Texas Commission on Environmental Quality

Remediation Division Correspondence Identification Form

SITE & PROGRAM AREA IDENTIFICATION

SITE LOCATION

Site Name: **Copano Enterprises LLC, dba CE Ranch LLC, Copano Site (Beds 1-4), Aransas and San Patricio County, Texas**

Address 1: **7037 CR 93**

Address 2:

City: **Aransas Pass** State: **Texas**

Zip Code: **78336** County: **San Patricio**

TCEQ Region: **Region 14 - Corpus Chrisi**

REMEDIATION DIVISION PROGRAM AND FACILITY IDENTIFICATION

Is This Site Being Managed Under A State Lead Contract?

☐ Yes ☑ No

Program Area: **IHW CORRECTIVE ACTION**

Mail Code: **MC-127**

Is This A New Site To This Program Area?

☐ Yes ☑ No

TCEQ SWR: **30097**

--Leave This Field Blank-- **--Leave This Field Blank--**

DOCUMENT(S) IDENTIFICATION

PHASE OF REMEDIATION	DOCUMENT NAME
1. ASSESSMENT	AFFECTED PROPERTY ASSESSMENT REPORT
2.	
3.	
4.	
5.	

CONTACT INFORMATION

RESPONSIBLE PARTY INFORMATION

Name:
Company: **Copano Enterprises LLC** Phone Number: **412-315-2785** Fax Number:
Address 1: **201 Isabella St.** City: **Pittsburgh** State: **PA** Zip Code: **15212-5858**
Address 2: Email: **ronald.morosky@alcoa.com**

ENVIRONMENTAL CONSULTANT/REPORT PREPARER/AGENT

Name: **Matt Wickham**
Company: **Golder Associates Inc.** Phone Number: **361-573-6442** Fax Number: **361-573-6449**
Address 1: **620 E. Airline** City: **Victoria** State: **TX** Zip Code: **77901**
Address 2: **Email: matthew_wickham@golder.com**

TCEQ INTERNAL USE ONLY

Document No.	TCEQ Database Term	Document No.	TCEQ Database Term
1.		4.	
2.		5.	
3.			

Copano Enterprises LLC
201 Isabella Street
Pittsburgh, PA 15212-5858 USA

June 29, 2020

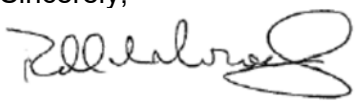
Ms. Eleanor T. Wehner
VCP-CA Section
Remediation Division
Texas Commission on Environmental Quality
P.O Box 13087
Austin, Texas 78711-3087

Re: Affected Property Assessment Report
Copano Enterprises LLC, dba CE Ranch LLC, Copano Site (Beds 1-4)
Aransas and San Patricio County, Texas
9019 Settlement Agreement effective May 21, 2018
TCEQ SWR No. 30097; EPA ID No. TXD008129983
Customer No. CN605550557; Regulated Entity No. RN104914312

Per the request contained in TCEQ correspondence dated June 10, 2019, please find enclosed the referenced report prepared by Golder Associates Inc. for Copano Enterprises LLC, dba as CE Ranch LLC.

Please contact me with any questions you may have.

Sincerely,



Ronald M. Morosky
Operations Manager

Enc.

cc:
Abigail Ryan, TCEQ
Susan Clewis, TCEQ
Beth Seaton, TCEQ
Tim Perdue, TCEQ
Matt Wickham, Golder

AFFECTED PROPERTY ASSESSMENT REPORT

COPANO SITE (BEDS 1-4)

COPANO ENTERPRISES LLC, dba CE RANCH LLC
ARANSAS AND SAN PATRICIO COUNTY, TEXAS

JUNE 2020

Prepared for:

COPANO ENTERPRISES LLC
Aransas and San Patricio County, TX

Prepared by:

GOLDER ASSOCIATES INC.
620 E. Airline
Victoria, Texas 77901
(361) 573-6442
Fax: (361) 573-6449

Golder Project No. 19125525

APAR Table of Contents[1]	Check if included
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[1] Items marked with an asterisk do not have prescribed formats (for example, laboratory reports).

	Check if included
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Cover Page

Program ID No. (primary): Report date: 6/29/2020

TCEQ Region No.: 14 MSD Certificate No.:

Additional Program ID Numbers.: SWR/Facility ID No.: 30097 PST Facility ID No.:

DCRP ID No.: VCP ID No.: LPST ID No.:

MSW Tracking No.: HW Permit/CP No.: Enforcement ID No.:

Other ID Nos.: Customer No. CN605550557, Regulated Entity No. RN104914312; EPA ID No. TXD008129983

Reason for submittal (check all that apply):

- ☒ Initial submittal
- ☐ Revision
- Notice of Deficiency Letter
- Permit/Compliance Plan
- Voluntary response
- Enforcement/Agreed order
- Directive/NOV letter
- Other:

On-Site Property Information

On-Site Property (Facility) Name: Copano Enterprises LLC, dba CE Ranch LLC, Copano Site (Beds 1-4), Aransas and San Patricio County, Texas

Street no. 7037 Pre dir: Street name: 93 Street type: Co. Rd. Post dir:

City: Aransas Pass County: Aransas County Code 004 Zip 78336

Nearest street intersection and location description: East of intersection of State Highway 136 and Co. Rd. 93

Latitude: **Decimal Degrees** (indicate one) North 27.985230

Longitude: **Decimal Degrees** (indicate one) West -97.228502

Contact Person for On-Site Property Information and Acknowledgment

Company Name or Person: Copano Enterprises LLC

Contact Name: Ronald M. Morosky Title: Operations Manager

Mailing Address: 201 Isabella St.

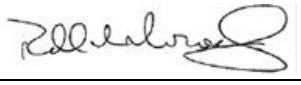
City: Pittsburgh State: PA Zip: 15212-5858 Phone: 412-315-2785

Email: ronald.morosky@alcoa.com Fax:

Person is: X property owner ___ property manager ___ potential purchaser ___ tenant ___ operator

other

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of administrative, civil, or criminal penalties.

Signature of Person  Name (print): Ronald M. Morosky Date: 6/29/2020

Consultant Contact Person

Consultant Company Name: Golder Associates Inc.

Contact Person: Matthew K. Wickham Title: Principal Hydrogeologist

Mailing Address: 620 E. Airline

City: Victoria State: Texas Zip: 77901

Phone: 361-573-6442 Fax: 361-573-6449 E-mail address matthew_wickham@golder.com

Professional Signatures and Seals

Professional Geoscientist

Matthew K. Wickham	5330	6/30/2021
Professional Geoscientist	Geoscientist License number	Expiration date
	6/29/2020	
Signature	Date	
361-652-1756		Matthew_Wickham@golder.com
Telephone number	FAX number	E-mail

Professional Engineer

Professional Engineer	P.E. License number	Expiration date
Signature	Date	
Telephone number	FAX number	E-mail

Firm Engineering Registration Number	Engineering Registration No.	Expiration Date
Golder Associates Inc.	50369	6/30/2020
Firm Geoscience Registration Number	Geoscience Registration No.	Expiration Date

Seals, as applicable:



Executive Summary

Environmental Media	Actual or Probable Exposures On-Site?		Actual or Probable Exposures Off-Site?		Have notifications for actual or probable exposures been completed? (§350.55(e))		
	Yes	No	Yes	No	Yes	No	N/A
Soil		X		X			X
Groundwater		X		X			X
Sediment		X		X			X
Surface Water		X		X			X

Is there, or has there been, an affected or potentially affected water well? ___ Yes _X_ No

If yes, what is the well used for? _____

Actual land use: On-site: ___ Res _X_ C/I Off-site affected property: ___ Res ___ C/I _X_ N/A

Land use for critical PCL determination: On-site: ___ Res _X_ C/I Off-site affected property: ___ Res ___ C/I _X_ N/A

Did the affected property pass the Tier 1 ecological exclusion criteria checklist? _____ Yes _X_ No

Affected groundwater-bearing unit(s) (in order from depth below ground surface), or uppermost groundwater-bearing unit if none affected

Unit No.	Name	Depth below ground surface (ft)	Resource Classification (1, 2, or 3)
1	Zone A	10-20	3
2			
3			

Assessment

Environmental Media		Assessment Levels Exceeded?						Affected property defined to RAL?			Is COC extent stable or expanding?	General classes of COCs (VOCs SVOCs, metals, etc.)
		On-Site?			Off-Site?							
		Yes	No	Not sampled	Yes	No	Not sampled	Yes	No	N/A		
Soil	Surface		X				X	X				Metals, Uranium, Radium 226/228/Combined
	Subsurface			X			X			X		
Groundwater			X				X	X				Metals, Uranium, Radium 226/228/Combined, Fluoride
Sediment			X				X	X				Metals, Uranium, Radium 226/228/Combined
Surface Water			X				X	X				Metals, Uranium, Radium 226/228/Combined

NAPL Occurrence Matrix

		NAPL Occurrence	Description
NAPL in vadose zone	X	No NAPL in vadose zone	There is no direct or indirect evidence of NAPL in the vadose zone
		NAPL in/on soil	NAPL detected in or on unsaturated, unconsolidated clay-, silt-, sand-, and/or gravel-dominated soils
		NAPL in fractured clay	NAPL detected in fractures of unsaturated fine-grained soils
		NAPL in fractured or porous rock	NAPL detected in unsaturated lithologic material
		NAPL in karst	NAPL detected in karst environment
NAPL at capillary fringe	X	No NAPL at capillary fringe	There is no direct or indirect evidence of NAPL at the capillary fringe
		NAPL at capillary fringe	NAPL detected at vadose-saturated zone transition, capillary fringe (in contact with water table)
NAPL in saturated zone	X	No NAPL in saturated zone	There is no direct or indirect evidence of NAPL in the saturated zone
		NAPL in soil	NAPL detected in saturated unconsolidated clay-, silt-, sand-, and/or gravel-dominated soils
		NAPL in fractured clay	NAPL detected in fractures of saturated fine-grained soil or other double-porosity sediments
		NAPL in saturated fractured or porous rock	NAPL detected in saturated lithologic material
		NAPL in saturated karst	NAPL detected in karst environment within the saturated zone
NAPL in surface water or sediment	X	No NAPL in surface water or sediment	There is no direct or indirect evidence of NAPL in surface water or sediments
		NAPL in surface water	NAPL detected in surface water at exceedance concentration levels or visual observation
		NAPL in sediments	NAPL detected in sediments at exceedance concentration levels or visual observation via migration pathway or a direct release

Remedy Decision

Environmental Media		Critical PCL exceeded on-site?			Critical PCL exceeded off-site?			PCLE zones defined?			General class (VOCs, SVOCs, metals, etc.) of COCs requiring remedy
		Yes	No	N/A	Yes	No	N/A	Yes	No	N/A	
Soil	Surface		X				X			X	
	Subsurface			X			X			X	
Groundwater			X				X			X	
Sediment			X				X			X	
Surface Water			X				X			X	

NAPL Triggers

NAPL Response Action Triggers		Description of Triggers
X	No NAPL response action triggers	No NAPL triggers have been observed in any assessment zones (vadose, capillary fringe and saturated), nor in surface water or sediments
	NAPL vapor accumulation is explosive	NAPL vapors accumulate in buildings, utility and other conduits, other existing structures, or within anticipated construction areas at levels that are potentially explosive (≥ 25% LEL)
	NAPL zone expanding	NAPL zone is observed to be expanding using time-series data
	Mobile NAPL in vadose zone	NAPL zone is observably mobile, or is theoretically mobile based on COC concentrations and residual saturation
	NAPL creating an aesthetic impact or causing nuisance condition	NAPL is responsible for objectionable characteristics (e.g., taste, odor, color, etc.) resulting in making a natural resource or soil unfit for intended use
	NAPL in contact with Class 1 groundwater	NAPL has come in actual contact with saturated zone or capillary fringe of a Class 1 GWBU
	NAPL in contact with Class 2 or 3 groundwater	NAPL has come in actual contact with saturated zone or capillary fringe of a Class 2 or Class 3 GWBU
	NAPL in contact with surface water	Liquid containing COC concentrations that exceed the aqueous solubility in contact with surface water via various migration pathways or direct release to surface water
	NAPL in or on sediments	Liquid containing COC concentrations that exceed the aqueous solubility impact surface water sediments via migration pathway or a direct release

Conclusions and Recommendations

Project Background and Scope of Investigation

Copano Enterprises LLC (dba CE Ranch, LLC in Texas) (CE) owns and operates the Site in San Patricio and Aransas Counties, Texas. CE and the Texas Commission on Environmental Quality (TCEQ) entered into a 9019 Settlement Agreement (the Agreement) on May 21, 2018 that outlines various environmental and other requirements, including requirements related to Site groundwater. Following TCEQ's approval of a Preliminary Groundwater Assessment Report and Drinking Water Survey Report for the Site, TCEQ requested the submission of an Affected Property Assessment Report (APAR).

This APAR specifically addresses the bauxite residue disposal areas (RDAs), which includes Beds 1, 2, 3, and 4 at the Site. Investigation activities have been conducted at the perimeter areas of the RDAs and on adjacent areas at the Site by Golder Associates Inc. (Golder) to generate the data necessary to prepare this APAR.

This investigation has been conducted to evaluate concentrations of metals, radium 226/228/combined, uranium, and fluoride in soil, groundwater, surface water, and sediment and to determine the groundwater resource classification.

Affected Property Assessment Results

No assessment levels were exceeded in the samples of soil, groundwater, surface water, and sediment collected at the Site. There is no affected property. No response action is required.

Response Actions, Recommendations, Conclusions

No response action is required.

COPANO ENTERPRISES LLC, dba CE RANCH LLC
AFFECTED PROPERTY ASSESSMENT REPORT
FOR THE
COPANO SITE (BEDS 1-4)

CHRONOLOGY

June 29, 2020	APAR submitted to TCEQ.
April 24, 2020	Class 3 Groundwater Demonstration Report submitted to TCEQ to ensure early TCEQ concurrence with groundwater classification for use in the APAR.
June 2019 – June 2020	Field work in support of the APAR. Four quarters of groundwater monitoring conducted. Surface soil, sediment, and surface water sampling conducted.
June 10, 2019	TCEQ approves the Revised PGAR and Revised DWS. TCEQ requests the submission of an Affected Property Assessment Report (APAR).
May 24, 2019	Revised DWSR submitted to TCEQ.
May 3, 2019	Revised PGAR and Tier I Ecological Exclusion Criteria Checklist submitted to TCEQ.
April 9, 2019	TCEQ submits comments on the DWSR.
April 3, 2019	Drinking Water Survey Report (DWSR) submitted to TCEQ.
March 5, 2019	TCEQ submits comments on the PGAR and requests the performance of a Drinking Water Survey. A completed Tier I Ecological Exclusion Criteria Checklist is also requested.
November 5, 2018	Preliminary Groundwater Assessment Report (PGAR) submitted to TCEQ.
September 2018	Preliminary Groundwater Assessment conducted. Installation of monitoring wells and piezometer wells adjacent to the perimeter containment dikes of Beds 1-4 to assess potential COCs present in the groundwater bearing units underlying the Site. Four piezometer wells were completed in the uppermost groundwater bearing unit (Zone A). Nine monitoring wells and five piezometer wells were completed in the lower groundwater bearing unit below Zone A (Zone B).
May 18, 2018	Copano Enterprises LLC (dba CE Ranch, LLC in Texas) enters into a 9019 Settlement Agreement that outlines various environmental and other requirements, including requirements related to Site groundwater.

Specialized Submittals Checklist

____ **Check here if no specialized submittals in this report**

	If included, specify section or appendix
Ecological Risk Assessment	
Reasoned justification, expedited stream evaluation, Tier 2 or 3 ecological risk assessment, and/or proposal for ecological services analysis	Section 9
Statistics	
Calculated site-specific background concentrations	Section 9
Used alternate statistical methods to determine proxy values for non-detected results (§350.51(n))	
Calculated representative concentrations (§350.79(2)) for remedy decision	
Analytical Issues	
Used SQL for assessment or critical PCL instead of the MQL (§350.51(d)(1)) or PCL (§350.79)	
The MQL of the analytical method exceeds assessment levels/critical PCLs (§350.54(e)(3))	
Human Health/Toxicology	
Variance to exposure factors approved by TCEQ Executive Director[1] (§350.74(j)(2))	
Developed PCLs based on alternate exposure areas	
Evaluated non-standard exposure pathway (e.g., agricultural, contact recreation, etc)	
Combined exposure pathways across media for simultaneously exposed populations (§350.71(j))	
Adjusted PCLs due to residual saturation, cumulative risk, hazard index, aesthetic concerns, or theoretical soil vapor	
Utilized non-default human health RBELs to calculate PCLs (includes use of non-default parameters, toxicity factors not published in rule, etc.) (§350.51(l), §350.73, §350.74)	
Calculated Tier 2 or 3 RBELs/PCLs or TSCA levels for polychlorinated biphenyls, or calculated Tier 2 or 3 RBELS/PCLs for cadmium, lead, dibenzo-p-dioxins, dibenzofurans, and/or polycyclic aromatic hydrocarbons	
Calculated Tier 1, 2, or 3 total petroleum hydrocarbon (TPH) PCLs	
Developed sediment/surface water human health RBELs and PCLs	
Fate and Transport	
Used or developed groundwater to surface water dilution factors	
Calculated Tier 2 PCL	
Calculated Tier 3 PCL	
Groundwater Issues	
Conducted aquifer test, classified Class 3 groundwater, or determined non-groundwater bearing unit (saturated soil)	Appendix 7

[1] Prior approval by Executive Director is required.

Section 1 Property Information

1.1 Physical Location

1.1.1 Property Location and Land Use

CE owns and operates the Copano Property (the Site) located east of the intersection of State Highway 136 and Co. Rd. 93 in San Patricio and Aransas Counties, Texas. The Site extends over approximately 11,000 acres. Land use in the surrounding areas is predominantly industrial and agricultural. There are isolated residential properties located near the Site. The nearest city is the City of Gregory, located approximately eight miles south of the Site (Figure 1A-1).

1.1.2 Topography and Weather

The Site is located on a flat coastal plain. Topographic changes are generally associated with the four separate surface impoundments (called Beds 1, 2, 3 and 4) at the Site. The elevation of the property and surrounding area ranges from approximately 5 to 20 feet above mean sea level (ft. msl). The dike crest elevation of Beds 1-4 ranges from approximately 29.5 to 36 ft. msl. The interior bauxite residue surface at Bed 1 crests at approximately 55 ft. msl.

The Site is bordered to the north and east by Copano Bay and Port Bay, respectively (Figure 1A-1). Elevations are the highest at Beds 1-4 and decrease radially away from the impoundments, gently sloping towards the shorelines of Copano Bay and Port Bay. The Site is not located in the 100-year flood plain.

Bed 1: Bed 1 is approximately 838 acres in size with containment dikes that crest at approximately 29.5 ft. msl. The decant pond is located approximately 300 ft. southeast of Bed 1.

Bed 2: Bed 2 is approximately 1,203 acres in size with containment dikes that crest at approximately 29.5 ft. msl. A fence and TX-188 are located approximately 700 ft. due north of Bed 2.

Bed 3: Bed 3 is approximately 412 acres in size containment dikes that crest at approximately 32 ft. msl. A fence and TX-188 are located approximately 750 ft. due south of Bed 3. A fence and Copano Retreat Rd. are located approximately 750 ft. northwest of Bed 3.

Bed 4: Bed 4 is approximately 697 acres in size with containment dikes that crest at approximately 36 ft. msl. From the base of the dike, the topography around Bed 4 is relatively flat and slopes gently towards the surrounding water bodies - Freshwater Lake, located approximately 650 ft. to the northwest; Swan Lake, located approximately 1,500 ft. to the north/northeast; and Port Bay, located approximately 6,500 ft. to the east. A fence and TX-188 are located approximately 750 ft. due south of Bed 4. A fence and Copano Retreat Rd. are located approximately 750 ft. southeast of Bed 4.

The area typically receives minimal consistent rainfall, but occasional storm systems can bring high intensity rainfall in short periods of time.

1.2 Affected Property and Sources of Release

1.2.1 History and Operations

The entire Copano Property consists of more than 11,000 acres. Beds 1, 2, 3 and 4 cover approximately 3,100 acres (Figure 1B). The dikes of the impoundments were reportedly constructed using native clays taken from shallow excavations on the property, and keyed into the underlying, approximately 20-ft thick clay layer. From the time period of 1969 until 2016, bauxite residue was pumped to the Site via pipelines from an alumina refinery located approximately 10 miles to the south of the Site on Corpus Christi Bay.

Bed 1: Bed 1 began operation in 1969 as a residue disposal area (RDA) for bauxite residue. Residue disposal in Bed 1 was ceased in 2016. Bed 1 is not an active RDA.

Bed 2: Bed 2 began operation in 1972 as an RDA for bauxite residue. Bed 2 is not an active RDA.

Bed 3: Bed 3 began operation in 1978 as an RDA for bauxite residue. Bed 3 is not an active RDA.

Bed 4: Bed 4 began operation in 1981 also intended for use as an RDA for bauxite residue, but was instead primarily only used for water management, i.e. receiving excess surface water from Bed 2. Bed 4 is not an active RDA.

1.2.2 Project Overview

CE owns and operates the Site in San Patricio and Aransas Counties, Texas. CE and the TCEQ entered into a 9019 Settlement Agreement (the Agreement) on May 21, 2018 that outlines various environmental and other requirements, including requirements related to Site groundwater.

A draft Preliminary Groundwater Assessment Report (PGAR) was prepared by Golder and submitted to the TCEQ on November 5, 2018 (Golder, 2018). The report described the procedures/results to address the groundwater assessment requirements of the Agreement. The PGAR was based on TRRP Tier 1 Protective Concentration Limits (PCLs) ($^{GW}GW_{Class\ 1\ 2}$) for the Site COCs (i.e., action levels). This comparison showed that radium 226/228/combined, uranium, and fluoride were measured at concentrations exceeding their respective action levels in groundwater samples collected from several monitoring wells. TCEQ provided comments (dated March 5, 2019) on the report requesting certain revisions and requesting the performance of a Drinking Water Survey in accordance with TCEQ Guidance (RG-428) (TCEQ, 2019a & 2019b). The March 5, 2019 TCEQ comment letter also requested a completed Tier I Ecological Exclusion Criteria Checklist.

A Final PGAR was prepared by Golder and submitted to the TCEQ on May 3, 2019 (Golder, 2019a). The final PGAR provided the Tier I Ecological Exclusion Criteria Checklist as Appendix A and is included in this report as Attachment 2A.

A Drinking Water Survey Report (DWSR) was submitted to TCEQ on April 3, 2019 (Golder,

2019b). After receiving comments on the DWSR (TCEQ, 2019c), a Revised DWSR was submitted to the TCEQ on May 24, 2019 (Golder, 2019c) and documented that no privately-owned drinking water wells were located within a 0.25-mile radius of the Site. The TCEQ approved the Revised DWSR and Final PGAR in a letter dated June 10, 2019 and requested the submission of an Affected Property Assessment Report (APAR) for the Site (TCEQ, 2019d).

A Class 3 Groundwater Demonstration Report was submitted to the TCEQ on April 28, 2020 (Golder, 2020) and approved on May 14, 2020 (TCEQ, 2020).

This APAR specifically addresses the RDAs, which includes Beds 1, 2, 3 and 4 at the Site. Samples of groundwater were collected from the groundwater monitoring network at the Site, which currently consists of 34 monitoring wells (Figure 1B) that surround the Beds. Surface soil was sampled from 44 locations surrounding the Beds. Sediment and surface water samples were collected at six locations from two surface water bodies located north/northwest of Bed 4.

This investigation has been conducted to evaluate concentrations of metals, radium 226/228/combined, uranium, and fluoride in soil, groundwater, surface water, and sediment and to determine the groundwater resource classification.

1.3 Geology/Hydrogeology

1.3.1 Regional Geology/Hydrogeology

The Site is located in the Gulf Coast Plain Province of Texas. The stratigraphy of the Gulf Coast Plain consists of a thick sequence of fluvial-deltaic sediments deposited as a wide belt generally trending northeast parallel to and dipping gently toward the present Gulf Coast. The fluvial-deltaic sediments consist of alternating sequences of unconsolidated to partially consolidated silt, clay, and sand. The formations present in the regional vicinity of the property include, from shallowest to deep, Holocene and Pleistocene alluvium, the Beaumont Formation, the Lissie Formation, the Goliad Formation, the Fleming Formation, and the Oakville Formation (Baker, 1979) (Ryder, 1991) (Figure 1C and Figure 1D).

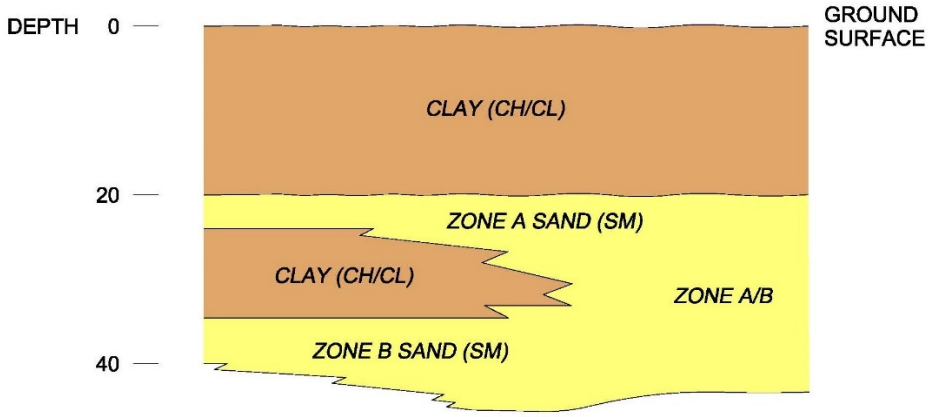
In this region of the Gulf Coast Plain, the stratigraphic units containing fresh to slightly saline water are the recent alluvium, the Beaumont Formation, the Lissie Formation, and the Goliad Formation. However, in the vicinity of the Site, all of these stratigraphic units [including the shallowest water bearing units at the Site (Zone A and Zone B)] are saline and are not used for any purpose. Much of the groundwater in Aransas and San Patricio County has naturally occurring high total dissolved solids content that exceeds drinking water standards and Department of Agriculture irrigation standards. Since 1965, the development of groundwater resources for public water supply has not been pursued, and cities in Aransas and San Patricio County (Rockport, Fulton, Aransas Pass, Ingleside, Gregory, Portland, Odem, and Taft) have relied on surface water from Lake Corpus Christi for public water supply (Shafer, 1968). Lake Corpus Christi is located 40 miles to the west-northwest of the Site.

1.3.2 Site Geology/Hydrogeology

Investigations at the facility have provided information about the Site subsurface geology and hydrogeology. In general, subsurface strata are part of the Quaternary (Pleistocene) Beaumont Formation, which consists of mostly clay, silt, sand and gravel deposited in stream channel,

point bar, natural levee, and backswamp depositional environments. Subsurface complexity arises from the interbedded nature of these deposits, resulting from the various depositional environments of the Beaumont Formation. Multiple sand units are present in the subsurface that are typically separated by a clay layer (i.e., aquitards).

The surface soil observed at the Site is a medium to high plasticity clay that extends to a depth of approximately 20 feet below the ground surface. Beneath this surface clay is the uppermost water-bearing zone (termed Zone A) that varies from a silty to clayey sand, ranging in thickness from just a few feet to over 20 feet, and typically containing interbedded layers of clay and silty clay. A deeper water-bearing zone (Zone B) is present beneath Zone A, being separated by a layer of clay ranging from just a few feet thick to over 10 feet. Zone B typically occurs as a silty sand, but occasionally as a clayey sand and also varies in thickness from a few feet to over 20 feet. Occasionally, the clay layer between Zones A and B is absent, and a thick sequence of sand with interbedded clay and silty clay represents Zone A/B. Both zones have high total dissolved solid (TDS) concentrations. The subsurface stratigraphy is shown on the generalized section below.



The stratigraphic units encountered at the Site, from shallowest to deepest, are summarized below:

- Unit 1 – Represents the clay/silty clay layer overlying the uppermost water-bearing unit. The top of Unit 1 occurs at approximately 10 to 15 ft. msl. The thickness of the clay is approximately 9 to 21 ft. The permeability of Unit 1 is less than 1x10-7 cm/s, based on historic tests conducted (Dames and Moore, 1979) on samples of the Unit 1 materials at Bed 4 and on available literature relating the Beaumont Formation.
- Zone A – Represents the shallowest near-surface water-bearing unit at the site. Zone A, a fine-to medium-grained, silty sand to sand, ranges from approximately 2 to 20 ft. in thickness and the top of Zone A occurs at approximately 2 to -12 ft. msl. Groundwater (Class 3) occurs under confined conditions in Zone A. Based on slug tests conducted by Golder in 2019, the hydraulic conductivity of Zone A ranges from 1.3 x 10-3 cm/s to 7.1 x 10-4 cm/s.
- Unit 2 – A silty clay to high plasticity clay layer between Zone A and Zone B. The thickness is approximately 1 to 15 ft. and the top of Unit 2 occurs at approximately 0 to -20 ft. msl. Laboratory permeability tests of clays indicate a hydraulic conductivity range of 1.31 x 10-7 cm/s to 1.4 x 10-8 cm/s (National Soil Services, Inc., 1968). The thickness and low hydraulic conductivity of the clay would be expected to significantly

impede downward COC migration.

- Zone B – Represents the next deepest water-bearing unit. Zone B, a fine-to medium-grained, silty sand to sand is approximately 2 to 20 ft. in thickness and the top of Zone B occurs at approximately -15 to -27.5 ft. msl. Groundwater (Class 3) occurs under confined conditions in Zone B.
- Unit 3 – This sandy, medium plasticity clay layer is the deepest geologic unit encountered during the well installations. The top of Unit 3 occurs at approximately -21 to -44 ft. msl and its thickness was not determined.

Groundwater in Zones A and B occurs in a confined condition within the sand units, i.e., the water level in a well is at a higher elevation than the top of the sand unit at that well location. Lateral groundwater flow in the upper water-bearing units ranges in direction from northeast to southeast towards Copano and Port Bays (Figures 5A-1 through 5A-2). The magnitude of the hydraulic gradient in Zone A is approximately 4.2E-04 to 1.1E-03 ft/ft. The magnitude of the hydraulic gradient in Zone B is approximately 5.0E-04 to 8.0E-04 ft/ft. Water-levels in the monitoring wells at the Site fluctuate as much as approximately two feet over a quarter of a year. Typically, quarterly water-level fluctuations are less than one foot (Table 5D).

Chemical properties of Zone A and Zone B groundwater were evaluated by analyzing for common chemical constituents (e.g., major cations and anions), metals, and radionuclides, and by measuring several parameters in the field (pH, specific conductance, alkalinity, oxidation-reduction potential, etc.). Review of these data (Tables 5B-1 and 5B-2) indicates that groundwater in Zone A and B is typical of shallow coastal environments. In general, TDS concentrations are high; bicarbonate alkalinity concentrations are low (<500 mg/L); sulfate concentrations are high; calcium, potassium and magnesium concentrations are high; pH is circum-neutral; and oxidation-reduction potential is positive.

Table 1A. Sources of Release (see input values on preceding page)

Affected property name/ number[1]	Name of potential source[2] (supplied by the person)	Type of potential source (select from Column 1 on Inputs list)	NOR unit or SWMU number, if applicable	Substances of potential concern (select from Column 2 on Inputs list)	Size of source (capacity, area, or volume)	Status of source (select from Column 3 on Inputs list)		Was a release from this source confirmed? (if yes, indicate the discovery method from Column 4 on Inputs list, and date release was discovered)			
						Status[3]:	If closed or other, list date closed or explain:	No	Yes	Discovery method	Date
N/A[4]	Bed 1	Surface Impoundments/ ponds, lagoons	NOR #30097, Unit #005	Metals, Uranium, Radium 226/228/combined	838-acre area	Inactive		X			
N/A	Bed 2	Surface Impoundments/ ponds, lagoons	NOR #30097, Unit #002	Metals, Uranium, Radium 226/228/combined	1,203-acre area	Inactive		X			
N/A	Bed 3	Surface Impoundments/ ponds, lagoons	NOR #30097, Unit #006	Metals, Uranium, Radium 226/228/combined	412-acre area	Inactive		X			
N/A	Bed 4	Surface Impoundments/ ponds, lagoons	NOR #30097, Unit #011	Metals, Uranium, Radium 226/228/combined	697-acre area	Inactive		X			

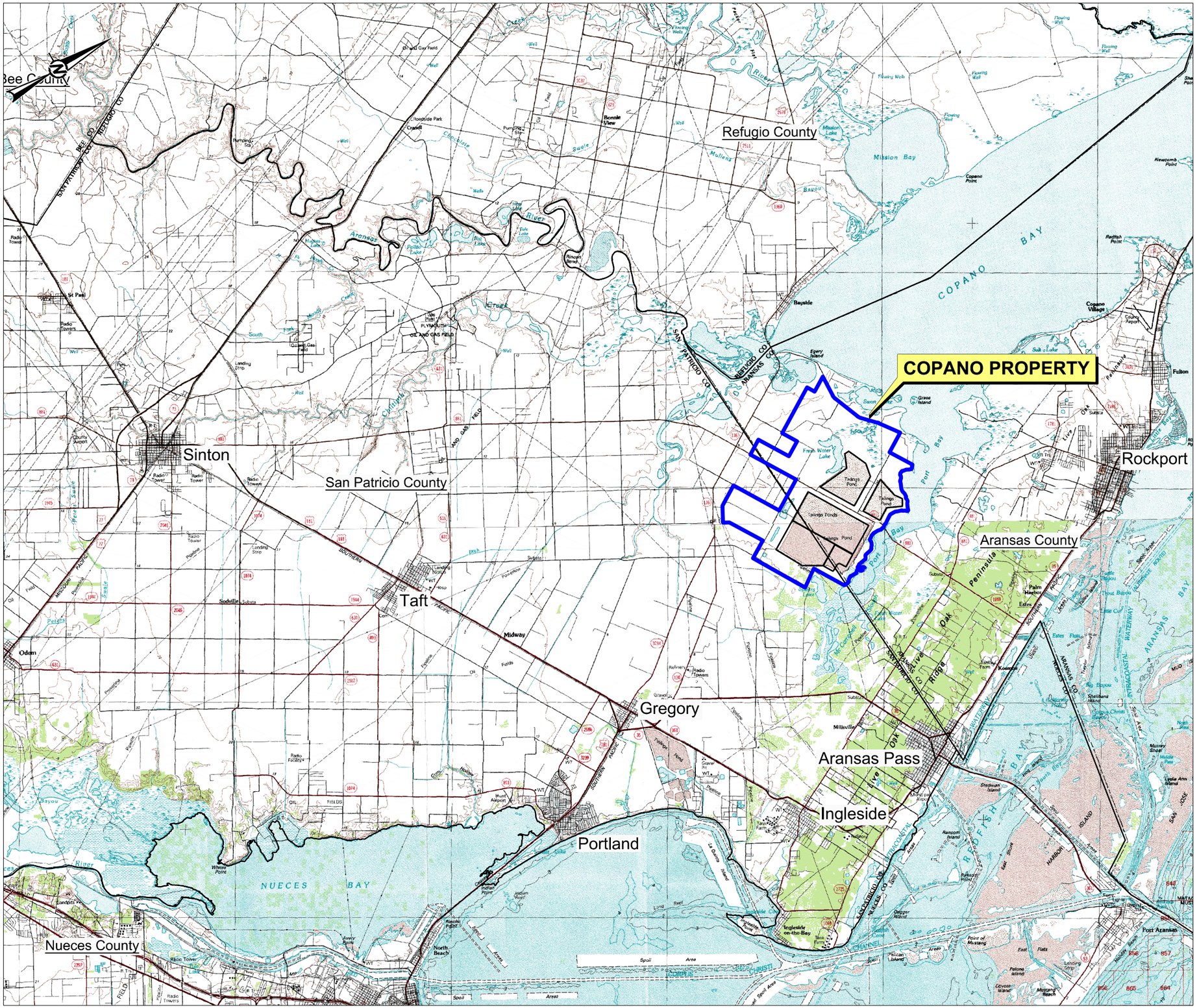
[1] The name or number is an identification of the affected property assigned by the person. Continue using the name or number identification throughout this report and all other correspondence on the affected property.
[2] The potential source is the source of the release. The person determines the name given to the potential source. Examples: northwest tank farm, Main Street landfill, etc.
[3] Specify whether the source status is active, inactive, abandoned, closed, or specify another status as appropriate.
[4] N/A – not applicable

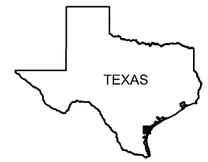
Table 1B. Potential Off-Site Sources

Affected property name/number	Off-site facility/ site name	Physical address	Regulatory ID number	Type of operation/ business	Years of operation (if known)	COCs
N/A						

1.0 Figures

Figure 1A-1	Regional Location Map
Figure 1A-2	Site Location Map
Figure 1B	Affected Property Map (Not applicable)
Figure 1C	Regional Geologic Map
Figure 1D	Regional Geologic Cross Section





QUADRANGLE LOCATIONS

REFERENCE(S)

BASE MAP FROM WWW.TNRIS.GOV, BEEVILLE, TEX 30X60 MIN. USGS QUADRANGLE DATED 1985 AND CORPUS CHRISTI, TX 30X60 MIN. USGS QUADRANGLE DATED 1984.

0 7500 15000
1" = 15000' FEET

CLIENT
CE RANCH LLC

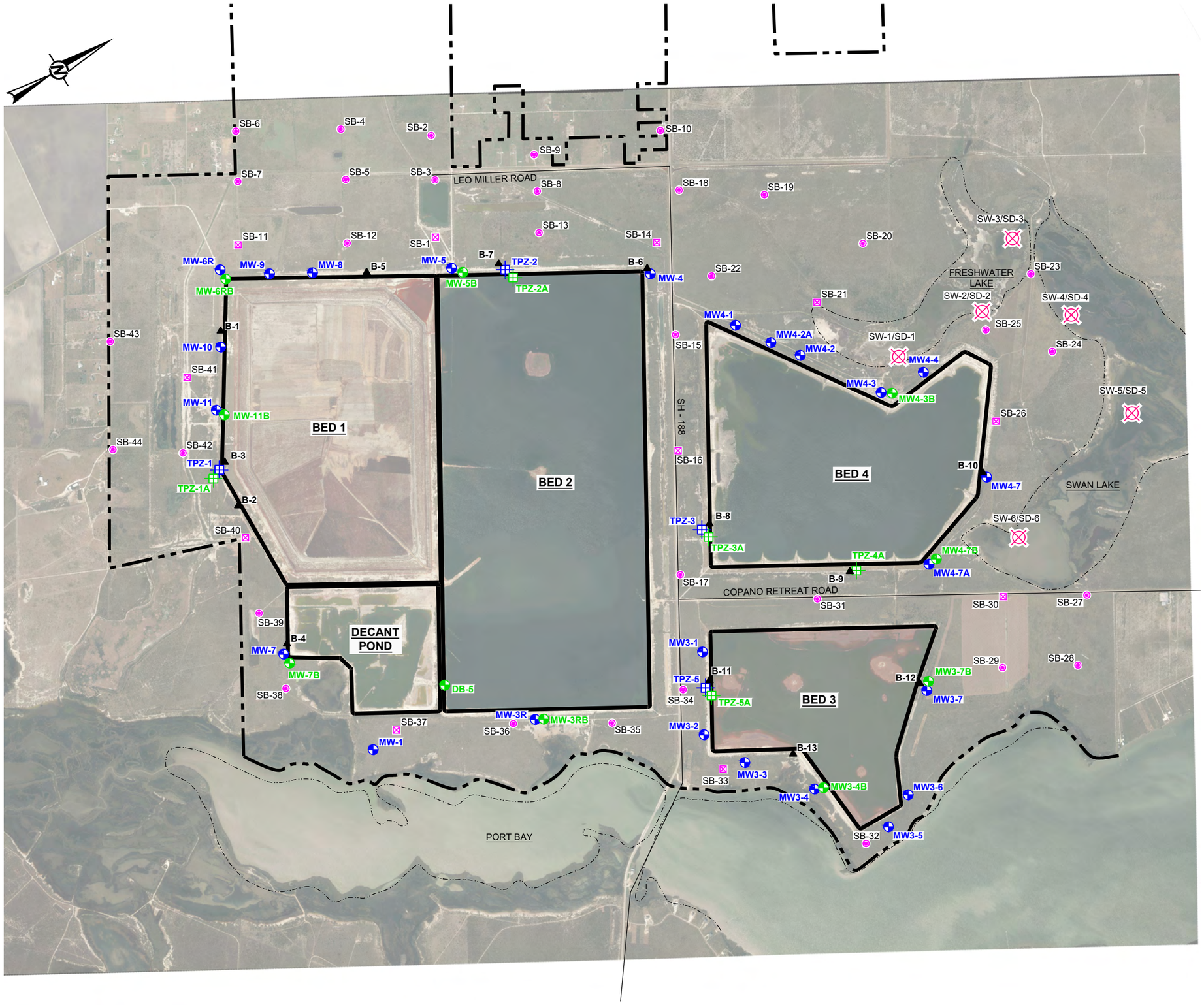
PROJECT
COPANO PROPERTY

TITLE
REGIONAL LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2018-11-01
DESIGNED	BZH
PREPARED	BZH
REVIEWED	SNR
APPROVED	SNR

PROJECT NO. 18105404 | REV. 0 | FIGURE 1A-1



LEGEND

	APPROXIMATE PROPERTY BOUNDARY
MW4-1	MONITORING WELL LOCATION (FUGRO) (ZONE A)
TPZ-2	TEMPORARY PIEZOMETER(S) LOCATION (ZONE A)
B-7	BORING LOCATION (ZONE A)
MW3-7B	MONITORING WELL LOCATION (ZONE B)
TPZ-2A	TEMPORARY PIEZOMETER(S) LOCATION (ZONE B)
	SURFACE WATER (SW) AND SEDIMENT (SD) SAMPLE LOCATIONS
	SCREENING SURFACE SOIL SAMPLE LOCATION (ANALYZED FOR SCREENING LEVEL ANALYTES)
	LOCATION SAMPLED FOR SCREENING LEVEL AND COPC ANALYTES

REFERENCE(S)

MAP BASED ON AERIAL PHOTOMETRIC MAP BY LANMON AERIAL PHOTOGRAPHY, FLOWN OCTOBER 23, 2019.

0 1200 2400
1" = 2400' FEET

CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
SITE LOCATION MAP

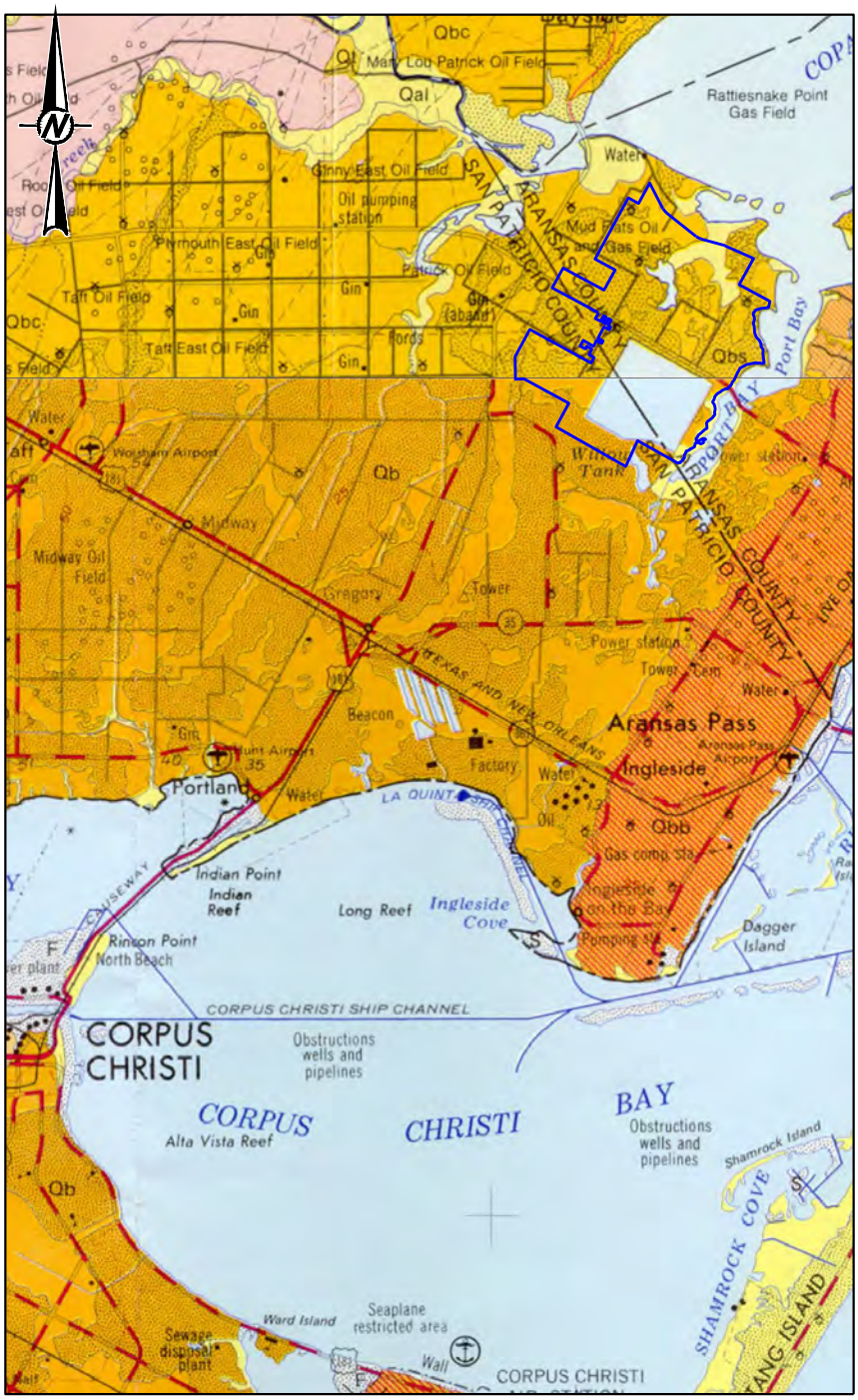
CONSULTANT
GOLDER

YYYY-MM-DD	2020-01-07
DESIGNED	BZH
PREPARED	PJM
REVIEWED	MKW
APPROVED	MKW

PROJECT NO. 19125525 | REV. 0 | FIGURE 1A-2

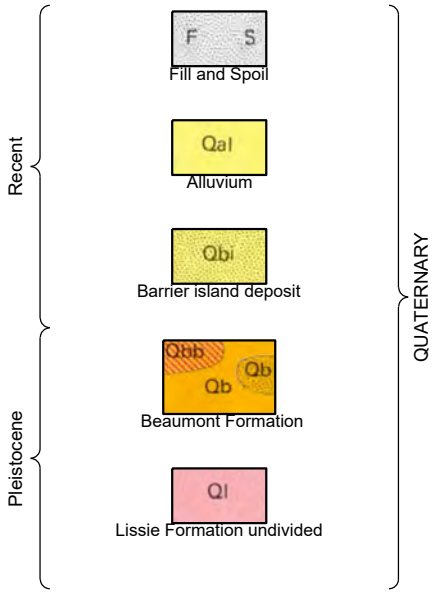
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\waxahkama.golder.gds\data\Projects - Victoria\ 2019\19125525 - Copano\2020-06 June\ | File Name: FIG 1A - 2 Site Location Map.dwg | Last Edited By: pmcbride Date: 2020-06-10 Time: 5:02:28 PM | Printed By: PMcBride Date: 2020-06-17 Time: 8:49:34 AM



EXPLANATION

(Formations Described in Separate Text)



NOTE(S)

THE LITHOLOGIC SYMBOLS FOR THE BEAUMONT FORMATION WERE REVISED SUBSEQUENT TO THE PUBLICATION OF THE CORPUS CHRISTI SHEET (1975). THE SYMBOL FOR DEPOSITS OF PREDOMINANTLY SAND WAS CHANGED FROM QB TO QBS, AND THE SYMBOL FOR DEPOSITS OF PREDOMINANTLY CLAY WAS CHANGED FROM QB TO QBC.

0 2.5 5
1" = 5 mi MILES

LEGEND

APPROXIMATE REYNOLDS PROPERTY BOUNDARY

REFERENCE(S)

BUREAU OF ECONOMIC GEOLOGY. GEOLOGIC ATLAS OF TEXAS, CORPUS CHRISTI SHEET (1975) AND BEEVILLE-BAY CITY SHEET (1987).

CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
REGIONAL GEOLOGIC MAP

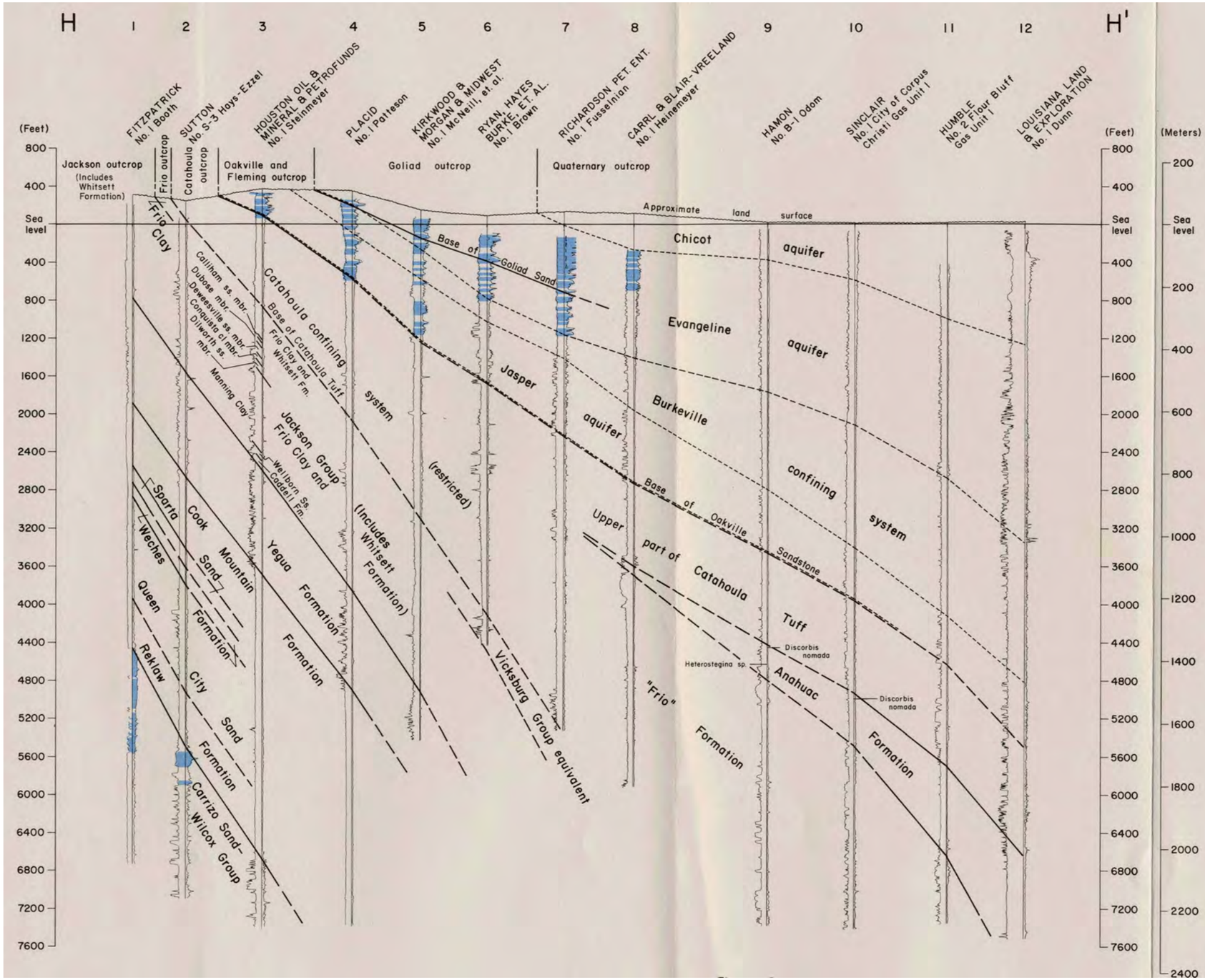
CONSULTANT
GOLDER

YYYY-MM-DD	2020-06-05
DESIGNED	ZGK
PREPARED	PJM
REVIEWED	MKW
APPROVED	MKW

PROJECT NO. 19125525 | REV. 0 | FIGURE 1C

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

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Path: \\texarkana.golder.gds\data\Projects - Victoria_2019\19125525 - Copano\2020-06 June\ | File Name: Fig 1C - Regional Geologic Map.dwg



CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
REGIONAL GEOLOGIC CROSS SECTION

CONSULTANT
GOLDER

YYYY-MM-DD	2020-06-05
DESIGNED	ZGK
PREPARED	PJM
REVIEWED	MKW
APPROVED	MKW

PROJECT NO. 19125525 | REV. 0 | FIGURE 1D

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in

Path: \\texarkana.golder.gds\data\Projects - Victoria_2019\19125525 - Copano\2020-06 June\ | File Name: Fig 1D - Regional Geologic Cross Section.dwg | Last Edited By: pmcbride Date: 2020-06-08 Time:5:23:58 PM | Printed By: PMcBride Date: 2020-06-08 Time:5:29:29 PM

Section 2 Exposure Pathways and Groundwater Resource Classification

Section 2.1 Source(s) of Potable Water for On-Site Property and Affected Off-Site Properties

Potable water is supplied to the Site by the San Patricio Municipal Water District from Lake Corpus Christi (Segment 2103), located 40 miles west-northwest of the Site. There are no potable water wells on or in the immediate vicinity (0.5 mi.) of the Site (See Section 2.3).

Section 2.2 Field Receptor Survey

Walking field surveys at the Site were conducted in the areas within 500 ft of the potentially affected properties. A decant pond is located approximately 300 ft. southeast of Bed 1. Bed 2 is bordered on the north by TX-188, and Bed 3 and Bed 4 are north of TX-188. Copano Retreat Rd. runs between Bed 3 and Bed 4. The results of the receptor survey are discussed in Section 2.4.

Section 2.3 Records Survey

Golder reviewed federal, state, and local environmental records pertaining to the Site. Database records were obtained through a record search performed by Banks Environmental Data (Banks). Banks reviewed available records made public by the state of Texas at the TCEQ, the Texas Water Development Board (TWDB) and the United States Geological Survey (USGS) to identify the approximate location of public and private water wells within the requested Area of Review (AOR) (within a 0.5 mile radius of the Site). Banks researched the located wells and plotted water wells identified on county highway maps or USGS 7.5-minute topographic maps at the TWDB. Banks transferred the approximate water well locations onto a map for review (Banks, 2018).

The wells shown as being within the 0.5-mile radius of the RDAs were further evaluated to verify their existence and location. The verification process included a review of water well searches conducted at the Site and adjacent properties and communications with off-site property owners regarding the presence of wells. In general, the database/map provided by Banks was found to be very inaccurate. Numerous wells identified in the Banks report were found to be plotted in incorrect areas. Through the verification process it was determined that just three water wells are present within the 0.5-mile radius of the RDAs. These water wells are capped inactive stock wells on the Copano Property and are not used for private drinking water. Other wells listed in the Banks report were found to be plugged and abandoned or were oil field supply wells no longer in operation or no longer present. No potable water wells were identified within the 0.5-mile search radius of the affected property. The areas within the search radius are provided water by the San Patricio Municipal Water District which utilizes surface water from Lake Corpus Christi. In addition, no public groundwater supply systems are present in the area.

Please refer to the DWSR (Golder, 2019c) for more information.

Section 2.4 Receptor Survey Results

The area encompassed by a 500 ft. radius around the Beds at the Site consists entirely of industrial or agricultural property owned by CE Ranch LLC. The land surface in the vicinity of the Site is relatively flat. The only significant topographic changes are manmade, i.e. the dikes of Beds 1, 2, 3, and 4. Much of the property is secured by fencing, so access to the Site is limited.

There are two surface water bodies located approximately 500-feet from Bed 3 and Bed 4. The topography east of Bed 3 slopes gently towards Port Bay, which is located approximately 500 ft. east/southeast. The topography northwest of Bed 4 slopes gently towards Freshwater Lake, which is located approximately 500 ft. northwest. Further discussions of the potential human health and ecological exposure pathways are presented in Sections 6, 7, and 9.

As discussed in previous sections, there were no potable water wells identified within 0.5-miles of the Beds. No water tanks, pump houses, windmills, cisterns, or other related permanent structures are within 500 ft of the Beds.

Underground utility surveys were conducted prior to drilling activities in 2018 for the Preliminary Groundwater Assessment at the Site. No underground utilities are present within 0.5-miles of the Beds.

Section 2.5 Groundwater Resource Classification

Zone A and Zone B groundwater at the Site is considered a Class 3 resource based on several lines of evidence (Golder, 2020).

The geographic location of the Site, bordered on two sides by the salt waters of Copano and Port Bay, results in considerable natural salinity of shallow groundwater at the Site. Several processes result in the natural salinity in groundwater, such as tidal influx of salt water, inundation by bay water, residual connate water, infiltration of sea spray, and concentration by evapotranspiration.

Five groundwater sampling events from all 34 monitoring wells have been performed at the Site. Total dissolved solids (TDS) analysis was performed during each event and exceeded 10,000 mg/L for each sample (Table 5B) with one exception (from well MW-1, 8,280 mg/L, sample collected 9/20/2018). Concentrations of total dissolved solids in samples collected from Zones A and B monitoring wells averaged 34,204 and 40,218 mg/L, respectively. In addition, groundwater quality at well locations farthest upgradient in Zones A and B (see Figures 5A-1 and 5A-2, respectively) were further assessed with regard to background conditions. The arithmetic mean of the TDS data reported for MW-9 (Zone A) for the five sampling events is 18,960 mg/L and the arithmetic mean of the TDS data reported for MW-5B (Zone B) for the five sampling events is 23,180 mg/L. These data exceed 10,000 mg/L and meet the naturally occurring criteria for a Class 3 groundwater resource.

The cation and anion data for the monitoring well samples were plotted on a trilinear (piper)

diagram. A review of the diagram indicates that the geochemical signature of Site groundwater is very similar across all samples/wells given the close grouping of the data on the diagram. This indicates that there is no variability of the source of the natural salinity for all the groundwater samples collected from the wells at the Site.

Three water wells were identified within a 0.5-mile radius of the RDA. These wells (State ID 79-63-802, 79-63-801 and 136832) are registered to Copano Enterprises LLC and are located on the Copano Property (i.e., on the 11,000-acre ranch property). These wells are not used for potable purposes.

No water wells were identified within 0.5-mile radius of the Site that supply groundwater for human consumption, agricultural purposes or any purpose which could result in exposure to human or ecological receptors.

In summary, RG-366/TRRP-8 states that a Class 3 groundwater resource designation is applied for groundwater-bearing units (GWBUs) where: i) the natural TDS concentration exceeds 10,000 mg/L, and where: (ii) there is no human or ecological exposure to groundwater from that GWBU within 0.5-miles. Results of the groundwater resource classification evaluation for the Site indicate that the uppermost GWBUs at the Site (Zones A and B) meet the criteria for a Class 3 groundwater resource, as defined by TRRP Rule §350.52(3) and consistent with RG-366/TRRP-8.

Please see the Class 3 Groundwater Demonstration Report (Golder, 2020) for more detailed information.

Section 2.6 Exposure Pathways

Exposure pathways were evaluated based on the geologic and physical characteristics of the affected properties, the extent and concentrations of COCs in various media, and current and anticipated future land use conditions. The potentially complete exposure pathways identified as applicable for this affected property assessment are presented on Table 2C and are detailed below.

Groundwater: Assessment levels and PCLs are based on the $^{GW}GW_{Class\ 3}$ pathway and the objective of this APAR was to delineate the PCL exceedance zones (PCLE zones). There were no exceedances of Class 3 PCLs for groundwater; therefore, the $^{GW}GW_{Class\ 3}$ pathway is considered incomplete.

The surrounding surface water bodies are not hydraulically connected to the uppermost GWBU. As shown on the Figures 4C-1 through 4C-3 and discussed in Sections 6 and 7, there is typically a minimum of four to five feet of clay between the bottom of the surrounding surface water bodies and the top of the uppermost GWBU at the Site. The ^{SW}GW and ^{Sed}GW exposure pathways were considered incomplete. However, surface water and sediment samples were collected at Freshwater Lake and Swan Lake to investigate the effect of atmospheric deposition (i.e. dusting from the Beds) on the surrounding surface water bodies. These pathways are discussed in Section 9.

The $^{Air}GW_{Inh\text{-}V}$ pathway is considered incomplete at the Site.

Surface Soil: The $^{Tot}Soil_{Comb}$ and $^{GW}Soil_{Class\ 3}$ pathways are considered potentially complete for surface soils, defined as soils from ground surface to 15 feet bgs for residential land use (delineation assessment). The $^{GW}Soil_{Class\ 3}$ pathway is the applicable soil-leaching to groundwater pathway since the uppermost GWBU was encountered at the Site and it is considered a Class 3 groundwater resource. The concentrations of COCs in soil samples collected at the Site do not exceed TRRP RALs. Therefore, these pathways are considered incomplete. The $^{Air}Soil_{Inh\text{-}V}$ pathway is considered incomplete at the Site.

Subsurface Soil: Exposure pathways associated with subsurface soil are not considered for this assessment due to the determination of an incomplete surface soil pathway.

Potential ecological receptors were described in the Tier I Exclusion Criteria Checklist (see Attachment 2A) and are evaluated in the Ecological Risk Assessment Review of Soil, Sediment, and Surface Water Data (See Section 9).

Table 2A. Water Well Summary

Well no. / designation	Well owner's name of record	Distance from affected property (ft.)	Screened interval/open interval (ft)	Cemented interval (ft)	Completion type	Total depth	Date drilled	Producing formation	Current water use[1]	Current status[2]	Data source[3]
Downgradient Wells											
79-63-801	Copano Enterprises LLC	2604	187-199	Not noted	Not noted	199	1955	Not noted	Liv	SB	TWDB Well Record
Cross-gradient Wells											
79-63-802	Copano Enterprises LLC	475	Not noted	Not noted	Not noted	190	1967	Not noted	Liv	SB	TWDB Well Record
Upgradient Wells											
136832	Copano Enterprises LLC	2213	260-300	0-10	Straight Wall	300	2007	Not noted	Liv	SB	TWDB Well Record

[1] Current water use: Dom - domestic; PS - public supply/municipal; Ind - industrial; Comm - commercial; Irr - irrigation; Liv - livestock
[2] Current status: Act - active; Ab - abandoned/not in use; SB - standby/backup; P&A - plugged and abandoned
[3] Indicate the specific primary source of well information.

Table 2B. Threatened and Affected Water Well Summary

Well number/ designation	Current owner and phone number	Property address and/or legal description[1]	Tenants and/or easement holders[2]	Samples collected		Do COC concentrations exceed Tier 1 $^{GW}GW_{Ing}$ PCLs?	
				Yes	No	Yes	No
N/A							

[1] Provide the address of the property containing the threatened or affected well. If the property does not have an address or if property plot maps are provided, include the legal description of the property (i.e., lot and block numbers, appraisal district reference numbers, etc.)
[2] If samples were collected on property not owned by the person and results exceed Tier 1 PCLs, provide the names of tenants and/or easement holders.

Table 2C. Complete or Reasonably Anticipated to be Complete Exposure Pathways

Exposure pathway	Surface soil[1]	Subsurface soil[2]	Groundwater	Surface water/ sediment
$^{Tot}Soil_{Comb}$[3]	X	NA	NA	NA
$^{Air}Soil_{Inh\text{-}V}$	NA			
$^{GW}Soil_{Ing}$ or $^{GW}Soil_{Class3}$	X			
$^{GW}GW_{Ing}$ or $^{GW}GW_{Class3}$	NA	NA	X	
$^{Air}GW_{Inh\text{-}V}$				
^{SW}GW			X	
^{Sed}GW			X	
^{SW}SW or ^{Sed}Sed			NA	X
Other (specify)[4]				

Notes:

1) Residential: soils from 0-15 feet deep, or to bedrock or groundwater-bearing unit if shallower.
   Commercial/industrial: soils from 0-5 feet deep, or to bedrock or groundwater-bearing unit if shallower.
2) The vadose zone beneath the surface soil extending to the groundwater-bearing unit and including unsaturated zones between stratified groundwater-bearing units.
3) Residential: $^{Air}Soil_{Inh\text{-}VP} + {}^{Soil}Soil_{Ing} + {}^{Soil}Soil_{Derm} + {}^{Veg}Soil_{Ing}$
   Commercial/industrial: $^{Air}Soil_{Inh\text{-}VP} + {}^{Soil}Soil_{Ing} + {}^{Soil}Soil_{Derm}$
4) If other exposure pathways are identified here, include those pathways in the derivation of assessment levels and evaluation of critical PCLs.

[1] Residential: soils from 0-15 feet deep, or to bedrock or groundwater-bearing unit if shallower.
Commercial/industrial: soils from 0-5 feet deep, or to bedrock or groundwater-bearing unit if shallower.

[2] The vadose zone beneath the surface soil extending to the groundwater-bearing unit and including unsaturated zones between stratified groundwater-bearing units.

[3] Residential: $^{Air}Soil_{Inh\text{-}VP} + {}^{Soil}Soil_{Ing} + {}^{Soil}Soil_{Derm} + {}^{Veg}Soil_{Ing}$
Commercial/industrial: $^{Air}Soil_{Inh\text{-}VP} + {}^{Soil}Soil_{Ing} + {}^{Soil}Soil_{Derm}$

[4] If other exposure pathways are identified here, include those pathways in the derivation of assessment levels and evaluation of critical PCLs.

2.0 Figures

Figure 2A Potential Receptors Map (Not applicable)

Figure 2B Field Survey Photographs

Figure 2C Water Well Map



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- 1 PHOTO LOCATION
- DIRECTION PHOTOGRAPH WAS TAKEN

REFERENCE(S)

MAP BASED ON AERIAL PHOTOMETRIC MAP BY LANMON AERIAL PHOTOGRAPHY, FLOWN OCTOBER 23, 2019.

0 1000 2000
1" = 2000' FEET

CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
FIELD RECEPTOR SURVEY - PHOTO LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-06-16
DESIGNED	BZH
PREPARED	PJM
REVIEWED	MKW
APPROVED	MKW

PROJECT NO. 19125525 | REV. 0 | FIGURE 2B

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana.golder.gds\data\Projects - Victoria_2019\19125525 - Copano\2020-06 June\ | File Name: FIG 2B - Field Receptor Survey Photo Location.dwg | Last Edited By: pmcbride Date: 2020-06-17 Time:9:25:44 AM | Printed By: PMcBride Date: 2020-06-17 Time:9:30:03 AM

FIGURE 2B
Field Receptor Survey Photographs
CE Ranch LLC
Copano Property

1) Photo taken at the western-most dike of Bed 1 facing northwest.	2) Photo taken at the western-most dike of Bed 2 facing northwest.
	
3) Photo taken at the western-most dike of Bed 4 facing north. Freshwater Lake can be seen in the distance.	4) Photo taken at the western-most dike of Bed 4 facing west. Freshwater Lake can be seen in the distance.
	

FIGURE 2B
Field Receptor Survey Photographs
CE Ranch LLC
Copano Property

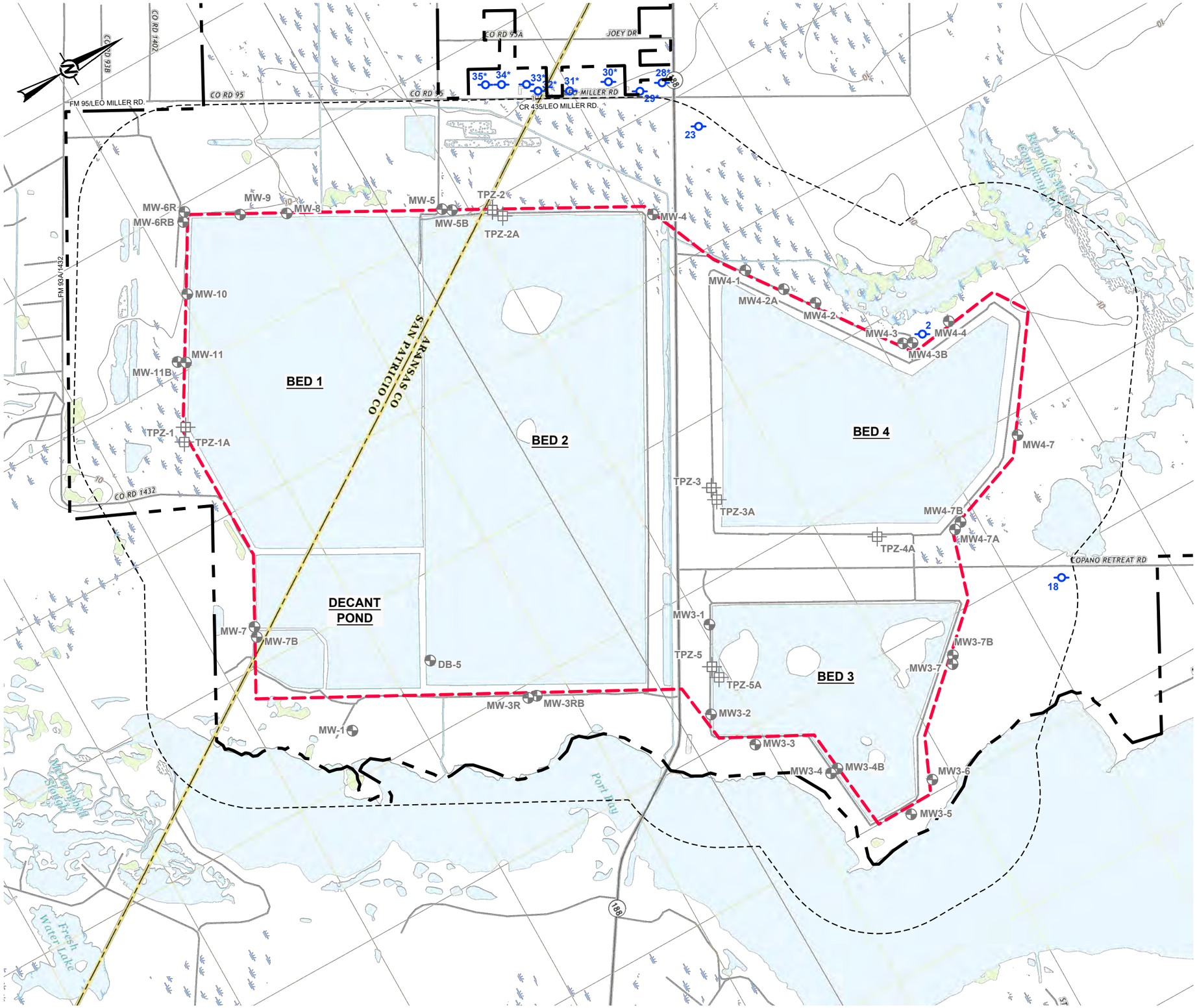
5) Photo taken at the northern-most dike of Bed 4 facing northeast. Swan Lake can be seen in the distance.	6) Photo taken at the eastern-most dike of Bed 4 facing east. Swan Lake can be seen in the distance.
	
7) Photo taken at the northern-most dike of Bed 3 facing northeast. Port Bay can be seen in the distance.	8) Photo taken at the eastern-most dike of Bed 3 facing east. Port Bay can be seen in the distance.
	

FIGURE 2B
Field Receptor Survey Photographs
CE Ranch LLC
Copano Property

9) Photo taken at the southeastern-most dike of Bed 3 facing south. Port Bay and Hwy-188 can be seen in the distance.	10) Photo taken at the southeastern-most dike of Bed 2 facing south. Port Bay can be seen in the distance.
	
11) Photo taken at the southeastern-most dike of Bed 1 facing southeast. The Decant Pond is pictured.	12) Photo taken at the southern corner where Bed 1 and the Decant Pond are adjacent.
	

FIGURE 2B
Field Receptor Survey Photographs
CE Ranch LLC
Copano Property

13) Photo taken at the southern-most dike of Bed 1 facing south.	14) Photo taken at the southern-most dike of Bed 1 facing south.
	



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- MW4-1 — MONITORING WELL LOCATION (ZONE A)
- MW3-7B — MONITORING WELL LOCATION (ZONE B)
- TPZ-2 — TEMPORARY PIEZOMETER LOCATION (ZONE A)
- TPZ-2A — TEMPORARY PIEZOMETER LOCATION (ZONE B)
- WATER WELL LOCATION
- EXTENT OF WASTE DISPOSAL UNITS
- 0.5 MILE BUFFER RADIUS

NOTE(S)

1. THE EXTENT OF AFFECTED GROUNDWATER HAS BEEN DELINEATED TO RESIDENTIAL HEALTH BASED VALUES FOR INGESTION.
2. ALL WATER WELLS PLOTTED WERE FOUND THROUGH BANKS DATABASE RESULTS EXCEPT WATER WELLS DENOTED WITH AN *.

REFERENCE(S)

BASE MAP TAKEN FROM USGS, ARANSAS PASS & BAYSIDE, TX 7.5 MIN USGS QUADRANGLE DATED 2019.

0 1100 2200
1" = 2200' FEET

CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
WATER WELL LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-04-17
DESIGNED	AJD
PREPARED	PJM
REVIEWED	CC
APPROVED	MKW

PROJECT NO. 19125525 | REV. 0 | FIGURE 2C

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana.golder.gds\data\Projects - Victoria_20191919\25525 - Copano\2020-06 June\ | File Name: FIG 2C - Water Well Location Map.dwg | Last Edited By: pmcbride Date: 2020-06-11 Time:1:54:12 AM | Printed By: PMcBride Date: 2020-06-11 Time:1:57:54 AM

2.0 Attachments

Attachment 2A	Tier 1 Ecological Exclusion Criteria Checklist
Attachment 2B	Tier 1 Ecological Exclusion Criteria Supporting Docs (refer to Final PGAR (Golder, 2019a))

Figure : 30 TAC '350.77(b)

TIER 1: Exclusion Criteria Checklist

This exclusion criteria checklist is intended to aid the person and the TNRCC in determining whether or not further ecological evaluation is necessary at an affected property where a response action is being pursued under the Texas Risk Reduction Program (TRRP). Exclusion criteria refer to those conditions at an affected property which preclude the need for a formal ecological risk assessment (ERA) because there are **incomplete or insignificant ecological exposure pathways** due to the nature of the affected property setting and/or the condition of the affected property media. This checklist (and/or a Tier 2 or 3 ERA or the equivalent) must be completed by the person for all affected property subject to the TRRP. The person should be familiar with the affected property but need not be a professional scientist in order to respond, although some questions will likely require contacting a wildlife management agency (i.e., Texas Parks and Wildlife Department or U.S. Fish and Wildlife Service). The checklist is designed for general applicability to all affected property; however, there may be unusual circumstances which require professional judgement in order to determine the need for further ecological evaluation (e.g., cave-dwelling receptors). In these cases, the person is strongly encouraged to contact TNRCC before proceeding.

Besides some preliminary information, the checklist consists of three major parts, **each of which must be completed unless otherwise instructed.** PART I requests affected property identification and background information. PART II contains the actual exclusion criteria and supportive information. PART III is a qualitative summary statement and a certification of the information provided by the person. **Answers should reflect existing conditions and should not consider future remedial actions at the affected property.** Completion of the checklist should lead to a logical conclusion as to whether further evaluation is warranted. Definitions of terms used in the checklist have been provided and users are strongly encouraged to familiarize themselves with these definitions before beginning the checklist.

Name of Facility: Copano Enterprises LLC (dba CE Ranch, LLC) (CE), Copano Property

Affected Property Location: San Patricio and Aransas Counties, Texas

Mailing Address: 7037 CR 93, Aransas Pass, Texas, 78336

TNRCC Case Tracking #s: 9019 Settlement Agreement effective May 21, 2018; CN605550557; RN104914312

Solid Waste Registration #s: 30097

Voluntary Cleanup Program #: N/A

EPA I.D. #s: TXD0081289983

Definitions[1]

Affected property - The entire area (i.e., on-site and off-site; including all environmental media) which contains releases of chemicals of concern at concentrations equal to or greater than the assessment level applicable for residential land use and groundwater classification.

Assessment level - A critical protective concentration level for a chemical of concern used for affected property assessments where the human health protective concentration level is established under a Tier 1 evaluation as described in '350.75(b) of this title (relating to Tiered Human Health Protective Concentration Level Evaluation), except for the protective concentration level for the soil-to-groundwater exposure pathway which may be established under Tier 1, 2, or 3 as described in '350.75(i)(7) of this title, and ecological protective concentration levels which are developed, when necessary, under Tier 2 and/or 3 in accordance with '350.77(c) and/or (d), respectively, of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels).

Bedrock - The solid rock (i.e., consolidated, coherent, and relatively hard naturally formed material that cannot normally be excavated by manual methods alone) that underlies gravel, soil or other surficial material.

Chemical of concern - Any chemical that has the potential to adversely affect ecological or human receptors due to its concentration, distribution, and mode of toxicity. Depending on the program area, chemicals of concern may include the following: solid waste, industrial solid waste, municipal solid waste, and hazardous waste as defined in Texas Health and Safety Code, '361.003, as amended; hazardous constituents as listed in 40 Code of Federal Regulations Part 261, Appendix VIII, as amended; constituents on the groundwater monitoring list in 40 Code of Federal Regulations Part 264, Appendix IX, as amended; constituents as listed in 40 CFR Part 258 Appendices I and II, as amended; pollutant as defined in Texas Water Code, '26.001, as amended; hazardous substance as defined in Texas Health and Safety Code, '361.003, as amended, and the Texas Water Code '26.263, as amended; regulated substance as defined in Texas Water Code '26.342, as amended and '334.2 of this title (relating to Definitions), as amended; petroleum product as defined in Texas Water Code '26.342, as amended and '334.122(b)(12) of this title (relating to Definitions for ASTs), as amended; other substances as defined in Texas Water Code '26.039(a), as amended; and daughter products of the aforementioned constituents.

Community - An assemblage of plant and animal populations occupying the same habitat in which the various species interact via spatial and trophic relationships (e.g., a desert community or a pond community).

Complete exposure pathway - An exposure pathway where a human or ecological receptor is exposed to a chemical of concern via an exposure route (e.g., incidental soil ingestion, inhalation of volatiles and particulates, consumption of prey, etc).

De minimus - The description of an area of affected property comprised of one acre or less where the ecological risk is considered to be insignificant because of the small extent of contamination, the absence of protected species, the availability of similar unimpacted habitat nearby, and the lack of adjacent sensitive environmental areas.

Ecological protective concentration level - The concentration of a chemical of concern at the point of exposure within an exposure medium (e.g., soil, sediment, groundwater, or surface water) which is determined in accordance with '350.77(c) or (d) of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels) to be protective for ecological receptors. These concentration levels are primarily intended to be protective for more mobile or wide-ranging ecological receptors and, where appropriate, benthic invertebrate communities within the waters in the state. These concentration levels are not intended to be directly protective of receptors with limited mobility or range (e.g., plants, soil invertebrates, and small rodents), particularly those residing

[1]These definitions were taken from 30 TAC '350.4 and may have both ecological and human health applications. For the purposes of this checklist, it is understood that only the ecological applications are of concern.

within active areas of a facility, unless these receptors are threatened/endangered species or unless impacts to these receptors result in disruption of the ecosystem or other unacceptable consequences for the more mobile or wide-ranging receptors (e.g., impacts to an off-site grassland habitat eliminate rodents which causes a desirable owl population to leave the area).

Ecological risk assessment - The process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors; however, as used in this context, only chemical stressors (i.e., COCs) are evaluated.

Environmental medium - A material found in the natural environment such as soil (including non-waste fill materials), groundwater, air, surface water, and sediments, or a mixture of such materials with liquids, sludges, gases, or solids, including hazardous waste which is inseparable by simple mechanical removal processes, and is made up primarily of natural environmental material.

Exclusion criteria - Those conditions at an affected property which preclude the need to establish a protective concentration level for an ecological exposure pathway because the exposure pathway between the chemical of concern and the ecological receptors is not complete or is insignificant.

Exposure medium - The environmental medium or biologic tissue in which or by which exposure to chemicals of concern by ecological or human receptors occurs.

Facility - The installation associated with the affected property where the release of chemicals of concern occurred.

Functioning cap - A low permeability layer or other approved cover meeting its design specifications to minimize water infiltration and chemical of concern migration, and prevent ecological or human receptor exposure to chemicals of concern, and whose design requirements are routinely maintained.

Landscaped area - An area of ornamental, or introduced, or commercially installed, or manicured vegetation which is routinely maintained.

Off-site property (off-site) - All environmental media which is outside of the legal boundaries of the on-site property.

On-site property (on-site) - All environmental media within the legal boundaries of a property owned or leased by a person who has filed a self-implementation notice or a response action plan for that property or who has become subject to such action through one of the agency=s program areas for that property.

Physical barrier - Any structure or system, natural or manmade, that prevents exposure or prevents migration of chemicals of concern to the points of exposure.

Point of exposure - The location within an environmental medium where a receptor will be assumed to have a reasonable potential to come into contact with chemicals of concern. The point of exposure may be a discrete point, plane, or an area within or beyond some location.

Protective concentration level - The concentration of a chemical of concern which can remain within the source medium and not result in levels which exceed the applicable human health risk-based exposure limit or ecological protective concentration level at the point of exposure for that exposure pathway.

Release - Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, with the exception of:

(A) A release that results in an exposure to a person solely within a workplace, concerning a

claim that the person may assert against the person's employer;

(B) An emission from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine;

(C) A release of source, by-product, or special nuclear material from a nuclear incident, as those terms are defined by the Atomic Energy Act of 1954, as amended (42 U.S.C. '2011 et seq.), if the release is subject to requirements concerning financial protection established by the Nuclear Regulatory Commission under '170 of that Act;

(D) For the purposes of the environmental response law '104, as amended, or other response action, a release of source, by-product, or special nuclear material from a processing site designated under '102(a)(1) or '302(a) of the Uranium Mill Tailings Radiation Control Act of 1978 (42 U.S.C. '7912 and '7942), as amended; and

(E) The normal application of fertilizer.

Sediment - Non-suspended particulate material lying below surface waters such as bays, the ocean, rivers, streams, lakes, ponds, or other similar surface water body (including intermittent streams). Dredged sediments which have been removed from below surface water bodies and placed on land shall be considered soils.

Sensitive environmental areas - Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young, and overwintering. Examples include critical habitat for threatened and endangered species, wilderness areas, parks, and wildlife refuges.

Source medium - An environmental medium containing chemicals of concern which must be removed, decontaminated and/or controlled in order to protect human health and the environment. The source medium may be the exposure medium for some exposure pathways.

Stressor - Any physical, chemical, or biological entity that can induce an adverse response; however, as used in this context, only chemical entities apply.

Subsurface soil - For human health exposure pathways, the portion of the soil zone between the base of surface soil and the top of the groundwater-bearing unit(s). For ecological exposure pathways, the portion of the soil zone between 0.5 feet and 5 feet in depth.

Surface cover - A layer of artificially placed utility material (e.g., shell, gravel).

Surface soil - For human health exposure pathways, the soil zone extending from ground surface to 15 feet in depth for residential land use and from ground surface to 5 feet in depth for commercial/industrial land use; or to the top of the uppermost groundwater-bearing unit or bedrock, whichever is less in depth. For ecological exposure pathways, the soil zone extending from ground surface to 0.5 feet in depth.

Surface water - Any water meeting the definition of surface water in the state as defined in '307.3 of this title (relating to Abbreviations and Definitions), as amended.

Figure: 30 TAC '350.77(b) continued

PART I. Affected Property Identification and Background Information

1) Provide a description of the specific area of the response action and the nature of the release. Include estimated acreage of the affected property and the facility property, and a description of the type of facility and/or operation associated with the affected property. Also describe the location of the affected property with respect to the facility property boundaries and public roadways.

The specific area of investigation is the Residue Disposal Area (RDA) at the Copano Property. The Copano Property is bordered to the north and east by Copano Bay and Port Bay, respectively (see Figure 1-1 in the Preliminary Groundwater Assessment Report). State Highway 136 runs in a north-south direction through the center of the property. From the time period of 1972 until 2016, bauxite residue was pumped to the Site via pipelines from an alumina refinery located approximately 10 miles to the south of the property on Corpus Christi Bay.

There are four separate surface impoundments (called Beds 1, 2, 3 and 4) at the property, covering approximately 3,100 acres. The entire Copano Property consists of more than 11,000 acres. The dikes of the impoundments were reportedly constructed using native clays taken from shallow excavations on the property, and keyed into the underlying, approximate 20-ft thick clay layer.

A Preliminary Groundwater Assessment was conducted in 2018. Samples of groundwater were collected from the groundwater monitoring network at the Site, which currently consists of 34 permanent monitoring wells (Figure 1-2 of the report), and were analyzed for chemicals of concern (COCs). Concentrations of the following COCs exceeded the action levels established for the assessment: (1) uranium; (2) Radium 226/228 (combined); and (3) fluoride.

No response actions have been conducted.

Attach available USGS topographic maps and/or aerial or other affected property photographs to this form to depict the affected property and surrounding area. Indicate attachments:

□ Topo map **Ξ Aerial photo** □ Other

2) Identify environmental media known or suspected to contain chemicals of concern (COCs) at the present time. Check all that apply:

Known/Suspected COC Location	Based on sampling data?	
□ Soil # 5 ft below ground surface	□ Yes	Ξ No
□ Soil >5 ft below ground surface	□ Yes	Ξ No
Ξ Groundwater	**Ξ Yes**	□ No
□ Surface Water/Sediments	□ Yes	Ξ No

Explain (previously submitted information may be referenced):

A Preliminary Groundwater Assessment was conducted in 2018. Samples of groundwater were collected from the groundwater monitoring network at the Site, which currently consists of 34 permanent monitoring wells (Figure 1-2) which surround the impoundments. Samples were analyzed for chemicals of concern (COCs). Concentrations of the following COCs exceeded the action levels established for the assessment: (1) uranium; (2) Radium 226/228 (combined); and (3) fluoride.

3) Provide the information below for the nearest surface water body which has become or has the potential to become impacted from migrating COCs via surface water runoff, air deposition, groundwater seepage, etc.

Exclude wastewater treatment facilities and stormwater conveyances/impoundments authorized by permit. Also exclude conveyances, decorative ponds, and those portions of process facilities which are:

a. Not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State; and

b. Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

The nearest surface water body is approximately 440 feet from the affected property and is named Port Bay. The water body is best described as a:

- ☐ freshwater stream: _____ perennial (has water all year)
  _____ intermittent (dries up completely for at least 1 week a year)
  _____ intermittent with perennial pools
- ☐ freshwater swamp/marsh/wetland
- ☐ saltwater or brackish marsh/swamp/wetland
- ☐ reservoir, lake, or pond; approximate surface acres:
- ☐ drainage ditch
- ☐ tidal stream ☐ bay **☒ estuary**
- ☐ other; specify

Is the water body listed as a State classified segment in Appendix C of the current Texas Surface Water Quality Standards; ''307.1 - 307.10?

☒ Yes Segment # 2472 Use Classification: PCR1, E/O

☐ No

If the water body is not a State classified segment, identify the first downstream classified segment.

Name:

Segment #:

Use Classification:

As necessary, provide further description of surface waters in the vicinity of the affected property:

PART II. Exclusion Criteria and Supportive Information

Subpart A. Surface Water/Sediment Exposure

1) Regarding the affected property where a response action is being pursued under the TRRP, have COCs migrated and resulted in a release or imminent threat of release to either surface waters or to their associated sediments via surface water runoff, air deposition, groundwater seepage, etc.? Exclude wastewater treatment facilities and stormwater conveyances/impoundments authorized by permit. Also exclude conveyances, decorative ponds, and those portions of process facilities which are:

a. Not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State; and

b. Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

Ξ Yes □ No

Explain:

Concentrations of COCs exceed TRRP Tier 1 PCLs in samples from some monitoring wells at the Site. Although no data have been collected to indicate that a release has occurred to surface waters or their associated sediments via surface runoff, air deposition, or groundwater seepage, due to the proximity of Port Bay to the monitoring wells where COC concentrations exceed the PCLs, the potential for a release cannot be ruled out. Data with which to determine the potential for a release will be collected during the Affected Property Assessment.

If the answer is Yes to Subpart A above, the affected property does not meet the exclusion criteria. However, complete the remainder of Part II to determine if there is a complete and/or significant soil exposure pathway, then complete PART III - Qualitative Summary and Certification . If the answer is No, go to Subpart B.

Subpart B. Affected Property Setting

In answering AYes@ to the following question, it is understood that the affected property is not attractive to wildlife or livestock, including threatened or endangered species (i.e., the affected property does not serve as valuable habitat, foraging area, or refuge for ecological communities). (May require consultation with wildlife management agencies.)

1) Is the affected property wholly contained within contiguous land characterized by: pavement, buildings, landscaped area, functioning cap, roadways, equipment storage area, manufacturing or process area, other surface cover or structure, or otherwise disturbed ground? To

□ Yes **Ξ No**

Explain:

The four surface impoundments where COCs exceed PCL in groundwater are part of an approximately 11,000 acre property. Parts of the 11,000 acre property outside of the impoundments may be attractive to wildlife.

If the answer to Subpart B above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subparts C and D and complete PART III - Qualitative Summary and Certification. If the answer to Subpart B above is No, go to Subpart C.

Subpart C. Soil Exposure

1) Are COCs which are in the soil of the affected property solely below the first 5 feet beneath ground surface **or** does the affected property have a physical barrier present to prevent exposure of receptors to COCs in surface soil?

☐ Yes ☐ No

Explain:

No soil samples have been collected at the affected property.

If the answer to Subpart C above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subpart D and complete PART III - Qualitative Summary and Certification. If the answer to Subpart C above is No, proceed to Subpart D.

Subpart D. *De Minimus* Land Area

In answering AYes@ to the question below, it is understood that all of the following conditions apply:

☐ The affected property is not known to serve as habitat, foraging area, or refuge to threatened/endangered or otherwise protected species. (Will likely require consultation with wildlife management agencies.)
☐ Similar but unimpacted habitat exists within a half-mile radius.
☐ The affected property is not known to be located within one-quarter mile of sensitive environmental areas (e.g., rookeries, wildlife management areas, preserves). (Will likely require consultation with wildlife management agencies.)
☐ There is no reason to suspect that the COCs associated with the affected property will migrate such that the affected property will become larger than one acre.

1) Using human health protective concentration levels as a basis to determine the extent of the COCs, does the affected property consist of one acre or less and does it meet all of the conditions above?

☐ Yes Ξ No

Explain how conditions are met/not met:

The areal extent of the solid waste management units where concentrations exceed PCLs is greater than 1 acre.

If the answer to Subpart D above is Yes, then no further ecological evaluation is needed at this affected property, assuming the answer to Subpart A was No. Complete PART III - Qualitative Summary and Certification. If the answer to Subpart D above is No, proceed to Tier 2 or 3 or comparable ERA.

Figure: 30 TAC '350.77(b) continued

PART III. Qualitative Summary and Certification (Complete in all cases.)

Attach a brief statement (not to exceed 1 page) summarizing the information you have provided in this form. This summary should include sufficient information to verify that the affected property meets or does not meet the exclusion criteria. The person should make the initial decision regarding the need for further ecological evaluation (i.e., Tier 2 or 3) based upon the results of this checklist. After review, TNRCC will make a final determination on the need for further assessment. **Note that the person has the continuing obligation to re-enter the ERA process if changing circumstances result in the affected property not meeting the Tier 1 exclusion criteria.**

The specific area of investigation is the Residue Disposal Area (RDA) at the Copano Property. There are four separate surface impoundments (called Beds 1, 2, 3 and 4) at the property, covering approximately 3,100 acres (Figure 1-1). The entire Copano Property consists of more than 11,000 acres. A Preliminary Groundwater Assessment was conducted in 2018. Samples of groundwater were collected from the groundwater monitoring network at the Site, which currently consists of 34 permanent monitoring wells (Figure 1-2) that surround the surface impoundments. Samples were analyzed for chemicals of concern (COCs). Concentrations of the following COCs exceeded the action levels established for the assessment: (1) uranium; (2) Radium 226/228 (combined); and (3) fluoride.

No response actions have been conducted at the Site.

The nearest surface water body is Port Bay and is approximately 440 feet from the nearest monitoring well where concentrations of COCs exceed the action levels. Port Bay is an estuary listed as Segment # 2472 with a use classification of PCR1, E/O.

Concentrations of COCs exceed TRRP Tier 1 PCLs in samples from some monitoring wells at the Site. Although no data have been collected to indicate that a release has occurred to surface waters or their associated sediments via surface runoff, air deposition, or groundwater seepage, due to the proximity of Port Bay to the monitoring wells where COC concentrations exceed the PCLs, the potential for a release cannot be ruled out. Data with which to determine the potential for a release will be collected during the Affected Property Assessment.

Completed by: Matthew K. Wickham, P.G. *(Typed/Printed Name)*

Principal Hydrogeologist *(Title)*

May 4, 2019 *(Date)*

I believe that the information submitted is true, accurate, and complete, to the best of my knowledge.

Matthew K. Wickham, P.G. *(Typed/Printed Name of Person)*

Principal Hydrogeologist *(Title of Person)*

_____ *(Signature of Person)*

_____ *(Date Signed)*

Section 3 Assessment Strategy

Section 3.1 General Assessment Issues

3.1.1 Environmental Media Assessed

Groundwater, surface water, surface soil, and sediment were the environmental media evaluated for this assessment. Groundwater was chosen due to previous monitoring and investigation activities described in Section 1.2.

General assessment methods for groundwater included collection of groundwater samples using low-flow techniques, analysis of groundwater samples for COCs, and collection of water-level measurements to evaluate groundwater flow directions. General assessment methods for surface soil, surface water, and sediment included collection of samples for each environmental medium and analysis of samples for COCs.

The $^{Air}GW_{Inh\text{-}V}$ and $^{Air}Soil_{Inh\text{-}V}$ pathway is considered incomplete at the Site. Exposure pathways associated with subsurface soil are not considered for this assessment due to the determination of an incomplete surface soil pathway.

3.1.2 Target COCs

Target COCs for the investigation were chosen using an “information-based approach” as described in “Selecting Target Chemicals of Concern” (RG-366, TRRP-10). Target COCs for this assessment were based primarily on previous investigations and monitoring conducted at the Site. The review of previous investigation data and monitoring indicated that metals, uranium, radium 226/228/combined, and fluoride were the target COCs in groundwater. Fluoride was not analyzed in surface water, surface soil, or sediment samples. The concentrations of these compounds were compared to RALs for the purpose of determining COCs for this APAR.

Arsenic and other metals were identified as COCs at the Copano Property. Concentrations of arsenic in groundwater were evaluated due to the potential interaction of the highly alkaline fluids generated during the production of alumina and the naturally occurring arsenic in native soils. Arsenic is more mobile at elevated pH and is concentrated in groundwater when the groundwater interacts with the alkaline fluids.

Uranium and radium are common constituents in the by-products of the aluminum smelting process. During the conversion of alumina to aluminum metal, waste “muds” are generated that contain technologically enhanced naturally occurring radioactive material (TENORM).

Although metals, uranium, radium 226/228/combined, and fluoride were identified as the target COCs, other constituents (cations/anions, etc.) were also analyzed and the results are included in this APAR.

3.1.3 Background

Site-specific background concentrations for metals and radionuclides in soil were evaluated as part of the soil assessment. Ten soil samples were collected from a background area located more than 1.5 miles west of Bed 1 (Figure 4A). The background area is on historically undeveloped land that is currently owned by CE. The surrounding area consists of undeveloped or agricultural land and a few residential properties located approximately 0.5 miles west/southwest of the background area. Given the historic use of the property, samples are not believed to have been impacted by any current or previous industrial activities. Background soil data are shown on Table 4D-1.

Section 3.2 Assessment Strategy

Previous investigations at the Site (preliminary groundwater assessment) delineated COCs in groundwater to TRRP RALs. The assessment strategy employed for completion of this APAR was based on a review of all historical data to determine potentially affected areas and applicable exposure pathways, and to determine the appropriate COCs.

As presented in Section 2.0 of this APAR, the applicable TRRP exposure pathways are the $^{GW}GW_{Class\ 3}$ and $^{Tot}Soil_{Comb}$/$^{GW}Soil_{Class3}$, ^{SW}GW, ^{Sed}GW, ^{SW}SW and ^{Sed}Sed pathways. Atmospheric deposition to surrounding surface water bodies was also investigated.

As discussed in Section 2.0, the $^{Air}Soil_{Inh\text{-}V}$ pathway is incomplete at the Site and was not assessed because the site COCs are not volatile.

3.2.1 General Assessment Approach

Groundwater conditions were investigated using samples collected at 34 monitoring wells, many of which were installed during previous investigations by the prior Site owner.

Samples were collected from soil borings at the Site to assess soil COC concentrations.

Surface water and sediment samples were collected from the surface water bodies located on the north/northwest side of Bed 4 (Freshwater Lake and Swan Lake).

3.2.1.1 Sampling Approach

Groundwater monitoring points are located at the perimeter of the Beds, some in paired configurations to monitor both Zone A and Zone B water-bearing units. Sampling methods were chosen with the intent of delineating any PCLE zones in groundwater at the Site.

Soil samples were collected from 0-1 feet below ground level (bgl) at 44 locations surrounding the Beds. The COCs and geologic setting allowed for the use of traditional investigation methods such as groundwater sampling using low-flow methods and the use of hand augers to collect soil samples.

3.2.1.2 Surface Water and Sediment Assessment

The Copano Site is bounded on the east by Port Bay and on the north by Copano Bay. The northern portion of the Site is occupied by a large "Y" shaped inlet which empties into Copano Bay, called Swan Lake. Swan Lake, a brackish wetland area, ranges in depth from less than one to three feet. This low-lying area can flood and drain with the tidal movement of Copano Bay. A separate water body, called Freshwater Lake, is located northwest of Bed 4. Freshwater Lake is not hydraulically connected to Copano Bay. It typically ranges in depth from less than one to three feet.

The potential for groundwater discharge to adjacent surface water bodies was considered using the stratigraphic and hydrogeologic data. Where data were available, the relationships between the uppermost GWBU (Zone A) and adjacent surface water bodies (Port Bay, Swan Lake, Freshwater Lake) were added to the Site cross sections (Figures 4C-1, 4C-2, and 4C-3). As shown on the cross sections, the uppermost GWBU does not intersect the surface water bodies. Rather, there is typically a minimum of approximately 4 to 5 feet of clay between the bottom of the surface water body and the top of the GWBU, and often as much as 7 to 8 feet of clay. Therefore, the surface water bodies are not hydraulically connected to the uppermost GWBU and the ^{SW}GW and ^{Sed}GW pathways are considered incomplete.

Surface water and sediment samples were collected at the water bodies nearest to Bed 4 (Swan Lake and Freshwater Lake) to investigate the potential ^{SW}GW, ^{Sed}GW, ^{SW}SW and ^{Sed}Sed pathways Three co-located surface water and sediment samples were collected from each water body. The data generated from the samples were evaluated for ecological exposures and potential ecological risk using benchmarks and PCLs for both fresh water and salt water.

3.2.1.3 Utilities

No known underground utility is threatened, affected, or is a potential migration pathway at the Site.

3.2.2 Assessment Methods

Groundwater samples were collected using a low-flow technique and analyzed using standard EPA methods. All groundwater samples were collected using a peristaltic pump with dedicated tubing. All sampling equipment that was not dedicated to the well was decontaminated prior to and after sampling using a Liquinox wash and distilled water rinse.

Groundwater collected for dissolved metals analyses was filtered during sample collection using a disposable 0.45-micron filter prior to chemical preservation. Groundwater samples collected for other analyses were only filtered if turbidity exceeded 10 NTUs following purging. A disposable 10-micron filter was used during sample collection prior to chemical preservation. When filtration was used, it is noted on the field forms in Appendix 3.

Soil samples were collected with a hand auger from 0 to 0.5 feet bgs. All sampling equipment was decontaminated prior to and after sampling using a Liquinox wash and distilled water rinse. A Golder geologist logged the lithology of the soil in the field and assessed the soils for any observable impact that would suggest contamination was present.

Sediment samples were collected at the shoreline of Freshwater and Swan Lake using a stainless-steel shovel. Samples were collected within the top 4-6 inches of sediment (the biologically active zone). The sampling technique minimized the loss of fine-grained sediment and avoidance of debris, such as sticks and rocks, during collection. There was heavy vegetation surrounding the shoreline at Freshwater and Swan Lake, and insects and worms were observed in the sediment. No unusual odors were observed at the sampling locations.

Surface water samples were collected at Freshwater and Swan Lake at one foot below the water surface and were co-located with the sediment samples noted above. There was heavy underwater vegetation and fish activity at Freshwater Lake during the sampling event. There was also fish activity at Swan Lake, and the tide was rising during the sampling event. At all sampling locations, the water was approximately 1.5 feet deep. No unusual odors were observed at the sampling locations. Water quality measurements, including pH, electrical conductivity, and salinity, were collected in the field. Surface water collected for dissolved metals analyses were filtered in the lab before analysis.

All methods were completed in accordance with Golder's Standard Operating Procedures (Appendix 14). Air monitoring was not performed. New monitoring wells were not drilled for this assessment.

3.2.2.1 Data Quality

Analytical methods utilized for the analysis of the COCs outlined in Section 3.3 above were appropriate and commonly utilized USEPA SW-846 methodologies for the type of COCs in each analysis group. Method quantitation limits (MQLs) for the laboratory methods used were in accordance with the TRRP PCL requirements. Appropriate quality assurance samples were collected during sampling events including field duplicates, matrix spike and matrix spike duplicates, and trip blanks and documentation of field instrument calibration. Laboratory data packages include TRRP quality QA/QC and associated documentation to meet TRRP requirements. Analytical data were validated in accordance with the usability requirements provided in TCEQ guidance document TRRP-13, Review and Reporting of COC Concentration Data (TCEQ, 2002). Data usability summaries are included with the laboratory data packages provided in Appendix 10.

Field analysis equipment included: a multiparameter meter (pH, temperature, specific conductance and oxidation-reduction potential), turbidimeter, and water level meter. All meters requiring calibration were calibrated either on a daily basis and/or at the frequency stated by the manufacturer.

Table 3A. Underground Utilities

Utility type	Construction material	Backfill material	Approx. depth (ft)	Utility company name	Potential migration pathway?		Affected?	
					Yes	No	Yes	No
N/A								

Section 4 Soil Assessment

Section 4.1 Derivation of Assessment Levels

Soil assessment levels were based on the following exposure pathways determined to be potentially complete at the Site, as discussed in Section 2.0 of this APAR:

Surface Soil: The $^{Tot}Soil_{Comb}$ and $^{GW}Soil_{Class\ 3}$ pathways are considered potentially complete for surface soils, defined as soils from ground surface to 15 feet bgs or to the top of the uppermost GWBU for residential land use. The $^{GW}Soil_{Class\ 3}$ pathway is the applicable soil-leaching to groundwater pathway since the uppermost water-bearing unit is considered to be a Class 3 groundwater resource.

Although the Site is considered commercial/industrial, delineation of COCs in Site soils was completed using PCLs established for residential land use (Residential Assessment Levels (RALs)) per TRRP rules. As presented on Table 4A for surface soil, the applicable RAL is the lowest Tier 1 residential PCL.

Subsurface Soil: Exposure pathways associated with subsurface soil are not considered for this assessment due to the determination of an incomplete surface soil pathway.

Section 4.2 Nature and Extent of COCs and NAPL in Soil

Soil sampling results are summarized on Table 4D-1 and 4D-2.

Surface Soil: All concentrations of COCs in soil were below the RALs. Based on the analytical results, there is no affected property at the Site related to surface soils.

Subsurface Soil: All soil samples were collected above 15 feet bgl. Exposure pathways associated with subsurface soil were not considered for this assessment due to the determination of an incomplete surface soil pathway.

NAPL: NAPL was not observed in surface soil at the Site.

Table 4A. Surface Soil Residential Assessment Levels for Human Health Exposure Pathways

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)[1]	$^{GW}Soil_{Class\ 3}$ PCL		Texas-specific Background (mg/kg)	Site-specific Background (mg/kg)	MQL (mg/kg)	Maximum Surface Soil Concentration			
			(mg/kg)	Tier				Sample ID	Sample Depth (ft bgs)	Sample Date	Concentration (mg/kg)
Aluminum	30	6.4E+04	1.0E+06	1	3.0E+04	3.2E+04	37.5	SB-14	0-0.5	11/25/2019	34,500
Antimony	30	1.5E+01	2.7E+02	1	1.0E+00	Non-detect	1.00	SB-33	0-0.5	11/25/2019	<0.597
Arsenic	30	2.4E+01	2.5E+02	1	5.9E+00	4.7E+00	1.00	SB-40	0-0.5	11/25/2019	5.58
Chromium	30	2.7E+04	1.2E+05	1	3.0E+01	2.0E+01	2.00	SB-40	0-0.5	11/25/2019	64.4
Lead	30	5.0E+02	1.5E+02	1	1.5E+01	1.3E+01	0.300	SB-30	0-0.5	11/25/2019	18.5
Mercury	30	5.5+E00	1.0E+02	1	4.0E-02	1.9E-02	0.0400	SB-14	0-0.5	11/25/2019	<0.0204
Nickel	30	8.4E+02	7.9E+03	1	1.0E+01	1.2E+01	2.00	SB-40	0-0.5	11/25/2019	29.4
Thallium	30	5.3E+00	8.7E+01	1	NA	Non-detect	1.00	SB-33	0-0.5	11/25/2019	<0.597
Vanadium	30	7.5E+01	4.4E+04	1	5.0E+01	3.0E+01	2.50	SB-40	0-0.5	11/25/2019	51.7
Uranium	30	2.2E+02	8.9E+04	1	5.0E+01	Non-detect	2.50	SB-40	0-0.5	11/25/2019	1.19
Radium-226	30	NA	NA	NA	NA	9.6E-01		SB-14	0-0.5	11/25/2019	1.52
Radium-228	30	NA	NA	NA	NA	9.7E-01		SB-40	0-0.5	11/25/2019	1.09
Radium 226/228 (Combined)	30	NA	NA	NA	NA	1.8E+00		SB-14	0-0.5	11/25/2019	2.36

[1] Radium 226/228/combined are reported in picocuries per kilogram (pCi/g)

Table 4B. Surface Soil Residential Assessment Levels with Ecological Component

COC	Human health PCL[1] (mg/kg)	Ecological PCL (0 to 0.5 ft)		Ecological PCL (0.5 to 5 ft)		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration in areas of ecological concern			
		(mg/kg)	Basis[2]	(mg/kg)	Basis[2]			Sample ID	Sample depth	Sample date	Conc (mg/kg)
See Section 9											

[1] List the lower of $^{Tot}Soil_{Comb}$ and $^{GW}Soil$ values from Table 4A.
[2] Specify the basis of the ecological PCL (benchmark, MQL, background, Tier 2 PCL, or Tier 3 PCL).

Table 4C. Subsurface Soil Residential Assessment Levels

COC	Source area size (acres)	$^{Air}Soil_{Inh\text{-}V}$ PCL (mg/kg)	^{GW}Soil PCL		MQL	Back-ground	Maximum concentration			
			(mg/kg)	Tier	(mg/kg)	(mg/kg)	Sample ID	Sample depth	Sample date	Conc (mg/kg)
N/A										

TABLE 4D-1
SOIL DATA SUMMARY
GENERAL CHEMISTRY AND RADIONUCLIDES
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	DATE	SAMPLE DEPTH (ft BGS)[1]	URANIUM (mg/kg)[2]	Q[3]	RADIUM 226 (pCi/g)[4]	Q	RADIUM 228 (pCi/g)	Q	RADIUM 226/228 COMBINED (pCi/g)	Q	CALCIUM (mg/kg)	Q	SODIUM (mg/kg)	Q	TOTAL ALKALINITY (As $CaCO_3$) (mg/kg)	Q	SULFATE (mg/kg)	Q	SOLUBLE AMMONIA-N (mg/kg)	Q	pH[5]	FRACTION OF ORGANIC CARBON	PERCENT MOISTURE (weight %)
ASSESSMENT LEVEL [6]			**220**																				
SB-1	11/25/2019	0 - 0.5	<1.12	N	0.820		0.634		1.45		2,630		7,920		125		1090		2.40		6.92	0.00680	23.9
SB-2	11/25/2019	0 - 0.5									1,910		864		471		<18.9				6.78	0.0156	24.2
SB-3	11/25/2019	0 - 0.5									29,800		550		599		23.8	J			7.94	0.00400	20.7
SB-4	11/25/2019	0 - 0.5									2,730		936		409		<18.5				7.52	0.00904	21.3
SB-5	11/25/2019	0 - 0.5									2,870		1,420		208		49.4	J			6.99	0.0100	18.9
SB-6	11/25/2019	0 - 0.5									3,550		761		427		<20.0				7.19	0.0114	26.6
SB-7	11/25/2019	0 - 0.5									2,760		693		364		28.7	J			7.22	0.00609	16.0
SB-8	11/25/2019	0 - 0.5									12,800		244		385		<18.0				7.60	0.0110	17.8
SB-9	11/25/2019	0 - 0.5									1,980		1,550		545		53.0	J			7.60	0.00677	25.9
SB-10	11/25/2019	0 - 0.5									4,050		628		526		35.9	J			7.61	0.0111	20.8
SB-11	11/25/2019	0 - 0.5	<1.14	N	0.669		0.450		1.12		3,990		255		278		<17.9		<1.00		7.74	0.00908	21.3
SB-12	11/25/2019	0 - 0.5									2,450		3,990		260		369				7.33	0.0105	23.4
SB-13	11/25/2019	0 - 0.5									492		40.9		<52.0		<17.0				7.11	0.00650	12.3
SB-14	11/25/2019	0 - 0.5	<1.19	N	1.52		0.836		2.36		2,380		678		236		43.0		<1.05		7.12	0.00394	25.1
SB-15	11/25/2019	0 - 0.5									2,300		1,980		573		111				7.16	0.0104	23.3
SB-16	11/25/2019	0 - 0.5	<1.09	N	0.561		0.735		1.30		1,350		686		380		23.2		<0.939		7.31	0.00845	18.3
SB-17	11/25/2019	0 - 0.5									1,990		3,020		550		450				7.87	0.00876	24.7
SB-18	11/25/2019	0 - 0.5									2,020		383		328		<17.1				8.11	0.00699	18.6
SB-19	11/25/2019	0 - 0.5									1,130		3,270		<57.2		395				6.16	0.00790	12.6
SB-20	11/25/2019	0 - 0.5									1,970		1,380		526		35.8				6.81	0.00938	20.6
SB-21	11/25/2019	0 - 0.5	<1.19	N	0.395		0.302		0.698		646		190		102		<18.3		<0.923		7.14	0.00450	19.9
SB-22	11/25/2019	0 - 0.5									1,400		1,420		414		80.4				7.82	0.0129	26.8
SB-23	11/25/2019	0 - 0.5									7,110		182		323		19.5	J			7.72	0.0120	17.9
SB-24	11/25/2019	0 - 0.5									2,060		487		339		<17.0				7.12	0.00549	17.6
SB-25	11/25/2019	0 - 0.5									9,720		854		848		<18.1				8.51	0.00804	19.6
SB-26	11/25/2019	0 - 0.5	<1.15	N	0.861		0.569		1.43		3,340		839		1040		25.6		<0.922		7.86	0.00994	17.8
SB-27	11/25/2019	0 - 0.5									1,750		406		297		<17.8				6.93	0.0115	18.0
SB-28	11/25/2019	0 - 0.5									1,430		763		272		<18.0				7.21	0.00874	17.3
SB-29	11/25/2019	0 - 0.5									2,400		566		670		<16.8				7.74	0.00938	16.9
SB-30	11/25/2019	0 - 0.5	<1.15	N	0.708		0.952		1.66		4,580		410		427		<18.7		<1.03		7.79	0.0112	22.4
SB-31	11/25/2019	0 - 0.5									699		10,500		<57.8		1580				6.89	0.00698	19.5
SB-32	11/25/2019	0 - 0.5									963		413		245		19.2	J			7.66	0.00612	21.6
SB-33	11/25/2019	0 - 0.5	<1.19	N	0.703		0.637		1.34		4,410		1,110		1070		19.9		<0.950		7.93	0.00674	18.7
SB-34	11/25/2019	0 - 0.5									1,670		2,310		339		246				7.47	0.00887	16.8
SB-35	11/25/2019	0 - 0.5									1,480		5,170		168		490				7.66	0.0147	23.1
SB-36	11/25/2019	0 - 0.5									1,270		2,890		656		181				8.15	0.00647	24.1
SB-37	11/25/2019	0 - 0.5	<1.08	N	0.736		0.815		1.55		868		1,230		484		71.9		<0.930		7.00	0.0101	16.5
SB-38	11/25/2019	0 - 0.5									118,000		132		355		<16.3				8.29	0.00528	15.8
SB-39	11/25/2019	0 - 0.5									7,330		6,320		110		4690				7.79	0.00686	18.2
SB-40	11/25/2019	0 - 0.5	1.19	JN	0.838		1.09		1.93		27,900		13,500		133		2800		<0.950		7.12	0.00667	16.7
SB-41	11/25/2019	0 - 0.5	<1.12	N	0.695		0.369		1.06		23,800		8,060		204		919		<0.967		7.70	0.00109	18.6
SB-42	11/25/2019	0 - 0.5									21,300		9,590		131		2000				7.50	0.00408	19.6
SB-43	11/25/2019	0 - 0.5									2,160		2,110		90.5		252				7.32	0.00662	13.5

TABLE 4D-1
SOIL DATA SUMMARY
GENERAL CHEMISTRY AND RADIONUCLIDES
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	DATE	SAMPLE DEPTH (ft BGS)[1]	URANIUM (mg/kg)[2]	Q[3]	RADIUM 226 (pCi/g)[4]	Q	RADIUM 228 (pCi/g)	Q	RADIUM 226/228 COMBINED (pCi/g)	Q	CALCIUM (mg/kg)	Q	SODIUM (mg/kg)	Q	TOTAL ALKALINITY (As $CaCO_3$) (mg/kg)	Q	SULFATE (mg/kg)	Q	SOLUBLE AMMONIA-N (mg/kg)	Q	pH[5]	FRACTION OF ORGANIC CARBON	PERCENT MOISTURE (weight %)
ASSESSMENT LEVEL [6]			**220**																				
SB-44	11/25/2019	0 - 0.5									1,200		66.0		77.2		<17.1				6.69	0.00646	17.2
BACKGROUND SOIL SAMPLES																							
BGSB-1	11/26/2019	0 - 0.5	<1.13	N	0.761		0.782		1.54		5,790		102		203		34.7	J	<0.964		7.02	0.0110	18.0
BGSB-2	11/26/2019	0 - 0.5	<1.16	N	0.843		0.624		1.47		4,780		143		264		<17.8		<0.944		7.29	0.0124	19.5
BGSB-3	11/26/2019	0 - 0.5	<1.24	N	0.884		0.834		1.72		4,380		1,440		423		53.9	J	<0.980		7.57	0.00836	19.5
BGSB-4	11/26/2019	0 - 0.5	<1.03	N	0.859		0.762		1.62		3,520		964		514		30.1	J	<0.977		7.53	0.00870	20.6
BGSB-5	11/26/2019	0 - 0.5	<1.14	N	0.837		0.868		1.70		4,020		120		118		<16.6		<0.883		6.97	0.00735	17.1
BGSB-6	11/26/2019	0 - 0.5	<1.16	N	0.734		0.786		1.52		5,500		145		122		58.0		<0.916		6.47	0.0102	17.1
BGSB-7	11/26/2019	0 - 0.5	<1.24	N	0.696		0.555		1.25		5,070		220		201		23.1	J	<1.02		7.03	0.00783	25.3
BGSB-8	11/26/2019	0 - 0.5	<1.26	N	0.857		0.652		1.51		5,340		185		227		<20.3		<1.02		7.21	0.00642	27.0
BGSB-9	11/26/2019	0 - 0.5	<1.32	N	0.931		0.796		1.73		18,800		454		450		38.9	J	<1.10		7.65	0.00770	27.8
BGSB-10	11/26/2019	0 - 0.5	<1.26	N	0.776		0.891		1.67		5,000		417		366		<18.6		<1.03		6.92	0.00588	24.6

Notes:
1) ft BGS - feet below ground surface
2) mg/kg - milligrams per kilogram
3) Q - lab qualifiers, as follows:
J - estimated value – the result falls between the Sample Detection Limit (SDL) and the Reporting Limit (RL)
N - laboratory does not offer NELAC certification for this analyte
< - indicates the analyte was not detected at the Sample Detection Limit (SDL); SDL listed in the concentration column
4) pCi/g - picocuries per gram
5) pH reported in Standard pH units
6) TRRP Tier 1 Residential PCL, the lowest of $^{Tot}Soil_{Comb}$ or $^{GW}Soil_{Class\ 3}$ for a 30-acre source area, November 8, 2019

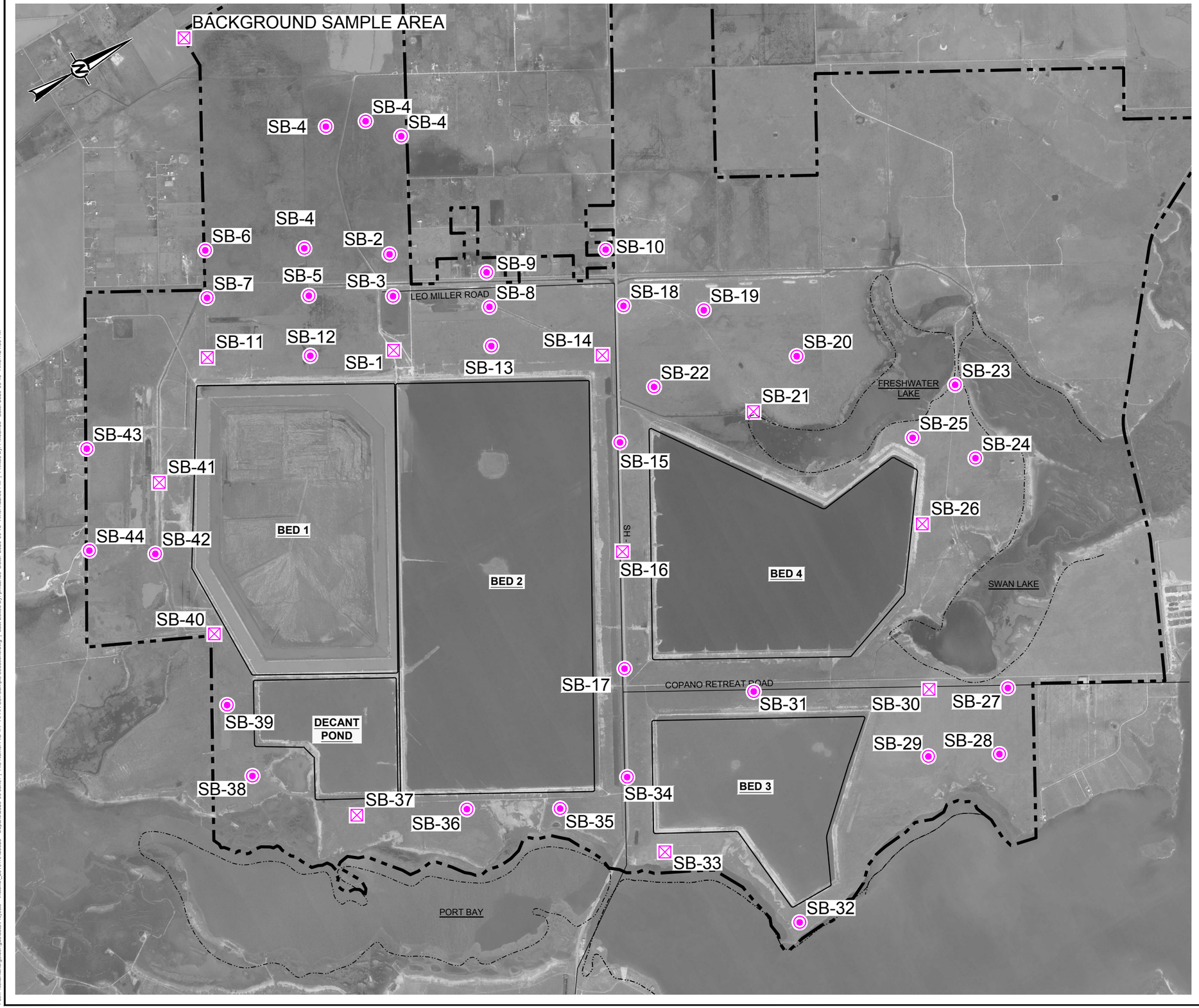
TABLE 4D-2
SOIL DATA SUMMARY
METALS
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	DATE	SAMPLE DEPTH (ft BGS)[1]	ALUMINUM (mg/kg)[2]	Q[3]	ANTIMONY (mg/kg)	Q	ARSENIC (mg/kg)	Q	CHROMIUM (mg/kg)	Q	LEAD (mg/kg)	Q	MERCURY (mg/kg)	Q	NICKEL (mg/kg)	Q	THALLIUM (mg/kg)	Q	VANADIUM (mg/kg)	Q
Assessment Level [4]			**64,000**		**15**		**24**		**27,000**		**150**		**5.5**		**840**		**5.3**		**75**	
SB-01	11/25/2019	0 - 0.5	19,800		<0.562		4.26		14.3		9.15		<0.0191		19.0		<0.562		28.1	
SB-02	11/25/2019	0 - 0.5	21,900																	
SB-03	11/25/2019	0 - 0.5	25,700																	
SB-04	11/25/2019	0 - 0.5	26,600																	
SB-05	11/25/2019	0 - 0.5	25,800																	
SB-06	11/25/2019	0 - 0.5	30,900																	
SB-07	11/25/2019	0 - 0.5	22,200																	
SB-08	11/25/2019	0 - 0.5	20,000																	
SB-09	11/25/2019	0 - 0.5	29,800																	
SB-10	11/25/2019	0 - 0.5	29,800																	
SB-11	11/25/2019	0 - 0.5	22,700		<0.572		2.48		14.9		10.2		<0.0170		8.15		<0.572		23.1	
SB-12	11/25/2019	0 - 0.5	30,300																	
SB-13	11/25/2019	0 - 0.5	4,440																	
SB-14	11/25/2019	0 - 0.5	34,500		<0.596		1.96		22.2		12.3		<0.0204		11.9		<0.596		30.9	
SB-15	11/25/2019	0 - 0.5	28,700																	
SB-16	11/25/2019	0 - 0.5	15,600		<0.546		3.41		11.1		7.19		<0.0190		5.71		<0.546		19.2	
SB-17	11/25/2019	0 - 0.5	30,100																	
SB-18	11/25/2019	0 - 0.5	27,500																	
SB-19	11/25/2019	0 - 0.5	17,800																	
SB-20	11/25/2019	0 - 0.5	25,100																	
SB-21	11/25/2019	0 - 0.5	9,090		<0.595		2.14		7.33		4.87		<0.0170		4.02		<0.595		13.1	
SB-22	11/25/2019	0 - 0.5	25,800																	
SB-23	11/25/2019	0 - 0.5	22,400																	
SB-24	11/25/2019	0 - 0.5	19,000																	
SB-25	11/25/2019	0 - 0.5	23,400																	
SB-26	11/25/2019	0 - 0.5	17,800		<0.574		3.56		13.0		8.77		<0.0174		7.39		<0.574		24.3	
SB-27	11/25/2019	0 - 0.5	17,500																	
SB-28	11/25/2019	0 - 0.5	16,800																	
SB-29	11/25/2019	0 - 0.5	19,300																	
SB-30	11/25/2019	0 - 0.5	24,800		<0.576		3.40		16.4		18.5		<0.0188		9.91		<0.576		24.7	
SB-31	11/25/2019	0 - 0.5	22,400																	
SB-32	11/25/2019	0 - 0.5	8,000																	
SB-33	11/25/2019	0 - 0.5	25,900		<0.597		3.33		17.3		9.38		<0.0185		8.60		<0.597		26.6	
SB-34	11/25/2019	0 - 0.5	20,400																	
SB-35	11/25/2019	0 - 0.5	24,000																	
SB-36	11/25/2019	0 - 0.5	28,000																	
SB-37	11/25/2019	0 - 0.5	17,100		<0.540		3.24		14.2		11.7		<0.0165		7.98		<0.540		21.7	
SB-38	11/25/2019	0 - 0.5	19,000																	
SB-39	11/25/2019	0 - 0.5	27,600																	
SB-40	11/25/2019	0 - 0.5	18,500		<0.556		5.58		64.4		12.3		<0.0181		29.4		<0.556		51.7	
SB-41	11/25/2019	0 - 0.5	21,400		<0.559		3.32		15.1		6.89		<0.0177		7.64		<0.559		27.1	
SB-42	11/25/2019	0 - 0.5	27,100																	
SB-43	11/25/2019	0 - 0.5	16,600																	
SB-44	11/25/2019	0 - 0.5	12,500																	
BACKGROUND SOIL SAMPLES																				
BGSB-1	11/26/2019	0 - 0.5	27,200		<0.565		4.32		17.4		13.2		0.0184	J	10.5		<0.565		26.5	
BGSB-2	11/26/2019	0 - 0.5	22,800		<0.580		3.65		14.6		10.9		<0.0168		8.79		<0.580		21.7	
BGSB-3	11/26/2019	0 - 0.5	29,300		<0.621		3.47		18.4		12.3		<0.0178		11.7		<0.621		25.7	
BGSB-4	11/26/2019	0 - 0.5	21,300		<0.516		4.24		13.9		11.8		<0.0170		8.55		<0.516		21.3	
BGSB-5	11/26/2019	0 - 0.5	20,800		<0.569		4.18		13.6		10.6		<0.0168		8.30		<0.569		22.4	
BGSB-6	11/26/2019	0 - 0.5	27,500		<0.580		4.10		17.1		12.9		0.0189	J	10.2		<0.580		25.5	
BGSB-7	11/26/2019	0 - 0.5	26,500		<0.619		4.33		16.7		11.2		<0.0196		9.90		<0.619		26.2	
BGSB-8	11/26/2019	0 - 0.5	26,300		<0.629		4.09		16.7		11.2		<0.0193		9.69		<0.629		25.8	
BGSB-9	11/26/2019	0 - 0.5	31,000		<0.660		4.05		19.4		12.3		<0.0190		11.8		<0.660		28.9	
BGSB-10	11/26/2019	0 - 0.5	25,900		<0.631		4.55		16.6		11.5		<0.0196		9.60		<0.631		26.2	

Notes:
1) ft BGS - feet below ground surface
2) mg/kg - milligrams per kilogram
3) Q - lab qualifiers, as follows:
   J - estimated value – the result falls between the Sample Detection Limit (SDL) and the Reporting Limit (RL)
   < - indicates the analyte was not detected at the Sample Detection Limit (SDL); SDL listed in the concentration column
4) TRRP Tier 1 Residential PCL, the lowest of $^{Tot}Soil_{Comb}$ or $^{GW}Soil_{Class\ 3}$ for a 30-acre source area, November 8, 2019

4.0 Figures

Figure 4A	Surface Soil COC Concentration Maps (Not applicable – Soil Sample Location Map provided)
Figure 4B	Subsurface Soil COC Concentration Maps (Not applicable)
Figure 4C-1 – 4C-3	Cross Sections



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- SCREENING SURFACE SOIL SAMPLE LOCATION (ANALYZED FOR SCREENING LEVEL ANALYTES)
- LOCATION SAMPLED FOR SCREENING LEVEL AND COPC ANALYTES

NOTE(S)

1. 10 BACKGROUND SAMPLES WERE COLLECTED AT THE BACKGROUND SOIL SAMPLING LOCATION

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH, IMAGERY DATED 8/29/17.

0 1250 2500
1" = 2500' FEET

CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
SOIL SAMPLE LOCATIONS

CONSULTANT
GOLDER

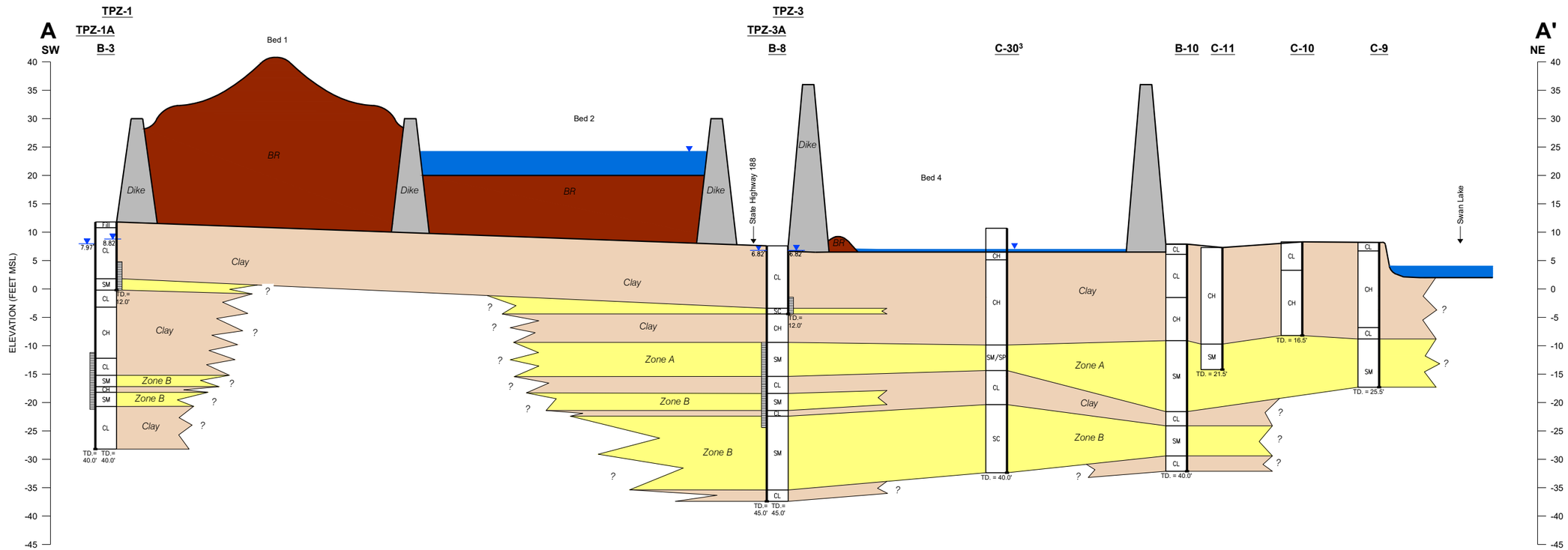
YYYY-MM-DD	2020-02-06
DESIGNED	AJD
PREPARED	PJM
REVIEWED	RJR
APPROVED	MKW

PROJECT NO. 19125525 | REV. 0 | FIGURE 4A

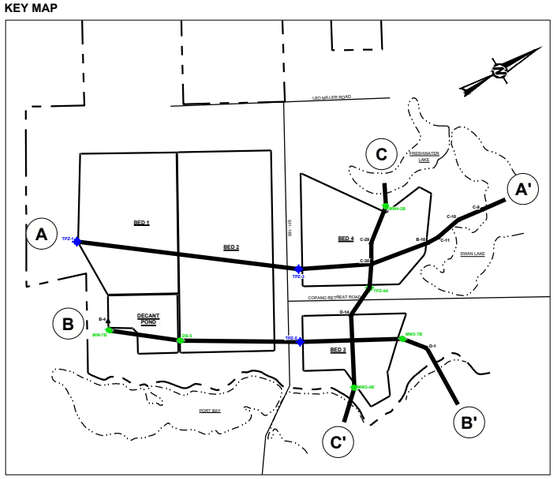
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in
0

Path: \\texarkana.golder.gds\data\Projects - Victoria_2019\19125525 - Copano\2020-06 June\ | File Name: FIG 4A - APAR Soil Sample Locations.dwg | Last Edited By: pmcbride Date: 2020-06-18 Time:1:22:53 PM | Printed By: PMcBride Date: 2020-06-18 Time:1:24:50 PM



KEY MAP



LEGEND

DIKE	DIKE MATERIAL
BR	BAUXITE RESIDUE
FILL	FILL
CL	SANDY CLAY
CH	SILTY CLAY
ML	CLAYEY SILT
SM	SILTY SAND
SC	CLAYEY SAND

MONITORING WELL CONSTRUCTION

- Boring
- Water Level (Ft MSL) Measured 2/4/2020.
- Well Screen

NOTE(S)

1. WATER LEVELS IN BEDS 2-4 ARE FOR ILLUSTRATIVE PURPOSES ONLY - WATER LEVELS FLUCTUATE BASED ON RAINFALL, PUMPING, ETC.
2. RESIDUE LEVELS IN BED 1 IS BASED ON RECENT TOPOGRAPHIC SURVEY. RESIDUE LEVELS IN BEDS 2-4 ARE APPROXIMATE
3. C-30 SOIL BORING LOGGED BEFORE CONSTRUCTION OF BED 4. FROM DAMES & MOORE SOIL STUDY (1979).

STATE OF TEXAS
MATTHEW K. WICKHAM
GEOLOGY
LIC. # 5330
LICENSED
PROFESSIONAL GEOSCIENTIST

SCALE IN FEET
VERTICAL 20
HORIZONTAL 2000
100x Vertical Exaggeration

CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
GEOLOGIC CROSS SECTION A-A'

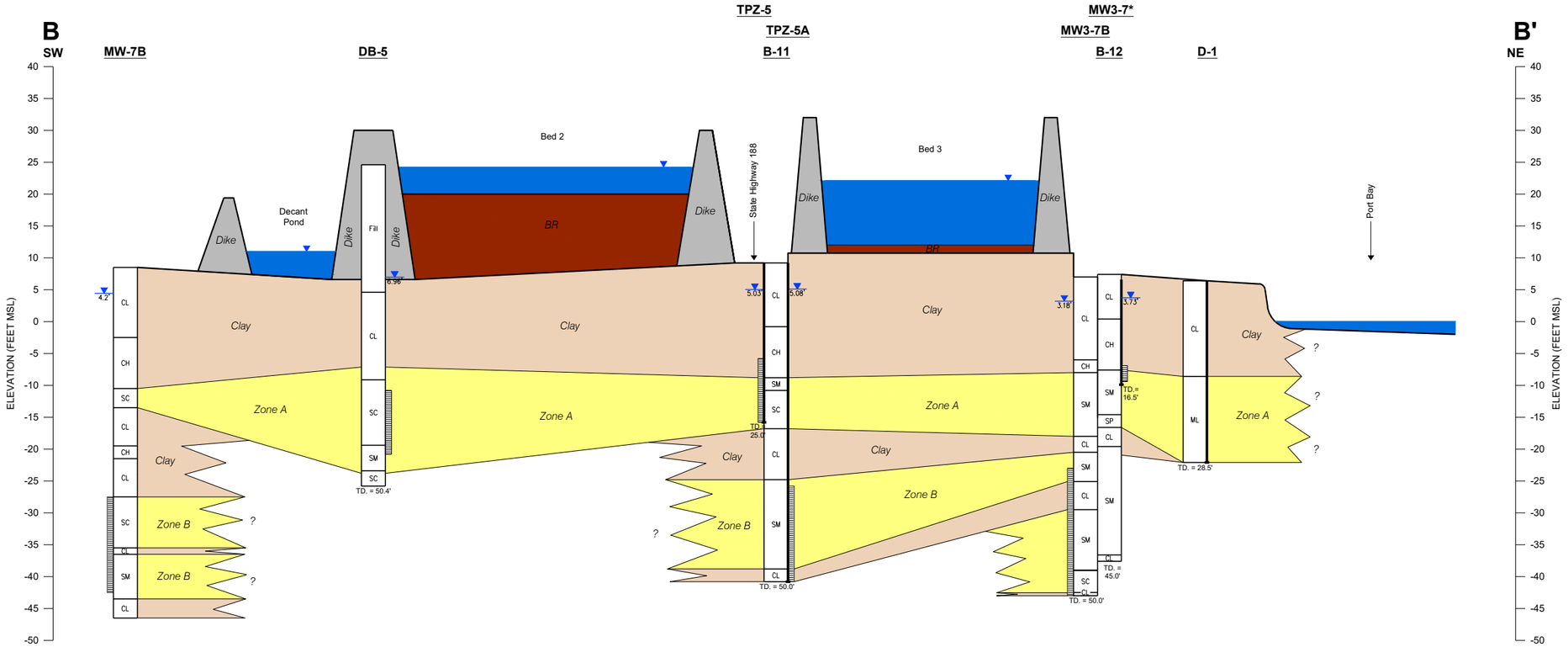
CONSULTANT
GOLDER

YYYY-MM-DD	2020-03-12
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MKW
APPROVED	MKW

PROJECT NO. 19125525
REV. 0
FIGURE 4C-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana.golder.gds\data\Projects - Victoria_2019\19125525 - Copano\2020-03 March\ | File Name: FIG 2-1 - Geologic Cross Sections.dwg | Last Edited By: pmckbride Date: 2020-04-22 Time:4:30:34 PM | Printed By: PMcBride Date: 2020-04-22 Time:4:31:46 PM



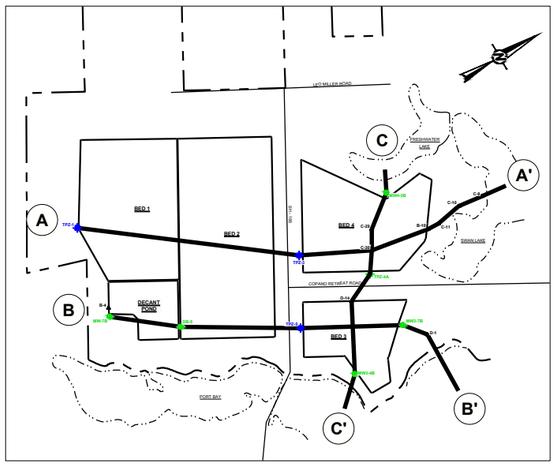
SCALE IN FEET

VERTICAL 20

HORIZONTAL 2000

100x Vertical Exaggeration

KEY MAP



LEGEND

	DIKE	DIKE MATERIAL
	BR	BAUXITE RESIDUE
	FILL	FILL
	CL	SANDY CLAY
	CH	SILTY CLAY
	ML	CLAYEY SILT
	SM	SILTY SAND
	SC	CLAYEY SAND

MONITORING WELL CONSTRUCTION

- Boring
- Water Level (Ft MSL) Measured 2/4/2020.
- Well Screen

NOTE(S)

1. * INDICATES A WELL WITH NO BORING LOG AVAILABLE (ONLY SCREENED INTERVAL AND SURVEY DATA AVAILABLE).
2. WATER LEVELS IN BEDS 2-4 ARE FOR ILLUSTRATIVE PURPOSES ONLY - WATER LEVELS FLUCTUATE BASED ON RAINFALL, PUMPING, ETC.
3. RESIDUE LEVELS IN BED 1 IS BASED ON RECENT TOPOGRAPHIC SURVEY. RESIDUE LEVELS IN BEDS 2-4 ARE APPROXIMATE.

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CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
GEOLOGIC CROSS SECTION B-B'

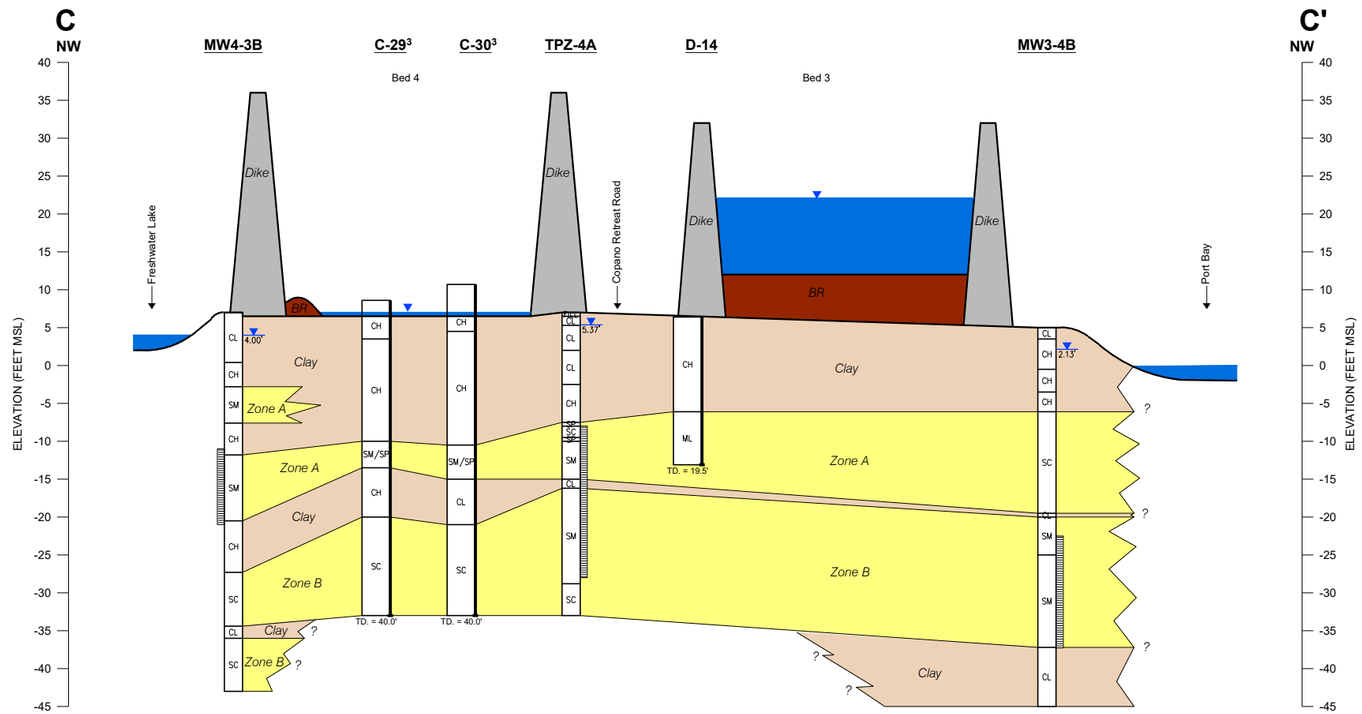
CONSULTANT
GOLDER

YYYY-MM-DD	2020-04-22
DESIGNED	AJD
PREPARED	PJM
REVIEWED	MKW
APPROVED	MKW

PROJECT NO. 19125525 | REV. 0 | FIGURE 4C-2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana.golder.gds\data\Projects - Victoria\ 20\19\19125525 - Copano\2020-03 March\ | File Name: FIG 2-1 - Geologic Cross Sections.dwg | Last Edited By: pmcbride Date: 2020-04-22 Time:1:41:36 PM | Printed By: PMcBride Date: 2020-04-22 Time:1:44:32 PM



SCALE IN FEET

20

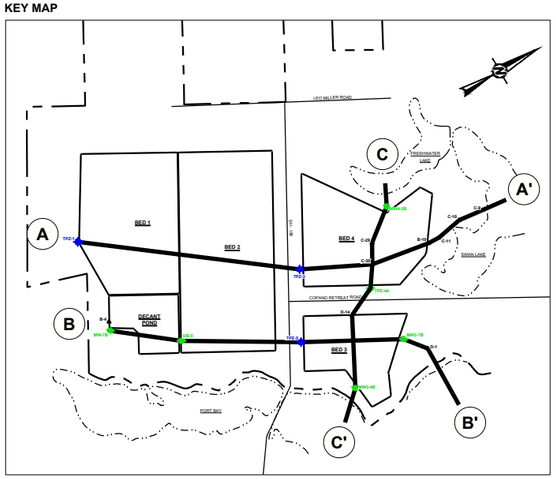
VERTICAL

2000

HORIZONTAL

100x Vertical Exaggeration

KEY MAP



LEGEND

DIKE	DIKE	MATERIAL
BR	BAUXITE	RESIDUE
FILL	FILL	
CL	SANDY	CLAY
CH	SILTY	CLAY
ML	CLAYEY	SILT
SM	SILTY	SAND
SC	CLAYEY	SAND

MONITORING WELL CONSTRUCTION

- Boring
- Water Level (Ft MSL) Measured 2/4/2020.
- Well Screen

NOTE(S)

1. WATER LEVELS IN BEDS 2-4 ARE FOR ILLUSTRATIVE PURPOSES ONLY - WATER LEVELS FLUCTUATE BASED ON RAINFALL, PUMPING, ETC.
2. RESIDUE LEVELS IN BED 1 IS BASED ON RECENT TOPOGRAPHIC SURVEY. RESIDUE LEVELS IN BEDS 2-4 ARE APPROXIMATE.
3. C-29 & C-30 SOIL BORING LOGGED BEFORE CONSTRUCTION OF BED 4. FROM DAMES & MOORE SOIL STUDY (1979).

STATE OF TEXAS
MATTHEW K. WICKHAM
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CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
GEOLOGIC CROSS SECTION C-C'

CONSULTANT
GOLDER

YYYY-MM-DD	2020-04-22
DESIGNED	AJD
PREPARED	PJM
REVIEWED	MKW
APPROVED	MKW

PROJECT NO. 19125525 | REV. 0 | FIGURE 4C-3

Path: \\texarkana.golder.ds\data\Projects - Victoria_2019\19125525 - Copano\2020-03 March\ | File Name: FIG 2-3 - Geologic Cross Sections.dwg | Last Edited By: pmcbride Date: 2020-04-22 Time:4:25:19 PM | Printed By: PMcBride Date: 2020-04-22 Time:4:32:46 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Section 5 Groundwater Assessment

Section 5.1 Derivation of Assessment Levels

The $^{GW}GW_{Class\ 3}$ exposure pathway was determined to be potentially complete at the Site, as discussed in Section 2.0 of this APAR.

As presented on Table 5A, the applicable residential assessment levels for groundwater correspond to the lowest residential Tier 1 PCL for the $^{GW}GW_{Class\ 3}$ pathway.

The ^{SW}GW and ^{Sed}GW exposure pathways were considered incomplete because the surrounding surface water bodies are not hydraulically connected to the uppermost GWBU at the Site. Cross sections illustrating this are provided as Figures 4C-1 through 4C-3.

The $^{Air}GW_{Inh\text{-}V}$ pathway is considered incomplete at the Site.

Section 5.2 Nature and Extent of COCs and NAPL in Groundwater

Groundwater sampling results are summarized on Table 5B.

All concentrations of COCs in groundwater were below the PCLs. Based on the analytical results, there is no affected property at the Site related to groundwater.

NAPL has not been observed to be present during investigation activities conducted at the Site.

Table 5A. Groundwater Residential Assessment Levels
Uppermost Groundwater-Bearing Unit (Zone A)

COC	Tier 1 $^{GW}GW_{Class3}$ (mg/L)[1]	$^{Air}GW_{Inh-V}$		$^{SW}GW^{2}$ (mg/L)	$^{Sed}GW^{2}$ (mg/L)	MQL (mg/L)	Maximum concentration			
		(mg/L)	Source area size (acres)				Sample ID	Screen Interval (ft bgs)	Sample date	Concentration (mg/L)
Aluminum	2.4E+03	NA	30			0.0300	MW4-1	Unknown	6/20/2019	0.6320
Antimony	6.0E-01	NA	30			0.00250	Multiple Wells	Multiple	Multiple Dates	<0.00160
Arsenic	1.0E+00	NA	30			0.00500	MW3-4	Unknown	6/19/2019	0.0125
Chromium	1.0E+01	NA	30			0.00500	MW4-2A	Unknown	12/3/2019	0.0116
Lead	1.5E+00	NA	30			0.00100	MW4-1	Unknown	6/20/2019	0.00167
Mercury	2.0E-01	9.4E-01	30			0.000200	MW-6R	12.0 – 17.0	2/5/2020	0.000560
Nickel	4.9E+01	NA	30			0.0100	MW-9	10.5 – 15.5	9/19/2019	0.0277
Thallium	2.0E-01	NA	30			0.00150	MW3-4	Unknown	12/4/2019	0.00126
Vanadium	4.4E+00	NA	30			0.00100	MW3-4	Unknown	6/19/2019	0.0287
Uranium	3.0E+00	NA	30			0.0100	MW-6R	12.0 – 17.0	6/20/2019	0.469
Radium-226	NA	NA	30			--	MW4-7A	Unknown	7/24/2019	2.25
Radium-228	NA	NA	30			--	MW-3R	14.5 – 19.5	2/6/2020	9.15
Radium 226/228 (Combined)	5.0E+02[3]	NA	30			--	MW-3R	14.5 – 19.5	2/6/2020	9.31
Fluoride	4.0E+02	NA	30			0.400	MW3-6	Unknown	6/20/2019	9.87

[1] Radium 226/228/combined are reported in picocuries per kilogram (pCi/L)
[2] PCLs for these pathways are not applicable to all sites. Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine when to calculate a PCL for this pathway.
[3] No TRRP PCL available. The EPA Maximum Contaminant Level (MCL) was used and multiplied by 100 for Class 3 groundwater.

Uppermost Groundwater-Bearing Unit (Zone B)

COC	Tier 1 $^{GW}GW_{Class3}$ (mg/L)[1]	$^{Air}GW_{Inh-V}$		$^{SW}GW^{2}$ (mg/L)	$^{Sed}GW^{2}$ (mg/L)	MQL (mg/L)	Maximum concentration			
		(mg/L)	Source area size (acres)				Sample ID	Screen Interval (ft bgs)	Sample date	Concentration (mg/L)
Aluminum	2.4E+03	NA	30			0.0300	DB-5	37.4 – 47.4	2/6/2020	0.237
Antimony	6.0E-01	NA	30			0.00250	MW-6RB	36.3 – 46.3	6/20/2019	0.00333
Arsenic	1.0E+00	NA	30			0.00500	MW3-7B	30.0 - 50.0	6/25/2019	0.00766
Chromium	1.0E+01	NA	30			0.00500	MW-3RB	32.0 – 47.0	2/6/2020	0.00581
Lead	1.5E+00	NA	30			0.00100	MW3-4B	27.5 – 42.5	2/11/2020	0.000826
Mercury	2.0E-01	9.4E-01	30			0.000200	Multiple Wells	Multiple	Multiple Dates	<0.0000800
Nickel	4.9E+01	NA	30			0.0100	MW-6RB	36.3 – 46.3	6/20/2019	0.0140
Thallium	2.0E-01	NA	30			0.00150	MW3-4B	27.5 – 42.5	12/4/2019	0.00158
Vanadium	4.4E+00	NA	30			0.00100	DB-5	37.4 – 47.4	6/18/2019	0.0205
Uranium	3.0E+00	NA	30			0.0100	MW3-4B	27.5 – 42.5	6/19/2019	0.130
Radium-226	NA	NA	30			--	MW3-7B	30.0 - 50.0	2/12/2020	12.4
Radium-228	NA	NA	30			--	MW3-4B	27.5 – 42.5	12/4/2019	24.8
Radium 226/228 (Combined)[3]	5.0E+02	NA	30			--	MW3-7B	30.0 - 50.0	2/12/2020	26.6
Fluoride	4.0E+02	NA	30			0.400	MW4-7B	33.0 – 48.0	6/19/2019	8.30

[1] Radium 226/228/combined are reported in picocuries per kilogram (pCi/L)
[2] PCLs for these pathways are not applicable to all sites. Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine when to calculate a PCL for this pathway.
[3] No TRRP PCL available. The EPA Maximum Contaminant Level (MCL) was used and multiplied by 100 for Class 3 groundwater.

TABLE 5B
GROUNDWATER DATA SUMMARY
METALS
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	DATE	TOTAL																				DISSOLVED																					
		ALUMINUM (mg/L)[1]	Q[2]	ANTIMONY (mg/L)	Q	ARSENIC (mg/L)	Q	CHROMIUM (mg/L)	Q	LEAD (mg/L)	Q	MERCURY (mg/L)	Q	NICKEL (mg/L)	Q	THALLIUM (mg/L)	Q	VANADIUM (mg/L)	Q	URANIUM (mg/L)	Q	ALUMINUM (mg/L)[2]	Q[3]	ANTIMONY (mg/L)	Q	ARSENIC (mg/L)	Q	CHROMIUM (mg/L)	Q	LEAD (mg/L)	Q	MERCURY (mg/L)	Q	NICKEL (mg/L)	Q	THALLIUM (mg/L)	Q	VANADIUM (mg/L)	Q	URANIUM (mg/L)	Q
ASSESSMENT LEVEL[3]		**2400**		**0.6**		**1**		**0.1**		**1.5**		**0.2**		**49**		**0.2**		**4.4**		**3**		**2400**		**0.6**		**1**		**0.1**		**1.5**		**0.2**		**49**		**0.2**		**4.4**		**3**	
Bed 1/Bed2/Decant Pond																																										
MW-1	9/20/2018	0.0334		<0.000800		0.00419	J	<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00434		0.0033	JN	<0.0100		<0.000800		0.00203	J	<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00183			
	6/18/2019	0.0719		<0.000800		0.00525		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00197		0.0126	N	0.0232	J	<0.000800		0.00468	J	0.00946		<0.000300		<0.0000800		0.00600	J	<0.000500		0.000840	J	0.0120	N
	9/19/2019	0.0502		<0.000800		0.00578		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00155		0.0158	N	0.00161	J	<0.000800		0.00454	J	<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00146		0.0146	N
	12/3/2019	0.356		<0.000800		0.00889		0.0108		0.000486	J	<0.0000800		0.0140		<0.000500		0.00308		0.0138	N	0.138		<0.000800		0.0117		0.00397	J	<0.000300		<0.0000800		0.0133		<0.000500		0.00300		0.0155	N
	2/6/2020	0.177		<0.000800		0.00463	J	0.00418	J	<0.000300		<0.0000800		0.00684	J	<0.000500		0.00292		0.0221	N	<0.0100		<0.000800		0.00314	J	<0.00200		<0.000300		<0.0000800		0.00675	J	<0.000500		0.00222		0.0235	N
MW-3R	9/20/2018	<0.0200		<0.00160		0.00430	J	<0.00400		<0.000600		0.000216		<0.00600		<0.00100		0.01830		0.107	N	<0.0100		<0.000800		0.00384	J	<0.00200		<0.000300		0.000225		0.00335	J	<0.000500		0.0184			
	6/18/2019	0.0441		<0.000800		0.00409	J	<0.00200		0.000360	J	<0.000137	J	0.00382	J	<0.000500		0.01870		0.116	N	0.0192	J	<0.000800		0.00402	J	<0.00200		<0.000300		<0.0000800		0.00335	J	<0.000500		0.0141		0.115	N
	9/19/2019	0.0112	J	<0.000800		0.00380	J	<0.00200		<0.000300		<0.000132	J	0.00376	J	<0.000500		0.0174		0.115	N	0.0112		<0.000800		0.00456	J	<0.00200		<0.000300		<0.0000800		0.00420	J	<0.000500		0.0167		0.120	N
	12/3/2019	0.0317		<0.000800		0.00388	J	<0.00200		<0.000300		0.000197	J	0.00311	J	<0.000500		0.0157		0.112	N	0.0221	J	<0.000800		0.00453	J	<0.00200		<0.000300		<0.0000800		0.00367	J	<0.000500		0.0166		0.114	N
	2/6/2020	0.1510		<0.000800		0.00350	J	<0.00200		<0.000300		0.000186	J	0.00302	J	<0.000500		0.00164		0.102	N	0.0165	J	<0.000800		0.00341	J	<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.0165		0.108	N
MW-3RB	9/20/2018	<0.0200		<0.00160		0.00938	J	<0.00400		<0.000600		<0.0000800		0.0101	J	<0.00100		0.00919		0.102	N	<0.0100		<0.000800		0.00800	J	<0.00200		<0.000300		<0.0000800		0.0083		<0.000500		0.00991			
	6/18/2019	0.0951		0.00156		0.00728		<0.00200		<0.000300		<0.0000800		0.00474	J	<0.000500		0.00979		0.109	N	0.0208	J	<0.000800		0.00724		<0.00200		<0.000300		<0.0000800		0.00440	J	<0.000500		0.00562		0.108	N
	9/19/2019	0.128		<0.000800		0.00466	J	<0.00200		<0.000300		<0.0000800		0.00403	J	<0.000500		0.0123		0.107	N	0.0137	J	<0.000800		0.00539		<0.00200		<0.000300		<0.0000800		0.00404	J	<0.000500		0.00873		0.115	N
	12/3/2019	0.0327		<0.000800		0.00529		<0.00200		<0.000300		<0.0000800		0.00379	J	<0.000500		0.0128		0.106	N	0.0173	J	<0.000800		0.00532		<0.00200		<0.000300		<0.0000800		0.00371	J	<0.000500		0.0133		0.109	N
	2/6/2020	0.0730		<0.000800		0.00520		0.00581		<0.000300		<0.0000800		0.00642	J	<0.000500		0.0181		0.0984	N	0.0206	J	<0.000800		0.00472		0.00499	J	<0.000300		<0.0000800		0.0101		<0.000500		0.0181		0.106	N
MW-4	9/24/2018	0.190		<0.000800		0.00215	J	<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00104		0.109	N	0.161		<0.00160		<0.00400		<0.00400		0.000650	J	<0.0000800		<0.00600		<0.00100		<0.00100			
	6/25/2019	0.0178	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		<0.000500		0.116	N	0.0261	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		<0.000500		0.115	N
	9/19/2019	0.0160	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		<0.000500		0.123	N	0.0107	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		<0.000500		0.124	N
	12/3/2019	0.193		<0.000800		<0.00200		<0.00200		0.000572	J	<0.0000800		<0.00300		<0.000500		0.000880		0.116	N	0.0185	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.000759	J	0.124	N
	2/5/2020	0.0455		<0.000800		<0.00200		0.00281	J	<0.000300		<0.0000800		0.00362	J	<0.000500		<0.000500		0.113	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		<0.000500		0.115	N
MW-5	9/24/2018	<0.0100		<0.000800		0.00360	J	<0.00200		0.000516	J	<0.0000800		0.0124		<0.000500		0.00814		0.0948	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		0.0139	J	<0.00100		0.00827			
	6/19/2019	0.0239	J	<0.000800		0.00260	J	<0.00200		0.000414	J	<0.0000800		0.0129		<0.000500		0.00725		0.107	N	0.0150	J	<0.000800		0.00264	J	<0.00200		<0.000300		<0.0000800		0.0136		<0.000500		0.00756		0.112	N
	9/19/2019	<0.0100		<0.000800		0.00262	J	<0.00200		0.000476	J	<0.0000800		0.0155		<0.000500		0.00972		0.104	N	0.0102	J	<0.000800		0.00300	J	<0.00200		<0.000300		<0.0000800		0.0163		<0.000500		0.00972		0.104	N
	12/3/2019	0.102		<0.000800		0.00314	J	0.00530		0.000885	J	<0.0000800		0.0161		<0.000500		0.01340		0.115	N	<0.0100		<0.000800		0.00320	J	<0.00200		<0.000300		<0.0000800		0.0147		<0.000500		0.0138		0.110	N
	2/5/2020	0.0102	J	<0.000800		0.00234	J	0.00904		0.000391	J	<0.0000800		0.0186		<0.000500		0.01170		0.109	N	<0.0100		<0.000800		0.00238	J	<0.00200		<0.000300		<0.0000800		0.0189		<0.000500		0.0113		0.108	N
MW-5B	9/24/2018	0.0319		<0.000800		0.00657		<0.00200		<0.000300		<0.0000800		0.0141		<0.000500		0.00346		0.0546	N	<0.0100		<0.000800		0.00417	J	<0.00200		<0.000300		<0.0000800		0.0127		<0.000500		0.00454			
	6/19/2019	0.0589		<0.000800		0.00427	J	<0.00200		<0.000300		<0.0000800		0.00889	J	<0.000500		0.00217		0.0535	N	0.0150	J	<0.000800		0.00484	J	<0.00200		<0.000300		<0.0000800		0.00938	J	<0.000500		0.00125		0.0564	N
	9/19/2019	0.0547		<0.000800		0.00382	J	<0.00200		<0.000300		<0.0000800		0.00796	J	<0.000500		0.00133		0.0531	N	0.0137	J	<0.000800		0.00427	J	<0.00200		<0.000300		<0.0000800		0.00751	J	<0.000500		0.000962	J	0.0528	N
	12/3/2019	0.0541		<0.000800		0.00205	J	<0.00200		0.000763	J	<0.0000800		0.00763	J	<0.000500		0.00121		0.0518	N	0.0144	J	<0.000800		0.00226	J	<0.00200		<0.000300		<0.0000800		0.00661	J	<0.000500		0.00138		0.0495	N
	2/5/2020	0.0211	J	<0.000800		0.00284	J	<0.00200		<0.000300	J	<0.0000800		0.00642	J	<0.000500		0.00153		0.0486	N	0.0112	J	<0.000800		0.00276	J	<0.00200		<0.000300		<0.0000800		0.00679	J	<0.000500		0.00123		0.0481	N
MW-6R	9/24/2018	<0.0100		<0.000800		0.00217	J	<0.00200		<0.000300		<0.0000800		0.00510	J	<0.000500		0.00818		0.484	N	<0.0100		<0.000801		<0.00200		<0.00200		<0.000300		<0.0000800		0.0053	J	<0.000500		0.00858			
	6/20/2019	0.0191	J	<0.000800		<0.00200		<0.00200		<0.000300		0.000109	J	0.00549	J	<0.000500		0.00711		0.469	N	0.0168	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00508	J	<0.000500		0.00722		0.447	N
	9/18/2019	0.0165	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00511	J	<0.000500		0.00705		0.124	N	0.0166	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00625	J	<0.000500		0.00744		0.483	N
	12/3/2019	0.0265	J	<0.000800		<0.00200		<0.00200		<0.000300		0.000476	J	0.00636	J	<0.000500		0.00741		0.432	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0008000		0.00706	J	<0.000500		0.00816		0.446	N
	2/5/2020	0.0136	J	<0.000800		<0.00200		<0.00200		<0.000300		0.000560	J	0.00562	J	<0.000500		0.00685		0.451	N	0.0222	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0008000		0.00629	J	<0.000500		0.00654		0.453	N
MW-6RB	9/24/2018	0.0208	J	<0.000800		0.00232	J	0.00415	J	<0.000300		0.000164	J	0.106		<0.000500		0.00544		0.0827	N	<0.0100		<0.000802		<0.00200		0.00396	J	<0.000300		0.000166	J	0.112		<0.000500		0.00496			
	6/20/2019	0.0170	J	0.00333		<0.00200		<0.00200		<0.000300		<0.0000800		0.0140		<0.000500		0.00184		0.0879	N	0.0213	J	0.00348		<0.00200		<0.00200		<0.000300		<0.0000800		0.0129		<0.000500		0.00194		0.0895	N
	9/19/2019	0.0294	J	<0.000800		0.00276	J	<0.00200		<0.000300		<0.0000800		0.0133		<0.000500		0.00326		0.0829	N	0.0191	J	<0.000800		0.00302	J	<0.00200		<0.000300		<0.0000800		0.0137		<0.000500		0.00302		0.0860	N
	12/3/2019	0.0768		<0.000800		0.00318	J	<0.00200		<0.000300		<0.0000800		0.0137		<0.000500		0.00338		0.0867	N	0.0170	J	<0.000800		0.00353	J	<0.00200		<0.000300		<0.0000800		0.0133		<0.000500		0.00211		0.0861	N
	2/5/2020	0.0623		<0.000800		0.00255	J	<0.00200		<0.000300		<0.0000800		0.00902	J	<0.000500		0.00167		0.0852	N	0.0197	J	<0.000800		0.00275	J	<0.00200		<0.000300		<0.0000800		0.0100		<0.000500		0.00102		0.0861	N
MW-7	9/25/2018	0.0180	J	<0.000810		0.00381	J	<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		<0.000500		0.0782	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		<0.00100			
	6/18/2019	0.0258	J	0.000911	J	0.00273	J	<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.000557	J	0.0739	N	0.0247	J	<0.000800		0.00288	J	<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		<0.000500		0.0765	N
	9/19/2019	0.0135	J	<0.000800		0.00341	J	<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		<0.000500		0.0791	N	0.0145	J	<0.000800		0.00411	J	<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.000579	J	0.0829	N
	12/3/2019	0.0481		<0.000800		0.00271	J	<0.00200		0.000730	J	<0.0000800		0.00578	J	<0.000500		0.000604	J	0.0845	N	0.0129	J	<0.000800		0.00220	J	<0.00200		<0.000300		<0.0000800		0.00554	J	<0.000500		0.000720	J	0.0861	N
	2/5/2020	0.0306	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00475	J	<0.000500		0.000655	J	0.0845	N	0.0162	J	<0.000800		0.00220	J	<0.00200		<0.000300		<0.0000800		0.00451	J	<0.000500		<0.000500		0.0774	N
MW-7B	9/25/2018	0.0421		0.000883	J	0.00513		0.00205	J	<0.000300		0.000165	J	0.0178		<0.000500		0.00755		0.0888	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		0.000298		0.0140	J	<0.00100		0.00754			
	6/18/2019	0.0318		<0.00120	J	0.00495	J	<0.00200		<0.000300		<0.0000800		0.0112		<0.000500		0.00532		0.0966	N	0.0262	J	<0.000800		0.00642		<0.00200		<0.000300		<0.0000800		0.0118		<0.000500		0.00302		0.0967	N
	9/19/2019	0.0297	J	<0.000800		0.00350	J	<0.00200		<0.000300		<0.0000800		0.00784	J	<0.000500		0.00522		0.0903	N	0.0159	J	<0.000800		0.00465	J	<0.00200		<0.000300		<0.0000800		0.00973	J	<0.000500		0.00398		0.0993	N
	12/3/2019	0.0576		<0.000800		0.00426	J	<0.00200		<0.000300		<0.0000800		0.00785	J	<0.000500		0.00403		0.0959	N	0.0155	J	<0.000800		0.00421	J	<0.00200		<0.000300		<0.0000800		0.00729	J	<0.000500		0.00454		0.0941	N
	2/6/2020	0.0420		<0.000800		0.00351	J	<0.00200		<0.000300		<0.0000800		0.00659	J	<0.000500		0.00307		0.0894	N	0.0320		<0.000800		0.00315	J	<0.00200		<0.000300		<0.0000800		0.00726	J	<0.000500		0.00347		0.0960	N
MW-8	9/24/2018	0.0166	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0136		<0.000500		0.00342		0.269	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0150		<0.000500		0.00316			
	6/18/2019	0.0368		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0128		<0.000500		0.00310		0.275	N	0.0238	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0115		<0.000500		0.00245		0.282	N
	9/19/2019	0.0157	J	<0.000800		<0.00200		<0.00279	J	<0.000300		<0.0000800		0.0173		<0.000500		0.00320		0.250	N	0.0109	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0151		<0.000500		0.00316		0.255	N
	12/3/2019	0.0406		<0.000800		<0.00200		0.00216	J	<0.000300		<0.0000800		0.00972	J	<0.000500		0.00285		0.260	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0103		<0.000500		0.00313		0.251	N
	2/5/2020	0.0120		<0.000800		<0.00200		0.00242	J	<0.000300		<0.0000800		0.00740	J	<0.000500		0.00259		0.265	N	<0.0100		<0.000800		<0.00200		0.00228	J	<0.000300		<0.0000800		0.00832	J	<0.000500		0.00260		0.273	N
MW-9	9/24/2018	<0.0100		<0.000800		0.00472	J	<0.00200		<0.000300		<0.0000800		0.0192		<0.000500		0.0210		0.0232	N	<0.0100		<0.000800		0.00440	J	<0.00200		<0.000300		<0.0000800		0.0200		<0.000500		0.0217			
	6/25/2019	0.0171	J	<0.000800		0.00464	J	<0.00200		<0.000300		<0.0000800		0.0175		<0.000500		0.0184		0.0255	N	0.0217	J	<0.000800		0.00394	J	<0.00200		<0.000300		<0.0000800		0.0168		<0.000500		0.0202		0.0249	N
	9/19/2019	<0.0100		<0.000800		0.00464	J	<0.00200		<0.000300		<0.0000800		0.0277		<0.000500		0.0213		0.0246	N	<0.0100		<0.000800		0.00520		<0.00200		<0.000300		<0.0000800		0.0284		<0.000500		0.0219		0.0257	N
	12/3/2019	0.0316		<0.000800		0.00455	J	<0.00200		0.000461	J	<0.0000800		0.0244		<0.000500		0.0209		0.0249	N	<0.0100		<0.000800		0.00494	J	<0.00200		<0.000300		<0.0000800		0.0248		<0.000500		0.0214		0.0253	N
	2/5/2020	0.0133	J	<0.000800		0.00385	J	<0.00200		<0.000300		<0.0000800		0.00990	J	<0.000500		0.0174		0.0242	N	0.0163	J	<0.000800		0.00396	J	<0.00200		<0.000300		<0.0000800		0.0107		<0.000500		0.0178		0.0241	N
MW-10	9/24/2018	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0275		<0.000500		0.0067		0.119	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0295		<0.000500		0.00694			

TABLE 5B
GROUNDWATER DATA SUMMARY
METALS
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	DATE	TOTAL																DISSOLVED															
		ALUMINUM (mg/L)[1]	Q[2]	ANTIMONY (mg/L)	Q	ARSENIC (mg/L)	Q	CHROMIUM (mg/L)	Q	LEAD (mg/L)	Q	MERCURY (mg/L)	Q	NICKEL (mg/L)	Q	THALLIUM (mg/L)	Q	VANADIUM (mg/L)	Q	URANIUM (mg/L)	Q	ALUMINUM (mg/L)[2]	Q[3]	ANTIMONY (mg/L)	Q	ARSENIC (mg/L)	Q	CHROMIUM (mg/L)	Q	LEAD (mg/L)	Q	MERCURY (mg/L)	Q	NICKEL (mg/L)	Q	THALLIUM (mg/L)	Q	VANADIUM (mg/L)	Q	URANIUM (mg/L)	Q
ASSESSMENT LEVEL[3]		**2400**		**0.6**		**1**		**0.1**		**1.5**		**0.2**		**49**		**0.2**		**4.4**		**3**		**2400**		**0.6**		**1**		**0.1**		**1.5**		**0.2**		**49**		**0.2**		**4.4**		**3**	
MW-10 Continued	6/19/2019	0.0229	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0159		<0.000500		0.00522		0.167	N	0.0187	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0142		<0.000500		0.00515		0.165	N
	9/19/2019	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0268		<0.000500		0.00590		0.148	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0281		<0.000500		0.00637		0.148	N
	12/3/2019	0.0327		<0.000800		<0.00200		0.00229	J	<0.000300		<0.0000800		0.0123		<0.000500		0.00385		0.201	N	0.0201	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0116		<0.000500		0.00418		0.190	N
	2/5/2020	0.0104	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00909	J	<0.000500		0.00352		0.197	N	0.0136	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00930	J	<0.000500		0.00314		0.197	N
MW-11	9/24/2018	<0.0100		<0.000800		0.00297	J	0.00221	J	<0.000300		<0.000400		0.0193		<0.000500		0.0262		0.0866	N	<0.0100		<0.000800		0.00252	J	<0.00200		<0.000300		<0.000400		0.0202		<0.000500		0.0272			
	6/18/2019	0.0277	J	<0.000800		0.00263	J	<0.00200		<0.000300		<0.0000800		0.0165		<0.000500		0.0268		0.0958	N	0.0624		<0.000800		0.00275	J	<0.00200		<0.000300		<0.0000800		0.0162		<0.000500		0.0250		0.0989	N
	9/19/2019	0.138		<0.000800		0.00249	J	<0.00200		<0.000300		<0.0000800		0.0256		<0.000500		0.0270		0.0888	N	0.0207	J	<0.000800		0.00257	J	<0.00200		<0.000300		<0.0000800		0.0281		<0.000500		0.0283		0.0935	N
	12/3/2019	0.0406		<0.000800		0.00275	J	0.00223	J	<0.000300		<0.0000800		0.0205		<0.000500		0.0269		0.0887	N	0.0270	J	<0.000800		0.00284	J	<0.00200		<0.000300		<0.0000800		0.0191		<0.000500		0.0259		0.0862	N
	2/5/2020	0.0126	J	<0.000800		0.00262	J	0.00214	J	<0.000300		<0.0000800		0.0145		<0.000500		0.0258		0.0831	N	0.0216	J	<0.000800		0.00291	J	<0.00200		<0.000300		<0.0000800		0.0153		<0.000500		0.0260		0.0831	N
MW-11B	9/24/2018	0.1130		<0.000800		0.00270	J	<0.00200		<0.000300		0.000127	J	0.00502	J	<0.000500		0.0109		0.0814	N	<0.0100		<0.000800		0.00213	J	<0.00200		<0.000300		0.000105		0.00501	J	<0.000500		0.0110			
	6/18/2019	0.0347		<0.000800		0.00271	J	<0.00200		<0.000300		<0.0000800		0.00491	J	<0.000500		0.00786		0.0873	N	0.0500		<0.000800		0.00300	J	<0.00200		<0.000300		<0.0000800		0.00698	J	<0.000500		0.00487		0.0874	N
	9/19/2019	0.0161	J	<0.000800		0.00282	J	<0.00200		<0.000300		<0.0000800		0.00481	J	<0.000500		0.00544		0.0825	N	0.0224	J	<0.000800		0.00340	J	<0.00200		<0.000300		<0.0000800		0.00563	J	<0.000500		0.00462		0.0878	N
	12/3/2019	0.0273	J	<0.000800		0.00295	J	<0.00200		<0.000300		<0.0000800		0.00571	J	<0.000500		0.00327		0.0862	N	0.0173	J	<0.000800		0.00287	J	<0.00200		<0.000300		<0.0000800		0.00495	J	<0.000500		0.00484		0.0862	N
	2/5/2020	0.0151	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00362	J	<0.000500		0.00498		0.0880	N	0.0118	J	<0.000800		0.00235	J	<0.00200		<0.000300		<0.0000800		0.00423	J	<0.000500		0.00417		0.0900	N
DB-5	9/24/2018	0.0142	J	<0.000800		0.00646		<0.00200		<0.000300		<0.0000800		0.00460	J	<0.000500		0.00591		0.0649	N	<0.0200		<0.00160		0.00416	J	<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		<0.00100			
	6/18/2019	0.0339		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00864	J	<0.000500		0.0205		0.0727	N	0.0231	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00797	J	<0.000500		0.0171		0.0746	N
	9/19/2019	0.0458		<0.000800		0.00592		<0.00200		<0.000300		<0.0000800		0.00730	J	<0.000500		0.00891		0.0898	N	0.0227	J	<0.000800		0.00592		<0.00200		<0.000300		<0.0000800		0.00786	J	<0.000500		0.00834		0.0947	N
	12/3/2019	0.0292	J	<0.000800		0.00326	J	<0.00200		<0.000300		<0.0000800		0.00503	J	<0.000500		0.00582		0.0769	N	0.0599		<0.000800		0.00312	J	<0.00200		<0.000300		<0.0000800		0.00546	J	<0.000500		0.00639		0.0747	N
	2/6/2020	0.237		<0.000800		0.00279	J	<0.00200		<0.000300		<0.0000800		0.00438	J	<0.000500		0.00576		0.0994	N	0.0149	J	<0.000800		0.00218	J	<0.00200		<0.000300		<0.0000800		0.00526	J	<0.000500		0.00632		0.109	N
Bed 3																																									
MW3-1	9/26/2018	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00207		0.108	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00179	J		
	6/19/2019	0.0280	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00528	J	<0.000500		0.00143		0.111	N	0.0150	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00554	J	<0.000500		0.00160		0.111	N
	9/17/2019	0.0124	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00627	J	<0.000500		0.00115		0.1150	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00584	J	0.000538	J	0.00164		0.114	N
	12/4/2019	0.0568		<0.000800		<0.00200		0.00756		0.000398	J	<0.000400		0.00398	J	<0.000500		0.00136		0.125	N	0.0282	J	<0.000800		<0.00200		0.00764		<0.000300		<0.0000800		0.00556	J	<0.000500		0.00231		0.131	N
	2/11/2020	0.0142	J	<0.000800		<0.00200		0.00617		<0.000300		<0.0000800		0.00532	J	<0.000500		0.000984	J	0.115	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00102		0.117	N
MW3-2	9/26/2018	0.0599	J	<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00318		0.123	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00242			
	6/19/2019	0.0305		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00250		0.132	N	0.145		<0.000800		<0.00200		<0.00200		0.000377	J	<0.0000800		<0.00300		<0.000500		0.00272		0.133	N
	9/18/2019	0.0573		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		0.000518	J	0.00220		0.129	N	0.0169		<0.000800		<0.00200		<0.00200		0.000650	J	<0.0000800		<0.00300		<0.000500		0.00192		0.132	N
	12/4/2019	0.0303		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00202		0.121	N	0.0173	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00330		0.132	N
	2/11/2020	0.108		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		<0.00200		0.122	N	0.0158	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00187		0.125	N
MW3-3	9/26/2018	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00619		0.117	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00519			
	6/19/2019	0.0303		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00339	J	<0.000500		0.00210		0.123	N	0.0179	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00338	J	<0.000500		0.00206		0.128	N
	9/18/2019	0.0781		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00350	J	<0.000500		0.00229		0.430	N	0.0131	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00350	J	<0.000500		0.00300		0.129	N
	12/4/2019	0.0194	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00329	J	<0.000500		0.00216		0.127	N	0.0117	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00352	J	<0.000500		0.00229		0.121	N
	2/11/2020	0.0155	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00352	J	<0.000500		0.00178		0.119	N	0.0114	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00315	J	<0.000500		0.00169		0.121	N
MW3-4	9/26/2018	0.0470	J	<0.00160		<0.00400		<0.00400		0.000628	J	<0.0000800		<0.00600		<0.00100		0.00251		0.101	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00177	J		
	6/19/2019	0.0302		<0.000800		0.0125		0.00227	J	<0.000300		<0.0000800		<0.00300		<0.000500		0.0287		0.0595	N	0.0179	J	<0.000800		0.0129		<0.00200		0.000552	J	<0.0000800		<0.00300		<0.000500		0.0300		0.0620	N
	9/18/2019	0.0148	J	<0.000800		<0.00200		<0.00200		0.000632	J	<0.0000800		0.00309	J	<0.000500		0.00140		0.129	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00142		0.135	N
	12/4/2019	0.0120	J	<0.000800		0.00224	J	0.00356	J	<0.000300		<0.0000800		0.00851	J	0.00126	J	0.00336		0.145	N	0.0130	J	<0.000800		<0.00200		0.00263	J	<0.000300		<0.0000800		0.0114		0.00116	J	0.00341		0.138	N
	2/11/2020	0.0944		<0.000800		<0.00200		0.00282	J	0.000563	J	<0.0000800		0.00527	J	<0.000500		0.00231		0.158	N	0.0122	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00577	J	<0.000500		0.00186		0.161	N
MW3-4B	9/26/2018	<0.0500		<0.00400		<0.0100		<0.0100		<0.00150		<0.0000800		<0.0150		<0.00250		0.00677		0.100	N	<0.0500		<0.00400		<0.0100		<0.0100		<0.00150		0.000149	J	<0.0150		<0.00250		0.00845			
	6/19/2019	0.0362		0.000915	J	0.00394	J	<0.00200		0.000529	J	<0.0000800		0.00634	J	0.00127	J	0.00778		0.130	N	0.0134	J	0.00107	J	0.00350	J	<0.00200		0.000580	J	<0.0000800		0.00611	J	0.00128	J	0.00816		0.133	N
	9/182019	0.0678		<0.00104	J	0.00331	J	0.00270	J	0.000500	J	<0.0000800		0.00846	J	0.00138	J	0.00623		0.114	N	<0.0100		<0.000800		0.00369	J	<0.00200		0.000421	J	<0.0000800		0.00803	J	0.00146	J	0.00628		0.124	N
	12/4/2019	0.0263	J	<0.000800		0.00367	J	0.00294	J	0.000413	J	<0.0000800		0.0101		0.00158		0.00572		0.118	N	0.0125	J	<0.000800		0.00278	J	<0.00200		0.000643	J	<0.0000800		0.00701	J	0.00143	J	0.00656		0.111	N
	2/11/2020	0.0227	J	<0.000800		0.00269	J	<0.00200		0.000826	J	<0.0000800		0.00585	J	0.00149	J	0.00646		0.109	N	0.0175	J	<0.000800		0.00276	J	<0.00200		0.000374	J	<0.0000800		0.00873	J	0.00147	J	0.00649		0.116	N
MW3-5	9/26/2018	0.0455	J	<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		0.00935	J	<0.00100		0.00470		0.094	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		0.00968	J	<0.00100		0.00434			
	6/20/2019	0.0490		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00954	J	0.000533	J	0.00271		0.138	N	0.0141	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00782	J	<0.000500		0.00258		0.133	N
	9/18/2019	0.0235	J	<0.000800		0.00252	J	0.00543		<0.000300		<0.0000800		0.00440	J	<0.000500		0.00645		0.0795	JN	0.0174	J	<0.000800		0.00265	J	0.00502		<0.000300		<0.0000800		0.00657	J	<0.000500		0.00672		0.0801	N
	12/5/2019	0.0188	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00779	J	0.000565	J	0.00297		0.129	N	0.0300		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00892	J	0.000535	J	0.00298		0.122	N
	2/12/2020	0.105		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00480	J	<0.000500		0.00257		0.126	N	0.0235	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00389	J	<0.000500		0.00213		0.126	N
MW3-6	9/26/2018	0.0364	J	<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		0.00831	J	<0.00100		0.00212		0.063	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		0.00778	J	<0.00100		0.00121	J		
	6/20/2019	0.264		<0.000800		0.00294	J	<0.00200		0.000480	J	<0.0000800		0.00617	J	<0.000500		0.00198		0.0972	N	0.0210	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.000977	J	0.0975	N
	9/18/2019	0.0303		<0.000800		<0.00200		0.00251	J	<0.000300		<0.0000800		0.00495	J	<0.000500		0.00138		0.105	N	0.0123	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00465	J	<0.000500		0.00124		0.109	N
	12/5/2019	0.1390		<0.000800		0.00210	J	0.00205	J	<0.000300		<0.0000800		<0.00300		<0.000500		0.00153		0.117	N	0.0186	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00322	J	<0.000500		0.000947	J	0.112	N
	2/12/2020	0.0245	J	<0.000800		<0.00200		0.00362	J	<0.000300		<0.0000800		0.00343	J	<0.000500		0.00103		0.095	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.000758	J	0.0914	N
MW3-7	9/25/2018	0.0257	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00322		0.110	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00285			
	6/25/2019	0.0179	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00328	J	<0.000500		0.00297		0.131	N	0.0453		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00350		0.131	N
	9/17/2019	0.0163	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00306	J	<0.000500		0.00372		0.132	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00308	J	<0.000500		0.00421		0.128	N
	12/5/2019	0.0150	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00294		0.127	N	0.0106	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00293		0.119	N
	2/12/2020	0.0178	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00308	J	<0.000500		0.00549		0.124	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00330	J	<0.000500		0.00513		0.124	N
MW3-7B	9/25/2018	0.0260	J	0.00131	J	<0.00200		0.00257	J	<0.000300		<0.0000800		<0.00300		<0.000500		0.00476		0.0093	N	<0.0200		<0.00160		0.00541		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00213			
	6/25/2019	0.0248	J	<0.000800		0.00766		<0.00200		<0.000300		<0.0000800		0.00368	J	<0.000500		0.000918	J	0.0613	N	0.0346		<0.000800		0.00676		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00104		0.0653	N

TABLE 5B
GROUNDWATER DATA SUMMARY
METALS
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	DATE	TOTAL																DISSOLVED															
		ALUMINUM (mg/L)[1]	Q[2]	ANTIMONY (mg/L)	Q	ARSENIC (mg/L)	Q	CHROMIUM (mg/L)	Q	LEAD (mg/L)	Q	MERCURY (mg/L)	Q	NICKEL (mg/L)	Q	THALLIUM (mg/L)	Q	VANADIUM (mg/L)	Q	URANIUM (mg/L)	Q	ALUMINUM (mg/L)[2]	Q[3]	ANTIMONY (mg/L)	Q	ARSENIC (mg/L)	Q	CHROMIUM (mg/L)	Q	LEAD (mg/L)	Q	MERCURY (mg/L)	Q	NICKEL (mg/L)	Q	THALLIUM (mg/L)	Q	VANADIUM (mg/L)	Q	URANIUM (mg/L)	Q
ASSESSMENT LEVEL[3]		**2400**		**0.6**		**1**		**0.1**		**1.5**		**0.2**		**49**		**0.2**		**4.4**		**3**		**2400**		**0.6**		**1**		**0.1**		**1.5**		**0.2**		**49**		**0.2**		**4.4**		**3**	
MW3-7B Continued	7/17/2019	0.0255	J	<0.000800		0.00652		0.00238	J	0.000357	J	<0.0000800		0.00850	J	<0.000500		0.000647	J	0.0592	N	0.0111	J	<0.000800		0.00757		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.000934	J	0.0568	N
	12/5/2019	0.0227	J	<0.000800		0.00625		0.00409	J	<0.000300		<0.0000800		0.00303	J	<0.000500		0.000955	J	0.0555	N	<0.0100		<0.000800		0.00504		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.000785	J	0.0714	N
	2/12/2020	0.0121	J	<0.000800		0.00547		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.000531	J	0.0773	N	<0.0100		<0.000800		0.00526		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.000617	J	0.0725	N
Bed 4																																									
MW4-1	9/20/2018	0.0250	J	<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00107	J	0.215	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00561	J	<0.000500		0.00107	J		
	6/20/2019	0.632		<0.000800		<0.00200		<0.00200		0.00167		<0.0000800		0.00860	J	<0.000500		0.00798		0.1990	N	0.0153	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00498	J	<0.000500		0.000792	J	0.175	N
	9/18/2019	0.0487		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00113		0.123	N	0.0244	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.000962	J	0.131	N
	12/3/2019	0.0366		<0.000800		0.00351	J	0.00424	J	<0.000300		<0.0000800		0.00976	J	<0.000500		0.000764		0.250	N	0.0134	J	<0.000800		0.00362	J	0.00303	J	<0.000300		<0.0000800		0.00887	J	<0.000500		0.00121		0.256	N
	2/6/2020	0.0924		<0.000800		0.00262	J	<0.00200		<0.000300		<0.0000800		0.00725	J	<0.000500		0.00106		0.260	N	0.0167	J	<0.000800		0.00252	J	<0.00200		<0.000300		<0.0000800		0.00754	J	<0.000500		0.000653	J	0.267	N
MW4-2	9/20/2018	0.0369	J	<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00451		0.104	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00436	J	0.000553	J	0.00484			
	6/20/2019	0.0286	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		0.000629	J	0.00401		0.117	N	0.0226	J	<0.000800		<0.00200		0.00266	J	<0.000300		<0.0000800		0.00388	J	0.000649	J	0.00396		0.116	N
	9/17/2019	0.0205	J	<0.000800		<0.00200		0.00220	J	<0.000300		<0.0000800		0.00628	J	0.000712	J	0.00395		0.112	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00496	J	0.000743	J	0.00410		0.111	N
	12/4/2019	0.0242	J	<0.000800		<0.00200		0.00659		<0.000300		<0.0000800		0.00603	J	0.000571	J	0.00368		0.111	N	0.0122	J	<0.000800		0.00220	J	0.00508		<0.000300		<0.0000800		0.00706	J	0.000585	J	0.00471		0.119	N
	2/6/2020	0.0983	J	<0.000800		<0.00200		0.00486	J	<0.000300		<0.0000800		0.00410	J	<0.000500		0.00355		0.109	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00323	J	<0.000500		0.00327		0.113	N
MW4-2A	9/20/2018	0.123		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		0.00935	J	<0.00100		0.0100		0.083	N	<0.0100		<0.000800		0.00203	J	<0.00200		<0.000300		<0.0000800		0.00848	J	<0.000500		0.00967			
	6/20/2019	0.0282	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0106		<0.000500		0.00850		0.112	N	0.0186	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.0100		<0.000500		0.00809		0.112	N
	9/17/2019	0.137		<0.000800		<0.00200		0.00879		<0.000300		<0.0000800		0.0115		<0.000500		0.00910		0.0962	N	0.0178	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00889	J	<0.000500		0.00900		0.0927	N
	12/3/2019	0.0465	J	<0.000800		0.00205	J	0.0116		<0.000300		<0.0000800		0.0143		<0.000500		0.00801		0.0901	N	0.0135	J	<0.000800		0.00247	J	0.00307	J	<0.000300		<0.0000800		0.0109		<0.000500		0.00874		0.0978	N
	2/6/2020	0.0657		<0.000800		<0.00200		0.00577		<0.000300		<0.0000800		0.00509	J	<0.000500		0.00860		0.0870	N	<0.0100		<0.000800		<0.00200		0.00220	J	<0.000300		0.0000877	J	0.00428	J	<0.000500		0.00788		0.0889	N
MW4-3	9/20/2018	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00229		0.0961	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00280			
	6/20/2019	0.0254	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300	J	0.000513	J	0.00183		0.114	N	0.0133	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00199		0.109	N
	9/18/2019	0.0305		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00232		0.107	N	0.0111	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00207		0.106	N
	12/4/2019	0.0134	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00191		0.104	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00300		0.112	N
	2/6/2020	0.0348		<0.000800		<0.00200		0.00390	J	<0.000300		<0.0000800		0.00656	J	<0.000500		0.00172		0.099	N	0.0103	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00166		0.106	N
MW4-3B	9/20/2018	0.0374	J	<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		0.0132	J	<0.00100		0.00195	J	0.0618	N	<0.0100		<0.000800		0.00286	J	<0.00200		<0.000300		<0.0000800		0.01190		0.000601	J	0.00241			
	6/20/2019	0.0338		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00732	J	0.000858	J	0.000910	J	0.0680	N	0.0210	J	<0.000800		0.00266	J	<0.00200		<0.000300		<0.0000800		0.00788	J	0.00109	J	0.00118		0.0697	N
	9/18/2019	0.0257	J	<0.000800		0.00212	J	<0.00200		<0.000300		<0.0000800		0.00700	J	0.000772	J	0.000997	J	0.0656	N	0.0151	J	<0.000800		0.00232	J	<0.00200		<0.000300		<0.0000800		0.00684	J	0.000767	J	0.000871	J	0.0664	N
	12/4/2019	0.0231	J	<0.000800		0.00238	J	<0.00200		<0.000300		<0.0000800		0.00675	J	0.000823	J	0.000523	J	0.0636	N	0.0101	J	<0.000800		0.00268	J	<0.00200		<0.000300		<0.0000800		0.00698	J	0.000730	J	0.00135		0.0675	N
	2/6/2020	0.0219	J	<0.000800		0.00213	J	<0.00200		<0.000300		<0.0000800		0.00628	J	0.000688	J	0.000582	J	0.0608	N	0.0104	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00649	J	0.000709	J	<0.000500		0.0615	N
MW4-4	9/25/2018	0.0292	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00196		0.0835	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00185	J		
	6/20/2019	0.0177	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00170		0.102	N	0.0144	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00178		0.0992	N
	9/18/2019	0.0148	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00175		0.0914	N	0.0128	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00259		0.0964	N
	12/4/2019	0.0122	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00175		0.0910	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00272		0.0993	N
	2/10/2020	<0.0100		<0.000800		<0.00200		0.00213	J	<0.000300		<0.0000800		<0.00300		<0.000500		0.00146		0.100	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00307	J	<0.000500		0.00161		0.0959	N
MW4-7	9/25/2018	0.0220	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00077	J	0.0543	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		<0.00100			
	6/19/2019	0.0343		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00116		0.0625	N	0.0148	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00112		0.0655	N
	9/18/2019	0.0165	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.000976	J	0.0630	N	0.0154	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00191		0.0653	N
	12/4/2019	0.0131	J	<0.000800		<0.00200		0.00235	J	<0.000300		<0.0000800		0.00374	J	<0.000500		<0.000500		0.0621	JN	0.0116	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00182		0.0647	N
	2/10/2020	0.0108	J	<0.000800		<0.00200		0.00235	J	<0.000300		<0.0000800		0.00374	J	<0.000500		0.000928	J	0.0575	N	<0.0100		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00109		0.0689	N
MW4-7A	9/25/2018	0.0456		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00312	J	<0.000500		0.00259		0.0854	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		<0.0000800		<0.00600		<0.00100		0.00229			
	7/24/2019	0.2320		<0.000800		<0.00200		0.00292	J	0.000422	J	<0.0000800		0.00461	J	<0.000500		0.002880		0.103	N	0.29700		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00405	J	<0.000500		0.00235		0.101	N
	9/17/2019	0.3970		<0.000800		<0.00200		0.00309	J	<0.000411	J	<0.0000800		0.00378	J	<0.000500		0.00330		0.101	N	0.0353		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00337	J	<0.000500		0.00272		0.105	N
	12/4/2019	0.0566		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		<0.000500		0.107	N	0.0154	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00329		0.114	N
	2/10/2020	0.0863		<0.000800		<0.00200		0.00500		<0.000300		<0.0000800		0.00437	J	<0.000500		0.00239		0.102	N	0.0113	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00333	J	<0.000500		0.00248		0.102	N
MW4-7B	9/25/2018	0.0326		<0.000800		0.00298	J	<0.00222	J	<0.000300		0.000787		0.00880	J	<0.000500		0.00566		0.0498	N	<0.0200		<0.00160		<0.00400		<0.00400		<0.000600		0.000817		0.00700	J	<0.00100		0.00602			
	6/19/2019	0.0277	J	<0.000800		0.00310	J	<0.00200		<0.000300		<0.0000800		0.00420	J	<0.000500		0.00532		0.0581	N	0.0194	J	<0.000800		0.00308	J	<0.00200		<0.000300		<0.0000800		0.00431	J	<0.000500		0.00506		0.0604	N
	9/17/2019	0.0323	J	0.000838	J	0.00224	J	0.00205	J	<0.000300		<0.0000800		0.00610	J	<0.000500		0.00443		0.0618	N	0.0109	J	<0.000800		0.00252	J	<0.00200		<0.000300		<0.0000800		0.00527	J	<0.000500		0.00441		0.0615	N
	12/4/2019	0.0285	J	<0.000800		0.00262	J	<0.00200		<0.000300		<0.0000800		0.00559	J	<0.000500		0.00326		0.0583	N	0.0141	J	<0.000800		0.00272	J	<0.00200		<0.000300		<0.0000800		0.00586	J	<0.000500		0.00548		0.0648	N
	2/10/2020	0.0729		<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00371	J	<0.000500		0.00408		0.0614	N	<0.0100	J	<0.000800		<0.00200		<0.00200		<0.000300		<0.0000800		0.00378	J	<0.000500		0.00425		0.0594	N

Notes:

1) mg/L - milligrams per liter

2) Q - lab qualifiers, as follows:

J - estimated value – the result falls between the Sample Detection Limit (SDL) and the Reporting Limit (RL)

< - indicates the analyte was not detected at the Sample Detection Limit (SDL); SDL listed in the concentration column

N - laboratory does not offer NELAC certification for this analyte

3) Unless otherwise noted, the groundwater assessment level is the TRRP Tier 1 Tier 1 Residential PCL for Class 3 Groundwater ($^{GW}GW_{Class\ 3}$)

TABLE 5C
GROUNDWATER DATA SUMMARY
GENERAL CHEMISTRY AND RADIONUCLIDES
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	DATE	ANALYTICAL RESULTS																										FIELD PARAMETERS					
		RADIUM 226 (pCi/L)[3]	Q	RADIUM 228 (pCi/L)	Q	COMBINED RADIUM 226/228 (pCi/L)	Q	CALCIUM (mg/L)	Q	MAGNESIUM (mg/L)	Q	SODIUM (mg/L)	Q	POTASSIUM (mg/L)	Q	CHLORIDE (mg/L)	Q	BICARBONATE (mg/L)	Q	CARBONATE (mg/L)	Q	HYDROXIDE (mg/L)	Q	TOTAL ALKALINITY (mg/L)	Q	FLUORIDE (mg/L)		SULFATE (mg/L)	Q	NITRATE (mg/L)	AMMONIA-N (mg/L)	Q	TOTAL DISSOLVED SOLIDS (mg/L)	Q	TEMPERATURE (°C)	pH[4]	SPECIFIC CONDUCTANCE (µS/cm)[6]	TURBIDITY (NTU)[6]	OXIDATION REDUCTION POTENTIAL (mV)[7]	DISSOLVED OXYGEN (mg/L)
ASSESSMENT LEVEL[8]																										400				1000										
OTHER CRITERIA[9]																250												250												
Bed 1/Bed2/Decant Pond																																								
MW-1	9/20/2018	0.0274		0.343		0.371		192		289		2,520		16.7		4,790		224		<10.0		<10.0		224		<0.100		524		0.91	0.51		8,280		27.90	7.61	11400	12.1	-132	1.18
	6/18/2019	1.87		1.98		3.85		746		1,100		8,960		47		17,000		316		<10.0		<10.0		316		<1.00		2,100		<1.00	1.65		31,200		30.48	7.18	39400	4.0	-152	0.00
	9/19/2019	0.507		1.56		2.07		829		1,220		10,100		54.7		18,600		337		<10.0		<10.0		337		<1.00		2,220		<1.00	2.23		36,900		27.28	7.02	46100	0.0	-221	0.34
	12/3/2019	-0.382		1.16		1.16		734		1,130		9,180		48.1		17,100		262		<10.0		<10.0		262		<1.00		1,900		2.06	J 0.819		41,600		25.25	6.93	46100	6.9	-190	1.01
	2/6/2020	0.237		2.35		2.59		917		1,490		11,800		65.5		23,300		293		<10.0		<10.0		293		<1.00		2,570		<1.00	0.540		43,500		19.58	7.38	63200	5.4	-242	1.26
MW-3R	9/20/2018	-0.0704		8.71		8.71		1,100		1,530		12,500		78.1		24,500		244		<10.0		<10.0		244		<1.00		6,050		<1.00	<0.100		46,000		27.84	7.15	55300	0.0	221	0.73
	6/18/2019	2.23		1.33		3.56		1,200		1,560		12,500		80.2		21,600		239		<10.0		<10.0		239		<1.00		5,560		<1.00	<0.100		46,500		32.21	7.06	55700	0.0	103	0.00
	9/19/2019	0.609		8.30		8.90		1,240		1,610		12,700		81.9		22,300		240		<10.0		<10.0		240		<1.00		5,600		<1.00	<0.100		47,400		29.19	6.56	52100	0.0	273	0.46
	12/3/2019	0.298		7.11		7.41		1,180		1,590		13,400		78.8		22,000		235		<10.0		<10.0		235		<1.00		5,320		<1.00	0.563		48,200		25.31	6.78	58200	0.0	428	1.29
	2/6/2020	0.162		9.15		9.31		1,110		1,530		12,800		77.7		23,200		217		<10.0		<10.0		217		<1.00		5,660		<1.00	1.11		48,600		21.07	7.00	65100	0.0	464	0.55
MW-3RB	9/20/2018	1.54		9.66		11.2		1,090		1,500		12,000		83.1		23,200		251		<10.0		<10.0		251		<1.00		6,120		<1.00	<0.100		44,400		28.88	6.84	53300	34.0	-101	0.52
	6/18/2019	1.97		12.1		14.0		1,160		1,550		12,700		79.2		21,500		242		<10.0		<10.0		242		3.18	J	5,850		<1.00	<0.100		45,900		29.30	7.10	56700	0.0	24	0.00
	9/19/2019	1.03		14.6		15.6		1,160		1,560		12,400		80.3		21,400		244		<10.0		<10.0		244		<1.00		5,900		<1.00	<0.100		47,800		27.75	6.56	52300	0.0	-1	0.39
	12/3/2019	0.895		11.1		12.0		1,150		1,550		12,900		76.2		21,800		237		<10.0		<10.0		237		<1.00		5,490		<1.00	0.194	J	46,400		24.75	6.77	58100	0.0	352	0.87
	2/6/2020	1.44		10.8		12.3		1,110		1,490		12,400		78.8		23,100		229		<10.0		<10.0		229		<1.00		5,710		<1.00	0.273		49,700		21.60	7.31	64100	0.0	424	5.72
MW-4	9/24/2018	0.517		0.264		0.781		955		2,080		11,600		67.9		21,900		305		<10.0		<10.0		305		<0.200		6,860		<0.200	1.10		42,700		29.05	7.23	51200	0.0	-62	2.57
	6/25/2019	0.683		0.624		1.31		1,060		2,140		11,800		68.4		22,300		306		<10.0		<10.0		306		8.03		6,850		<1.00	1.39		44,600		28.61	7.01	52900	0.4	-181	0.41
	9/19/2019	0.426		2.62		3.05		1,010		1,970		11,200		70.0		23,600		293		<10.0		<10.0		293		3.88	J	7,030		<1.00	0.759		44,800		30.42	6.84	43900	3.1	-54	0.44
	12/3/2019	0.262		2.01		2.27		997		2,040		11,500		65.6		21,000		281		<10.0		<10.0		281		<1.00		5,910		<1.00	0.723		46,000		22.92	7.12	99100	0.0	-136	0.79
	2/5/2020	0.438		1.77		2.21		915		1,980		11,400		64.4		21,600		277		<10.0		<10.0		277		<1.00		5,830		<1.00	0.665		44,800		13.75	7.19	58300	0.0	-106	0.36
MW-5	9/24/2018	0.932		3.64		4.58		874		1,160		6,790		48.4		13,800		504		<10.0		<10.0		504		<0.200		3,470		<0.200	<0.100		26,200		29.29	6.89	34500	0.0	83	0.61
	6/19/2019	1.01		3.85		4.86		918		1,150		7,080		47.0		13,200		478		<10.0		<10.0		478		<1.00		3,230		<1.00	<0.100		27,800		28.84	6.68	36400	0.0	360	0.35
	9/19/2019	1.07		3.11		4.18		951		1,140		6,860		53.1		14,500		525		<10.0		<10.0		525		<1.00		3,610		<1.00	<0.100		29,100		31.54	6.55	29200	0.2	515	0.34
	12/3/2019	0.661		2.37		3.03		898		1,140		6,920		48.5		13,500		506		<10.0		<10.0		506		<1.00		3,300		<1.00	<0.100		27,900		22.54	7.05	69400	0.0	525	3.93
	2/5/2020	1.17		2.77		3.94		867		1,160		6,880		47.5		14,300		491		<10.0		<10.0		491		<1.00		3,090		<1.00	0.121		27,500		15.86	7.14	3900	1.7	500	1.19
MW-5B	9/24/2018	3.11		7.08		10.2		940		889		5,770		60.1		11,900		325		<10.0		<10.0		325		<0.200		2,160		<0.200	0.155	J	22,900		31.46	6.68	29400	87.3	243	0.62
	6/19/2019	3.19		9.63		12.8		930		885		5,710		57.8		12,300		313		<10.0		<10.0		313		<1.00		2,060		<0.100	0.214	J	23,600		30.28	6.70	31600	2.8	-11	0.38
	9/19/2019	2.33		8.18		10.5		961		870		5,500		58.8		10,200		291		<10.0		<10.0		291		1.96	J	2,180		<1.00	<0.100		23,000		31.55	6.63	26100	0.7	-29	0.46
	12/3/2019	1.29		6.39		7.68		976		892		6,110		56.9		12,200		286		<10.0		<10.0		286		<1.00		2,000		<1.00	<0.100		23,200		23.21	6.89	67500	0.0	-7	0.72
	2/5/2020	2.71		9.09		11.8		883		905		5,870		56.2		12,700		286		<10.0		<10.0		286		<1.00		2,050		<1.00	0.122	J	23,200		14.43	6.99	33900	0.0	-38	0.62
MW-6R	9/24/2018	0.678		1.64		2.32		625		577		7,460		24.7		11,900		612		<10.0		<10.0		612		<0.200		3,760		<0.200	<0.100		26,000		27.20	6.73	32300	0.0	196	0.85
	6/20/2019	0.871		3.05		3.92		655		556		7,480		23.9		12,400		624		<10.0		<10.0		624		6.60		3,850		<1.00	<0.100		26,200		29.30	6.84	33700	7.0	488	0.00
	9/19/2019	0.543		2.70		3.24		637		590		7,830		25.7		11,800		592		<10.0		<10.0		592		2.09	J	4,350		<1.00	<0.100		24,100		28.39	6.49	31200	0.0	205	0.52
	12/3/2019	0.393		1.48		1.87		627		537		7,430		23.9		12,100		583		<10.0		<10.0		583		1.22	J	3,590		<1.00	1.35		26,300		14.72	6.64	43100	5.1	142	0.63
	2/5/2020	0.621		2.11		2.73		577		556		7,540		23.2		12,200		598		<10.0		<10.0		598		<1.00		3,310		<1.00	0.31		25,900		17.83	6.90	34800	0.0	469	5.41
MW-6RB	9/24/2018	2.00		2.96		4.96		603		595		5,640		36.9		10,500		330		<10.0		<10.0		330		<0.200		2,610		<0.200	<0.100		20,400		27.15	7.07	27300	62.3	519	3.41
	6/20/2019	0.734		3.11		3.85		602		588		5,760		46.9		11,400		350		<10.0		<10.0		350		4.69		2,590		<1.00	<0.100		20,800		30.32	7.79	28400	12.5	-72	1.22
	9/19/2019	0.927		3.42		4.35		617		609		5,880		36.7		11,200		315		<10.0		<10.0		315		<1.00		2,740		<1.00	<0.100		22,300		34.08	6.80	24300	0.2	7	0.42
	12/3/2019	0.819		3.12		3.94		594		587		6,040		36.6		10,600		305		<10.0		<10.0		305		<1.00		2,330		<1.00	<0.100		21,700		16.52	7.05	67600	1.4	-137	0.61
	2/5/2020	2.18		3.60		5.78		558		597		6,260		33.7		10,800		308		<10.0		<10.0		308		<1.00		2,420		<1.00	0.973		21,600		15.83	7.04	30500	0.0	-93	1.07
MW-7	9/25/2018	1.10		3.37		4.47		990		1,160		10,900		49.3		22,000		207		<10.0		<10.0		207		<0.200		3,520		<0.200	0.186	J	38,600		26.95	7.17	49800	0.0	-25	0.98
	6/18/2019	0.930		4.23		5.16		1,070		1,160		11,000		49		19,800		198		<10.0		<10.0		198		<0.200		3,200		3.88	0.580		39,600		32.77	6.75	52300	1.4	-103	0.97
	9/19/2019	1.10		2.54		3.64		1,090		1,190		11,400		50.3		19,700		206		<10.0		<10.0		206		<1.00		3,420		<1.00	0.115	J	40,000		33.71	6.63	47200	0.0	-116	0.50
	12/3/2019	0.505		1.81		2.32		1,040		1,150		11,300		46.5		20,300		185		<10.0		<10.0		185		<1.00		3,200		<1.00	<0.100		41,200		25.15	7.06	53000	0.0	474	1.40
	2/5/2020	0.914		3.23		4.14		977		1,170		11,700		47.6		21,800		183		<10.0		<10.0		183		<1.00		3,160		<1.00	<0.100		43,700		18.72	7.14	53800	0.0	410	0.88
MW-7B	9/25/2018	0.0272		8.27		8.30		1,450		1,800		13,800		87.7		29,600		234		<10.0		<10.0		234		<1.00		1330		<1.00	0.125	J	51,900		26.83	6.69	64000	23.0	103	0.67
	6/18/2019	2.81		7.78		10.6		1,490		1,760		13,900		88		27,400		236		<10.0		<10.0		236		<1.00		4,060		<1.00	0.929		51,000		29.93	6.60	62000	37.4	-81	0.31
	9/19/2019	1.44		10.2		11.6		1,500		1,810		14,200		86.4		27,600		234		<10.0		<10.0		234		<1.00		4,110		<1.00	<0.100		52,800		27.26	6.69	38800	0.6	-56	1.56
	12/3/2019	-0.332		9.02		9.02		1,470		1,860		14,700		82.1		25,600		192		<10.0		<10.0		192		<1.00		3,810		<1.00	<0.100		54,600		25.86	6.74	64600	3.3	208	0.31
	2/6/2020	1.82		10.8		12.6		1,430		1,720		14,400		81.7		28,200		227		<10.0		<10.0		227		<1.00		3,940		<1.00	0.547		54,400		20.27	6.93	73300	0.0	-91	0.67
MW-8	9/24/2018	0.092		0.53		0.622		826		778		6,760		25.5		11,000		436		<10.0		<10.0		436		<0.200		4,440		<0.200	<0.100		24,900		30.11	6.88	31800	0.0	490	0.55
	6/18/2019	0.172		1.03		1.20		894		772		6,850		24.8		11,500		426		<10.0		<10.0		426		<0.200		4,280		<0.200	<0.100		25,800		32.37	6.90	33000	14.6	4482	0.21
	9/19/2019	0.0874		0.648		0.728		906		760		6,670		26.1		12,500		423		<10.0		<10.0		423		1.04	J	4,800		<1.00	<0.100		26,100		32.53	6.59	26900	0.0	496	5.07
	12/3/2019	0.0926		1.03		1.12		861		744		6,900		24.0		11,500		423		<10.0		<10.0		423		2.66	J	4,230		<1.00	<0.100		26,400		23.46	7.13	69700	0.0	520	6.52
	2/5/2020	0.0984		1.93		2.03		787		767		7,150		24.6		12,000		413		<10.0		<10.0		413		3.03	J	3,890		<1.00	0.456		25,900		12.79	7.36	36200	0.0	520	5.51
MW-9	9/24/2018	0.118		1.22		1.34		970		636		4,370		27.4		9,690		448		<10.0		<10.0		448		<0.200		1,150		<0.200	0.110	J	18,200		28.33	6.64	25300	0.1	521	0.52
	6/25/2019	0.233		0.516		0.750		1,070		719		4,660		29.6	J	10,300		432		<10.0		<10.0		432		2.88	J	1,250		<1.00	<0.100		18,100		26.80	6.59	27700	0.0	473	0.44
	9/19/2019	0.130		0.615		0.746		1,060		679		4,590		29.8		11,700		402		<10.0		<10.0		402		<1.00		1,420		<1.00	<0.100		18,700		33.19	6.35	22100	0.0	501	1.46
	12/3/2019	0.234		0.770		1.00		986		662		4,730		28.8		10,200		387		<10.0		<10.0		387		<1.00		1,200		<1.00	<0.100		21,400		23.54	6.78	57500	0.0	500	1.19
	2/5/2020	0.0791		0.488		0.567		919		677		4,590		27.8		10,800		395		<10.0		<10.0		395		<1.00		1,240		<1.00	<0.100		18,400		16.16	6.85	29600	0.0	518	3.3
MW-10	9/24/2018	0.0597		0.0506		0.110		595		618		5,190		16.0		8,630		565		<10.0		<10.0		565		<0.200		3,160		<0.200	<0.100		19,000		29.54	6.80	25500	0.0	442	0.62
	6/19/2019	0.147		-0.554		0.147		609		639		5,440		16.5		8,710		561		<10.0		<10.0		561		1.32	J	3,170		<1.00	<0.100		20,600		26.90	6.62	26600	0.0	430	0.66
	9/19/2019	0.0715		0.640		0.711		638		648		5,380		18.4		10,700		543		<10.0		<10.0		543		1.04	J	3,660		<0.500	<0.100		20,200		33.15	6.49	22300	0.0	337	0.53
	12/3/2019	0.131		0.000		0.131		611		633		5,600		16.1		8,880		510		<10.0		<10.0		510		<1.00		3,080		<1.00	<0.100		21,900		23.08	6.85	28500	8.3	474	4.32
	2/5/2020	0.219		-0.279		0.219		571		646		5,550		19.1		9,360		510		<10.0		<10.0		510		2.35	J	3,190		<1.00	0.313		20,600		18.26	7.27	28000	0.0	494	4.28
MW-11	9/24/2018	0.107		1.15		1.25		307		585		5,010		18.8		8,130		1,010		<10.0		<10.0		1010		5.73		1,760		<0.200	<0.100		18,100		32.80	7.33	22900	0.0	467	6.07
	6/18/2019	0.0892		0.0566		0.146		348		578		5,150		18.4		7,650		974		<10.0		<10.0		974		<0.200		1,620		<0.200	0.650		17,400		31.67	6.57	23700	0.0	488	0.43
	9/19/2019	0.0824		0.295		0.377		353		571		5,080		20.9		9,210		1,030		<10.0		<10.0		1030		1.67	J	1,750		<0.500	<0.100		17,400		29.73	6.49	23000	0.0	298	0.68
	12/3/2019	0.0688		0.800		0.869		324		564		5,260		18.7		8,230		1,000		<10.0		<10.0		1000		1.51	J	1,550		<1.00	0.182	J	17,500		23.70	6.79	25600	1.1	498	2.29
	2/5/2020	0.179		-0.0272		0.179		294		568		5,220		19.9		8,670		991		<10.0		<10.0		991		2.59	J	1,550		<1.00	<0.100		17,200		16.32	7.27	25500	0.0	505	4.36
MW-11B	9/24/2018	2.57		1.63		4.20		569		848		5,360		42.7		10,400		331		<10.0		<10.0		331		<0.200		2,310		<0.200	<0.100		19,500		30.55	6.91	27100	7.5	422	1.46
	6/18/2019	2.52		5.15		7.67		601		841		5,400		42.8		9,800		324		<10.0		<10.0		324		<0.200		2,140		<0.200	0.305		20,800		31.77	6.62	27100	0.0	-28	0.39
	9/19/2019	1.61		3.90		5.51		650		871		5,490		43.5		10,300		330		<10.0		<10.0		330		1.73	J	2,250		<1.00	<0.100		22,100		29.16	6.71	26400	0.0	-8	0.36
	12/3/2019	1.30		6.82		8.12		599		867		5,500		42.4		10,600		331		<10.0		<10.0		331		<1.00		2,200		<1.00	0.111	J	22,100		25.59	6.74	29700	0.0	330	0.48
	2/5/2020	4.31		5.47		9.78		557		857		5,460		40.5		11,200		327		<10.0		<10.0		327		<1.00		2,440		<1.00	0.118	J	19,900		21.33	6.95	29800	0.0	-65	0.92
DB-5	9/24/2018	0.231		1.40		1.63		669		976		8,190		53.6		15,400		383		<10.0		<10.0		383		<0.200		3,250		<0.200	0.944		28,500		27.98	7.21	38200	2.3	-118	0.95
	6/18/2019	0.742		2.00		2.74		692		934		7,960		54.8		14,600		329		<10.0		<10.0		329		<0.200		2,970		<0.200	0.958		30,400		30.85	6.70	39300	0.2	-11	0.55
	9/19/2019	0.407		1.71		2.12		720		941		8,070		54.4		15,100		372		<10.0		<10.0		372		1.45	J	3,040		<1.00	0.227	J	29,700		27.36	6.81	36400	0.2	-89	0.50
	12/3/2019	0.417		1.94		2.36		688		947		8,970		52.2		14,900		373		<10.0		<10.0		373		<1.00		2,970		<1.00	1.24		30,300		23.81	7.11	84700	8.0	-292	1.34
	2/6/2020	0.465		2.40		2.86		674		930		8,340		51.5		15,900		432		<10.0		<10.0		432		<1.00		2,960		<1.00	2.15		32,600		18.96	7.01	45500	0.0	-174	1.33
Bed 3																																								
MW3-1	9/26/2018	0.148		0.331		0.479		1,040		1,220		8,970		39.1		17,900		220		<10.0		<10.0		220		<1.00		4,380		<1.00	<0.100		35,500		27.50	7.24	42900	0.0	202	1.88
	6/19/2019	0.491		1.15		1.64		1,040		1,270		9,660		39.8		17,800		237		<10.0		<10.0		237		<1.00		4,100		<1.00	<0.100		36,100		29.44	6.77	45800	0.0	98	0.00

TABLE 5C
GROUNDWATER DATA SUMMARY
GENERAL CHEMISTRY AND RADIONUCLIDES
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	DATE	ANALYTICAL RESULTS																												FIELD PARAMETERS					
		RADIUM 226 (pCi/L)[3]	Q	RADIUM 228 (pCi/L)	Q	COMBINED RADIUM 226/228 (pCi/L)	Q	CALCIUM (mg/L)	Q	MAGNESIUM (mg/L)	Q	SODIUM (mg/L)	Q	POTASSIUM (mg/L)	Q	CHLORIDE (mg/L)	Q	BICARBONATE (mg/L)	Q	CARBONATE (mg/L)	Q	HYDROXIDE (mg/L)	Q	TOTAL ALKALINITY (mg/L)	Q	FLUORIDE (mg/L)		SULFATE (mg/L)	Q	NITRATE (mg/L)		AMMONIA-N (mg/L)	Q	TOTAL DISSOLVED SOLIDS (mg/L)	Q	TEMPERATURE (°C)	pH[4]	SPECIFIC CONDUCTANCE (µS/cm)[5]	TURBIDITY (NTU)[6]	OXIDATION REDUCTION POTENTIAL (mV)[7]	DISSOLVED OXYGEN (mg/L)
ASSESSMENT LEVEL[8]																										400				1000											
OTHER CRITERIA[9]																250												250													
MW3-1 Continued	9/17/2019	0.198		-0.351		0.198		1,020		1,280		9,790		40.9		19,900		223		<10.0		<10.0		223		3.97		4,620		<1.00		<0.100		43,300		31.38	6.42	41800	0.0	115	0.45
	12/4/2019	-0.221		0.782		0.782		1,080		1,250		9,430		40.4		17,500		217		<10.0		<10.0		217		<1.00		4,060		<1.00		<0.100		37,800		22.72	7.31	50300	3.0	102	2.56
	2/11/2020	0.131		-0.0141		0.131		1,130		1,280		9,930		39.2		19,000		220		<10.0		<10.0		220		<1.00		4,120		<1.00		0.167		40,300		17.03	6.92	48100	0.0	165	4.16
MW3-2	9/26/2018	0.474		2.28		2.76		805		1,220		8,450		49.6		16,700		234		<10.0		<10.0		234		<1.00		3,640		<1.00		<0.100		32,000		26.27	7.14	40500	8.6	187	0.58
	6/19/2019	1.98		2.06		4.04		871		1,320		9,350		50.1		16,800		254		<10.0		<10.0		254		1.23	J	3,980		<1.00		<0.100		35,300		29.36	7.09	44400	>1000	128	1.33
	9/18/2019	0.315		2.14		2.45		811		1,270		9,150		50.9		17,100		227		<10.0		<10.0		227		2.05	J	3,710		<1.00		<0.100		35,500		28.06	6.80	40100	0.0	66	0.57
	12/4/2019	0.0161		1.01		1.03		849		1,300		9,650		50.4		16,700		228		<10.0		<10.0		228		<1.00		3,730		<1.00		<0.100		33,000		24.06	7.47	46900	19.1	119	2.63
	2/11/2020	0.337		1.08		1.42		883		1,260		9,210		48.5		18,200		229		<10.0		<10.0		229		<1.00		3,890		<1.00		0.128	J	38,700		17.84	7.43	45900	14.8	277	4.2
MW3-3	9/26/2018	0.0487		1.32		1.37		1,100		1,340		9,090		56.1		18,600		212		<10.0		<10.0		212		<1.00		4,650		<1.00		<0.100		34,900		29.15	7.10	41600	0.0	46	0.62
	6/19/2019	0.373		3.54		3.91		1,040		1,350		9,400		53		17,700		217		<10.0		<10.0		217		<1.00		4,500		<1.00		<0.100		36,100		30.02	6.80	44300	0.0	110	0.75
	9/18/2019	0.493		0.106		0.598		1,100		1,400		9,680		57.5		18,400		205		<10.0		<10.0		205		<1.00		5,250		<1.00		0.136	J	37,400		29.07	6.80	41000	3.0	58	0.74
	12/4/2019	0.322		1.94		2.26		1,070		1,370		9,830		53.5		19,200		205		<10.0		<10.0		205		<1.00		4,640		<1.00		<0.100		35,700		25.21	7.22	49200	0.0	374	1.26
	2/11/2020	0.296		1.73		2.02		1,100		1,350		9,620		53.3		18,700		203		<10.0		<10.0		203		1.78	J	4,510		<1.00		0.106		40,400		17.99	7.28	46400	2.6	384	2.89
MW3-4	9/26/2018	0.961		2.48		3.44		1,120		1,680		12,400		118		24,700		232		<10.0		<10.0		232		<1.00		4,380		<1.00		0.176	J	53,700		30.44	7.20	54400	0.1	-201	0.29
	6/19/2019	0.390		2.26		2.65		308		875		8,090		182		15,400		228		<10.0		<10.0		228		<1.00		2,080		1.01	J	<0.100		28,300		30.88	7.72	36500	0.0	120	5.51
	9/18/2019	1.04		2.91		3.95		1,240		1,970		14,400		129		29,000		228		<10.0		<10.0		228		<1.00		228		<1.00		0.131	J	53,000		32.69	6.80	54200	1.0	-56	0.36
	12/4/2019	0.476		1.59		2.07		1,290		2,030		15,000		127		29,900		218		<10.0		<10.0		218		<1.00		4,660		<1.00		<0.100		49,600		25.08	7.65	68200	76.7	491	2.45
	2/11/2020	0.576		2.64		3.21		1,340		1,940		14,900		125		29,700		217		<10.0		<10.0		217		<1.00		4,590		<1.00		0.180	J	59,500		17.89	7.63	66100	29.8	63	2.79
MW3-4B	9/26/2018	-0.0329		20.7		20.7		1,260		2,670		19,600		284		44,500		222		<10.0		<10.0		222		<1.00		6,280		<1.00		<0.100		77,500		31.00	6.74	88500	10.9	98	0.63
	6/19/2019	3.11		20.8		23.9		1,280		2,740		20,800		257		40,100		227		<10.0		<10.0		227		<1.00		5,780		<1.00		<0.100		80,500		30.80	6.91	85600	0.0	131	0.28
	9/18/2019	3.45		16.3		19.7		1,380		3,070		22,900		302		45,300		218		<10.0		<10.0		218		<1.00		6,670		<1.00		0.103	J	82,000		31.40	6.70	77100	0.0	82	4.64
	12/4/2019	1.26		24.8		26.1		1,360		2,920		21,900		298		41,100		217		<10.0		<10.0		217		<1.00		5,490		2.54	J	<0.100		76,000		25.66	7.33	96300	0.0	272	0.62
	2/11/2020	2.83		22.2		25.0		1,360		2,890		22,500		289		43,700		210		<10.0		<10.0		210		<1.00		5,930		<1.00		<0.100		79,000		17.49	7.22	97300	0.6	265	0.053
MW3-5	9/26/2018	0.0991		0.562		0.661		1,010		1,230		9,680		74.3		20,100		233		<10.0		<10.0		233		<1.00		4,440		<1.00		<0.100		35,400		29.95	7.15	44700	5.1	55	0.40
	6/20/2019	0.480		2.23		2.71		1,100		1,380		11,000		75.8		20,000		224		<10.0		<10.0		224		9.51		5,140		<1.00		<0.100		42,200		26.64	6.91	51400	0.0	126	0.52
	9/18/2019	0.0761		-0.329		0.0761		782		1,050		9,570		79.6		18,000		194		<10.0		<10.0		194		1.84	J	3,670		<1.00		<0.100		34,300		31.64	6.73	44000	0.0	88	5.38
	12/5/2019	0.0922		0.814		0.906		1,150		1,470		11,600		77.5		21,100		213	C	<10.0	C	<10.0	C	213	C	<1.00		4,800	C	<1.00	C	<0.100	C	46,800	C	23.18	6.80	53000	18.2	172	0.4
	2/12/2020	0.471		0.768		1.24		1,170		1,430		11,400		76.5		20,600		211		<10.0		<10.0		211		<1.00		4,640		<1.00		<0.100		44,100		17.34	6.99	55800	4.5	466	0.91
MW3-6	9/26/2018	0.261		1.44		1.7		1,050		1,390		9,610		57.2		19,900		305		<10.0		<10.0		305		<1.00		4,700		<1.00		<0.100		39,000		27.76	7.03	45900	2.5	-22	0.40
	6/20/2019	0.357		3.48		3.84		1,130		1,490		10,600		57.1		19,300		335		<10.0		<10.0		335		9.87		4,820		<1.00		<0.100		40,500		27.06	6.91	50500	0.0	107	0.36
	9/18/2019	0.260		1.10		1.36		1,140		1,640		11,200		59.3		19,300		267		<10.0		<10.0		267		1.82	J	4,950		<1.00		0.116		38,800		30.94	6.69	43700	0.0	137	5.29
	12/5/2019	0.298		1.13		1.43		1,150		1,580		11,300		60.1		19,900		221	C	<10.0	C	<10.0	C	221	C	<1.00		4,640	C	<1.00	C	<0.100	C	49,900	C	23.80	7.23	49700	0.0	115	3.08
	2/12/2020	0.134		1.31		1.45		1,210		1,560		11,200		58.9		20,200		258		<10.0		<10.0		258		<1.00		4,600		<1.00		0.160	J	43,500		16.91	7.29	54000	1.1	326	7.59
MW3-7	9/25/2018	0.311		1.41		1.72		1,090		1,510		11,500		51.7		22,200		233		<10.0		<10.0		233		<0.200		5,560		<0.200		<0.100		41,800		27.51	7.16	50700	0.0	110	0.42
	6/25/2019	0.261		1.35		1.61		1,190		1,650		12,100		51.4		22,200		293		<10.0		<10.0		293		9.05		5,420		<1.00		<0.100		42,600		29.37	6.97	54300	0.0	66	0.44
	9/17/2019	0.183		-0.687		0.183		1,040		1,500		11,900		54.1		21,900		263		<10.0		<10.0		263		4.26		5,510		<1.00		0.240		42,900		31.70	6.49	49400	0.0	111	3.72
	12/5/2019	0.156		1.86		2.02		1,120		1,520		11,800		49.7		21,500		233	C	<10.0	C	<10.0	C	233	C	<1.00		4,880	C	<1.00	C	<0.100	C	46,600	C	24.95	7.15	50300	0.0	498	1.37
	2/12/2020	0.171		1.21		1.38		1,100		1,450		11,600		47.7		21,200		327		<10.0		<10.0		327		<1.00		5,160		<1.00		0.122	J	45,400		16.47	7.16	55400	0.0	496	0.87
MW3-7B	9/25/2018	1.18		6.26		7.44		1,580		1,030		11,300		88.6		22,800		55.8		<10.0		<10.0		55.8		<0.200		3,850		<0.200		0.155		40,400		29.91	8.44	50400	39.1	-45	0.63
	6/25/2019	2.05		13.5		15.5		1,250		1,590		11,700		71.7		20,700		89.6		<10.0		<10.0		89.6		7.30		3,840		<1.00		0.605		39,700		27.93	10.12	54400	0.0	-81	0.38
	9/17/2019	1.65		0.564		2.21		1,080		1,460		11,500		79.2		21,300		134		<10.0		<10.0		134		1.32	J	4,140		<1.00		0.700		41,700		30.02	7.23	46800	0.0	7	1.27
	12/5/2019	1.34		12.0		13.4		1,120		1,400		11,300		87.1		20,800		145	C	<10.0	C	<10.0	C	145	C	1.87	J	4,050	C	<1.00	C	<0.100	C	43,400	C	24.54	7.58	49900	0.0	-103	0.52
	2/12/2020	12.4		14.2		26.6		1,100		1,480		10,700		61.8		20,300		202		<10.0		<10.0		202		<1.00		3,740		<1.00		<0.100		43,700		18.34	7.95	55300	0.3	-50	0.84
Bed 4																																									
MW4-1	9/20/2018	0.804		4.06		4.86		811		849		6,220		37.3		13,100		519		<10.0		<10.0		519		<1.00		3,050		<1.00		<0.100		24,500		30.79	6.65	32700	11.1	-100	0.41
	6/20/2019	0.546		3.76		4.31		819		845		6,450		36.3		12,500		437		<10.0		<10.0		437		5.55		3,120		<1.00		<0.100		25,400		27.39	6.90	33000	0.0	-81	4.17
	9/17/2019	0.384		2.30		2.68		773		892		6,680		38.7		13,500		363		<10.0		<10.0		363		<1.00		3,230		<1.00		<0.100		25,000		29.67	7.01	30300	6.9	-186	0.32
	12/3/2019	0.161		2.98		3.14		1,000		1,010		7,110		37.2		12,900		435		<10.0		<10.0		435		<1.00		3,070		<1.00		0.113	J	28,800		23.82	6.49	37100	57.4	-71	0.95
	2/6/2020	0.401		3.78		4.18		993		1,000		7,100		36.1		14,400		439		<10.0		<10.0		439		<1.00		3,610		<1.00		0.150	J	29,600		11.28	7.33	39600	17.5	-39	2.34
MW4-2	9/20/2018	0.196		3.68		3.88		1,190		1,570		10,900		84.2		23,200		240		<10.0		<10.0		240		<1.00		5,330		<1.00		<0.100		41,700		34.20	6.98	52100	0.0	536	1.35
	6/20/2019	0.589		2.79		3.38		1,270		1,630		11,500		83.4		23,400		234		<10.0		<10.0		234		8.97		5,470		1.36	J	<0.100		44,200		30.63	7.37	54400	2.9	7	2.82
	9/17/2019	0.0958		0.312		0.408		1,160		1,670		11,700		86.1		23,000		230		<10.0		<10.0		230		1.20	J	5,100		2.10	J	1.10		45,200		29.58	6.69	48900	0.0	159	0.22
	12/4/2019	0.582		3.83		4.41		1,280		1,740		11,900		84.6		21,800		230		<10.0		<10.0		230		<1.00		4,940		2.82	J	<0.100		52,400		19.03	6.99	58300	0.0	144	1.82
	2/6/2020	0.0241		3.58		3.61		1,200		1,620		11,700		80.3		22,400		220		<10.0		<10.0		220		<1.00		4,890		1.71	J	<0.100		46,900		16.31	7.44	58600	0.0	142	5.62
MW4-2A	9/20/2018	0.169		-0.796		0.169		1,130		1,110		7,730		57.2		16,400		280		<10.0		<10.0		280		<1.00		4,280		<1.00		<0.100		30,000		32.99	6.75	39000	0.8	94	0.52
	6/20/2019	0.209		2.52		2.73		1,140		1,060		7,850		49.6		15,700		302		<10.0		<10.0		302		5.66		4,150		<1.00		<0.100		30,000		28.51	7.02	38100	1.9	43	3.29
	9/17/2019	0.679		0.0235		0.703		1,060		1,100		7,890		56.4		15,900		292		<10.0		<10.0		292		<1.00		3,950		<1.00		0.953		30,900		31.45	6.66	35300	0.0	156	1.52
	12/3/2019	0.0707		-0.0412		0.0707		1,190		1,240		8,820		57.3		16,600		14.5	J	<10.0		<10.0		<20.0		<1.00		4,480		8.51		<0.100		35,300		23.31	7.26	88300	17.0	75	2.36
	2/6/2020	0.165		0.107		0.271		1,150		1,250		8,460		57.0		17,800		286		<10.0		<10.0		286		<1.00		4,410		<1.00		0.145	J	35,600		15.46	7.50	45400	0.0	109	9.65
MW4-3	9/20/2018	0.000		1.64		1.64		1,180		1,460		9,610		67.0		22,900		221		<10.0		<10.0		221		<1.00		4,110		<1.00		<0.100		38,000		30.33	6.73	48900	0.0	181	0.88
	6/20/2019	1.28		2.39		3.67		1,270		1,530		10,600		65.1		22,600		225		<10.0		<10.0		225		7.85		4,030		<1.00		0.523		38,300		28.81	6.80	50600	0.0	17	0.45
	9/18/2019	0.343		1.84		2.18		1,240		1,640		11,000		66.7		18,900		214		<10.0		<10.0		214		<1.00		3,630		<1.00		<0.100		40,800		32.63	6.61	43900	0.7	226	0.71
	12/4/2019	0.481		1.93		2.41		1,250		1,610		10,800		65.8		21,700		212		<10.0		<10.0		212		<1.00		4,050		<1.00		0.309		41,600		20.96	7.09	53800	0.0	509	1.27
	2/6/2020	0.353		3.54		3.89		1,200		1,500		10,300		63.2		21,300		214		<10.0		<10.0		214		<1.00		3,700		<1.00		0.982		42,800		18.53	7.25	54900	0.0	497	1.7
MW4-3B	9/20/2018	0.258		2.04		2.30		1,280		1,500		9,960		94.8		21,000		265		<10.0		<10.0		265		<1.00		4,130		<1.00		0.155	J	37,700		27.52	7.13	48600	30.8	57	0.34
	6/20/2019	0.403		2.03		2.44		1,300		1,490		9,740		93.3		19,300		265		<10.0		<10.0		265		7.06		3,800		<1.00		0.691		39,400		29.15	6.74	49200	0.0	-75	0.40
	9/18/2019	0.478		0.887		1.36		1,450		1,690		10,700		94.6		22,500		257		<10.0		<10.0		257		<1.00		4,400		<1.00		0.206		38,600		33.52	6.54	42500	2.3	-30	3.11
	12/4/2019	0.424		1.74		2.16		1,340		1,590		9,930		93.0		21,600		255		<10.0		<10.0		255		<1.00		4,490		<1.00		0.656		39,800		20.53	6.91	51300	0.2	-99	3.93
	2/6/2020	-0.0235		1.04		1.04		1,260		1,490		10,300		89.9		20,700		252		<10.0		<10.0		252		<1.00		3,750		<1.00		1.58		41,600		18.13	7.15	53400	0.0	-9	0.75
MW4-4	9/25/2018	0.821		1.70		2.52		1,100		1,180		8,680		49.6		16,600		181		<10.0		<10.0		181		<0.200		4,560		1.70		<0.100		31,500		29.38	6.74	41900	0.0	-88	0.73
	6/20/2019	0.724		3.66		4.38		1,120		1,150		8,760		47.8		16,000		184		<10.0		<10.0		184		7.47		4,500		1.22	J	<0.100		32,500		29.27	6.92	42500	0.0	128	0.45
	9/18/2019	0.354		1.90		2.25		1,090		1,200		9,030		50.4		17,500		177		<10.0		<10.0		177		2.01	J	4,920		1.37	J	<0.100		34,400				6.74	38800	0.0	21	0.46
	12/4/2019	0.438		0.750		1.19		1,130		1,210		8,750		49.0		17,100		182		<10.0		<10.0		182		<1.00		4,550		3.11	J	<0.100		34,900		20.21	7.12	45400	0.0	-108	0.74
	2/10/2020	1.10		1.95		3.05		1,110		1,170		8,490		48.1		16,500		176		<10.0		<10.0		176		<1.00		4,080		1.43	J	0.248	J	32,500		20.95	7.08	42900	0.0	285	1.74
MW4-7	9/25/2018	0.767		2.94		3.71		741		874		7,530		49.6		14,600		257		<10.0		<10.0		257		<0.200		2,770		<0.200		<0.100		26,800		28.78	7.40	35000	0.0	-69	0.47
	6/19/2019	0.518		1.75		2.27		709		839		7,470		47.3		14,700		265		<10.0		<10.0		265		7.03		2,750		<1.00		<0.100		26,700		28.05	7.14	36000	11.7	142	2.06
	6/25/2019	0.302		3.53		3.83		790		879		7,750		50.2																				27.37	6.96	37100	0.0	66	0.29
	9/18/2019	0.917		2.49		3.41		703		845		7,490		50.1		14,200		256		<10.0		<10.0		256		1.81	J	2,700		<1.00		<0.100		27,700		28.77	6.79	32800	0.0	-50	0.43
	12/4/2019	0.691		1.99		2.68		732		831		6,960		47.1		13,500		253		<10.0		<10.0		253		<1.00		2,440		<1.00		<0.100		25,800		22.48	7.08	32800	0.0	-111	4.67
	2/10/2020	1.47		2.60		4.07		742		865		7,440		46.8		14,200		259		<10.0		<10.0		259		<1.00		2,470		<1.00		<0.100		26,500		22.52	7.21	37000	0.0	164	2.37
MW4-7A	9/25/2018	2.76		7.02		9.79		495		866		7,920		64.6		15,500		308		<10.0		<10.0		308		<0.200		2,500		0.236	J	<0.100		27,400		31.91	6.85	37000	67.0	141	1.38
	6/19/2019							790		879		7,750		50.2		15,600		342		<10.0		<10.0		342		7.37		2,470		<1.00		<0.100		28,200		29.43	7.22	37700	12.9	151	0.47
	7/24/2019	2.25		5.10		7.35		519		859		8,360		62.5																				37.97	7.00	39100	5.9	115	0.47
	9/17/2019	1.70		5.05		6.76		481		843		8,170		65.1		15,000		330		<10.0		<10.0		330		1.50	J	2,260		<1.00		<0.100		28,300		27.82	6.65	34000	0.0	117	0.43

TABLE 5C
GROUNDWATER DATA SUMMARY
GENERAL CHEMISTRY AND RADIONUCLIDES
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	DATE	ANALYTICAL RESULTS																														FIELD PARAMETERS					
		RADIUM 226 (pCi/L)[3]	Q	RADIUM 228 (pCi/L)	Q	COMBINED RADIUM 226/228 (pCi/L)	Q	CALCIUM (mg/L)	Q	MAGNESIUM (mg/L)	Q	SODIUM (mg/L)	Q	POTASSIUM (mg/L)	Q	CHLORIDE (mg/L)	Q	BICARBONATE (mg/L)	Q	CARBONATE (mg/L)	Q	HYDROXIDE (mg/L)	Q	TOTAL ALKALINITY (mg/L)	Q	FLUORIDE (mg/L)		SULFATE (mg/L)	Q	NITRATE (mg/L)		AMMONIA-N (mg/L)	Q	TOTAL DISSOLVED SOLIDS (mg/L)	Q	TEMPERATURE (°C)	pH[4]	SPECIFIC CONDUCTANCE (µS/cm)[5]	TURBIDITY (NTU)[6]	OXIDATION REDUCTION POTENTIAL (mV)[7]	DISSOLVED OXYGEN (mg/L)
ASSESSMENT LEVEL[8]																										**400**				**1000**												
OTHER CRITERIA[9]																**250**												**250**														
MW4-7A Continued	12/4/2019	1.45		3.86		5.32		652		1,000		8,730		69.7		16,200		320		<10.0		<10.0		320		<1.00		2,550		<1.00		<0.100		30,500		24.45	7.15	42000	0.0	201	5.39
	2/10/2020	1.31		4.01		5.32		554		898		8,250		63.4		15,700		315		<10.0		<10.0		315		<1.00		2,310		<1.00		<0.100		28,900		22.82	7.31	40200	1.0	496	5.89
MW4-7B	9/25/2018	0.0528		12.0		12.0		1,240		1,800		11,800		104		26,500		271		<10.0		<10.0		271		<1.00		4,540		<1.00		<0.100		45,700		29.30	7.17	55400	10.1	554	3.14
	6/19/2019	3.28		14.6		17.9		1,240		1,840		12,400		102		26,100		273		<10.0		<10.0		273		8.30		4,350		<1.00		<0.100		46,600		31.02	7.15	58000	15.0	128	0.69
	9/17/2019	4.35		18.1		22.5		1,250		1,840		12,700		106		24,800		250		<10.0		<10.0		250		1.41	J	4,130		<1.00		<0.100		46,200		29.07	6.68	52000	0.0	126	0.21
	12/4/2019	1.19		15.0		16.2		1,320		1,900		13,000		104		24,800		254		<10.0		<10.0		254		<1.00		4,120		<1.00		<0.100		48,000		24.61	7.03	59200	0.0	69	3.33
	2/10/2020	4.38		13.0		17.3		1,280		1,810		12,200		101		24,200		254		<10.0		<10.0		254		<1.00		3,850		<1.00		<0.100		45,900		23.48	7.19	58800	0.0	83	1.46

Notes:
1) mg/L - milligrams per liter
2) Q - lab qualifiers, as follows:
J - estimated value -- the result falls between the Sample Detection Limit (SDL) and the Reporting Limit (RL)
< - indicates the analyte was not detected at the Sample Detection Limit (SDL); SDL listed in the concentration column
C- Sample result or QC discussed in Case Narative of Lab Report
3) pCi/L - picocuries per liter
4) pH reported in Standard pH units
5) µS/cm - microSiemens per centimeter
6) NTU - Nephelometric Turbidity Units
7) mV - millivolts
8) Unless otherwise noted, the assessment level is the TRRP Tier 1 Industrial PCL for Class 3 Groundwater ($^{GW}GW_{Class\ 3}$)
9) Per TRRP, compounds for which calculation of a Human Health PCL is not required (https://www.tceq.gov/remediation/trrp/trrppcls.html)

TABLE 5D
SUMMARY OF WATER LEVEL MEASUREMENTS
CE RANCH LLC
COPANO PROPERTY

WELL ID	TOP OF CASING ELEVATION[1] (ft MSL)[2]	DATE MEASURED	DEPTH TO WATER (ft BTOC)[3]	WATER LEVEL ELEVATION (ft MSL)
Bed 1 / 2 / Decant Pond				
MW-1	9.70	4/18/2018	6.18	3.52
		7/25/2018	8.81	0.89
		8/29/2018	7.98	1.72
		9/19/2018	7.02	2.68
		2/12/2019	6.28	3.42
		6/17/2019	6.54	3.16
		8/5/2019	7.38	2.32
		9/16/2017	8.71	0.99
		12/2/2019	5.01	4.69
		2/4/2020	7.70	2.00
MW-3R	8.30	4/18/2018	4.30	4.00
		7/25/2018	4.60	3.70
		8/29/2018	4.79	3.51
		9/19/2018	4.48	3.82
		2/12/2019	3.40	4.90
		6/17/2019	3.77	4.53
		8/5/2019	5.20	3.10
		9/16/2019	4.52	3.78
		12/2/2019	4.28	4.02
		2/4/2020	3.65	4.65
MW-3RB	8.90	8/29/2018	5.76	3.14
		9/19/2018	4.02	4.88
		2/12/2019	3.83	5.07
		6/17/2019	4.30	4.60
		8/5/2019	5.62	3.28
		9/16/2019	5.01	3.89
		12/2/2019	4.77	4.13
		2/4/2020	4.12	4.78
MW-4	10.60	4/18/2018	5.79	4.81
		7/25/2018	5.57	5.03
		8/29/2018	7.06	3.54
		9/19/2018	3.63	6.97
		2/12/2019	3.71	6.89
		6/17/2019	6.16	4.44
		8/5/2019	7.35	3.25
		9/16/2019	7.26	3.34
		12/2/2019	5.63	4.97

TABLE 5D
SUMMARY OF WATER LEVEL MEASUREMENTS
CE RANCH LLC
COPANO PROPERTY

WELL ID	TOP OF CASING ELEVATION[1] (ft MSL)[2]	DATE MEASURED	DEPTH TO WATER (ft BTOC)[3]	WATER LEVEL ELEVATION (ft MSL)
MW-4 Cont.		2/4/2020	4.57	6.03
MW-5	16.10	4/18/2018	5.25	10.85
		7/25/2018	5.10	11.00
		8/29/2018	6.42	9.68
		9/19/2018	5.93	10.17
		2/12/2019	3.81	12.29
		6/17/2019	4.93	11.17
		8/5/2019	6.72	9.38
		9/16/2019	5.56	10.54
		12/2/2019	4.81	11.29
		2/4/2020	4.21	11.89
MW-5B	15.50	8/29/2018	5.89	9.61
		9/19/2018	4.75	10.75
		2/12/2019	3.61	11.89
		6/17/2019	4.50	11.00
		8/5/2019	5.70	9.80
		9/16/2019	5.90	9.60
		12/2/2019	5.15	10.35
		2/4/2020	4.37	11.13
MW-6R	17.30	4/18/2018	7.55	9.75
		7/25/2018	8.71	8.59
		8/29/2018	9.68	7.62
		9/19/2018	7.99	9.31
		2/12/2019	4.45	12.85
		6/17/2019	7.51	9.79
		8/5/2019	8.63	8.67
		9/16/2019	9.25	8.05
		12/2/2019	9.66	7.64
		2/4/2020	8.41	8.89
MW-6RB	16.50	8/29/2018	7.41	9.09
		9/19/2018	7.62	8.88
		2/12/2019	6.25	10.25
		6/17/2019	6.33	10.17
		8/5/2019	7.50	9.00
		9/16/2009	8.00	8.50
		12/2/2019	8.26	8.24
		2/4/2020	7.76	8.74
MW-7	10.70	4/18/2018	5.93	4.77

TABLE 5D
SUMMARY OF WATER LEVEL MEASUREMENTS
CE RANCH LLC
COPANO PROPERTY

WELL ID	TOP OF CASING ELEVATION[1] (ft MSL)[2]	DATE MEASURED	DEPTH TO WATER (ft BTOC)[3]	WATER LEVEL ELEVATION (ft MSL)
MW-7 Continued		7/25/2018	6.20	4.50
		8/29/2018	7.34	3.36
		9/19/2018	4.81	5.89
		2/12/2019	3.78	6.92
		6/17/2019	6.03	4.67
		8/5/2019	7.37	3.33
		9/16/2019	8.45	2.25
		12/2/2019	8.36	2.34
		2/4/2020	6.21	4.49
MW-7B	11.20	8/29/2018	7.78	3.42
		9/19/2018	6.00	5.20
		2/12/2019	4.44	6.76
		6/17/2019	6.38	4.82
		8/5/2019	7.70	3.50
		9/16/2019	8.60	2.60
		12/2/2019	8.52	2.68
		2/4/2020	6.78	4.42
MW-8	14.80	4/18/2018	4.42	10.38
		7/25/2018	4.66	10.14
		8/29/2018	4.83	9.97
		9/19/2018	4.51	10.29
		1/14/2019	3.35	11.45
		2/12/2019	2.58	12.22
		6/17/2019	5.68	9.12
		8/5/2019	5.63	9.17
		9/16/2019	5.07	9.73
		12/2/2019	4.71	10.09
		2/4/2020	3.32	11.48
MW-9	17.20	4/18/2018	6.16	11.04
		7/25/2018	6.52	10.68
		8/29/2018	7.45	9.75
		9/19/2018	4.86	12.34
		1/14/2019	5.06	12.14
		2/12/2019	4.17	13.03
		6/17/2019	6.09	11.11
		8/5/2019	7.65	9.55
		9/16/2019	8.28	8.92
		12/2/2019	4.99	12.21

TABLE 5D
SUMMARY OF WATER LEVEL MEASUREMENTS
CE RANCH LLC
COPANO PROPERTY

WELL ID	TOP OF CASING ELEVATION[1] (ft MSL)[2]	DATE MEASURED	DEPTH TO WATER (ft BTOC)[3]	WATER LEVEL ELEVATION (ft MSL)
MW-9 Cont.		2/4/2020	5.51	11.69
MW-10	16.80	4/18/2018	5.21	11.59
		7/25/2018	5.70	11.10
		8/29/2018	6.72	10.08
		9/19/2018	3.44	13.36
		2/12/2019	2.88	13.92
		6/17/2019	5.13	11.67
		8/5/2019	7.13	9.67
		9/16/2019	7.70	9.10
		12/2/2019	8.01	8.79
		2/4/2020	5.18	11.62
MW-11	15.40	4/18/2018	6.81	8.59
		7/25/2018	6.96	8.44
		8/29/2018	7.79	7.61
		9/19/2018	5.36	10.04
		2/12/2019	5.04	10.36
		6/17/2019	6.85	8.55
		8/5/2019	8.33	7.07
		9/16/2019	8.60	6.80
		12/2/2019	8.92	6.48
		2/4/2020	6.24	9.16
MW-11B	16.80	8/29/2018	7.01	9.79
		9/19/2018	7.55	9.25
		2/12/2019	6.26	10.54
		6/17/2019	11.46	5.34
		8/5/2019	8.35	8.45
		9/16/2019	9.02	7.78
		12/2/2019	8.74	8.06
		2/4/2020	7.36	9.44
DB-5	30.20	4/18/2018	23.07	7.13
		7/25/2018	23.34	6.86
		8/29/2018	24.11	6.09
		9/19/2018	22.49	7.71
		2/12/2019	21.80	8.40
		6/17/2019	22.86	7.34
		8/5/2019	23.95	6.25
		9/16/2017	24.30	5.90
		12/2/2019	23.97	6.23

TABLE 5D
SUMMARY OF WATER LEVEL MEASUREMENTS
CE RANCH LLC
COPANO PROPERTY

WELL ID	TOP OF CASING ELEVATION[1] (ft MSL)[2]	DATE MEASURED	DEPTH TO WATER (ft BTOC)[3]	WATER LEVEL ELEVATION (ft MSL)
DB-5 Cont.		2/4/2020	23.24	6.96
TPZ-1	14.80	7/25/2018	10.41	4.39
		8/29/2018	8.93	5.87
		9/19/2018	6.67	8.13
		2/12/2019	5.65	9.15
		6/17/2019	7.56	7.24
		8/5/2019	9.18	5.62
		9/16/2019	9.95	4.85
		12/2/2019	8.71	6.09
		2/4/2020	6.83	7.97
TPZ-1A	14.60	7/25/2018	5.05	9.55
		8/29/2018	7.03	7.57
		9/19/2018	5.51	9.09
		2/12/2019	4.36	10.24
		6/17/2019	5.68	8.92
		8/5/2019	7.16	7.44
		9/16/2019	7.72	6.88
		12/2/2019	7.01	7.59
		2/4/2020	5.78	8.82
TPZ-2	16.00	7/25/2018	4.22	11.78
		8/29/2018	6.39	9.61
		9/19/2018	4.46	11.54
		2/12/2019	4.40	11.60
		6/17/2019	4.62	11.38
		8/5/2019	6.90	9.10
		9/16/2019	5.80	10.20
		12/2/2019	5.29	10.71
		2/4/2020	4.75	11.25
TPZ-2A	15.90	7/25/2018	4.82	11.08
		8/29/2018	6.77	9.13
		9/19/2018	5.03	10.87
		2/12/2019	4.15	11.75
		6/17/2019	5.34	10.56
		8/5/2019	6.85	9.05
		9/16/2019	6.48	9.42
		12/2/2019	5.64	10.26
		2/4/2020	4.98	10.92

TABLE 5D
SUMMARY OF WATER LEVEL MEASUREMENTS
CE RANCH LLC
COPANO PROPERTY

WELL ID	TOP OF CASING ELEVATION[1] (ft MSL)[2]	DATE MEASURED	DEPTH TO WATER (ft BTOC)[3]	WATER LEVEL ELEVATION (ft MSL)
Bed 3				
MW3-1	10.90	4/18/2018	6.61	4.29
		7/25/2018	6.68	4.22
		8/29/2018	7.65	3.25
		9/19/2018	4.58	6.32
		2/12/2019	4.73	6.17
		6/17/2019	6.57	4.33
		8/5/2019	7.96	2.94
		9/17/2019	7.68	3.22
		12/2/2019	7.08	3.82
		2/4/2020	5.81	5.09
MW3-2	11.50	4/18/2018	7.50	4.00
		7/25/2018	7.93	3.57
		8/29/2018	8.76	2.74
		9/19/2018	7.90	3.60
		2/12/2019	5.23	6.27
		6/17/2019	7.72	3.78
		8/5/2019	8.70	2.80
		9/17/2019	8.24	3.26
		12/2/2019	8.70	2.80
		2/4/2020	7.52	3.98
MW3-3	10.70	4/18/2018	7.74	2.96
		7/25/2018	8.30	2.40
		8/29/2018	8.96	1.74
		9/19/2018	8.06	2.64
		2/12/2019	6.00	4.70
		6/17/2019	7.99	2.71
		8/5/2019	8.94	1.76
		9/17/2019	8.97	1.73
		12/2/2019	8.56	2.14
		2/4/2020	7.93	2.77
MW3-4	8.10	4/18/2018	6.19	1.91
		7/25/2018	6.80	1.30
		8/29/2018	7.02	1.08
		9/19/2018	5.21	2.89
		2/12/2019	5.33	2.77
		6/17/2019	5.93	2.17
		8/5/2019	7.30	0.80

TABLE 5D
SUMMARY OF WATER LEVEL MEASUREMENTS
CE RANCH LLC
COPANO PROPERTY

WELL ID	TOP OF CASING ELEVATION[1] (ft MSL)[2]	DATE MEASURED	DEPTH TO WATER (ft BTOC)[3]	WATER LEVEL ELEVATION (ft MSL)
MW3-4 Continued		9/17/2019	4.98	3.12
		12/2/2019	6.32	1.78
		2/4/2020	5.97	2.13
MW3-4B	7.50	8/29/2018	6.74	0.76
		9/19/2018	4.92	2.58
		2/12/2019	4.97	2.53
		6/17/2019	5.64	1.86
		8/5/2019	6.84	0.66
		9/17/2019	5.66	1.84
		12/2/2019	5.76	1.74
		2/4/2020	5.50	2.00
MW3-5	9.00	4/18/2018	7.30	1.70
		7/25/2018	7.00	2.00
		8/29/2018	8.10	0.90
		9/19/2018	6.56	2.44
		2/12/2019	5.93	3.07
		6/17/2019	7.39	1.61
		8/5/2019	8.36	0.64
		9/17/2019	7.91	1.09
		12/2/2019	7.50	1.50
		2/4/2020	6.99	2.01
MW3-6	9.60	4/18/2018	7.50	2.10
		7/25/2018	7.88	1.72
		8/29/2018	8.25	1.35
		9/19/2018	7.04	2.56
		2/12/2019	6.12	3.48
		6/17/2019	7.50	2.10
		8/5/2019	8.53	1.07
		9/17/2019	8.43	1.17
		12/2/2019	7.95	1.65
		2/4/2020	7.21	2.39
MW3-7	10.80	4/18/2018	7.50	3.30
		7/25/2018	7.61	3.19
		8/29/2018	8.40	2.40
		9/19/2018	7.66	3.14
		2/12/2019	5.65	5.15
		6/17/2019	7.33	3.47
		8/5/2019	8.43	2.37

TABLE 5D
SUMMARY OF WATER LEVEL MEASUREMENTS
CE RANCH LLC
COPANO PROPERTY

WELL ID	TOP OF CASING ELEVATION[1] (ft MSL)[2]	DATE MEASURED	DEPTH TO WATER (ft BTOC)[3]	WATER LEVEL ELEVATION (ft MSL)
MW3-7 Continued		9/17/2019	7.21	3.59
		12/2/2019	7.90	2.90
		2/4/2020	7.07	3.73
MW3-7B	10.20	8/29/2018	7.68	2.52
		9/19/2018	7.14	3.06
		2/12/2019	5.34	4.86
		6/17/2019	6.75	3.45
		8/5/2019	7.84	2.36
		9/17/2019	7.59	2.61
		12/2/2019	7.36	2.84
		2/4/2020	7.02	3.18
TPZ-5	12.10	7/25/2018	6.32	5.78
		8/29/2018	8.78	3.32
		9/19/2018	6.24	5.86
		2/12/2019	5.96	6.14
		6/17/2019	7.72	4.38
		8/5/2019	8.96	3.14
		9/17/2019	8.89	3.21
		12/2/2019	8.36	3.74
		2/4/2020	7.07	5.03
TPZ-5A	12.20	7/25/2018	6.56	5.64
		8/29/2018	8.77	3.43
		9/19/2018	6.13	6.07
		2/12/2019	5.83	6.37
		6/17/2019	7.82	4.38
		8/5/2019	8.96	3.24
		9/17/2019	8.85	3.35
		12/2/2019	8.35	3.85
		2/4/2020	7.12	5.08
Bed 4				
MW4-1	10.00	4/18/2018	4.99	5.01
		7/25/2018	4.54	5.46
		8/29/2018	5.48	4.52
		9/19/2018	2.67	7.33
		2/13/2019	3.19	6.81
		6/17/2019	4.18	5.82
		8/5/2019	6.37	3.63
		9/17/2019	5.50	4.50

TABLE 5D
SUMMARY OF WATER LEVEL MEASUREMENTS
CE RANCH LLC
COPANO PROPERTY

WELL ID	TOP OF CASING ELEVATION[1] (ft MSL)[2]	DATE MEASURED	DEPTH TO WATER (ft BTOC)[3]	WATER LEVEL ELEVATION (ft MSL)
MW4-1		12/2/2019	5.20	4.80
Continued		2/6/2020	4.38	5.62
MW4-2	9.50	4/18/2018	5.60	3.90
		7/25/2018	5.25	4.25
		8/29/2018	6.44	3.06
		9/19/2018	4.59	4.91
		2/13/2019	4.12	5.38
		6/17/2019	6.16	3.34
		8/5/2019	7.40	2.10
		9/17/2019	6.37	3.13
		12/2/2019	4.42	5.08
		2/4/2020	4.08	5.42
MW4-2A	9.70	4/18/2018	5.54	4.16
		7/25/2018	5.52	4.18
		8/29/2018	6.45	3.25
		9/19/2018	5.03	4.67
		2/13/2019	3.87	5.83
		6/17/2019	4.90	4.80
		8/5/2019	7.10	2.60
		9/17/2019	5.41	4.29
		12/2/2019	5.40	4.30
		2/4/2020	4.77	4.93
MW4-3	11.10	4/18/2018	5.64	5.46
		7/25/2018	5.73	5.37
		8/29/2018	6.26	4.84
		9/19/2018	4.05	7.05
		2/13/2019	4.37	6.73
		6/17/2019	5.16	5.94
		8/5/2019	6.65	4.45
		9/17/2019	5.85	5.25
		12/2/2019	6.40	4.70
		2/4/2020	5.59	5.51
MW4-3B	9.60	8/29/2018	5.15	4.45
		9/19/2018	2.97	6.63
		2/13/2019	3.33	6.27
		6/17/2019	4.72	4.88
		8/5/2019	6.05	3.55
		9/17/2019	6.00	3.60

TABLE 5D
SUMMARY OF WATER LEVEL MEASUREMENTS
CE RANCH LLC
COPANO PROPERTY

WELL ID	TOP OF CASING ELEVATION[1] (ft MSL)[2]	DATE MEASURED	DEPTH TO WATER (ft BTOC)[3]	WATER LEVEL ELEVATION (ft MSL)
MW4-3B Continued		12/2/2019	6.34	3.26
		2/4/2020	5.60	4.00
MW4-4	11.10	4/18/2018	6.97	4.13
		7/25/2018	7.09	4.01
		8/29/2018	8.60	2.50
		9/19/2018	5.32	5.78
		2/13/2019	4.25	6.85
		6/17/2019	7.30	3.80
		8/5/2019	7.35	3.75
		9/17/2019	8.41	2.69
		12/2/2019	7.53	3.57
		2/4/2020	5.29	5.81
MW4-7	11.50	4/18/2018	7.91	3.59
		7/25/2018	8.01	3.49
		8/29/2018	8.93	2.57
		9/19/2018	6.66	4.84
		2/13/2019	6.29	5.21
		6/17/2019	7.83	3.67
		8/5/2019	9.03	2.47
		9/17/2019	8.30	3.20
		12/2/2019	8.53	2.97
		2/4/2020	8.00	3.50
MW4-7A	8.60	4/18/2018	5.17	3.43
		7/25/2018	5.40	3.20
		8/29/2018	6.31	2.29
		9/19/2018	3.50	5.10
		2/13/2019	3.61	4.99
		6/17/2019	3.99	4.61
		8/5/2019	6.60	2.00
		9/17/2019	4.17	4.43
		12/2/2019	5.20	3.40
		2/4/2020	4.66	3.94
MW4-7B	7.90	8/29/2018	5.76	2.14
		9/19/2018	3.00	4.90
		2/13/2019	3.10	4.80
		6/17/2019	3.52	4.38
		8/5/2019	6.05	1.85
		9/17/2019	3.68	4.22

TABLE 5D
SUMMARY OF WATER LEVEL MEASUREMENTS
CE RANCH LLC
COPANO PROPERTY

WELL ID	TOP OF CASING ELEVATION[1] (ft MSL)[2]	DATE MEASURED	DEPTH TO WATER (ft BTOC)[3]	WATER LEVEL ELEVATION (ft MSL)
MW4-7B Continued		12/2/2019	4.70	3.20
		2/4/2020	4.18	3.72
TPZ-3	10.90	7/25/2018	3.84	7.06
		8/29/2018	6.02	4.88
		9/19/2018	3.42	7.48
		2/13/2019	3.52	7.38
		6/17/2019	3.90	7.00
		8/5/2019	6.60	4.30
		9/17/2019	4.71	6.19
		12/2/2019	4.24	6.66
		2/4/2020	3.79	7.11
TPZ-3A	11.00	7/25/2018	2.61	8.39
		8/29/2018	5.18	5.82
		9/19/2018	2.66	8.34
		2/13/2019	2.73	8.27
		6/17/2019	3.91	7.09
		8/5/2019	5.93	5.07
		9/17/2019	4.68	6.32
		12/2/2019	4.50	6.50
		2/4/2020	4.18	6.82
TPZ-4A	9.90	7/25/2018	3.23	6.67
		8/29/2018	5.69	4.21
		9/19/2018	3.11	6.79
		2/13/2019	3.31	6.59
		6/17/2019	3.76	6.14
		8/5/2019	6.45	3.45
		9/17/2019	4.70	5.20
		12/2/2019	5.01	4.89
		2/4/2020	4.53	5.37

NOTES:
1) Top of PVC well casing, TOC
2) ft MSL - Feet above or below mean sea level
3) ft BTOC - Feet below top of casing

5.0 Figures

Figure 5A-1 and 5A-2 Groundwater Gradient Maps

Figure 5B Groundwater COC Concentration Maps (Not applicable)

Figure 5C Groundwater Geochemistry Maps (Not applicable)

Figure 5D Cross Section Groundwater-to-Surface Water Pathway (Refer to Figures 4C-1 – 4C-3)



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- MW4-1 — MONITORING WELL LOCATION (ZONE A)
- MW3-7B — MONITORING WELL LOCATION (ZONE B)
- TPZ-2 — TEMPORARY PIEZOMETER LOCATION (ZONE A)
- TPZ-2A — TEMPORARY PIEZOMETER LOCATION (ZONE B)
- B-7 — BORING LOCATION
- (3.26) — WATER LEVEL ELEVATION (ft. MSL) (MEASURED 2/4/2020)
- -10- — POTENTIOMETRIC CONTOUR, CONTOUR INTERVAL = 1.0 ft
- DIRECTION OF GROUND WATER FLOW (ZONE A)

REFERENCE(S)

MAP BASED ON AERIAL PHOTOMETRIC MAP BY LANMON AERIAL PHOTOGRAPHY, FLOWN OCTOBER 23, 2019.

STATE OF TEXAS
MATTHEW K. WICKHAM
GEOLOGY
LIC. # 5330
LICENSED
PROFESSIONAL GEOSCIENTIST

0 1000 2000
1" = 2000' FEET

CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
POTENTIOMETRIC SURFACE MAP - ZONE A (FEBRUARY 4, 2020)

CONSULTANT
GOLDER

YYYY-MM-DD	2020-03-19
DESIGNED	AJD
PREPARED	PJM
REVIEWED	SNR
APPROVED	SNR

PROJECT NO. 19125525 | REV. 0 | FIGURE 5A-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana.golder.gds\data\Projects - Victoria_2019\19125525 - Copano\2020-06 June\ | File Name:FIG 5A-1 - Pot Surface Map - Zone A (1Q2020).dwg | Last Edited By: pmcbride Date: 2020-06-09 Time:9:47:01 PM | Printed By: PMcBride Date: 2020-06-09 Time:9:49:43 PM

LEO MILLER ROAD

FRESHWATER LAKE

SWAN LAKE

COPANO RETREAT ROAD

PORT BAY

SH - 188

BED 1

BED 2

BED 3

BED 4

DECANT POND

MW-6R
MW-6RB (8.74)
MW-9
MW-8
B-5
DB-1
MW-5
MW-5B (11.13)
TPZ-2
B-7
TPZ-2A (10.92)
B-6
MW-4
CB-7
C-38
MW4-1
MW4-2
MW4-2A
MW4-3B (4.00)
MW4-3
MW4-4
C-21
C-28
B-1
MW-10
MW-11
MW-11B (9.44)
CB-9
DB-2
B-3
CB-3
TPZ-1A (8.82)
TPZ-1
B-2
DB-4
B-4
MW-7
MW-7B (4.42)
DB-5 (6.96)
MW-3R
MW-3RB (4.78)
MW-1
C-43
B-8
TPZ-3
TPZ-3A (6.82)
TPZ-4A (5.37)
B-9
MW4-7A
MW4-7B (3.72)
B-10
MW4-7
MW3-1
B-11
BD-4
TPZ-5
TPZ-5A (5.08)
MW3-2
BD-5
MW3-3
B-13
MW3-7B (3.18)
B-12
MW3-7
MW3-4B (2.13)
MW3-4
MW3-6
MW3-5

9?
8?
7?
6?
5?
4?
3?
?9
?10
?11
?8
?7
?6
?5
?4
?3

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- MW4-1 — MONITORING WELL LOCATION (ZONE A)
- MW3-7B — MONITORING WELL LOCATION (ZONE B)
- TPZ-2 — TEMPORARY PIEZOMETER LOCATION (ZONE A)
- TPZ-2A — TEMPORARY PIEZOMETER LOCATION (ZONE B)
- B-7 — BORING LOCATION
- (3.26) — WATER LEVEL ELEVATION (ft. MSL) (MEASURED 2/4/2020)
- -10- — POTENTIOMETRIC CONTOUR, CONTOUR INTERVAL = 1.0 ft
- DIRECTION OF GROUND WATER FLOW (ZONE B)

REFERENCE(S)

MAP BASED ON AERIAL PHOTOMETRIC MAP BY LANMON AERIAL PHOTOGRAPHY, FLOWN OCTOBER 23, 2019.

STATE OF TEXAS
MATTHEW K. WICKHAM
GEOLOGY
LIC. # 5330
LICENSED
PROFESSIONAL GEOSCIENTIST

0 1000 2000
1" = 2000' FEET

CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
POTENTIOMETRIC SURFACE MAP - ZONE B (FEBRUARY 4, 2020)

CONSULTANT
GOLDER

YYYY-MM-DD	2020-03-18
DESIGNED	AJD
PREPARED	PJM
REVIEWED	SNR
APPROVED	SNR

PROJECT NO. 19125525 | REV. 0 | FIGURE 5A-2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana.golder.gds\data\Projects - Victoria_2019\19125525 - Copano\2020-06 June\ | File Name:FIG 5A-2 - Post Surface Map - Zone B (1Q2020).dwg | Last Edited By: pmcbride Date: 2020-06-08 Time:5:14:47 PM | Printed By: PMcBride Date: 2020-06-09 Time:7:50:40 PM

Section 6 Surface Water Assessment and Critical PCL Development

Section 6.1 Type of Surface Water and Applicable Water Quality Criteria

The northern portion of the Copano Site is occupied by a large "Y" shaped inlet which empties into Copano Bay, called Swan Lake. Swan Lake is an unclassified brackish wetland area, and ranges in depth from less than one to three feet. This low-lying area can flood and drain with the tidal movement of Copano Bay. Swan Lake is surrounded on the east, west, and south by CE Ranch's property. The only entry to this surface water body is from the north in Copano Bay. The shallow nature of this wetland would prevent entry by boat and the aquatic life that has been observed consists of smaller baitfish. For the purposes of this investigation, the area has been considered a contact recreational area. Swan Lake is surrounded by native vegetation and intermediate aquatic life was observed during sample collection from this surface water body. No unusual odors were observed during sample collection.

A separate water body, called Freshwater Lake, is located northwest of Bed 4. Freshwater Lake is an unclassified brackish lake that is not hydraulically connected to Copano Bay. It typically ranges in depth from less than one to three feet. Freshwater Lake is located on CE Ranch's property, which is surrounded by a barbed wire fence with locked entry gates. Although direct human exposure due to wading or swimming or ingestion of shellfish or fish from this surface water body would not occur, Freshwater Lake was considered a contact recreational area for the development of surface water PCLs. The lake is surrounded by native vegetation, and limited aquatic life was observed during sample collection. No unusual odors were observed during sample collection.

The Copano Site is bounded on the east by Port Bay and on the north by Copano Bay. Appendix D of the Texas Surface Water Quality Standards designates Port Bay and Copano Bay (Segment No. 2472) as contact recreational areas and indicates these bays have exceptional aquatic life and produce edible species of clams, oysters, and/or mussels.

The potential for groundwater discharge to adjacent surface water bodies was considered using the stratigraphic and hydrogeologic data. Where data were available, the relationships between the uppermost GWBU (Zone A) and adjacent surface water bodies (Port Bay, Swan Lake, Freshwater Lake) were added to the Site cross sections (Figures 4C-1, 4C-2, and 4C-3). As discussed in earlier Sections, the uppermost GWBU does not intersect the surface water bodies. There is typically a minimum of approximately 4 to 5 feet of clay between the bottom of the surface water body and the top of the GWBU, and often as much as 7 to 8 feet of clay. It was concluded that Port Bay, Swan Lake, and Freshwater Lake are not hydraulically connected to the GWBU at the Site and the ^{SW}GW and ^{Sed}GW pathways are incomplete.

Surface water samples were collected at the water bodies nearest to Bed 4 (Swan Lake and Freshwater Lake) to investigate the possible atmospheric deposition due to dusting from the Beds. Three surface water samples were collected from each water body at one foot below the water surface.

As presented on Table 6A, the applicable residential assessment levels for surface water correspond to the combined Tier 1 human health exposure pathways for contact recreation water ($^{Tot}RW_{Comb}$). The data generated from the samples were also evaluated for ecological exposures and potential ecological risk using chronic benchmarks for both fresh water and salt water. Further discussion of the ecological risk assessment is detailed in Section 9.

Section 6.2 Surface Water Risk-Based Exposure Levels (RBELs) for Human Health and Aquatic Life Protection

Surface water samples collected at Freshwater Lake and Swan Lake utilized the combined Tier 1 human health exposure pathway PCLs for contact recreation water ($^{Tot}RW_{Comb}$).

Section 6.3 Nature and Extent of COCs in Surface Water

The surface water sampling results are summarized on Tables 6B-1 and 6B-2.

Concentrations of COCs in surface water samples collected at Freshwater Lake and Swan Lake did not exceed the combined Tier 1 human health exposure pathway PCLs for contact recreation water ($^{Tot}RW_{Comb}$).

NAPL has not been observed to be present during investigation activities conducted at the Site.

Section 6.4 Critical PCL for Surface Water

Concentrations of COCs in surface water samples collected at Freshwater Lake and Swan Lake did not exceed the combined Tier 1 human health exposure pathways for contact recreation water ($^{Tot}RW_{Comb}$).

Table 6A. Surface Water Critical PCLs

COC	Background (mg/L)	MQL (mg/L)	Human Health[1] ($^{SW}SW_{HH}$)					Aquatic Life and Ecological[2] ($^{SW}SW_{eco}$)				^{SW}SW petroleum fuel discharges (mg/L)	Conc (mg/L)	
					Contact recreation				Chronic Benchmark (mg/L)					
			Water and fish (mg/L)	Fish only (mg/L)	Incidental ingestion (mg/L)	Dermal contact (mg/L)	Combined[3] (mg/L)	Acute (mg/L)	FW	SW	Wildlife receptors (mg/L)		Max	Rep
Aluminum	N/A	0.0300	N/A	N/A	9.36E+02	7.09E+02	4.03E+02	N/A	N/A	N/A	N/A	N/A	7.81	N/A
Antimony	N/A	0.00250	N/A	N/A	3.74E-01	4.25E-01	1.99E-01	N/A	2.2	0.73	N/A	N/A	0.00232	N/A
Arsenic	N/A	0.00500	N/A	N/A	3.47E-01	1.59E-01	2.85E-01	N/A	N/A	N/A	N/A	N/A	0.0135	N/A
Chromium	N/A	0.00500	N/A	N/A	1.40E+03	1.38E+02	1.26E+02	N/A	N/A	N/A	N/A	N/A	0.00417	N/A
Lead	N/A	0.00100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00344	N/A
Mercury	N/A	0.000200	N/A	N/A	2.81E-01	1.49E-01	9.73E-02	N/A	0.0013	0.0011	N/A	N/A	<0.0000800	N/A
Nickel	N/A	0.0100	N/A	N/A	1.87E+01	2.84E+01	1.13E+01	N/A	N/A	N/A	N/A	N/A	0.00565	N/A
Thallium	N/A	0.00150	N/A	N/A	7.49E-02	5.67E-01	6.61E-02	N/A	0.18	2.1	N/A	N/A	<0.000500	N/A
Vanadium	N/A	0.00100	N/A	N/A	6.55E+00	1.29E+00	1.08E+00	N/A	0.02		N/A	N/A	0.0111	N/A
Uranium	N/A	0.0100	N/A	N/A	2.81E+00	2.13E+01	2.48E+00	N/A	N/A	N/A	N/A	N/A	0.00879	N/A
Radium 226	N/A		N/A	N/A	N/A	N/A	N/A	N/A	4	4	N/A	N/A		N/A
Radium 228	N/A		N/A	N/A	N/A	N/A	N/A	N/A	3	3	N/A	N/A		N/A
Dissolved Metals														
Aluminum	N/A	0.0300	N/A	N/A	9.36E+02	7.09E+02	4.03E+02	N/A	0.087	N/A	N/A	N/A	0.0166	N/A

[1] $^{SW}SW_{HH}$ – Surface water PCL protective of human health.
[2] $^{SW}SW_{eco}$ – Surface water PCL protective of aquatic life and wildlife ecological receptors. A PCL was not developed under an ecological risk assessment, the value used is the chronic benchmark for freshwater (FW) and saltwater (SW).
[3] Combined includes incidental ingestion and dermal pathway.

COC	Background (mg/L)	MQL (mg/L)	Human Health[1] ($^{SW}SW_{HH}$)					Aquatic Life and Ecological[2] ($^{SW}SW_{eco}$)				^{SW}SW petroleum fuel discharges (mg/L)	Conc (mg/L)	
					Contact recreation				Chronic Benchmark (mg/L)					
			Water and fish (mg/L)	Fish only (mg/L)	Incidental ingestion (mg/L)	Dermal contact (mg/L)	Combined[3] (mg/L)	Acute (mg/L)	FW	SW	Wildlife receptors (mg/L)		Max	Rep
Antimony	N/A	0.00250	N/A	N/A	3.74E-01	4.25E-01	1.99E-01	N/A	N/A	N/A	N/A	N/A	<0.000800	N/A
Arsenic	N/A	0.00500	N/A	N/A	3.47E-01	1.59E-01	2.85E-01	N/A	0.15	0.078	N/A	N/A	0.0123	N/A
Chromium	N/A	0.00500	N/A	N/A	1.40E+03	1.38E+02	1.26E+02	N/A	0.042	N/A	N/A	N/A	<0.00200	N/A
Lead	N/A	0.00100	N/A	N/A	N/A	N/A	N/A	N/A	0.00117	0.0053	N/A	N/A	0.000526	N/A
Mercury	N/A	0.000200	N/A	N/A	2.81E-01	1.49E-01	9.73E-02	N/A	N/A	N/A	N/A	N/A	<0.0000800	N/A
Nickel	N/A	0.0100	N/A	N/A	1.87E+01	2.84E+01	1.13E+01	N/A	0.0289	0.0131	N/A	N/A	0.00368	N/A
Thallium	N/A	0.00150	N/A	N/A	7.49E-02	5.67E-01	6.61E-02	N/A	N/A	N/A	N/A	N/A	<0.000500	N/A
Vanadium	N/A	0.00100	N/A	N/A	6.55E+00	1.29E+00	1.08E+00	N/A	N/A	N/A	N/A	N/A	0.00564	N/A
Uranium	N/A	0.0100	N/A	N/A	2.81E+00	2.13E+01	2.48E+00	N/A	0.7	N/A	N/A	N/A	0.00853	N/A

TABLE 6B-1
FIELD READINGS
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	DATE	pH[1]	SPECIFIC CONDUCTIVITY (mS/cm)[2]	SALINITY (ppt)[3]	TURBIDITY (NTU)[4]	DISSOLVED OXYGEN (mg/L)[5]	TOTAL DISSOLVED SOLIDS (mg/L)
SW-1 (Freshwater)	5/15/2020	9.05	22300	10.3	22.9	11.20	10.9
SW-2 (Freshwater)	5/15/2020	8.82	24200	10.9	12.1	10.10	11.8
SW-3 (Freshwater)	5/15/2020	8.77	26900	11.3	9.60	7.81	11.7
SW-4 (Saltwater)	5/15/2020	8.58	47400	21.0	19.7	7.93	24.1
SW-5 (Saltwater)	5/15/2020	8.54	42600	19.8	18.2	12.40	20.6
SW-6 (Saltwater)	5/15/2020	8.58	51400	20.2	18.8	13.30	20.2

Notes:
1) pH reported in standard units
2) mS/cm - milliSiemens per centimeter
3) ppt - parts per thousand
4) NTU - Nephelometric Turbidity Unit
5) mg/L - milligrams per liter

TABLE 6B-2
SURFACE WATER DATA SUMMARY
CE RANCH LLC
COPANO PROPERTY

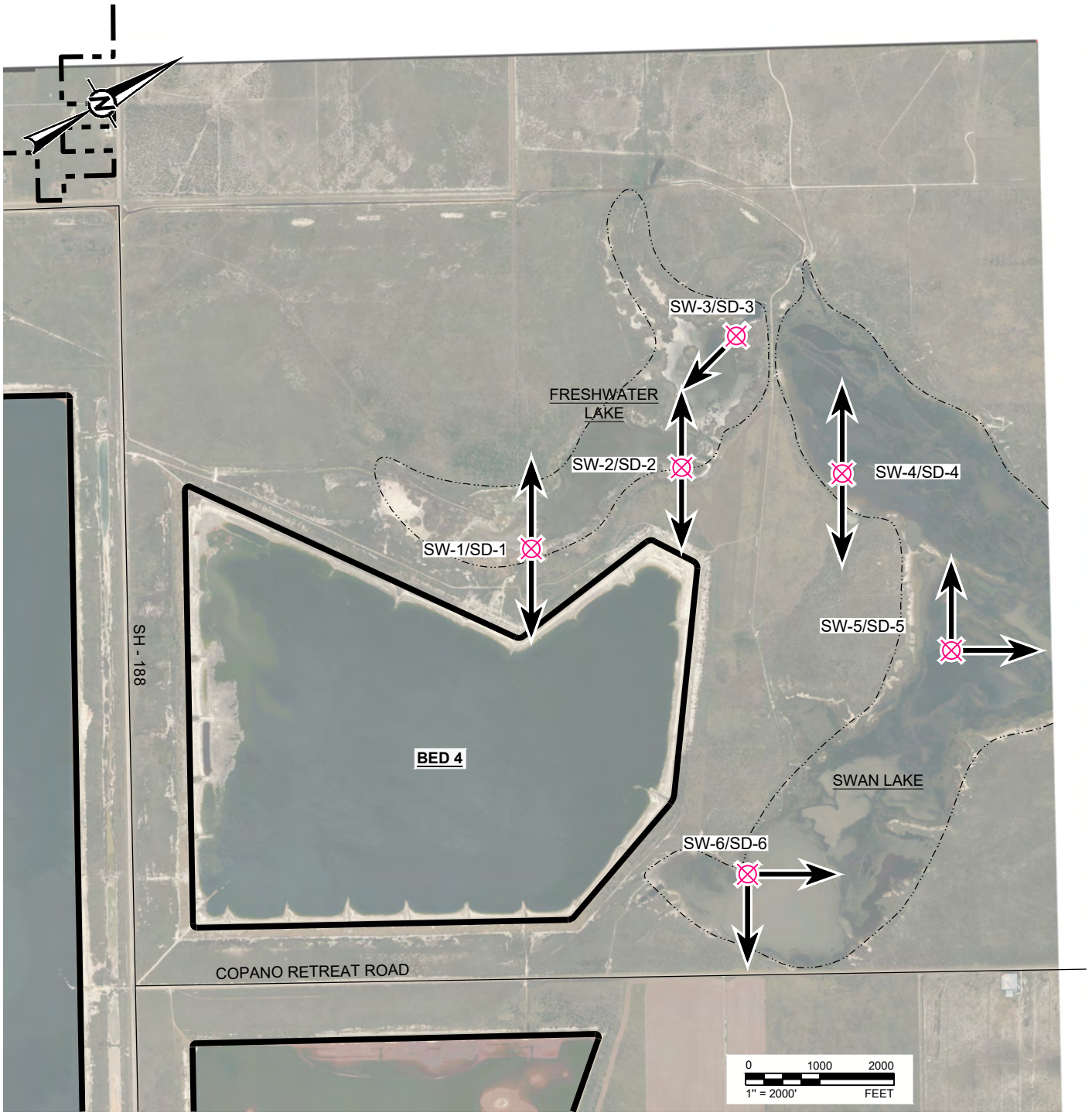
SAMPLE ID	SURFACE WATER BODY NAME	DATE	RADIUM 226 (pCi/L)[1]	Q[2]	RADIUM 228 (pCi/L)	Q	RADIUM 226/228 (COMBINED) (pCi/L)	Q	TOTAL METALS																										DISSOLVED METALS																					
									ALUMINUM (mg/L)[3]	Q	ANTIMONY (mg/L)	Q	ARSENIC (mg/L)	Q	CHROMIUM (mg/L)	Q	LEAD (mg/L)	Q	MERCURY (mg/L)	Q	NICKEL (mg/L)	Q	THALLIUM (mg/L)	Q	VANADIUM (mg/L)	Q	URANIUM (mg/L)	Q	ALUMINUM (mg/L)	Q	ANTIMONY (mg/L)	Q	ARSENIC (mg/L)	Q	CHROMIUM (mg/L)	Q	LEAD (mg/L)	Q	MERCURY (mg/L)	Q	NICKEL (mg/L)	Q	THALLIUM (mg/L)	Q	VANADIUM (mg/L)	Q	URANIUM (mg/L)	Q
Assessment Level[4]									**403**		**0.199**		**0.0285**		**126**				**0.0973**		**11.3**		**0.0661**		**1.08**		**2.48**		**403**		**0.199**		**0.0285**		**126**				**0.0973**		**11.3**		**0.0661**		**1.08**		**2.48**	
SW-1	Freshwater Lake	5/15/2020	0.293		2.64		2.93		7.81		0.00232	J	0.0113		0.00417	J	0.00344		<0.0000800		0.00565	J	<0.000500		0.0104		0.00466	JN	<0.0100		<0.000800		0.00867		<0.00200		0.000526	J	<0.0000800		0.00368	J	<0.000500		0.00326		0.00401	JN
SW-2	Freshwater Lake	5/15/2020	0.0453		0.290		0.743		0.660		<0.000800		0.0116		<0.00200		0.000489	J	<0.0000800		0.00331	J	<0.000500		0.00341		0.00403	JN	0.0166	J	<0.000800		0.0106		<0.00200		<0.000300		<0.0000800		0.00335	J	<0.000500		0.00233		0.00388	JN
SW-3	Freshwater Lake	5/15/2020	0.217		1.77		1.98		2.51		<0.000800		0.0127		<0.00200		0.00117		<0.0000800		0.00427	J	<0.000500		0.00463		0.00360	JN	<0.0100		<0.000800		0.0115		<0.00200		<0.000300		<0.0000800		0.00332	J	<0.000500		0.00231		0.00345	JN
SW-4	Swan Lake	5/15/2020	0.706		0.796		1.50		1.33		<0.000800		0.00786		<0.00200		0.000590	J	<0.0000800		<0.00300		<0.000500		0.00443		0.00425	JN	<0.0100		<0.000800		0.00732		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00311		0.00410	JN
SW-5	Swan Lake	5/15/2020	0.110		2.19		2.30		3.76		<0.000800		0.00749		<0.00200		0.00160		<0.0000800		<0.00300		<0.000500		0.00708		0.00403	JN	<0.0100		<0.000800		0.00625		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00287		0.00385	JN
SW-6	Swan Lake	5/15/2020	0.629		3.79		4.42		6.55		<0.000800		0.0135		0.00279	J	0.00292		<0.0000800		0.00425	J	<0.000500		0.0111		0.00879	JN	<0.0100		<0.000800		0.0123		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00564		0.00853	JN

Notes:
1) pCi/L - picocuries per liter
2) Q - lab qualifiers, as follows:
J - estimated value – the result falls between the Sample Detection Limit (SDL) and the Reporting Limit (RL)
< - indicates the analyte was not detected at the Sample Detection Limit (SDL); SDL listed in the concentration column
N - laboratory does not offer NELAC certification for this analyte
3) mg/L - milligrams per liter
4) Tier 1 Contact Recreation Water PCL for combined human health exposure pathways ($^{Tot}RW_{Comb}$), updated March 31, 2006.

6.0 Figures

Figure 6A Surface Water PCLE Zone Map (Not applicable)

Figure 6B Photographs



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- SURFACE WATER (SW) AND SEDIMENT (SD) SAMPLE LOCATIONS
- DIRECTION PHOTOGRAPH WAS TAKEN

CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
SURFACE WATER SAMPLING LOCATIONS - PHOTO MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-06-16
DESIGNED	PJM
PREPARED	PJM
REVIEWED	MKW
APPROVED	MKW

PROJECT NO. 19125525 | REV. 0 | FIGURE 6B

Last Edited By: pmcbride Date: 2020-06-17 Time:9:39:11 AM | Printed By: PMcBride Date: 2020-06-17 Time:9:59:48 AM
Path: \\texarkana.golder.gds\data\Projects - Victoria_2019\19125525 - Copano\2020-06 June\ | File Name: FIG 6B - Surface Water Locations - Photo Map.dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 1 in

FIGURE 6B
Surface Water Sampling Location Photographs
CE Ranch LLC
Copano Property

SW-1 location at Freshwater Lake. Photo taken facing southest.	SW-1 location at Freshwater Lake. Photo taken facing northwest.
	
SW-2 location at Freshwater Lake. Photo taken facing southeast.	SW-2 location at Freshwater Lake. Photo was taken facing northwest.
	

FIGURE 6B
Surface Water Sampling Location Photographs
CE Ranch LLC
Copano Property

SW-3 location at Freshwater Lake. Photo was taken facing south.	SW-4 location at Swan Lake. Photo was taken facing northwest.
	
SW-4 location at Swan Lake. Photo was taken facing southeast.	SW-5 location at Swan Lake. Photo was taken facing northeast.
	

FIGURE 6B
Surface Water Sampling Location Photographs
CE Ranch LLC
Copano Property

SW-5 location at Swan Lake. Photo was taken facing northwest.	SW-6 location at Swan Lake. Photo was taken facing northeast.
	
SW-6 location at Swan Lake. Photo was taken facing southeast.	
	

Section 7 Sediment Assessment and Critical PCL Development

Section 7.1 Type of Sediment and Applicable Criteria

As stated in Section 6, the ^{SW}GW and ^{Sed}GW pathways are incomplete.

Sediment samples were collected at the water bodies nearest to Bed 4 (Swan Lake and Freshwater Lake) to further investigate the potential atmospheric deposition due to dusting at the Beds. Three sediment water samples were collected from the banks of each water body at four to six inches below the ground surface. As presented on Table 7A, the applicable residential assessment levels for sediment correspond to the combined Tier 1 human health exposure pathways for sediment ($^{Tot}Sed_{Comb}$). The data generated from the samples were also evaluated for ecological exposures and potential ecological risk using chronic benchmarks for both fresh water and salt water. Further discussion of the ecological risk assessment is detailed in Section 9.

Sediment that was collected from the banks of Swan Lake consisted of very fine to fine-grained sands with little clay. The sands were light grey to light brown, rounded, and well sorted. Worms were observed in the aerobic zone, which was observed to be approximately four inches below ground surface. No unusual odors were observed during sample collection. As discussed in Section 6.1, Swan Lake is surrounded on the east, west, and south by CE Ranch's property. The only entry to this surface water body would be from the north in Copano Bay. The shallow nature of this wetland prevents entry by boat and the aquatic life that has been observed consists of smaller baitfish. For the purposes of this investigation, the area has been considered a contact recreational area although the potential for direct human exposure due to wading or swimming is considered low. Evidence of past or current shellfish reefs were not present at Swan Lake; the potential for indirect human exposure from ingestion of shellfish and fish are low.

Sediment that was collected from the banks of Freshwater Lake consisted of very fine-grained sands that were brown to light grey, rounded, and well sorted. Worms were observed in the aerobic zone (approximately four inches below ground surface) and there was heavy vegetation on the bottom of the lake. No unusual odors were observed during sample collection. As discussed in Section 6.1, Freshwater Lake is located on CE Ranch's property. Although direct human exposure due to wading or swimming or ingestion of shellfish or fish from this surface water body would not occur, Freshwater Lake was considered a contact recreational area for the development of sediment PCLs.

Section 7.2 Sediment Risk-based Exposure Levels (RBELs) for Human Health

Sediment samples collected at Freshwater Lake and Swan Lake utilized the combined Tier 1 human health exposure pathway PCLs for sediment ($^{Tot}Sed_{Comb}$).

Section 7.3 Nature and Extent of COCs in Sediment

Sediment sampling results are summarized on Table 7B.

Concentrations of COCs in sediment samples collected at Freshwater Lake and Swan Lake did not the combined Tier 1 human health exposure pathway PCLs for sediment ($^{Tot}Sed_{Comb}$). Also, concentrations of COCs in sediment samples were below all ecological benchmarks.

NAPL has not been observed to be present during investigation activities conducted at the Site.

Table 7A. Sediment Critical PCLs

COC	MQL (mg/kg)	Background (mg/kg)	Human Health ($^{Sed}Sed_{HH}$)[1]				Ecological ($^{Sed}Sed_{Eco}$)[2]			Conc (mg/kg)	
			Contact recreation			Ingestion of impacted fish/shellfish (mg/kg)	Benthic Chronic Benchmarks (mg/kg)		Wildlife receptors/fish (mg/kg)	Max	Rep
			Incidental ingestion (mg/kg)	Dermal contact (mg/kg)	Combined[3] (mg/kg)		FW	SW			
Aluminum	37.5	N/A	7.3E+05	1.9E+05	1.5E+05	N/A	N/A	N/A	N/A	36,700	N/A
Antimony	1.00	N/A	2.9E+02	1.2E+02	8.3E+01	N/A	0.3	2	N/A	<0.285	N/A
Arsenic	1.00	N/A	2.8E+02	1.9E+02	1.1E+02	N/A	9.79	8.2	N/A	4.39	N/A
Chromium	2.00	N/A	1.0E+06	3.8E+04	3.6E+04	N/A	43.4	81	N/A	24.8	N/A
Lead	0.300	N/A	N/A	N/A	5.0E+02	N/A	35.8	46.7	N/A	13.8	N/A
Mercury	0.0400	N/A	2.2E+02	4.1E+01	3.4E+01	N/A	0.18	0.15	N/A	<0.0301	N/A
Nickel	2.00	N/A	1.5E+04	1.5E+03	1.4E+03	N/A	22.7	20.9	N/A	14.8	N/A
Thallium	1.00	N/A	5.9E+01	1.5E+02	4.3E+01	N/A	N/A	N/A	N/A	<0.949	N/A
Vanadium	2.50	N/A	5.1E+03	3.5E+02	3.3E+02	N/A	N/A	N/A	N/A	43.6	N/A
Uranium	2.50	N/A	2.2E+03	5.8E+03	1.6E+03	N/A	N/A	N/A	N/A	2.05	N/A
Radium 226		N/A	N/A	N/A	N/A	N/A	100	100	N/A		N/A
Radium 228		N/A	N/A	N/A	N/A	N/A	91	91	N/A		N/A

[1] $^{Sed}SED_{HH}$ – Sediment PCL protective of human health.
[2] $^{Sed}SED_{Eco}$ – Sediment PCL protective of ecological receptors. A PCL was not developed under an ecological risk assessment, the value provided is the benthic chronic benchmarks for freshwater (FW) and saltwater (SW).
[3] Combined includes incidental ingestion and dermal pathway.

TABLE 7B
SEDIMENT SUMMARY
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	SURFACE WATER BODY NAME	DATE	Radium 226 (pCi/g)[1]	Q[2]	Radium 228 (pCi/g)	Q	ALUMINUM (mg/kg)[3]	Q	ANTIMONY (mg/kg)	Q	ARSENIC (mg/kg)	Q	CHROMIUM (mg/kg)	Q	LEAD (mg/kg)	Q	MERCURY (mg/kg)	Q	NICKEL (mg/kg)	Q	THALLIUM (mg/kg)	Q	VANADIUM (mg/kg)	Q	URANIUM (mg/kg)	Q	PERCENT MOISTURE (%)
Assessment Level[4]							**150,000**		**83**		**110**		**36,000**		**500**		**34**		**1,400**		**43**		**330**		**1,600**		
SD-1	Freshwater Lake	5/15/2020	0.861		0.256		6,730		<0.210		1.12	J	5.17		3.75		<0.0228		2.62	J	<0.699		8.89		<1.40	N	35.0
SD-2	Freshwater Lake	5/15/2020	0.836		0.415		12,000		<0.232		1.89		8.93		5.43		<0.0245		4.70		<0.774		15.9		<1.55	N	39.6
SD-3	Freshwater Lake	5/15/2020	0.714		0.406		10,300		<0.220		1.18	J	7.57		4.74		<0.0260		3.80		<0.735		11.1		<1.47	N	39.2
SD-4	Swan Lake	5/15/2020	1.05		0.821		13,800		<0.228		2.40		10.0		7.75		<0.0256		5.47		<0.759		18.9		<1.52	N	40.1
SD-5	Swan Lake	5/15/2020	0.487		0.628		18,300		<0.234		2.72		13.3		7.12		<0.0267		7.75		<0.779		30.1		<1.56	N	44.2
SD-6	Swan Lake	5/15/2020	0.822		1.23		36,700		<0.285		4.39		24.8		13.8		<0.0301		14.8		<0.949		43.6		2.05	JN	54.2

Notes:

1) pCi/g - picocuries per gram

2) Q - lab qualifiers, as follows:

J - estimated value – the result falls between the Sample Detection Limit (SDL) and the Reporting Limit (RL)

< - indicates the analyte was not detected at the Sample Detection Limit (SDL); SDL listed in the concentration column

N - laboratory does not offer NELAC certification for this analyte

3) mg/kg - milligrams per kilogram

4) Tier 1 Contact Sediment PCL for combined human health exposure pathways ($^{Tot}Sed_{Comb}$), updated March 31, 2006.

7.0 Figures

Figure 7A Sediment PCLE Zone Map (Not applicable)

Section 8 Air Assessment and Critical PCL Development

An air assessment was not required for this Site.

Section 9 Ecological Risk Assessment

Reasoned Justification

N/A – see attached Ecological Risk Assessment Review Soil, Sediment, and Surface Water Data.

Expedited Stream Evaluation

N/A – see attached Ecological Risk Assessment Review Soil, Sediment, and Surface Water Data.

Tier 2 Screening Level Ecological Risk Assessment (SLERA)

See attached Ecological Risk Assessment Review Soil, Sediment, and Surface Water Data.

Proposal for Ecological Services Analysis

N/A – see attached Ecological Risk Assessment Review Soil, Sediment, and Surface Water Data.

June 29, 2020 Project No. 19134560

Ecological Risk Assessment Review of Soil, Sediment and Surface Water Data CE Ranch LLC, Copano Property

Golder Associates Inc. (Golder) is pleased to submit this ecological evaluation of the surface soil, surface water and sediment data recently generated form the Copano Property (the Site). This assessment has been completed using the Texas ecological risk process as described in the documents published by the TCEQ:

- TCEQ's Texas Risk Reduction Program (TRRP) [TAC 350];
- TCEQ's *Conducting Ecological Risk Assessments at Remediation Sites in Texas* (ERAG) (Publication RG-263) (August 2018);
- TCEQ's Supporting Documentation for the TCEQ's Ecological Benchmark Tables and the Tables themselves (August 2019);
- TCEQ's *Determining Representative Concentrations of Chemicals of Concern*. Publication RG-366/TRRP-15eco (2013); and
- TCEQ's Ecological Protective Concentration Level (PCL) Database which provides soil PCLs for wildlife (found online: pcl.wtamu.edu/pcl/login.jsp).

1.0 ECOLOGICAL RISK ASSESSMENT UNDER THE TEXAS RISK REDUCTION PROGRAM (TRRP)

1.1 Tiered Process

The ecological risk assessment process in Texas is split into three tiers:

Tier 1 is the Exclusion Criteria Checklist [Figure: 30 TAC 350.77(b)] which was designed to be an "off-ramp" for the ecological assessment process for those sites with no ecological attributes. For example, if an area is totally paved and chemicals of concern (COCs) could not be discharged to a surface water body, then the site would meet the requirements of the checklist and no ecological assessment would be necessary. The Copano Site did not meet the requirements of the checklist and, therefore, is required to move to Step 2 below.

Tier 2 is the Screening Level Ecological Risk Assessment (SLERA) and is the most common type of ecological assessment. An abbreviated SLERA for the Site based on the available soil data is presented Section 1.2 below. The SLERA can be the terminal ecological risk for a site, or it can be used to develop/identify PCLs or it can be used as the basis for further evaluation.

Tier 3 is the Site-Specific Ecological Risk Assessment (SSERA) and uses site-specific inputs such as tissue data collected from the site. Generally, a SLERA is completed prior to the development of an SSERA. The SLERA is used to define those uncertainties that can be addressed with site-specific data. For example, the SLERA would

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model the concentration of COCs in mammal tissue, but the SSERA could sample the mammals. The SSERA is not applicable to this Site.

1.2 Tier 2 SLERA

The Tier 2 SLERA (aka SLERA) uses site media data (e.g., metals concentrations in soil) to estimate exposure to ecological receptors (e.g., small mammals or birds) using data and exposure assumptions taken from the open literature. The ecological risk process in Texas is comprised of 10 required elements which are described in TRRP [30 TAC 350] and in RG-263 *Conducting Ecological Risk Assessments at Remediation Sites in Texas* (ERAG) (TCEQ, 2018a). The required elements as they pertain to the Site are described below.

1.2.1 Benchmark Screening (Required Element 1)

The first step in the process is to screen the maximum detected concentrations against the screening level benchmarks and for soil, background concentrations for metals. The higher of the Texas Median background values and the site-specific background values is applied in the SLERA. Table 1 shows the site-specific background data for the site COCs (aluminum, antimony, arsenic, chromium, lead, mercury, nickel, thallium, vanadium and uranium, radium-226 and radium-228[1]). Table 1 also shows the 95% Upper Prediction Limits (UPLs) calculated for the COCs using the ProUCL program. All of the UPLs are based on a normal data distribution.

1.2.1.1 Soil Benchmark Screening

Table 2 shows the comparison of the site surface soil sample data to background concentrations and the soil ecological benchmarks. Figure 1 shows the locations of the samples in relation to the beds. The benchmarks are concentrations protective of soil invertebrate and plant communities. If the maximum detected concentration is less than the benchmark for a nonbioaccumulative COC, then no further investigation of that COC is required. However, chromium, lead, mercury, and nickel are considered bioaccumulative in soil by the TCEQ (see Table 5.1 in TCEQ, 2018a), and if any of these COCs are detected in soil at a concentration greater than background, then they must be evaluated for exposure to wildlife. The results of the benchmark screening for each COC is listed below:

- **Aluminum** –Aluminum is only considered an ecological COC if the soils are at a pH less than 5.5 (EPA, 2003). The pH of the site soils ranges from 6.16 to 8.51 with a simple average of 7.38. Because of the neutral pH of the site soils, aluminum is not considered an ecological COC and no further ecological evaluation is necessary.
- **Antimony** – Antimony was not detected in the background soil samples or the site soil samples above the sample detection limits. Antimony is removed as an ecological COC.
- **Arsenic** – Arsenic was not detected above the ecological benchmark or the Texas median background value in the site soil samples. Arsenic is removed as an ecological COC.
- **Chromium** – Chromium exceeds the Texas median background of 30 mg/kg in one sample (SB-40 at 64.4 mg/kg). Chromium is considered a bioaccumulative metal in soil and is retained as an ecological COC and is discussed further in this SLERA.
- **Lead** – Lead exceeds the Texas median background concentration of 15 mg/kg in one sample (SB-30 at 18.5 mg/kg), but the concentration is below the screening benchmark of 120 mg/kg. The soil invertebrate

[1] Calcium, sodium, total alkalinity, sulfate and soluble ammonia data are also available, but they parameters are generally not evaluated in ecological risk assessments.

community and plant community are not at risk from lead, but because lead is considered a bioaccumulative metal in soil, further analysis is required in this SLERA.

- **Mercury** – Mercury was not detected in the site soil samples above the sample detection limits. Mercury is removed as an ecological COC.
- **Nickel** – Nickel concentrations exceed the site-specific background concentration of 12 mg/kg for two samples (SB-01 at 19.0 mg/kg and SB-40 at 29.4 mg/kg); however, these concentrations are less than the ecological soil benchmark of 38 mg/kg. Nickel is considered a bioaccumulative metal in soil and is retained as an ecological COC and discussed further in this SLERA.
- **Thallium** – Thallium was not detected in the background soil samples or the site soil samples above the sample detection limits. Thallium is removed as an ecological COC.
- **Vanadium** – Vanadium exceeds the Texas median background concentration of 50 mg/kg in one sample (SB-40 at 51.7 mg/kg). All concentrations of vanadium exceed the ecological soil benchmark. Therefore, vanadium is retained for further analysis in the SLERA.
- **Uranium –** Uranium was not detected above the ecological benchmark or background concentration. Uranium is removed as an ecological COC.
- **Radium-226, Radium-228 and Combined 226 + 228** – All of the detected concentrations are below the TCEQ's radionuclide biota concentration guides (BCGs) protective of terrestrial receptors. There is not a BCG for combined radium-226 and -228 so the lowest BCG between radium-226 and radium-228 is presented. Radium is removed as an ecological COC.

Chromium, lead, nickel, and vanadium in soil are discussed further in the following sections.

1.2.1.2 Surface Water Benchmark Screening

Tables 3A and 3B shows the comparison of the surface water data collected from the freshwater area and saltwater area of the nearby wetlands to the benchmarks. Figure 2 shows the sample locations. Surface water samples were filtered, and both the total and dissolved fractions were analyzed for this evaluation. Benchmarks are noted as based on total or dissolved fractions and therefore total surface water sample data were compared to total benchmarks and dissolved surface water sample data were compared to dissolved benchmarks. As shown on Tables 3A (total analyses) and 3B (dissolved analyses), there were no exceedances of any of the available benchmarks, except for one detection of radium-228 from saltwater location SW-06 at 3.79 pCi/L with a benchmark of 3 pCi/L. The other five detections are below the benchmark and there are no exceedances of the radium-226 benchmark.

1.2.1.3 Sediment Benchmark Screening

Table 4 shows the comparison of the sediment samples collected in the freshwater area and saltwater area of the nearby wetlands to the benchmarks. Figure 2 shows the sample locations. There were no exceedances of detected metals or non-detect values when compared to the benchmarks.

1.2.2 Exposure Pathway Analysis, Conceptual Site Model, Fate and Transport (Required Elements 2 - 4)

The exposure pathway analysis and conceptual site model (CSM) present how the ecological receptors are exposed to the metals potentially originating from the residue disposal area (RDA). The primary COC transport pathway is historic windblown dust from the RDA. Wetlands and surface water bodies are present to the north and east of the RDA and there is the possibility that windblown dust from the RDA has been deposited in the wetlands.

1.2.3 Receptor effects levels and exposure assessment (Required Element 5)

Ecological receptors to be assessed in this SLERA are based on the Minor Habitat-Terrestrial for soil exposures and include the American robin, American woodcock, bobwhite quail, deer mouse, eastern cottontail, least shrew, mourning dove, nine-banded armadillo, northern cardinal, raccoon, red fox, red-tailed hawk, southern short tailed shrew, Texas rat snake, Virginia opossum and white footed mouse. Additionally, domestic cattle are present in the study area. Domestic cattle are also included in the database. For the aquatic portion of the assessment, the sediment PCLs developed for the spotted sandpiper are used for comparison for bioaccumulative metals in sediment (i.e., nickel).

1.2.4 Hazard Quotient Analysis (Required Elements 6 and 7)

A hazard quotient (HQ) is simply the ratio of the exposure point concentration to the PCL and provides a way to identify when concentrations exceed the “safe” value. An HQ greater than 1 indicates a potential risk; an HQ below 1 indicates acceptable risk. The PCL database was used to determine the lowest soil PCL for those receptors listed in the Minor Habitat plus domestic cattle. All of the calculated HQs are below 1 as described below:

Chromium – The lowest soil average PCL is 289.3 mg/kg for American robin. The domestic cattle conservative PCL is over 6,000 mg/kg in soil. The ratio of the maximum concentration of 64.4 mg/kg to the PCLs is below 1.

Lead – The lowest conservative soil PCL is based on the American robin at 22.9 mg/kg. The domestic cattle conservative PCL is over 10,000 mg/kg in soil. The ratio of the maximum concentration of 18.5 mg/kg to the soil PCLs is well below 1.

Nickel - The lowest conservative soil PCL is based on the American robin at 72.8 mg/kg. The domestic cattle conservative PCL is over 3,000 mg/kg. The ratio of the maximum concentration of 29.4 mg/kg to the soil PCLs is well below 1. Nickel is considered bioaccumulative in sediment and there were detections of nickel in the sediment (Table 4). The lowest conservative sediment PCL is 150.8 mg/kg for the spotted sandpiper. The maximum detected concentration of nickel in sediment is 14.8 mg/kg. The ratio of the maximum concentration of 14.8 mg/kg to the PCL is well below 1.

Vanadium - The lowest conservative PCL is based on the American woodcock at 52.2 mg/kg. The domestic cattle conservative PCL is 1,446 mg/kg. The ratio of the maximum concentration of 51.7 mg/kg to the PCLs is below 1.

Based on the HQ Analysis, there are no final COCs and therefore ecological-based PCLs are not necessary.

1.2.5 Uncertainty Analysis (Required Element 8)

This section of the SLERA describes significant uncertainties included in the assessment and hypothesizes on the impact of these uncertainties on the PCLs and SLERA conclusions.

One uncertainty identified in this SLERA evaluation is the possibility of a small soil hot spot around SB-40. This location has the highest concentrations for chromium, nickel, and vanadium (see Table 2). The closest sample which was analyzed for all of the metals is SB-41 located to the west of SB-40. It is possible that a hot spot exists in the corner of the property by Bed 1, but the concentrations are not significantly greater than background and based on comparisons to ecological soil benchmarks, are not causing risk to birds, mammals or reptiles.

There is one concentration of chromium and one concentration of vanadium in soil that are greater than both their background value and the soil benchmark, indicating that the soil invertebrate and plant community may be at risk. However, the determination of risk is generally made on representative concentrations and not single concentrations. The 95% Upper Confidence Limit (UCL) is considered the standard representative statistic for exposure point concentrations. The 95% UCL for chromium (using all the detected site concentrations) is 39.44 mg/kg (Appendix A) which is above the background value of 30 mg/kg. The 95% UCL for vanadium is 31.69 mg/kg which is well below the background value of 50 mg/kg. Based on the distribution of the concentrations, most of the chromium and vanadium concentrations are below background values.

The primary uncertainty associated with the surface water and sediment evaluation is the lack of benchmarks for vanadium and uranium. Vanadium was detected in all six sediment samples with a maximum detection of 43.6 mg/kg. There was only 1 detection above the detection limit for uranium in sediment (2.05 mg/kg). As a point of reference, the median Texas soil background value if 50 mg/kg for both uranium and vanadium. There are no salt water benchmarks for vanadium or uranium, however, all detections were well below the freshwater benchmarks. Based on the median Texas soil background value and freshwater values, vanadium and uranium in sediment and surface water are not present at concentrations that could cause unacceptable risk to ecological receptors.

Table 5 shows the field parameters for the surface water samples. The salinity between the freshwater samples and saltwater samples is significant (approximately double), however the freshwater samples have salinity greater than the 2 parts per thousand (ppt) as defined by the ERAG benchmark guidance (TCEQ, 2018b) for salt water. The freshwater surface water body is likely a transitional area and receives freshwater inflows. Salinity in the freshwater area likely fluctuates with freshwater inflows and tidal actions. The freshwater surface water and sediment samples were compared to freshwater benchmarks in Tables 3A, 3B, and 4, respectively. However, if the sample data from the freshwater samples are compared to the salt water benchmarks, there are no exceedances.

1.2.6 Ecological PCL Development (Required Element 9)

This SLERA did not result in any final COCs for wildlife or benthic invertebrates and therefore ecological PCLs are not applicable. Final ecological PCLs are not necessary for immobile terrestrial receptors (e.g., plants and soil invertebrates).

1.2.7 Ecological Risk Management (Required Element 10) and Project Recommendations

Required Element 10 is risk management, i.e., what actions are recommended to reduce or remove the risk to ecological receptors. For this SLERA it was determined that there is no ecological risk to the wildlife receptors listed in the TCEQ's Minor Habitat (terrestrial and aquatic) plus domestic cattle. Further ecological assessment is not warranted.

1.2.8 References

Texas Commission on Environmental Quality (TCEQ). 2018a. *Conducting Ecological Risk Assessments at Remediation Sites in Texas* (ERAG) (Publication RG-263) August.

TCEQ. 2018b. Supporting Documentation for the TCEQ's Ecological Benchmark Tables. (Publication RG-263b) August.

U.S. Environmental Protection Agency (EPA). 2003. *Ecological Soil Screening Level for Aluminum*. Interim Final. OSWER Directive 9285.7-60.

Golder Associates Inc.



Margaret Roy
Senior Consultant



Matthew K. Wickham, P.G.
Principal Hydrogeologist

Tables

TABLE 1
SOIL DATA SUMMARY - BACKGROUND
METALS AND RADIONUCLIDES
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	DATE	ALUMINUM (mg/kg)[1]	Q[2]	ANTIMONY (mg/kg)	Q	ARSENIC (mg/kg)	Q	CHROMIUM (mg/kg)	Q	LEAD (mg/kg)	Q	MERCURY (mg/kg)	Q	NICKEL (mg/kg)	Q	THALLIUM (mg/kg)	Q	VANADIUM (mg/kg)	Q	URANIUM (mg/kg)	Q	RADIUM 226 (pCi/g)[3]	Q	RADIUM 228 (pCi/g)	Q	RADIUM 226/228 COMBINED (pCi/g)	Q
95% UPL[4]	**--**	**32240**		**All ND**		**4.717**		**20.07**		**13.45**		**0.0189**		**12.22**		**All ND**		**29.69**		**All ND**		**0.959**		**0.966**		**1.859**	
BGSB-1	11/26/2019	27200		<0.565		4.32		17.4		13.2		0.0184	J	10.5		<0.565		26.5		<1.13		0.761		0.782		1.54	
BGSB-2	11/26/2019	22800		<0.580		3.65		14.6		10.9		<0.0168		8.79		<0.580		21.7		<1.16		0.843		0.624		1.47	
BGSB-3	11/26/2019	29300		<0.621		3.47		18.4		12.3		<0.0178		11.7		<0.621		25.7		<1.24		0.884		0.834		1.72	
BGSB-4	11/26/2019	21300		<0.516		4.24		13.9		11.8		<0.0170		8.55		<0.516		21.3		<1.03		0.859		0.762		1.62	
BGSB-5	11/26/2019	20800		<0.569		4.18		13.6		10.6		<0.0168		8.30		<0.569		22.4		<1.14		0.837		0.868		1.705	
BGSB-6	11/26/2019	27500		<0.580		4.10		17.1		12.9		0.0189	J	10.2		<0.580		25.5		<1.16		0.734		0.786		1.52	
BGSB-7	11/26/2019	26500		<0.619		4.33		16.7		11.2		<0.0196		9.90		<0.619		26.2		<1.24		0.696		0.555		1.25	
BGSB-8	11/26/2019	26300		<0.629		4.09		16.7		11.2		<0.0193		9.69		<0.629		25.8		<1.26		0.857		0.652		1.51	
BGSB-9	11/26/2019	31000		<0.660		4.05		19.4		12.3		<0.0190		11.8		<0.660		28.9		<1.32		0.931		0.796		1.73	
BGSB-10	11/26/2019	25900		<0.631		4.55		16.6		11.5		<0.0196		9.60		<0.631		26.2		<1.26		0.776		0.891		1.67	

Notes:

1) mg/kg - milligrams per killogram, UPL - upper prediction limit

2) Q - lab qualifiers, as follows:

J - estimated value – the result falls between the Sample Detection Limit (SDL) and the Reporting Limit (RL)

< - indicates the analyte was not detected at the Sample Detection Limit (SDL); SDL listed in the concentration column

3) pCi/g - picocuries per gram

4) 95% UPLs (Upper Prediction Limits) are based on normal data distribution. The UPL for mercury is the maximum detection and not a statistical calculation.

5) All samples collected from 0-6 inches below ground surface.

TABLE 2
SOIL DATA SUMMARY
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	SAMPLE DATE	ALUMINUM (mg/kg)[1]	Q[2]	ANTIMONY (mg/kg)	Q	ARSENIC (mg/kg)	Q	CHROMIUM* (mg/kg)	Q	LEAD* (mg/kg)	Q	MERCURY* (mg/kg)	Q	NICKEL* (mg/kg)	Q	THALLIUM (mg/kg)	Q	VANADIUM (mg/kg)	Q	URANIUM (mg/kg)	Q	RADIUM 226 (pCi/g)[3]	Q	RADIUM 228 (pCi/g)	Q	RADIUM 226/228 COMBINED (pCi/g)	Q
Ecological Soil Benchmark [4]		**30,000**		**5**		**18**		**0.4**		**120**		**0.1**		**38**		**1**		**2**		**5**		**50**		**40**		**40**	
Texas-Specific Median Background [5]		**30,000**		**1**		**5.9**		**30**		**15**		**0.04**		**10**		**No Value**		**50**		**50**		**No Value**		**No Value**		**No Value**	
Site-Specific Background 95% UPL [6]		**32,240**		**All ND**		**4.72**		**20.07**		**13.45**		**0.0189**		**12**		**All ND**		**30**		**All ND**		**0.959**		**0.966**		**1.859**	
SB-01	11/25/2019	19,800		<0.562		4.26		14.3		9.15		<0.0191		19.0		<0.562		28.1		<1.12		0.820		0.634		1.45	
SB-02	11/25/2019	21,900																									
SB-03	11/25/2019	25,700																									
SB-04	11/25/2019	26,600																									
SB-05	11/25/2019	25,800																									
SB-06	11/25/2019	30,900																									
SB-07	11/25/2019	22,200																									
SB-08	11/25/2019	20,000																									
SB-09	11/25/2019	29,800																									
SB-10	11/25/2019	29,800																									
SB-11	11/25/2019	22,700		<0.572		2.48		14.9		10.2		<0.0170		8.15		<0.572		23.1		<1.14		0.669		0.450		1.12	
SB-12	11/25/2019	30,300																									
SB-13	11/25/2019	4,440																									
SB-14	11/25/2019	34,500		<0.596		1.96		22.2		12.3		<0.0204		11.9		<0.596		30.9		<1.19		1.52		0.836		2.36	
SB-15	11/25/2019	28,700																									
SB-16	11/25/2019	15,600		<0.546		3.41		11.1		7.19		<0.0190		5.71		<0.546		19.2		<1.09		0.561		0.735		1.30	
SB-17	11/25/2019	30,100																									
SB-18	11/25/2019	27,500																									
SB-19	11/25/2019	17,800																									
SB-20	11/25/2019	25,100																									
SB-21	11/25/2019	9,090		<0.595		2.14		7.33		4.87		<0.0170		4.02		<0.595		13.1		<1.19		0.395		0.302		0.698	
SB-22	11/25/2019	25,800																									
SB-23	11/25/2019	22,400																									
SB-24	11/25/2019	19,000																									
SB-25	11/25/2019	23,400																									
SB-26	11/25/2019	17,800		<0.574		3.56		13.0		8.77		<0.0174		7.39		<0.574		24.3		<1.15		0.861		0.569		1.43	
SB-27	11/25/2019	17,500																									
SB-28	11/25/2019	16,800																									
SB-29	11/25/2019	19,300																									
SB-30	11/25/2019	24,800		<0.576		3.40		16.4		18.5		<0.0188		9.91		<0.576		24.7		<1.15		0.708		0.952		1.66	
SB-31	11/25/2019	22,400																									
SB-32	11/25/2019	8,000																									
SB-33	11/25/2019	25,900		<0.597		3.33		17.3		9.38		<0.0185		8.60		<0.597		26.6		<1.19		0.703		0.637		1.34	
SB-34	11/25/2019	20,400																									
SB-35	11/25/2019	24,000																									
SB-36	11/25/2019	28,000																									

TABLE 2
SOIL DATA SUMMARY
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	SAMPLE DATE	ALUMINUM (mg/kg)[1]	Q[2]	ANTIMONY (mg/kg)	Q	ARSENIC (mg/kg)	Q	CHROMIUM* (mg/kg)	Q	LEAD* (mg/kg)	Q	MERCURY* (mg/kg)	Q	NICKEL* (mg/kg)	Q	THALLIUM (mg/kg)	Q	VANADIUM (mg/kg)	Q	URANIUM (mg/kg)	Q	RADIUM 226 (pCi/g)[3]	Q	RADIUM 228 (pCi/g)	Q	RADIUM 226/228 COMBINED (pCi/g)	Q
Ecological Soil Benchmark [4]		**30,000**		**5**		**18**		**0.4**		**120**		**0.1**		**38**		**1**		**2**		**5**		**50**		**40**		**40**	
Texas-Specific Median Background [5]		**30,000**		**1**		**5.9**		**30**		**15**		**0.04**		**10**		**No Value**		**50**		**50**		**No Value**		**No Value**		**No Value**	
Site-Specific Background 95% UPL [6]		**32,240**		**All ND**		**4.72**		**20.07**		**13.45**		**0.0189**		**12**		**All ND**		**30**		**All ND**		**0.959**		**0.966**		**1.859**	
SB-37	11/25/2019	17,100		<0.540		3.24		14.2		11.7		<0.0165		7.98		<0.540		21.7		<1.08		0.736		0.815		1.55	
SB-38	11/25/2019	19,000																									
SB-39	11/25/2019	27,600																									
SB-40	11/25/2019	18,500		<0.556		5.58		64.4		12.3		<0.0181		29.4		<0.556		51.7		1.19	JN	0.838		1.09		1.93	
SB-41	11/25/2019	21,400		<0.559		3.32		15.1		6.89		<0.0177		7.64		<0.559		27.1		<1.12		0.695		0.369		1.06	
SB-42	11/25/2019	27,100																									
SB-43	11/25/2019	16,600																									
SB-44	11/25/2019	12,500																									

Notes:

1) mg/kg - milligrams per killogram, UPL - upper prediction limit

2) Q - lab qualifiers, as follows:

   J - estimated value – the result falls between the Sample Detection Limit (SDL) and the Reporting Limit (RL)

   N - laboratory does not offer NELAC certification for this analyte

   < - indicates the analyte was not detected at the Sample Detection Limit (SDL); SDL listed in the concentration column

3) pCi/g - picocuries per gram

4) Ecological Soil Benchmarks dated August 2019.

5) Texas-Specific Median Background concentrations for metals from TRRP rule §350.51(m).

6) Site-Specific Background 95% UPLs (Upper Prediction Limits) from Table 1.

7) All samples collected from 0-6 inches below ground surface.

8) * indicates that the analyte is bioaccumulative in soil

9) Highlighted cells indicate an exceedance of the highest of the Texas-Specific Median Background concentrations or the Site-Specific Background concentrations if the Background is higher than the Ecological Soil Benchmark.

10) Aluminum is not considered an Ecological COC due to the neutral pH of the site soils. Therefore, no ecological evaluation is necessary.

TABLE 3A
SURFACE WATER DATA SUMMARY
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	SAMPLE DATE	TOTAL[6]																											
		ALUMINUM (mg/L)[1]	Q[2]	ANTIMONY (mg/L)	Q	ARSENIC (mg/L)	Q	CHROMIUM (mg/L)	Q	LEAD (mg/L)	Q	MERCURY[3] (mg/L)	Q	NICKEL (mg/L)	Q	THALLIUM[3] (mg/L)	Q	VANADIUM (mg/L)	Q	URANIUM (mg/L)	Q	Radium 226 (pCi/L)[4]	Q	Radium 228 (pCi/L)	Q	RADIUM 226/228 (COMBINED) (pCi/L)	Q
Freshwater Chronic Benchmark[5]		**Not Applicable**		**2.2**		**Not Applicable**		**Not Applicable**		**Not Applicable**		**0.0013**		**Not Applicable**		**0.18**		**0.02**		**Not Applicable**		**4**		**3**		**Not Applicable**	
SW-1 (Freshwater)	5/15/2020	7.81		0.00232	J	0.0113		0.00417	J	0.00344		<0.0000800		0.00565	J	<0.000500		0.0104		0.00466	JN	0.293		2.64		2.93	
SW-2 (Freshwater)	5/15/2020	0.660		<0.000800		0.0116		<0.00200		0.000489	J	<0.0000800		0.00331	J	<0.000500		0.00341		0.00403	JN	0.045		0.29		0.74	
SW-3 (Freshwater)	5/15/2020	2.51		<0.000800		0.0127		<0.00200		0.00117		<0.0000800		0.00427	J	<0.000500		0.00463		0.00360	JN	0.217		1.77		1.98	
Saltwater Chronic Benchmark[5]		**Not Applicable**		**0.73**		**Not Applicable**		**Not Applicable**		**Not Applicable**		**0.0011**		**Not Applicable**		**2.1**		**No Value**		**Not Applicable**		**4**		**3**		**Not Applicable**	
SW-4 (Salt Water)	5/15/2020	1.33		<0.000800		0.00786		<0.00200		0.000590	J	<0.0000800		<0.00300		<0.000500		0.00443		0.00425	JN	0.706		0.80		1.50	
SW-5 (Salt Water)	5/15/2020	3.76		<0.000800		0.00749		<0.00200		0.00160		<0.0000800		<0.00300		<0.000500		0.00708		0.00403	JN	0.110		2.19		2.30	
SW-6 (Salt Water)	5/15/2020	6.55		<0.000800		0.0135		0.00279	J	0.00292		<0.0000800		0.00425	J	<0.000500		0.0111		0.00879	JN	0.629		3.79		4.42	

Notes:

1) mg/L - milligrams per liter

2) Q - lab qualifiers, as follows:

J - estimated value – the result falls between the Sample Detection Limit (SDL) and the Reporting Limit (RL)

< - indicates the analyte was not detected at the Sample Detection Limit (SDL); SDL listed in the concentration column

N - laboratory does not offer NELAC certification for this analyte

3) Bioaccumulative in water.

4) pCi/L - picocuries per liter

5) Freshwater and Saltwater Chronic Benchmarks for surface water (TCEQ August 2019 Benchmark Tables Accompanying the Ecological Risk Assessment Guidance).

6) Benchmarks based on the dissolved fraction are compared to the dissolved sample.

7) Highlighted cells indicate an exceedance of the associated Benchmark.

TABLE 3B
SURFACE WATER DATA SUMMARY
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	SAMPLE DATE	DISSOLVED[6]																					
		ALUMINUM (mg/L)[1]	Q[2]	ANTIMONY (mg/L)	Q	ARSENIC (mg/L)	Q	CHROMIUM (mg/L)	Q	LEAD (mg/L)	Q	MERCURY[3] (mg/L)	Q	NICKEL (mg/L)	Q	THALLIUM[3] (mg/L)	Q	VANADIUM (mg/L)	Q	URANIUM (mg/L)	Q
Freshwater Chronic Benchmark[5]		**0.087**		**Not Applicable**		**0.15**		**0.042**		**0.00117**		**Not Applicable**		**0.0289**		**Not Applicable**		**Not Applicable**		**0.7**	
SW-1 (Freshwater)	5/15/2020	<0.0100		<0.000800		0.00867		<0.00200		0.000526	J	<0.0000800		0.00368	J	<0.000500		0.00326		0.00401	JN
SW-2 (Freshwater)	5/15/2020	0.0166	J	<0.000800		0.0106		<0.00200		<0.000300		<0.0000800		0.00335	J	<0.000500		0.00233		0.00388	JN
SW-3 (Freshwater)	5/15/2020	<0.0100		<0.000800		0.0115		<0.00200		<0.000300		<0.0000800		0.00332	J	<0.000500		0.00231		0.00345	JN
Saltwater Chronic Benchmark[5]		**No Value**		**Not Applicable**		**0.078**		**No Value**		**0.0053**		**Not Applicable**		**0.0131**		**Not Applicable**		**Not Applicable**		**No Value**	
SW-4 (Salt Water)	5/15/2020	<0.0100		<0.000800		0.00732		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00311		0.00410	JN
SW-5 (Salt Water)	5/15/2020	<0.0100		<0.000800		0.00625		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00287		0.00385	JN
SW-6 (Salt Water)	5/15/2020	<0.0100		<0.000800		0.0123		<0.00200		<0.000300		<0.0000800		<0.00300		<0.000500		0.00564		0.00853	JN

Notes:

1) mg/L - milligrams per liter

2) Q - lab qualifiers, as follows:

J - estimated value – the result falls between the Sample Detection Limit (SDL) and the Reporting Limit (RL)

< - indicates the analyte was not detected at the Sample Detection Limit (SDL); SDL listed in the concentration column

N - laboratory does not offer NELAC certification for this analyte

3) Bioaccumulative in water.

4) pCi/L - picocuries per liter

5) Freshwater and Saltwater Chronic Benchmarks for surface water (TCEQ August 2019 Benchmark Tables Accompanying the Ecological Risk Assessment Guidance).

6) Benchmarks based on the dissolved fraction are compared to the dissolved sample.

TABLE 4
SEDIMENT SUMMARY
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	SAMPLE DATE	ALUMINUM (mg/kg)[1]	Q[2]	ANTIMONY (mg/kg)	Q	ARSENIC (mg/kg)	Q	CHROMIUM (mg/kg)	Q	LEAD (mg/kg)	Q	MERCURY[3] (mg/kg)	Q	NICKEL[3] (mg/kg)	Q	THALLIUM (mg/kg)	Q	VANADIUM (mg/kg)	Q	URANIUM (mg/kg)	Q	Radium 226 (pCi/g)[4]	Q	Radium 228 (pCi/g)	Q
Freshwater Chronic Benchmark[5]		**No Value**		**0.3**		**9.79**		**43.4**		**35.8**		**0.18**		**22.7**		**No Value**		**No Value**		**No Value**		**100**		**91**	
SD-1 (Freshwater)	5/15/2020	6730		<0.210		1.12	J	5.17		3.75		<0.0228		2.62	J	<0.699		8.89		<1.40	N	0.861		0.256	
SD-2 (Freshwater)	5/15/2020	12000		<0.232		1.89		8.93		5.43		<0.0245		4.70		<0.774		15.9		<1.55	N	0.836		0.415	
SD-3 (Freshwater)	5/15/2020	10300		<0.220		1.18	J	7.57		4.74		<0.0260		3.80		<0.735		11.1		<1.47	N	0.714		0.406	
Saltwater Chronic Benchmark[5]		**No Value**		**2**		**8.2**		**81**		**46.7**		**0.15**		**20.9**		**No Value**		**No Value**		**No Value**		**100**		**91**	
SD-4 (Salt Water)	5/15/2020	13800		<0.228		2.40		10.0		7.75		<0.0256		5.47		<0.759		18.9		<1.52	N	1.05		0.821	
SD-5 (Salt Water)	5/15/2020	18300		<0.234		2.72		13.3		7.12		<0.0267		7.75		<0.779		30.1		<1.56	N	0.487		0.628	
SD-6 (Salt Water)	5/15/2020	36700		<0.285		4.39		24.8		13.8		<0.0301		14.8		<0.949		43.6		2.05	JN	0.822		1.23	

Notes:

1) mg/kg - milligrams per kilogram

2) Q - lab qualifiers, as follows:

J - estimated value – the result falls between the Sample Detection Limit (SDL) and the Reporting Limit (RL)

< - indicates the analyte was not detected at the Sample Detection Limit (SDL); SDL listed in the concentration column

N - laboratory does not offer NELAC certification for this analyte

3) Bioaccumulative in sediment

4) pCi/g - picocuries per gram

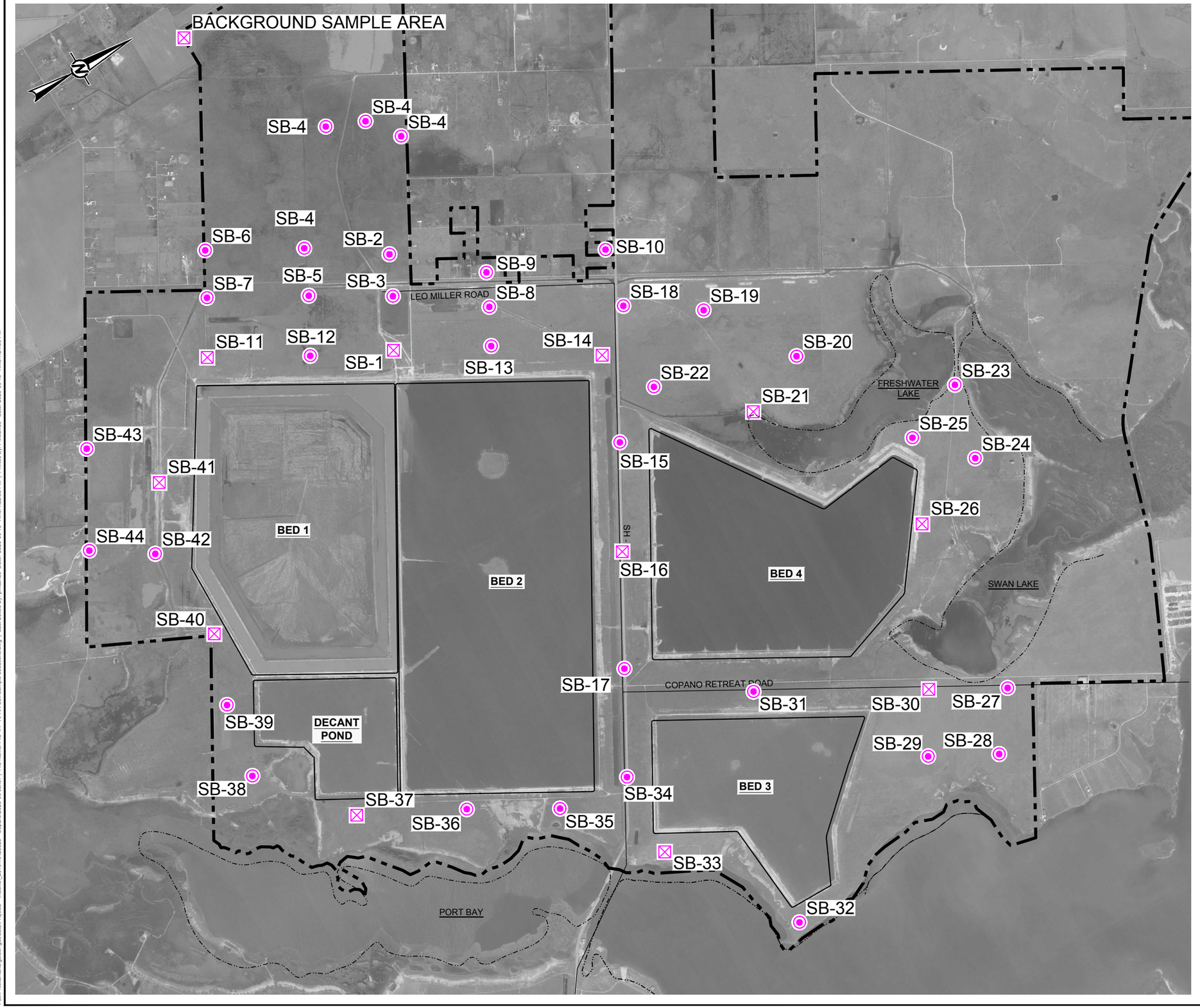
5) Freshwater and Saltwater Sediment Chronic Benchmarks for sediment samples (TCEQ August 2019 Benchmark Tables Accompanying the Ecological Risk Assessment Guidance).

TABLE 5
FIELD READINGS
CE RANCH LLC
COPANO PROPERTY

SAMPLE ID	DATE	pH[1]	SPECIFIC CONDUCTIVITY (mS/cm)[2]	SALINITY (ppt)[3]	TURBIDITY (NTU)[4]	DISSOLVED OXYGEN (mg/L)[5]	TOTAL DISSOLVED SOLIDS (mg/L)
SW-1 (Freshwater)	5/15/2020	9.05	22300	10.3	22.9	11.20	10.9
SW-2 (Freshwater)	5/15/2020	8.82	24200	10.9	12.1	10.10	11.8
SW-3 (Freshwater)	5/15/2020	8.77	26900	11.3	9.60	7.81	11.7
SW-4 (Salt Water)	5/15/2020	8.58	47400	21.0	19.7	7.93	24.1
SW-5 (Salt Water)	5/15/2020	8.54	42600	19.8	18.2	12.40	20.6
SW-6 (Salt Water)	5/15/2020	8.58	51400	20.2	18.8	13.30	20.2

Notes:
1) pH reported in standard units
2) mS/cm - milliSiemens per centimeter
3) ppt - parts per thousand
4) NTU - Nephelometric Turbidity Unit
5) mg/L - milligrams per liter

Figures



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- SCREENING SURFACE SOIL SAMPLE LOCATION (ANALYZED FOR SCREENING LEVEL ANALYTES)
- LOCATION SAMPLED FOR SCREENING LEVEL AND COPC ANALYTES

NOTE(S)

1. 10 BACKGROUND SAMPLES WERE COLLECTED AT THE BACKGROUND SOIL SAMPLING LOCATION

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH, IMAGERY DATED 8/29/17.

0 1250 2500
1" = 2500' FEET

CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
SOIL SAMPLE LOCATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020-02-06
DESIGNED	AJD
PREPARED	PJM
REVIEWED	RJR
APPROVED	MKW

PROJECT NO. 19125525 | REV. 0 | FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in 0

Path: \\texarkana.golder.gds\data\Projects - Victoria_2019\19125525 - Copano\2020-06 June\ | File Name: FIG 4A - APAR Soil Sample Locations.dwg | Last Edited By: pmcbride Date: 2020-06-18 Time:1:22:53 PM | Printed By: PMcBride Date: 2020-06-18 Time:1:24:50 PM



LEGEND

APPROXIMATE PROPERTY BOUNDARY

SURFACE WATER (SW) AND SEDIMENT (SD) SAMPLE LOCATIONS

REFERENCE(S)

MAP BASED ON AERIAL PHOTOMETRIC MAP BY LANMON AERIAL PHOTOGRAPHY, FLOWN OCTOBER 23, 2019.

0 1000 2000
1" = 2000' FEET

CLIENT
CE RANCH LLC

PROJECT
COPANO PROPERTY

TITLE
SURFACE WATER AND SEDIMENT LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-06-08
DESIGNED	BZH
PREPARED	PJM
REVIEWED	MKW
APPROVED	MKW

PROJECT NO. 19125525 | REV. 0 | FIGURE 2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in 0

Path: \\texarkana.golder.gds\data\Projects - Victoria_2019\19125525 - Copano\2020-06 June\ | File Name: FIG 1 - Surface Water-Sediment Locations.dwg | Last Edited By: pmcbride Date: 2020-06-10 Time:5:16:03 PM | Printed By: PMcBride Date: 2020-06-10 Time:5:19:15 PM

Appendix A
ProUCL Output

Appendix A
UPLs for Background Soil Data
CE Ranch LLC
Copano Property

Upper Prediction Limits for Background Soil Data

Background Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.112/19/2019 1:28:52 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Coverage	95%
New or Future K Observations	1
Number of Bootstrap Operations	2000

Aluminum

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
Minimum	20800	First Quartile	23575
Second Largest	29300	Median	26400
Maximum	31000	Third Quartile	27425
Mean	25860	SD	3318
Coefficient of Variation	0.128	Skewness	-0.264
Mean of logged Data	10.15	SD of logged Data	0.132

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	2.911	d2max (for USL)	2.176

Normal GOF Test

Shapiro Wilk Test Statistic	0.942	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.205	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	35520	90% Percentile (z)	30113
95% UPL (t)	**32240**	95% Percentile (z)	31318
95% USL	33081	99% Percentile (z)	33580

Gamma GOF Test

A-D Test Statistic	0.395	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.221	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	65.42	k star (bias corrected MLE)	45.86
Theta hat (MLE)	395.3	Theta star (bias corrected MLE)	563.8
nu hat (MLE)	1308	nu star (bias corrected)	917.3
MLE Mean (bias corrected)	25860	MLE Sd (bias corrected)	3819

Background Statistics Assuming Gamma Distribution

95% Wilson Hilferty (WH) Approx. Gamma UPL	32743	90% Percentile	30858
95% Hawkins Wixley (HW) Approx. Gamma UPL	32816	95% Percentile	32445
95% WH Approx. Gamma UTL with 95% Coverage	36798	99% Percentile	35562
95% HW Approx. Gamma UTL with 95% Coverage	36995		
95% WH USL	33753	95% HW USL	33852

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.927	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.228	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Background Statistics assuming Lognormal Distribution

95% UTL with 95% Coverage	37648	90% Percentile (z)	30379
95% UPL (t)	33054	95% Percentile (z)	31868
95% USL	34176	99% Percentile (z)	34859

Nonparametric Distribution Free Background Statistics

Data appear Normal at 5% Significance Level

Nonparametric Upper Limits for Background Threshold Values

Order of Statistic, r	10	95% UTL with 95% Coverage	31000
Approx, f used to compute achieved CC	0.526	Approximate Actual Confidence Coefficient achieved by U	0.401
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	31000	95% BCA Bootstrap UTL with 95% Coverage	31000
95% UPL	31000	90% Percentile	29470
90% Chebyshev UPL	36301	95% Percentile	30235
95% Chebyshev UPL	41030	99% Percentile	30847
95% USL	31000		

Appendix A
UPLs for Background Soil Data
CE Ranch LLC
Copano Property

Arsenic

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
Minimum	3.47	First Quartile	4.06
Second Largest	4.33	Median	4.14
Maximum	4.55	Third Quartile	4.3
Mean	4.098	SD	0.322
Coefficient of Variation	0.0785	Skewness	-0.911
Mean of logged Data	1.408	SD of logged Data	0.0813
Critical Values for Background Threshold Values (BTVs)			
Tolerance Factor K (For UTL)	2.911	d2max (for USL)	2.176
Normal GOF Test			
Shapiro Wilk Test Statistic	0.914	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.241	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Background Statistics Assuming Normal Distribution			
95% UTL with 95% Coverage	5.035	90% Percentile (z)	4.51
95% UPL (t)	**4.717**	95% Percentile (z)	4.627
95% USL	4.798	99% Percentile (z)	4.847
Gamma GOF Test			
A-D Test Statistic	0.535	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.249	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	172.4	k star (bias corrected MLE)	120.7
Theta hat (MLE)	0.0238	Theta star (bias corrected MLE)	0.0339
nu hat (MLE)	3447	nu star (bias corrected)	2415
MLE Mean (bias corrected)	4.098	MLE Sd (bias corrected)	0.373
Background Statistics Assuming Gamma Distribution			
95% Wilson Hilferty (WH) Approx. Gamma UPL	4.755	90% Percentile	4.583
95% Hawkins Wixley (HW) Approx. Gamma UPL	4.76	95% Percentile	4.73
95% WH Approx. Gamma UTL with 95% Coverage	5.123	99% Percentile	5.015
95% HW Approx. Gamma UTL with 95% Coverage	5.136		
95% WH USL	4.848	95% HW USL	4.855
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.896	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.257	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Background Statistics assuming Lognormal Distribution			
95% UTL with 95% Coverage	5.177	90% Percentile (z)	4.535
95% UPL (t)	4.777	95% Percentile (z)	4.671
95% USL	4.877	99% Percentile (z)	4.937
Nonparametric Distribution Free Background Statistics			
Data appear Normal at 5% Significance Level			
Nonparametric Upper Limits for Background Threshold Values			
Order of Statistic, r	10	95% UTL with 95% Coverage	4.55
Approx, f used to compute achieved CC	0.526	Approximate Actual Confidence Coefficient achieved by U	0.401
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	4.55	95% BCA Bootstrap UTL with 95% Coverage	4.55
95% UPL	4.55	90% Percentile	4.352
90% Chebyshev UPL	5.11	95% Percentile	4.451
95% Chebyshev UPL	5.569	99% Percentile	4.53
95% USL	4.55		

Chromium

General Statistics

Total Number of Observations	10	Number of Distinct Observations	9
Minimum	13.6	First Quartile	15.1
Second Largest	18.4	Median	16.7
Maximum	19.4	Third Quartile	17.33
Mean	16.44	SD	1.886
Coefficient of Variation	0.115	Skewness	-0.224
Mean of logged Data	2.794	SD of logged Data	0.117

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	2.911	d2max (for USL)	2.176

Normal GOF Test

Shapiro Wilk Test Statistic	0.934	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.234	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	21.93	90% Percentile (z)	18.86
95% UPL (t)	**20.07**	95% Percentile (z)	19.54
95% USL	20.54	99% Percentile (z)	20.83

Gamma GOF Test

A-D Test Statistic	0.435	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.25	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	82.4	k star (bias corrected MLE)	57.75
Theta hat (MLE)	0.2	Theta star (bias corrected MLE)	0.285
nu hat (MLE)	1648	nu star (bias corrected)	1155
MLE Mean (bias corrected)	16.44	MLE Sd (bias corrected)	2.163

Background Statistics Assuming Gamma Distribution

95% Wilson Hilferty (WH) Approx. Gamma UPL	20.31	90% Percentile	19.27
95% Hawkins Wixley (HW) Approx. Gamma UPL	20.35	95% Percentile	20.15
95% WH Approx. Gamma UTL with 95% Coverage	22.57	99% Percentile	21.89
95% HW Approx. Gamma UTL with 95% Coverage	22.66		
95% WH USL	20.88	95% HW USL	20.92

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.923	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.254	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Background Statistics assuming Lognormal Distribution

95% UTL with 95% Coverage	22.97	90% Percentile (z)	18.98
95% UPL (t)	20.46	95% Percentile (z)	19.81
95% USL	21.08	99% Percentile (z)	21.45

Nonparametric Distribution Free Background Statistics

Data appear Normal at 5% Significance Level

Nonparametric Upper Limits for Background Threshold Values

Order of Statistic, r	10	95% UTL with 95% Coverage	19.4
Approx, f used to compute achieved CC	0.526	Approximate Actual Confidence Coefficient achieved by U	0.401
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	19.4	95% BCA Bootstrap UTL with 95% Coverage	19.4
95% UPL	19.4	90% Percentile	18.5
90% Chebyshev UPL	22.38	95% Percentile	18.95
95% Chebyshev UPL	25.06	99% Percentile	19.31
95% USL	19.4		

Appendix A
UPLs for Background Soil Data
CE Ranch LLC
Copano Property

Lead

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	8
Minimum	10.6	First Quartile	11.2
Second Largest	12.9	Median	11.65
Maximum	13.2	Third Quartile	12.3
Mean	11.79	SD	0.865
Coefficient of Variation	0.0733	Skewness	0.346
Mean of logged Data	2.465	SD of logged Data	0.0728
Critical Values for Background Threshold Values (BTVs)			
Tolerance Factor K (For UTL)	2.911	d2max (for USL)	2.176
Normal GOF Test			
Shapiro Wilk Test Statistic	0.953	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.152	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Background Statistics Assuming Normal Distribution			
95% UTL with 95% Coverage	14.31	90% Percentile (z)	12.9
95% UPL (t)	**13.45**	95% Percentile (z)	13.21
95% USL	13.67	99% Percentile (z)	13.8
Gamma GOF Test			
A-D Test Statistic	0.258	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.162	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	208.6	k star (bias corrected MLE)	146.1
Theta hat (MLE)	0.0565	Theta star (bias corrected MLE)	0.0807
nu hat (MLE)	4173	nu star (bias corrected)	2922
MLE Mean (bias corrected)	11.79	MLE Sd (bias corrected)	0.975
Background Statistics Assuming Gamma Distribution			
95% Wilson Hilferty (WH) Approx. Gamma UPL	13.5	90% Percentile	13.06
95% Hawkins Wixley (HW) Approx. Gamma UPL	13.51	95% Percentile	13.44
95% WH Approx. Gamma UTL with 95% Coverage	14.45	99% Percentile	14.18
95% HW Approx. Gamma UTL with 95% Coverage	14.48		
95% WH USL	13.74	95% HW USL	13.75
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.958	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.149	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Background Statistics assuming Lognormal Distribution			
95% UTL with 95% Coverage	14.54	90% Percentile (z)	12.91
95% UPL (t)	13.53	95% Percentile (z)	13.26
95% USL	13.78	99% Percentile (z)	13.93
Nonparametric Distribution Free Background Statistics			
Data appear Normal at 5% Significance Level			
Nonparametric Upper Limits for Background Threshold Values			
Order of Statistic, r	10	95% UTL with 95% Coverage	13.2
Approx, f used to compute achieved CC	0.526	Approximate Actual Confidence Coefficient achieved by U	0.401
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	13.2	95% BCA Bootstrap UTL with 95% Coverage	13.2
95% UPL	13.2	90% Percentile	12.93
90% Chebyshev UPL	14.51	95% Percentile	13.07
95% Chebyshev UPL	15.74	99% Percentile	13.17
95% USL	13.2		

Nickel

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
Minimum	8.3	First Quartile	8.993
Second Largest	11.7	Median	9.795
Maximum	11.8	Third Quartile	10.43
Mean	9.903	SD	1.204
Coefficient of Variation	0.122	Skewness	0.386
Mean of logged Data	2.286	SD of logged Data	0.121
Critical Values for Background Threshold Values (BTVs)			
Tolerance Factor K (For UTL)	2.911	d2max (for USL)	2.176
Normal GOF Test			
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.132	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Background Statistics Assuming Normal Distribution			
95% UTL with 95% Coverage	13.41	90% Percentile (z)	11.45
95% UPL (t)	**12.22**	95% Percentile (z)	11.88
95% USL	12.52	99% Percentile (z)	12.7
Gamma GOF Test			
A-D Test Statistic	0.276	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.138	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	76.23	k star (bias corrected MLE)	53.43
Theta hat (MLE)	0.13	Theta star (bias corrected MLE)	0.185
nu hat (MLE)	1525	nu star (bias corrected)	1069
MLE Mean (bias corrected)	9.903	MLE Sd (bias corrected)	1.355
Background Statistics Assuming Gamma Distribution			
95% Wilson Hilferty (WH) Approx. Gamma UPL	12.33	90% Percentile	11.67
95% Hawkins Wixley (HW) Approx. Gamma UPL	12.35	95% Percentile	12.23
95% WH Approx. Gamma UTL with 95% Coverage	13.75	99% Percentile	13.32
95% HW Approx. Gamma UTL with 95% Coverage	13.8		
95% WH USL	12.69	95% HW USL	12.71
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.125	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Background Statistics assuming Lognormal Distribution			
95% UTL with 95% Coverage	13.97	90% Percentile (z)	11.48
95% UPL (t)	12.4	95% Percentile (z)	12
95% USL	12.79	99% Percentile (z)	13.02
Nonparametric Distribution Free Background Statistics			
Data appear Normal at 5% Significance Level			
Nonparametric Upper Limits for Background Threshold Values			
Order of Statistic, r	10	95% UTL with 95% Coverage	11.8
Approx, f used to compute achieved CC	0.526	Approximate Actual Confidence Coefficient achieved by U	0.401
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	11.8	95% BCA Bootstrap UTL with 95% Coverage	11.8
95% UPL	11.8	90% Percentile	11.71
90% Chebyshev UPL	13.69	95% Percentile	11.76
95% Chebyshev UPL	15.41	99% Percentile	11.79
95% USL	11.8		

Vanadium

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	9
Minimum	21.3	First Quartile	23.18
Second Largest	26.5	Median	25.75
Maximum	28.9	Third Quartile	26.2
Mean	25.02	SD	2.428
Coefficient of Variation	0.097	Skewness	-0.39
Mean of logged Data	3.215	SD of logged Data	0.0992
Critical Values for Background Threshold Values (BTVs)			
Tolerance Factor K (For UTL)	2.911	d2max (for USL)	2.176
Normal GOF Test			
Shapiro Wilk Test Statistic	0.883	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.278	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	
Data appear Approximate Normal at 5% Significance Level			
Background Statistics Assuming Normal Distribution			
95% UTL with 95% Coverage	32.09	90% Percentile (z)	28.13
95% UPL (t)	**29.69**	95% Percentile (z)	29.01
95% USL	30.3	99% Percentile (z)	30.67
Gamma GOF Test			
A-D Test Statistic	0.746	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.724	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.293	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.266	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	114.8	k star (bias corrected MLE)	80.41
Theta hat (MLE)	0.218	Theta star (bias corrected MLE)	0.311
nu hat (MLE)	2296	nu star (bias corrected)	1608
MLE Mean (bias corrected)	25.02	MLE Sd (bias corrected)	2.79
Background Statistics Assuming Gamma Distribution			
95% Wilson Hilferty (WH) Approx. Gamma UPL	29.98	90% Percentile	28.66
95% Hawkins Wixley (HW) Approx. Gamma UPL	30.02	95% Percentile	29.78
95% WH Approx. Gamma UTL with 95% Coverage	32.81	99% Percentile	31.96
95% HW Approx. Gamma UTL with 95% Coverage	32.91		
95% WH USL	30.69	95% HW USL	30.74
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.872	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.293	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.262	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Background Statistics assuming Lognormal Distribution			
95% UTL with 95% Coverage	33.25	90% Percentile (z)	28.29
95% UPL (t)	30.15	95% Percentile (z)	29.33
95% USL	30.91	99% Percentile (z)	31.38
Nonparametric Distribution Free Background Statistics			
Data appear Approximate Normal at 5% Significance Level			
Nonparametric Upper Limits for Background Threshold Values			
Order of Statistic, r	10	95% UTL with 95% Coverage	28.9
Approx, f used to compute achieved CC	0.526	Approximate Actual Confidence Coefficient achieved by U	0.401
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	28.9	95% BCA Bootstrap UTL with 95% Coverage	28.9
95% UPL	28.9	90% Percentile	26.74
90% Chebyshev UPL	32.66	95% Percentile	27.82
95% Chebyshev UPL	36.12	99% Percentile	28.68
95% USL	28.9		

Ra-226

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
Minimum	0.696	First Quartile	0.765
Second Largest	0.884	Median	0.84
Maximum	0.931	Third Quartile	0.859
Mean	0.818	SD	0.0732
Coefficient of Variation	0.0895	Skewness	-0.268
Mean of logged Data	-0.205	SD of logged Data	0.0909
Critical Values for Background Threshold Values (BTVs)			
Tolerance Factor K (For UTL)	2.911	d2max (for USL)	2.176
Normal GOF Test			
Shapiro Wilk Test Statistic	0.961	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.203	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Background Statistics Assuming Normal Distribution			
95% UTL with 95% Coverage	1.031	90% Percentile (z)	0.912
95% UPL (t)	**0.959**	95% Percentile (z)	0.938
95% USL	0.977	99% Percentile (z)	0.988
Gamma GOF Test			
A-D Test Statistic	0.312	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.218	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	136	k star (bias corrected MLE)	95.24
Theta hat (MLE)	0.00601	Theta star (bias corrected MLE)	0.00859
nu hat (MLE)	2719	nu star (bias corrected)	1905
MLE Mean (bias corrected)	0.818	MLE Sd (bias corrected)	0.0838
Background Statistics Assuming Gamma Distribution			
95% Wilson Hilferty (WH) Approx. Gamma UPL	0.966	90% Percentile	0.927
95% Hawkins Wixley (HW) Approx. Gamma UPL	0.967	95% Percentile	0.96
95% WH Approx. Gamma UTL with 95% Coverage	1.05	99% Percentile	1.025
95% HW Approx. Gamma UTL with 95% Coverage	1.053		
95% WH USL	0.987	95% HW USL	0.989
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.954	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.216	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Background Statistics assuming Lognormal Distribution			
95% UTL with 95% Coverage	1.062	90% Percentile (z)	0.916
95% UPL (t)	0.97	95% Percentile (z)	0.946
95% USL	0.993	99% Percentile (z)	1.007
Nonparametric Distribution Free Background Statistics			
Data appear Normal at 5% Significance Level			
Nonparametric Upper Limits for Background Threshold Values			
Order of Statistic, r	10	95% UTL with 95% Coverage	0.931
Approx, f used to compute achieved CC	0.526	Approximate Actual Confidence Coefficient achieved by U	0.401
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	0.931	95% BCA Bootstrap UTL with 95% Coverage	0.931
95% UPL	0.931	90% Percentile	0.889
90% Chebyshev UPL	1.048	95% Percentile	0.91
95% Chebyshev UPL	1.153	99% Percentile	0.927
95% USL	0.931		

Ra-228

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
Minimum	0.555	First Quartile	0.68
Second Largest	0.868	Median	0.784
Maximum	0.891	Third Quartile	0.825
Mean	0.755	SD	0.11
Coefficient of Variation	0.146	Skewness	-0.709
Mean of logged Data	-0.291	SD of logged Data	0.154
Critical Values for Background Threshold Values (BTVs)			
Tolerance Factor K (For UTL)	2.911	d2max (for USL)	2.176
Normal GOF Test			
Shapiro Wilk Test Statistic	0.921	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.225	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Background Statistics Assuming Normal Distribution			
95% UTL with 95% Coverage	1.075	90% Percentile (z)	0.896
95% UPL (t)	**0.966**	95% Percentile (z)	0.936
95% USL	0.994	99% Percentile (z)	1.011
Gamma GOF Test			
A-D Test Statistic	0.497	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.245	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	48.76	k star (bias corrected MLE)	34.2
Theta hat (MLE)	0.0155	Theta star (bias corrected MLE)	0.0221
nu hat (MLE)	975.3	nu star (bias corrected)	684
MLE Mean (bias corrected)	0.755	MLE Sd (bias corrected)	0.129
Background Statistics Assuming Gamma Distribution			
95% Wilson Hilferty (WH) Approx. Gamma UPL	0.99	90% Percentile	0.924
95% Hawkins Wixley (HW) Approx. Gamma UPL	0.993	95% Percentile	0.979
95% WH Approx. Gamma UTL with 95% Coverage	1.131	99% Percentile	1.087
95% HW Approx. Gamma UTL with 95% Coverage	1.14		
95% WH USL	1.025	95% HW USL	1.03
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.899	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.25	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Background Statistics assuming Lognormal Distribution			
95% UTL with 95% Coverage	1.171	90% Percentile (z)	0.911
95% UPL (t)	1.005	95% Percentile (z)	0.963
95% USL	1.045	99% Percentile (z)	1.07
Nonparametric Distribution Free Background Statistics			
Data appear Normal at 5% Significance Level			
Nonparametric Upper Limits for Background Threshold Values			
Order of Statistic, r	10	95% UTL with 95% Coverage	0.891
Approx, f used to compute achieved CC	0.526	Approximate Actual Confidence Coefficient achieved by U	0.401
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	0.891	95% BCA Bootstrap UTL with 95% Coverage	0.891
95% UPL	0.891	90% Percentile	0.87
90% Chebyshev UPL	1.101	95% Percentile	0.881
95% Chebyshev UPL	1.257	99% Percentile	0.889
95% USL	0.891		

Radium 226 228 Combined

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
Minimum	1.25	First Quartile	1.513
Second Largest	1.72	Median	1.58
Maximum	1.73	Third Quartile	1.696
Mean	1.574	SD	0.148
Coefficient of Variation	0.0943	Skewness	-1.07
Mean of logged Data	0.449	SD of logged Data	0.0992
Critical Values for Background Threshold Values (BTVs)			
Tolerance Factor K (For UTL)	2.911	d2max (for USL)	2.176
Normal GOF Test			
Shapiro Wilk Test Statistic	0.895	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.146	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Background Statistics Assuming Normal Distribution			
95% UTL with 95% Coverage	2.005	90% Percentile (z)	1.764
95% UPL (t)	**1.859**	95% Percentile (z)	1.818
95% USL	1.896	99% Percentile (z)	1.919
Gamma GOF Test			
A-D Test Statistic	0.464	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.152	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	117.1	k star (bias corrected MLE)	82.04
Theta hat (MLE)	0.0134	Theta star (bias corrected MLE)	0.0192
nu hat (MLE)	2342	nu star (bias corrected)	1641
MLE Mean (bias corrected)	1.574	MLE Sd (bias corrected)	0.174
Background Statistics Assuming Gamma Distribution			
95% Wilson Hilferty (WH) Approx. Gamma UPL	1.882	90% Percentile	1.8
95% Hawkins Wixley (HW) Approx. Gamma UPL	1.885	95% Percentile	1.87
95% WH Approx. Gamma UTL with 95% Coverage	2.058	99% Percentile	2.006
95% HW Approx. Gamma UTL with 95% Coverage	2.066		
95% WH USL	1.926	95% HW USL	1.93
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.871	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.16	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Background Statistics assuming Lognormal Distribution			
95% UTL with 95% Coverage	2.091	90% Percentile (z)	1.779
95% UPL (t)	1.896	95% Percentile (z)	1.844
95% USL	1.944	99% Percentile (z)	1.973
Nonparametric Distribution Free Background Statistics			
Data appear Normal at 5% Significance Level			
Nonparametric Upper Limits for Background Threshold Values			
Order of Statistic, r	10	95% UTL with 95% Coverage	1.73
Approx, f used to compute achieved CC	0.526	Approximate Actual Confidence Coefficient achieved by U	0.401
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	1.73	95% BCA Bootstrap UTL with 95% Coverage	1.73
95% UPL	1.73	90% Percentile	1.721
90% Chebyshev UPL	2.04	95% Percentile	1.726
95% Chebyshev UPL	2.252	99% Percentile	1.729
95% USL	1.73		

Section 10 COC Screening

Section 10.1 Frequency of Detection

No COCs at the Site were screened during the assessment.

Section 10.2 Lab Contaminant or Blank Contaminant

No COCs at the Site were screened during the assessment.

Section 10.3 COC Not Sourced On-Site

No COCs at the Site were screened during the assessment.

Section 10.4 Appropriate Sample Quantitation Limits

No COCs at the Site were screened during the assessment.

Section 10.5 Screened COCs Expected to be Present Dropped from Future Sampling

No COCs at the Site were screened during the assessment.

Table 10A. COC Screening Summary Table

1	2	3	4	5	6	7	8	SQL Justifications	
								9	10
COC	All detected concentrations and SQLs < residential assessment level in all sampled media §350.71(k)(1)	COC not detected in any sample in the medium §350.71(k)(3)	Frequency of detects <5% of the ≥20 samples in this medium[1] §350.71(k)(2)(A)(i) through (iii)	Common lab contaminant[2] §350.71(k)(2)(B)	Blank contaminant[2] §350.71(k)(2)(C)	Max conc < background §350.71(k)(2)(D)	COC not sourced on-site[3] §350.71(k)(2)(E)	All SQLs < RAL §350.71(k)(3)(A)	SQL > RAL but justified[4] §350.71(k)(3)(B)
N/A									

[1] Provide in the text justification that a critical PCL is not warranted based on the criteria specified in §350.71(k)(2)(A)(iii).
[2] Provide in the text justification that the COC is not anticipated to be present at the site (see §350.71(k)(2)(B) or (C)).
[3] Provide in the text justification that the COC is not from an on-site source (see §350.71(k)(2)(E)).
[4] Provide in the text justification that all requirements of §350.71(k)(3)(B) are met.

Section 11 Soil Critical PCL Development

Section 11.1 Tier 2 or 3 PCL Development and Non-Default Parameters

No Tier 2 or 3 PCLs were developed for this assessment.

Section 11.2 Soil PCL Adjustments

No PCL adjustments were made to PCLs for the target COCs (metals, uranium, radium 226/228/combined).

Section 11.3 Soil Critical PCLs

Critical PCL development was not necessary due to the concentrations of all COCs in soil samples being below the RALs.

Table 11A. Surface Soil Critical PCLs
Date of the Tier 1 PCL tables used in the determination of PCLs: _____

On-Site Surface Soil Critical PCLs
Land use for purpose of critical PCL development: ___ Residential ___ Commercial/industrial

COC	$^{Tot}Soil_{Comb}$ PCL			$^{GW}Soil^{1}$ PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	$^{SW}Soil^{2}$ (mg/kg)	$^{Sed}Soil^{2}$ (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/kg)	0.5-5 ft. (mg/kg)					Max	Rep[3]	
N/A															

Off-Site Surface Soil Critical PCLs
Land use for purpose of critical PCL development:[4] ___ Residential ___ Commercial/industrial

COC	$^{Tot}Soil_{Comb}$ PCL			$^{GW}Soil^{1}$ PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	$^{SW}Soil^{2}$ (mg/kg)	$^{Sed}Soil^{2}$ (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/kg)	0.5-5 ft. (mg/kg)					Max	Rep[3]	
N/A															

[1] $^{GW}Soil$ includes $^{GW}Soil_{Ing}$, $^{GW}Soil_{Class3}$, $^{Air}GW\text{-}Soil_{Inh\text{-}V}$, and $^{GW}Soil$ for secondary MCLs, as applicable.
[2] Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine if a PCL is required to be developed for this pathway.
[3] Provide justifications and calculations for use of representative concentrations in Appendix 8.
[4] Repeat the table if needed for different off-site land uses.

Table 11B. Subsurface Soil Critical PCLs
Date of the Tier 1 PCL tables used in the determination of PCLs: _____

On-Site Subsurface Soil Critical PCLs
Land use for purpose of critical PCL development: _____ Residential ____ Commercial/industrial

COC	$^{Air}Soil_{Inh-V}$ PCL			$^{GW}Soil^{1}$ PCL			MQL (mg/kg)	Background (mg/kg)	Max conc (mg/kg)	Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)				
N/A										

Off-Site Subsurface Soil Critical PCLs
Land use for purpose of PCL development[2]: ____ Residential ____ Commercial/industrial

COC	$^{Air}Soil_{Inh-V}$ PCL			$^{GW}Soil^{1}$ PCL			MQL (mg/kg)	Background (mg/kg)	Max conc (mg/kg)	Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)				
N/A										

[1] $^{GW}Soil$ includes $^{GW}Soil_{Ing}$, $^{GW}Soil_{Class3}$, $^{Air}GW\text{-}Soil_{Inh-V}$, and $^{GW}Soil$ for secondary MCLs, as applicable.
[2] Repeat the table if needed for differing off-site land uses.

11.0 Figures

Figure 11A Surface Soil PCLE Zone Maps (Not applicable)

Figure 11B Subsurface Soil PCLE Zone Maps (Not applicable)

Figure 11C Cross Sections of the PCLE Zone (Not applicable)

Section 12 Groundwater Critical PCL Development

Section 12.1 Tier 2 or 3 PCL Development and Non-Default Parameters

No Tier 2 or 3 PCLs were developed for this assessment.

Section 12.2 Groundwater PCL Adjustments

No PCL adjustments were made to PCLs for the target COCs (metals, uranium, radium 226/228/combined, fluoride).

Section 12.3 Groundwater Critical PCLs

Tier 1 residential PCLs were utilized as the Critical PCL for COCs retained for Critical PCL development. The applicable Critical PCLs for metals, uranium, radium 226/228/combined, and fluoride are equivalent to the Tier 1 residential PCLs (RALs).

Table 12A. Groundwater Critical PCLs – Full Plume POE

Groundwater-bearing unit: _____
Repeat table for each applicable groundwater-bearing unit.
Date of the Tier 1 PCL tables used in the determination of PCLs: _____

On-Site Groundwater Critical PCLs
Land use for purpose of PCL development: X Residential ____ Commercial/industrial

COC	$^{GW}GW_{Class\ 3}$ PCL		$^{Air}GW_{Inh\text{-}V}$ PCL		Ecological PCL for groundwater[1]		MQL (mg/L)	Background (mg/L)	Maximum Concentration (mg/L)	Remedy or NFA
	(mg/L)	Tier	(mg/L)	Tier	(mg/L)	Tier				
N/A										

Off-Site Groundwater Critical PCLs
Land use for purpose of PCL development[2]: ____ Residential ____ Commercial/industrial

COC	$^{GW}GW_{Ing}$ PCL		$^{Air}GW_{Inh\text{-}V}$ PCL		Ecological PCL for groundwater[1]		MQL (mg/L)	Background (mg/L)	Conc (mg/L)		Remedy or NFA
	(mg/L)	Tier	(mg/L)	Tier	(mg/L)	Tier			Max	Rep[2]	
N/A											

[1] This pathway is applicable for direct contact with groundwater, such as cave invertebrates or salamanders.
[2] Repeat the table if needed for different off-site land uses.

Table 12B. Groundwater-to-Surface Water PCLs
Groundwater-bearing unit: _____

COC	SW critical PCL (mg/L)[1]	Groundwater-to-surface water dilution factor	^{SW}GW critical PCL[2] (mg/L)
N/A			

Table 12C. Groundwater-to-Sediment PCLs
Groundwater-bearing unit: _____

COC	Sed critical PCL (mg/kg)[3]	Surface water mixing factor[4]	K_{sed-w} (mg/L-gw/ mg/kg-sed)	^{Sed}GW critical PCL[5] (mg/L)
N/A				

[1] From Table 6A.
[2] Equals results of Table 12B second column divided by the value in the third column.
[3] From Table 7A.
[4] Default is 1.
[5] Equals product of Table 12C columns 2, 3, and 4.

Table 12D. Groundwater Critical PCL Evaluation - Surface Water/Sediment Discharge POE
Groundwater-bearing unit: _____

COC	GW Critical PCL[1] (mg/L)	[SW]GW critical PCL[2] (mg/L)	[Sed]GW critical PCL[3] (mg/L)	Critical PCL for GW-SW POE[4] (mg/L)	Conc at GW-SW POE (mg/L)		At GW-SW POE, remedy or NFA?
					Max	Rep[5]	
N/A							

[1] From Table 12A, on-site or off-site, whichever is appropriate for this POE.
[2] From Table 12B
[3] From Table 12C
[4] Lowest of the values in the three previous columns.
[5] Provide justifications and calculations for use of representative concentrations in Appendix 9.

12.0 Figures

Figure 12A Groundwater PCLE Zone Map (Not applicable)

Section 13 Notifications

No notifications were necessary as a result of the assessment.

Section 13.1 Notification of Actual or Probable Exposure

No notifications were necessary as a result of the assessment.

Section 13.2 Other Notifications

Table 13A. Notification Summary

Property ID	Property owner name	Physical property address, city, zip	Property owner mailing address, city, state, zip	Property owner phone no.	Contact name, mailing address, city, state, zip (if different from owner)	Reason for notification
N/A						

Appendices

Appendix 1	Notifications (Not applicable)
Appendix 2	Boring Logs and Monitoring Well Completion Details (Not applicable)
Appendix 3	Monitor Well Development and Purging Data
Appendix 4	Registration and Institutional Controls (Not applicable)
Appendix 5	Water Well Records
Appendix 6	Monitoring Well Records (Not applicable)
Appendix 7	Aquifer Testing Data
Appendix 8	Statistics Data Tables and Calculations (Included in Section 9)
Appendix 9	Development of Non-Default RBELS and PCLs (Not applicable)
Appendix 10	Laboratory Data Packages and Data Usability Summary
Appendix 11	Miscellaneous Assessment (Not Applicable)
Appendix 12	Waste Characterization and Disposition Documentation
Appendix 13	Photographic Documentation (Not applicable)
Appendix 14	Standard Operating Procedures
Appendix 15	OSHA Health and Safety Plan (350.74 (b)(1)) (Not applicable)
Appendix 16	Reference List

Appendix 3

Monitor Well Purging Data

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 18111309-2003 **Project Name:** Copano GW 2Q19	**Date:** 6/18/19
Sample Number: 1	**Starting Water Level (ft. BMP):** 6.10
Sampling Location (well ID, etc.): MW-1	**Casing Stickup (ft.):**
Sampled by: Victor Gonzalez	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 19.85
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 3 in.
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 4.86

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck	
pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron # .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:13	-	0.2	-	-	-	-	-	-	-		Pump is on
11:23	2	0.2	30.95	7.10	Clear	38800	12.1	-150	0.00	7.85	
11:28	3	↓	30.53	7.16	↓	39000	6.9	-152	0.00	8.30	
11:32	4	↓	30.48	7.18	↓	39400	4.0	-152	0.00	8.60	

Water Level (ft. BMP) at End of Purge: 8.60 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
~~11:34~~	250	P	2	Y / N	HNO_3	
~~11:36~~	250	↓	1	N	H_2SO_4	
~~11:38~~	250		1	N	NaOH	
~~11:40~~ 11:34	1L	↓	2	N	HNO_3	

Comments:

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2: 0.163

3 0.361

4 0.453

GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003 **Project Name:** Copano GW 2Q19 **Date:** 6/18/19

Sample Number: 2	**Starting Water Level (ft. BMP):** 3.78
Sampling Location (well ID, etc.): MW-3R	**Casing Stickup (ft.):** –
Sampled by: VG	**Starting Water Level (ft. BGL):** –
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 13.02
Screened Interval (ft. BGL): –	**Casing Diameter (in ID):** 3 in
Filter Pack Interval (ft. BGL): –	**Casing Volume (gal.):** 7.06

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Rad 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & 1.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:33	-	0.2	-	-	-	-	-	-	-		Pump is on
12:43	2	↓	32.59	7.06	55400	Clear	1.9	107	0.11	3.95	
12:48	3	↓	32.89	7.06	54400	↓	0.0	103	0.00	3.95	
12:53	4	↓	32.21	7.06	55700	↓	0.0	103	0.00	3.95	

Water Level (ft. BMP) at End of Purge: 3.89 @ 13:14 **Sample Intake Depth (ft. BMP):** 18

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:55	250	P	2	Y/N	HNO_3	
↓	250	↓	1	N	H_2SO_4	
	250		1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003 **Project Name:** Copano GW 2Q19 **Date:** 6/18/19

Sample Number: 3	**Starting Water Level (ft. BMP):** 4.32
Sampling Location (well ID, etc.): MW-3RB	**Casing Stickup (ft.):** –
Sampled by: VG	**Starting Water Level (ft. BGL):** –
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 50.07
Screened Interval (ft. BGL): –	**Casing Diameter (in ID):** 2 in.
Filter Pack Interval (ft. BGL): –	**Casing Volume (gal.):** ~~7.48~~ 7.45

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Recd 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:37	-	0.2	-	-	-	-	-	-	-		Pump is on
13:47	2	↓	29.40	7.12	56700	Clear	~~0.0~~ ~~0.0~~	27	0.03	4.50	
13:52	3		29.17	7.11	56800	↓	0.0	25	0.00	4.59	
13:57	4	↓	29.30	7.10	56700	↓	0.0	24	0.00	4.59	

Water Level (ft. BMP) at End of Purge: 4.39 @ 13:52 **Sample Intake Depth (ft. BMP):** 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:59	250	P	2	Y/N	HNO_3	
↓	250	↓	1	↓	H_2SO_4	
↓	250	↓	1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003 **Project Name:** Cópano GW 2Q19 **Date:** 6/19/17

Sample Number: MW 4	**Starting Water Level (ft. BMP):** 5.53
Sampling Location (well ID, etc.): MW-4	**Casing Stickup (ft.):** —
Sampled by: VG	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 21.21
Screened Interval (ft. BGL): ~	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): ~	**Casing Volume (gal.):** 2.50

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Reuse

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
9:33	-	0.2	-	-	-	-	-	-	-		Pump is on
9:43	2	↓	28.78	7.23	51600	Clear	11.3	-70	0.07	7.10	
9:48	3	↓	29.03	7.21	51600	↓	10.3	-76	0.12	7.81	
9:53	4	↓	29.14	7.20	51800	↓	10.4	-81	0.17	8.38	

Water Level (ft. BMP) at End of Purge: 10.74 @ 10:15 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
9:55	250	P	2	Y/Y	HNO_3	
↓	250	↓	1	N	H_2SO_4	
	250		1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18M1309-2003 **Project Name:** Capano GW 2Q19 **Date:** 6/25/19

Sample Number: MW-4	**Starting Water Level (ft. BMP):** 5.90
Sampling Location (well ID, etc.): MW-4	**Casing Stickup (ft.):** —
Sampled by: CC	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/RVC	**Total Depth (ft. BMP):** 21.21
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): —	**Casing Volume :** 2.495 gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Other: **Filter / Filter Size:** 10 micron + 0.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1:16	-	0.2	-	-	-	-	-	-	-	5.95	Pump is on
1:26	2	↓	29.19	7.02	53,000	neutral	0.43	-178	0.43	9.78	
1:31	3	↓	28.89	7.01	52,900	↓	0.42	-181	0.42	8.45	
1:36	4	↓	28.61	7.01	52,900	↓	0.41	-181	0.41	9.15	

Water Level (ft. BMP) at End of Purge: 9.15 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1:41	250 mL	P	1	Y-0.45	HNO_3	
↓	500 mL	P	1	Y-10	HNO_3	
↓	1 L	P	2	Y-10	HNO_3	

Comments:

Had to re-sample due to lost icechest

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GROUNDWATER SAMPLING RECORD

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Project Number: 181120-2003 **Project Name:** Cupro GW 2019	**Date:** 6-19-19
Sample Number: MW-5	**Starting Water Level (ft. BMP):** 4.55
Sampling Location (well ID, etc.): MW-5	**Casing Stickup (ft.):** -
Sampled by: GMC	**Starting Water Level (ft. BGL):** -
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 21.78
Screened Interval (ft. BGL): -	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): -	**Casing Volume (gal.):** 6.33

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peri Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45 for dissolved metals

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
9:06	-	.2	-	-	-	-	-	-	-	4.55	Pump is on
9:16	2	↓	28.76	6.67	36,600	Clear	0.0	365	0.35	5.90	
9:21	3		28.81	6.67	36,500	Clear	0.0	356	0.40	6.30	
9:26	4		28.84	6.68	36,400	Clear	0.0	360	0.35	6.40	

Water Level (ft. BMP) at End of Purge: 6.40 **Sample Intake Depth (ft. BMP):** 16

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
9:35	✓	P	6	Y	HNO_3, H_2SO_4, -	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1811809-2003 **Project Name:** Cuprus GW 2019 **Date:** 6-19-19

Sample Number: MW-5B	**Starting Water Level (ft. BMP):** 4.52
Sampling Location (well ID, etc.): MW-5B	**Casing Stickup (ft.):** —
Sampled by: BML	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 51.40
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 7.64

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peri pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Beech 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck beeper

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
9:37	-	.2	-	-	-	-	-	-	-	4.52	Pump is on
9:47	2	↓	30.25	6.70	31,800	clear	4.6 ↑↓	14	0.54	4.67	NTU lowering ↑↓
9:52	3	↓	30.25	6.70	31,500	clear	2.7	0	0.42	4.69	NTU flux
9:57	4	↓	30.28	6.70	31,600	clear	2.8	-11	0.38	4.70	

Water Level (ft. BMP) at End of Purge: 4.70 **Sample Intake Depth (ft. BMP):** 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1005	V	P	6	Y	HNO_3, H_2SO_4	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111308.2003 **Project Name:** Capano GW 2Q19 **Date:** 6-18-19

Sample Number: DB-5	**Starting Water Level (ft. BMP):** 22.80
Sampling Location (well ID, etc.): DB-5	**Casing Stickup (ft.):** —
Sampled by: GMK	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 44
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 3.45

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Beep 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45 micron (Dissolved metals)

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:10	-	.2	-	-	-	-	-	-	-	22.80	Pump is on
12:20	2	↓	30.55	6.74	39,600	Clear	0.0	-97	0.66	23.15	
12:25	3	↓	30.88	6.77	39,300	Clear	0.2	-68	0.55	23.19	
12:30	4	↓	30.85	6.77	39,300	Clear	0.2	-43	0.55	23.19	

Water Level (ft. BMP) at End of Purge: 23.19 **Sample Intake Depth (ft. BMP):** 39

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:40	✓	P	6	Y	HNO_3, H_2SO_4, —	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003	**Project Name:** Copano GW 2019	**Date:** 6/20/19	
Sample Number: MW-6R		**Starting Water Level (ft. BMP):** 7.45	
Sampling Location (well ID, etc.): ~~MW-6~~ MW-6R		**Casing Stickup (ft.):** –	
Sampled by: VG		**Starting Water Level (ft. BGL):** –	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 20.21	
Screened Interval (ft. BGL): –		**Casing Diameter (in ID):** 3	
Filter Pack Interval (ft. BGL): –		**Casing Volume (gal.):** 4.68	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Red 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron # 145

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:18	-	0.2	-	-	-	-	-	-	-		Pump is on
12:28	2	↓	28.05	6.88	33800	orange/	4.4	487	0.05	7.70	
12:33	3	↓	28.94	6.86	33700	brown	5.4	488	0.04	7.70	
12:38	4	↓	29.19	6.85	33800	↓	6.6	488	0.00	7.70	
12:40	4.5	↓	29.30	6.84	33700	↓	7.0	488	0.00	7.70	

Water Level (ft. BMP) at End of Purge: 7.65 @ 13:00 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:45	250	P	2	Y / N	HNO_3	
↓	250	↓	1	N	H_2SO_4	
↓	250	↓	1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003 **Project Name:** Capano GW 2Q19 **Date:** 6/20/19

Sample Number: MW-6RB	**Starting Water Level (ft. BMP):** 6.39
Sampling Location (well ID, etc.): MW-6RB	**Casing Stickup (ft.):** —
Sampled by: VG	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/(PVC)	**Total Depth (ft. BMP):** 50.20
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 7.14

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: (Peristaltic) or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & 1.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:08	-	0.2	-	-	-	-	-	-	-		Pump is on
13:18	2	↓	30.38	9.82	22500	Clear	20.6	-170	0.84	7.02	
13:23	3	↓	30.26	9.33	25000	↓	20.5	-191	0.81	7.02	
13:28	4	↓	30.31	7.87	28300	↓	12.8	-84	1.16	7.02	
13:30	4.5	↓	30.32	7.79	28400	↓	12.5	-72	1.22	7.02	

Water Level (ft. BMP) at End of Purge: 6.45 @ 13:50 **Sample Intake Depth (ft. BMP):** ≈ 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:35	250	P	1	Y/Y	HNO_3	
↓	250	↓	1	N	H_2SO_4	
↓	250	↓	1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 181809-2003 **Project Name:** Copano GW 2019 **Date:** 6-18-19

Sample Number: MW-7	**Starting Water Level (ft. BMP):** 5.93
Sampling Location (well ID, etc.): MW-7	**Casing Stickup (ft.):** ~
Sampled by: GML	**Starting Water Level (ft. BGL):** ~
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 22.62
Screened Interval (ft. BGL): ~	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): ~	**Casing Volume (gal.):** 2.72

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Beal 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45 for dissolved

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:40	-	.2	-	-	-	-	-	-	-	5.93	Pump is on
13:50	2	|	31.66	6.76	52,400	Clear	24.3 ↓	-76	0.68	6.96	
13:55	3	|	32.17	6.75	52,800	Clear	16.4 ↓	-96	0.56	6.96	
14:00	4	↓	32.61	6.75	52,500	Clear	8.7 ↓	-102	0.50	6.86	
14:02	4.4	↓	32.77	6.75	52,300	Clear	1.4	-103	0.47	6.96	

Water Level (ft. BMP) at End of Purge: 6.96 **Sample Intake Depth (ft. BMP):** 17

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:10	✓	P	6	Y	HNO_3, H_2SO_4, -	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18113O9-2003	**Project Name:** Capano GW 2019	**Date:** 6-18-19	
Sample Number: MW-7B		**Starting Water Level (ft. BMP):** 6.30	
Sampling Location (well ID, etc.): MW-7B		**Casing Stickup (ft.):** —	
Sampled by: GMC		**Starting Water Level (ft. BGL):** —	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 52.53	
Screened Interval (ft. BGL): —		**Casing Diameter (in ID):** 2	
Filter Pack Interval (ft. BGL): —		**Casing Volume (gal.):** 7.54	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45 for dissolved

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:05	-	.2	-	-	-	-	-	-	-	6.30	Pump is on
13:15	2	↓	30.21	6.60	62,700	clear	102 ↓	-114	0.37	6.60	
13:20	3	↓	30.01	6.60	62,200	clear	68.1 ↓	-98	0.34	6.60	
13:25	4	↓	29.54	6.60	62,000	clear	48.5 ↓	-84	0.30	6.60	
13:27	4.4	↓	29.93	6.60	62,000	clear	37.4 ↓	-81	0.31	6.64	

Water Level (ft. BMP) at End of Purge: 6.60 **Sample Intake Depth (ft. BMP):** 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:35	✓	P	6	Y	HNO_3, H_2SO_4, —	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1811309-2003 **Project Name:** Copano GW 2Q19 **Date:** 6/18/19

Sample Number: 5	**Starting Water Level (ft. BMP):** 3.42
Sampling Location (well ID, etc.): MW-8	**Casing Stickup (ft.):** –
Sampled by: VG	**Starting Water Level (ft. BGL):** –
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 18.50
Screened Interval (ft. BGL): –	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): –	**Casing Volume (gal.):** 5.53

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
15:07	-	0.2	-	-	-	-	-	-	-		Pump is on
15:17	2	↓	32.82	6.93	32800	light	20.4	484	0.26	3.90	
15:22	3	↓	32.57	6.91	32900	brown	No.3	483	0.24	3.95	
15:27	4	↓	32.37	6.90	33000	↓	19.6	482	0.21	4.01	
~~15:30~~											

Water Level (ft. BMP) at End of Purge: 4.13 @ 15:53 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
15:30	250	P	2	Y / Y	HNO_3	
↓	250	↓	1	N	H_2SO_4	
↓	250	↓	1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003 **Project Name:** Copano - GW 2919 **Date:** 6/19/19

Sample Number:	**Starting Water Level (ft. BMP):** 5.98
Sampling Location (well ID, etc.): MW-9	**Casing Stickup (ft.):** –
Sampled by: VG	**Starting Water Level (ft. BGL):**
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 18.94
Screened Interval (ft. BGL): –	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): –	**Casing Volume (gal.):** 4.76

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron # 1,465

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
8:35	-	0.2	-	-	-	-	-	-	-		Pump is on
8:45	2	↓	27.04	6.72	26100	tan	4.8	531	0.40	6.13	
8:50	3		27.11	6.75	26600	↓	6.1	523	0.37	6.13	
8:55	4	↓	27.26	6.76	26300	↓	5.9	579	0.37	6.13	

Water Level (ft. BMP) at End of Purge: 6.09 @ 9:14 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
8:57	250	P	2	Y/N	HNO_3	
↓	250	↓	1	N	H_2SO_4	
	250		1		None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003 **Project Name:** Copano GW 2019 **Date:** 6/25/19

Sample Number. MW-9	**Starting Water Level (ft. BMP):** 6.33
Sampling Location (well ID, etc.): MW-9	**Casing Stickup (ft.):** —
Sampled by: CC	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/(PVC)	**Total Depth (ft. BMP):** 18.94
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): —	**Casing Volume :** 4.627 gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Other: **Filter / Filter Size:** 10 micron + 0.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
2:31	-	0.2	-	-	-	-	-	-	-	6.33	Pump is on
2:41	2	↓	27.05	6.62	27,600	Yellow	0.0	494	0.50	6.50	↓
2:46	3	↓	26.88	6.60	27,600	↓	↓	479	0.44	6.50	↓
2:51	4	↓	26.80	6.59	27,700	↓	↓	473	0.44	6.50	↓

Water Level (ft. BMP) at End of Purge: 6.50 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
2:56	250 ml	P	1	Y	HNO_3	
↓	500ml	↓	1	N	↓	
↓	1L	↓	2	N	↓	

Comments:

Resampled due to lost ice chest

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GROUNDWATER SAMPLING RECORD

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Project Number: 18113109-2003 **Project Name:** Cupano GW 2019 **Date:** 6-19-19

Sample Number: MW-10	**Starting Water Level (ft. BMP):** 5.30
Sampling Location (well ID, etc.): MW-10	**Casing Stickup (ft.):** —
Sampled by: GM	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 18.94
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 8.94

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peri Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Back 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ 6 Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45 for dissolved metals

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
8:25	-	.2	-	-	-	-	-	-	-	5.30	Pump is on
8:35	2	↓	27.02	6.61	26,500	Clear	0.0	434	0.76	5.60	
8:40	3		26.83	6.62	26,400	Clear	0.0	432	0.66	5.60	
8:45	4		26.90	6.62	26,400	Clear	0.0	430	0.86	5.60	

Water Level (ft. BMP) at End of Purge: 5.60 **Sample Intake Depth (ft. BMP):** ~~18~~ 14

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
8:55	V	P	6	Y	HNO_3, H_2SO_4	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1871309-2003	**Project Name:** Capano GW 2019	**Date:** 6-18-19	
Sample Number: MW-11		**Starting Water Level (ft. BMP):** 6.87	
Sampling Location (well ID, etc.): MW-11		**Casing Stickup (ft.):** —	
Sampled by: GMC		**Starting Water Level (ft. BGL):** —	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 19.02	
Screened Interval (ft. BGL): —		**Casing Diameter (in ID):** 4	
Filter Pack Interval (ft. BGL): —		**Casing Volume (gal.):** 7.95	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peri Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45 for dissolved metals

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
15:07	-	.2	-	-	-	-	-	-	-	6.87	Pump is on
15:17	2	↓	31.67	6.57	23,900	Clear	0.0	488	0.42	7.62	
15:22	3		31.68	6.57	23,700	Clear	0.0	488	0.43	7.63	
15:27	4		31.67	6.57	23,700	Clear	0.0	488	0.43	7.65	

Water Level (ft. BMP) at End of Purge: 7.65 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
15:35	✓	P	6	Y	HNO_3, H_2SO_4 —	
15:45	✓	P	6	Y	HNO_3, H_2SO_4 —	Dup MW-101

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GROUNDWATER SAMPLING RECORD

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Project Number: 181/1309-2003 **Project Name:** Capano GW 2019 **Date:** 6-18-19

Sample Number: MW-11B	**Starting Water Level (ft. BMP):** 7.30
Sampling Location (well ID, etc.): MW-11B	**Casing Stickup (ft.):** –
Sampled by: GMC	**Starting Water Level (ft. BGL):** –
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 36.45
Screened Interval (ft. BGL): –	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): –	**Casing Volume (gal.):** 4.72

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45 for dissolved

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
14:30	-	.2	-	-	-	-	-	-	-	7.50	Pump is on
14:40	2	↓	32.07	6.68	26,500	Clear	0.6	1	0.51	8.55	
14:45	3	↓	31.85	6.63	27,000	Clear	0.0	-28	0.39	8.70	
14:50	4	↓	31.77	6.62	27,100	Clear	0.0	-28	0.39	8.75	

Water Level (ft. BMP) at End of Purge: 8.75 **Sample Intake Depth (ft. BMP):** 30

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
15:00	V	P	6	Y	HNO_3, H_2SO_4 –	

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GROUNDWATER SAMPLING RECORD

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Project Number: 18112309-2003 **Project Name:** Copano GW 2019	**Date:** 6-5-19
Sample Number: MW3-1	**Starting Water Level (ft. BMP):** 6.41
Sampling Location (well ID, etc.): MW3-1	**Casing Stickup (ft.):** –
Sampled by: GMC	**Starting Water Level (ft. BGL):** –
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 18.55
Screened Interval (ft. BGL): –	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): –	**Casing Volume (gal.):** 7.92

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peri Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 3

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + 145 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:30	-	.2	-	-	-	-	-	-	-	6.41	Pump is on
10:40	2	↓	29.53	6.77	45,900	clear	0.0	100	0.47	6.57	
10:45	3		29.39	6.77	45,800	clear	0.0	99	0.40	6.57	
10:50	4		29.44	6.77	45,800	clear	0.0	98	0.40	6.57	

Water Level (ft. BMP) at End of Purge: 6.57 **Sample Intake Depth (ft. BMP):** 14

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:40	✓	P	6	Y	HNO_3, H_2SO_4 –	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111209-2003 **Project Name:** Coyanosa 2Q15 **Date:** 6-15-15

Sample Number: MW3-2	**Starting Water Level (ft. BMP):** 7.74
Sampling Location (well ID, etc.): MW3-2	**Casing Stickup (ft.):** —
Sampled by: GNL	**Starting Water Level (ft. BGL):** -
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 19.91
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 7.95

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peri Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Roof

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & 1.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:08	-	.2	-	-	-	-	-	-	-	7.74	Pump is on
11:18	2	↓	29.37	7.11	43,800	Slky	>1000	128	1.29	8.56	
11:23	3		29.37	7.10	44,000	Slky	>1000	128	1.46	8.56	
11:28	4		29.36	7.09	44,400	Slky	>1000	128	1.33	8.56	

Water Level (ft. BMP) at End of Purge: 8.56 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:35	✓	P	6	Y	HNO_3, H_2SO_4, —	
11:45	✓	P	6	Y	HNO_3, H_2SO_4, —	Dup of MW-202

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 181B204-2003 **Project Name:** Cipriano Gw 2019	**Date:** 6-19-19
Sample Number: MW3-3	**Starting Water Level (ft. BMP):** 7.97
Sampling Location (well ID, etc.): MW3-3	**Casing Stickup (ft.):** —
Sampled by: GML	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 20.70
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 8.05

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Barrel

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45 for dissolved metals

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:03	-	.2	-	-	-	-	-	-	-	7.97	Pump is on
12:13	2	.1	31.15	6.81	43,400	Clear	0.0	107	0.88	8.12	
12:18	3	.1	30.46	6.80	44,000	Clear	0.0	109	0.84	8.17	
12:23	4	.1	30.02	6.80	44,300	Clear	0.0	110	0.75	8.21	

Water Level (ft. BMP) at End of Purge: 8.21 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:30	✓	P	6	Y	~~HCl~~ HNO_3, H_2SO_4, —	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 181180g.2003 **Project Name:** Copano Bay 2019 **Date:** 6-15-19

Sample Number: MW3-4	**Starting Water Level (ft. BMP):** 6.15
Sampling Location (well ID, etc.): MW3-4	**Casing Stickup (ft.):** —
Sampled by: GMC	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 15.86
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 6.34

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Pori Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bal 3

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:43	-	.2	-	-	-	-	-	-	-	6.15	Pump is on
12:53	2	↓	30.65	7.70	36,500	clear	0.0	113	5.81	6.54	DO probably less than bubble
12:58	3		30.88	7.72	36,400	clear	0.0	118	6.00	6.61	
13:03	4		30.88	7.72	36,500	clear	0.0	120	5.51	6.64	

Water Level (ft. BMP) at End of Purge: 6.64 **Sample Intake Depth (ft. BMP):** 10

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:10	V	P	6	Y	HNO_3, H_2SO_4	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111307.2003 **Project Name:** Capano - 6m 2019 **Date:** 6-15-19

Sample Number: MW3-48	**Starting Water Level (ft. BMP):** 8.77
Sampling Location (well ID, etc.): MW3-48	**Casing Stickup (ft.):** —
Sampled by: GMC	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 44.58
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 6.16

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peri Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Barrel 3

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:14	-	.2	-	-	-	-	-	-	-	8.77	Pump is on
13:24	2	↓	30.91	6.93	86,400	Clear	0.0	133	0.28	6.90	
13:29	3		30.83	6.92	85,900	Clear	0.0	131	0.28	6.93	
13:34	4		30.80	6.91	85,600	Clear	0.0	131	0.28	6.96	

Water Level (ft. BMP) at End of Purge: 6.96 **Sample Intake Depth (ft. BMP):** 40

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:45	V	P	6	Y	HNO_3, H_2SO_4, —	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1811309-2003	**Project Name:** Cupinco GW 2019	**Date:** 6-20-19
Sample Number: MW3-5		**Starting Water Level (ft. BMP):** 7.43
Sampling Location (well ID, etc.): MW3-5		**Casing Stickup (ft.):** —
Sampled by: GML		**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 16.69
Screened Interval (ft. BGL): —		**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —		**Casing Volume (gal.):** 6.05

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 3

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
8:54	-	.2	-	-	-	-	-	-	-	7.43	Pump is on
9:04	2	↓	26.59	6.89	51,400	Clear	3.4	134	0.51	7.90	
9:09	3	↓	26.67	6.91	51,400	Clear	0.0	131	0.53	7.92	
9:14	4	↓	26.64	6.91	51,400	Clear	0.0	126	0.52	7.94	

Water Level (ft. BMP) at End of Purge: 7.94 **Sample Intake Depth (ft. BMP):** 11

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
9:25	V	P	6	Y	HNO_3, H_2SO_4, —	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18113109-2003	**Project Name:** Capano 6m 2019	**Date:** 6-20-19	
Sample Number: MW3-6		**Starting Water Level (ft. BMP):** 7.60	
Sampling Location (well ID, etc.): MW3-6		**Casing Stickup (ft.):** —	
Sampled by: GMC		**Starting Water Level (ft. BGL):** —	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 16.92	
Screened Interval (ft. BGL): —		**Casing Diameter (in ID):** 4	
Filter Pack Interval (ft. BGL): —		**Casing Volume (gal.):** 6.09	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peri Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Ball

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
9:30	-	.2	-	-	-	-	-	-	-	7.60	Pump is on
9:40	2	|	26.94	6.92	50,800	Clear	0.0	126	0.44	7.70	
9:45	3	|	26.98	6.92	50,600	Clear	0.0	121	0.39	7.70	
9:50	4	↓	27.04	6.91	50,500	Clear	0.0	107	0.36	7.70	

Water Level (ft. BMP) at End of Purge: 7.76 **Sample Intake Depth (ft. BMP):** 11

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:00	V	P	6	Y	HNO_3, H_2SO_4, —	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003 **Project Name:** Copano GW 2Q19 **Date:** 6/19/19

Sample Number: MW3-7	**Starting Water Level (ft. BMP):** 7.32
Sampling Location (well ID, etc.): MW3-7	**Casing Stickup (ft.):** —
Sampled by: VG	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 20.63
Screened Interval (ft. BGL): -	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): -	**Casing Volume (gal.):** 4.88

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Reel 3

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:43	-	0.2	-	-	-	-	-	-	-		Pump is on
11:53	2		32.15	7.35	52600	Clear	13.1	150	2.23	7.46	
12:58	3	↓	32.12	7.29	52700	↓	13.3	150	2.21	7.46	
12:03	4	↓	32.22	7.25	52700	↓	13.8	149	2.47	7.46	

Water Level (ft. BMP) at End of Purge: 7.36 @ 12:26 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:06	250	P	2	Y/Y	HNO_3	
↓	250	↓	1	N	H_2SO_4	
↓	250	↓	1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18M309-2003 **Project Name:** Capano GW 2019 **Date:** 6/25/19

Sample Number: MW3-7	**Starting Water Level (ft. BMP):** 7.46
Sampling Location (well ID, etc.): MW3-7	**Casing Stickup (ft.):** —
Sampled by: CC	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/(PVC)	**Total Depth (ft. BMP):** 20.63
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): —	**Casing Volume :** 4.83 gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 3

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Other: **Filter / Filter Size:** 10 micron + 0.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:12	-	0.2	-	-	-	-	-	-	-	7.49	Pump is on
11:22	2	↓	29.08	6.99	54,500	neutral	0.0	61	0.52	7.60	↓
11:27	3	↓	29.29	6.98	54,200	↓	↓	63	0.46	7.60	↓
11:32	4	↓	29.37	6.97	54,300	↓	↓	66	0.44	7.60	↓

Water Level (ft. BMP) at End of Purge: 7.60 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:37	250 ml	P	1	Y	HNO_3	
↓	500 ml	↓	1	N	↓	
↓	1L	↓	2	N	↓	

Comments:

Re-sampled due to lost ice chest

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Project Number: 18111309-2003 **Project Name:** Copano GW ZQ19 **Date:** 6/19/19

Sample Number: MW3-7B	**Starting Water Level (ft. BMP):** 6.75
Sampling Location (well ID, etc.): MW3-7B	**Casing Stickup (ft.):** –
Sampled by: VG	**Starting Water Level (ft. BGL):** –
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 51.91
Screened Interval (ft. BGL): –	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): –	**Casing Volume (gal.):** 7.36

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Back 3

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron † 145

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:47	-	0.2	-	-	-	-	-	-	-		Pump is on
10:57	2	↓	28.97	10.05	46800	clear	11.4	-9	3.55	6.98	
11:02	3	↓	29.00	10.10	46900	↓	9.6	-8	3.05	6.99	
11:07	4	↓	29.04	10.12	47000	↓	10.1	-8	3.72	6.99	

Water Level (ft. BMP) at End of Purge: 6.77 @ 11:27 **Sample Intake Depth (ft. BMP):** 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:10	250	P	2	Y / Y	HNO_3	
↓	250	↓	1	N	H_2SO_4	
	250		1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1811309-2003 **Project Name:** Copano GW 2019 **Date:** 6/25/19

Sample Number: MW3-7B	**Starting Water Level (ft. BMP):** 6.92
Sampling Location (well ID, etc.): MW3-7B	**Casing Stickup (ft.):** —
Sampled by: CC	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 51.91
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): —	**Casing Volume :** 7.33 gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 3

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + 0.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:13	-	0.2	-	-	-	-	-	-	-	6.99	Pump is on
10:23	2	↓	27.21	9.97	53,000	neutral	3.6	-6	0.39	7.19	↓
10:28	3	↓	27.18	8.02	53,800	↓	0.0	-61	0.31	7.23	↓
10:33	4	↓	27.19	7.61	54,200	↓	0.9	-81	0.38	7.10	↓
10:38	5	↓	27.93	7.56	54,400	↓	0.0	-81	0.38	7.10	↓

Water Level (ft. BMP) at End of Purge: 7.10 **Sample Intake Depth (ft. BMP):** 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:43	250 ml	P	1	Y	HNO_3	
↓	500ml	↓	1	N	↓	
↓	1 L	↓	2	N	↓	

Comments:

Re-sampled due to lost ice chest

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003 **Project Name:** Copeno GW 2019 **Date:** 6/20/19

Sample Number: MW4-1	**Starting Water Level (ft. BMP):** 4.31
Sampling Location (well ID, etc.): MW4-1	**Casing Stickup (ft.):** -
Sampled by: VG	**Starting Water Level (ft. BGL):** -
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 13.32
Screened Interval (ft. BGL): -	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): -	**Casing Volume (gal.):** 3.31

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of ~~Discharged~~ Water: Bed 4

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron 0.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
8:43	-	0.2	-	-	-	-	-	-	-		Pump is on
8:53	2	↓	27.27	6.95	33200	clear	0.5	-127	2.52	5.52	
8:58	3	↓	27.36	6.93	33300	↓	0.0	-98	4.27	5.79	
9:03	4	↓	27.39	6.90	33000	↓	0.0	-81	4.17	6.01	

Water Level (ft. BMP) at End of Purge: 5.28 @ 9:24 **Sample Intake Depth (ft. BMP):** 10

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
9:05	250	P	2	Y / N	HNO_3	
↓	250	↓	1	N	H_2SO_4	
	250		1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003 **Project Name:** Capmo GW 2Q19 **Date:** 6/20/19

Sample Number: MW-1	**Starting Water Level (ft. BMP):** 5.90
Sampling Location (well ID, etc.): MW4-2	**Casing Stickup (ft.):** -
Sampled by: VG	**Starting Water Level (ft. BGL):** -
Measuring Point (MP) of Well: TOC/RVC	**Total Depth (ft. BMP):** 17.56
Screened Interval (ft. BGL): -	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): -	**Casing Volume (gal.):** 4.28

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Roll Off

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:05	-	0.2	-	-	-	-	-	-	-		Pump is on
11:15	~~11:15~~ 2	↓	29.69	7.26	54600	Clear	1.9	106	1.56	7.57	
11:20	~~11:20~~ 3	↓	30.06	7.28	54700	↓	2.2	114	2.01	8.05	
11:25	~~11:25~~ 4	↓	30.44	7.32	54600	↓	2.7	9	2.77	8.75	
11:30	5	↓	30.63	7.37	54400	↓	2.9	7	2.82	9.10	

Water Level (ft. BMP) at End of Purge: ~~11.12~~ 11.24 @ 11:50 **Sample Intake Depth (ft. BMP):** ~14

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:35	250	P	2	Y/N	HNO_3	
↓	250	↓	1	N	H_2SO_4	
	250		1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003	**Project Name:** Coperna GW 2019	**Date:** 6/20/19	
Sample Number: MW4-2A		**Starting Water Level (ft. BMP):** 4.96	
Sampling Location (well ID, etc.): MW4-2A		**Casing Stickup (ft.):** -	
Sampled by: VG		**Starting Water Level (ft. BGL):** -	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 17.09	
Screened Interval (ft. BGL): -		**Casing Diameter (in ID):** 2	
Filter Pack Interval (ft. BGL): -		**Casing Volume (gal.):** 1.98	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 4

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
9:43	-	0.2	-	-	-	-	-	-	-		Pump is on
9:53	2	↓	28.25	7.03	38000	clear	1.6	53	3.11	6.02	
9:58	3	↓	28.37	7.02	38200	↓	1.8	42	3.24	6.07	
10:03	4	↓	28.51	7.02	38100	↓	1.9	43	3.29	5.94	

Water Level (ft. BMP) at End of Purge: ~~5.~~ 5.93 @ 10:50 **Sample Intake Depth (ft. BMP):** ≈ 14

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:05	250	P	2	Y / N	HNO_3	
↓	250	↓	1	N	H_2SO_4	
	250		1		None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1811809-2003 **Project Name:** Lopeno GW 2019 **Date:** 6-20-19

Sample Number: MW 4-3	**Starting Water Level (ft. BMP):** 5.35
Sampling Location (well ID, etc.): MW4-3	**Casing Stickup (ft.):** —
Sampled by: GMC	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 16.11
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 9.95

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peri Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Ground

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:32	-	.2	-	-	-	-	-	-	-	5.35	Pump is on
11:42	2	↓	28.96	6.81	50,800	Clear	0.0	-26	0.31	5.55	
11:47	3	↓	28.87	6.80	50,600	clear	0.0	8	0.47	5.56	
11:52	4	↓	28.89	6.80	50,600	Clear	0.0	17	0.45	5.56	

Water Level (ft. BMP) at End of Purge: 5.56 **Sample Intake Depth (ft. BMP):** 11

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:00	✓	P	6	Y	HNO_3, H_2SO_4, —	
12:10	✓	P	6	Y	HNO_3, H_2SO_4, —	Dup MW-303

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 181B09-2003 **Project Name:** Copano - GW 2Q15	**Date:** 6-20-15
Sample Number: MW4-3B	**Starting Water Level (ft. BMP):** 4,72
Sampling Location (well ID, etc.): MW4-3B	**Casing Stickup (ft.):** -
Sampled by: GM	**Starting Water Level (ft. BGL):** -
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 21,05
Screened Interval (ft. BGL): -	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): -	**Casing Volume (gal.):** 4,29

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peri Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 4

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & 1.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:13	-	.2	-	-	-	-	-	-	-	4,72	Pump is on
12:23	2	↓	29.17	6.73	49,500	clear	0.0	-90	0.30	4.80	
12:28	3		29.21	6.73	49,400	Clear	0.0	-81	0.38	4.82	
12:33	4		29.15	6.74	49,200	Clear	0.0	-75	0.40	4.84	

Water Level (ft. BMP) at End of Purge: 4,84 **Sample Intake Depth (ft. BMP):** 25

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:40	✓	P	6	Y	HNO_3, H_2SO_4, -	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111304-2003 **Project Name:** Copano 6th 2019	**Date:** 6-22-19
Sample Number: MW4-4	**Starting Water Level (ft. BMP):** 7.35
Sampling Location (well ID, etc.): MW4-4	**Casing Stickup (ft.):** -
Sampled by: GML	**Starting Water Level (ft. BGL):** -
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 17.19
Screened Interval (ft. BGL): -	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): -	**Casing Volume (gal.):** 6.43

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peri Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Beck 4

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45 for dissolved metals

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1043	-	.2	-	-	-	-	-	-	-	7.35	Pump is on
10:53	2	↓	28.89	6.92	42,400	clear	0.0	130	0.65	8.05	
10:58	3	↓	29.08	6.92	42,500	clear	0.0	124	0.52	8.05	
11:03	4	↓	29.27	6.92	42,500	clear	0.0	128	0.45	8.05	

Water Level (ft. BMP) at End of Purge: 8.05 **Sample Intake Depth (ft. BMP):** 12

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:10	V	P	6	Y	HNO_3, H_2SO_4, -	

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 18111309-2003 **Project Name:** Cepuro GW 2Q19 **Date:** 6/19/19

Sample Number: MW4-7A	**Starting Water Level (ft. BMP):** 3.97
Sampling Location (well ID, etc.): MW4-7A	**Casing Stickup (ft.):** -
Sampled by: VG	**Starting Water Level (ft. BGL):** -
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 16.06
Screened Interval (ft. BGL): -	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): -	**Casing Volume (gal.):** 1.97

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Red 4

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:47	-	0.2	-	-	-	-	-	-	-		Pump is on
12:57	2	↓	29.63	7.25	37700	Clear	17.8	151	0.21	4.60	
13:02	3	↓	29.49	7.23	37700	↓	13.8	152	0.32	4.60	
13:07	4	↓	29.43	7.22	37700	↓	12.9	151	0.47	4.60	

Water Level (ft. BMP) at End of Purge: 4.19 @ 13:57 **Sample Intake Depth (ft. BMP):** 11

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:12	250	P	2	Y/Y	HNO_3	
↓	250	↓	1	N	H_2SO_4	
↓	250	↓	1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments: MS / MSD

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003	**Project Name:** Copano GW 2Q19		**Date:** 6/19/19
Sample Number: MW4-7		**Starting Water Level (ft. BMP):** 7.72	
Sampling Location (well ID, etc.): MW4-7		**Casing Stickup (ft.):** —	
Sampled by: VG		**Starting Water Level (ft. BGL):** —	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 19.69	
Screened Interval (ft. BGL): —		**Casing Diameter (in ID):** 3	
Filter Pack Interval (ft. BGL): —		**Casing Volume (gal.):** 4.39	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bull 4

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
15:07	-	0.2	-	-	-	-	-	-	-		Pump is on
15:17	2	↓	28.57	7.18	36000	clear	13.3	146	3.17	7.80	
15:22	3		28.24	7.15	35900	↓	11.6	145	2.74	7.80	
15:27	4	↓	28.05	7.14	36000	↓	11.7	142	2.06	7.80	

Water Level (ft. BMP) at End of Purge: 7.73 @ 15:45 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
15:30	250	P	2	Y/Y	HNO_3	
↓	250	↓	1	N	H_2SO_4	
	250		1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 18111309-2003 **Project Name:** Capano GW 2019 **Date:** 6/25/19

Sample Number: MW4-7	**Starting Water Level (ft. BMP):** 7.96
Sampling Location (well ID, etc.): MW4-7	**Casing Stickup (ft.):** —
Sampled by: CC	**Starting Water Level (ft. BGL):** —
Measuring Point (MP) of Well: TOC/(PVC)	**Total Depth (ft. BMP):** 19.69
Screened Interval (ft. BGL): —	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): —	**Casing Volume :** 4.30 gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated equipment

Purging: (Peristaltic) pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 4

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Other: **Filter / Filter Size:** 10 micron + 0.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:13	-	0.2	-	-	-	-	-	-	-	7.98	Pump is on
12:23	2	↓	28.25	6.97	36,900	neutral	0.0	80	0.35	8.19	↓
12:28	3	↓	27.68	6.96	37,000	↓	↓	71	0.31	8.30	↓
12:33	4	↓	27.37	6.96	37,100	↓	↓	66	0.29	8.33	↓

Water Level (ft. BMP) at End of Purge: 8.33 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:38	250 ml	P	1	Y	HNO_3	
↓	500 ml	P	1	N	↓	
	1 L	P	2	N		

Comments:

Re-sampled due to lost ice chest

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GROUNDWATER SAMPLING RECORD

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Project Number: 18111309-2003	**Project Name:** Copano GW 2Q19	**Date:** 6/19/19	
Sample Number: MW4-7B		**Starting Water Level (ft. BMP):** 3.64	
Sampling Location (well ID, etc.): MW4-7B		**Casing Stickup (ft.):** ---	
Sampled by: VG		**Starting Water Level (ft. BGL):** —	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 50.85	
Screened Interval (ft. BGL): —		**Casing Diameter (in ID):** 2	
Filter Pack Interval (ft. BGL): —		**Casing Volume (gal.):** 7.69 – 7.70	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic Pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 4

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron 1.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
~~14:30~~ 14:15	-	0.2	-	-	-	-	-	-	-		Pump is on
~~15:00~~ 14:25	2	↓	31.39	7.19	57800	Clear	16.2	140	0.50	4.12	
14:30	3	↓	30.91	7.17	57900	↓	16.0	135	0.52	4.12	
14:35	4	↓	31.02	7.15	58000	↓	~~15~~ 15.0	128	0.69	4.12	

Water Level (ft. BMP) at End of Purge: 3.63 @ 14:54 **Sample Intake Depth (ft. BMP):** 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:38	250	P	2	Y / Y	HNO_3	
↓	250	↓	1	N	H_2SO_4	
↓	250	↓	1	↓	None	
↓	1L	↓	2	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 191225	**Project Name:** Copano GW Sampling - 2Q	**Date:** 7/24/19	
Sample Number: MW4-7A		**Starting Water Level (ft. BMP):** 6.37	
Sampling Location (well ID, etc.): MW4-7A		**Casing Stickup (ft.):** –	
Sampled by: CC		**Starting Water Level (ft. BGL):** –	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 16.06	
Screened Interval (ft. BGL): –		**Casing Diameter (in ID):** 2	
Filter Pack Interval (ft. BGL): –		**Casing Volume (gal.):** 1.57	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 4

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + 0.45 µ

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
2:31	-	0.2	-	-	-	-	-	-	-	6.95	Pump is on
2:41	2	↓	32.38	6.98	40,100	neutral	8.6	124	0.67	6.95	
2:52	3		32.59	7.00	39,800	neutral	8.5	119	0.53	6.98	
2:57	4		32.97	7.00	39,100	neutral	5.9	115	0.47	6.98	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):**

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
3:02	1L	P	1		HNO3	
3:02	1L	↓	1		↓	
3:02	250mL		1			
3:02	500mL		1			

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Cogema 3Q19 **Date:** 9-19-19

Sample Number: MW-1	**Starting Water Level (ft. BMP):** 8.70
Sampling Location (well ID, etc.): MW-1	**Casing Stickup (ft.):** 3.2
Sampled by: GL	**Starting Water Level (ft. BGL):** 5.5
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 20.48
Screened Interval (ft. BGL): 12.5-17.5	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 4.20

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Beef 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:55	-	.2	-	-	-	-	-	-	-	8.70	Pump is on
12:05	2	↓	27.02	7.08	46,900	Clear	0.0	-252	0.30	10.21	
12:10	3	↓	27.40	7.04	46,200	Clear	0.0	-234	0.31	10.68	
12:15	4	↓	27.28	7.02	46,100	Clear	0.0	-221	0.34	10.97	

Water Level (ft. BMP) at End of Purge: 10.97 **Sample Intake Depth (ft. BMP):** 15'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:25	500	P	1	N	~~HNO3~~ + HNO_3	Total Metals
↓	250	↓	1	Y	HNO_3	Dissolved Metals
↓	250	↓	1	N	H_2SO_4	NH_4
↓	250	↓	1	N	—	anions
↓	1L	↓	2	N	—	$Ra_{226/228}$

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 912525 **Project Name:** Copano Bay **Date:** 9-19-19

Sample Number: MW-3R	**Starting Water Level (ft. BMP):** 4.50
Sampling Location (well ID, etc.): MW3R	**Casing Stickup (ft.):** 2
Sampled by: GL	**Starting Water Level (ft. BGL):**
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 22.58
Screened Interval (ft. BGL): 17-22	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):**

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:07	-	.2	-	-	-	-	-	-	-	4.50	Pump is on
11:17	2	↓	30.26	6.57	52,100	Clear	0.0	199	0.63	4.70	
11:22	3		29.72	6.56	52,100	Clear	0.0	232	0.55	4.70	
11:27	4		29.19	6.56	52,100	Clear	0.0	273	0.46	4.70	

Water Level (ft. BMP) at End of Purge: 4.70 **Sample Intake Depth (ft. BMP):** 19

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:35	500	P	1	N	HNO_3	Total Metals
↓	250	↓	1	Y	HNO_3	Dissolved Metals
	250		1	N	H_2SO_4	NH_4
	250		1	N	—	anions
	1L		2	N	—	Ra 226/227

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1512525 **Project Name:** Copano 3219	**Date:** 9-17-19
Sample Number: MW-3RB	**Starting Water Level (ft. BMP):** 5.20
Sampling Location (well ID, etc.): MW-3RB	**Casing Stickup (ft.):** 3.0
Sampled by: GL	**Starting Water Level (ft. BGL):** 2.2
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 50.04
Screened Interval (ft. BGL): 35 - 55	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): 33 - 55	**Casing Volume (gal.):** 7.30

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Beal 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:35	-	.2	-	-	-	-	-	-	-	5.20	Pump is on
10:45	2	↓	27.74	6.54	51,300	clear	0.0	-3	0.45	5.30	
10:50	3	↓	27.72	6.56	51300	clear	0.0	-1	0.41	5.36	
10:55	4	↓	27.75	6.56	51,300	Clear	0.0	-1	0.39	5.40	

Water Level (ft. BMP) at End of Purge: 5.30 **Sample Intake Depth (ft. BMP):** 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:05	500	P	1	N	HNO_3	Total metals
↓	250	↓	1	Y	HNO_3	Dissolved Metals
↓	250	↓	1	N	H_2SO_4	NH4
↓	250	↓	1	N	—	anion
↓	1L	↓	2	N	—	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 Project Name: Cupmo 3615	Date: 9-19-19
Sample Number: DB-5	Starting Water Level (ft. BMP): 24.26
Sampling Location (well ID, etc.): DB-5	Casing Stickup (ft.): 5.6
Sampled by: BL	Starting Water Level (ft. BGL): 18.66
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 44
Screened Interval (ft. BGL): 40.2 - 50.2	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL): —	Casing Volume (gal.): 12.89

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Barrel

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
9:55	~~8/11~~	-	.2	-	-	-	-	-	-	24.26	Pump is on
10:05	~~8:21~~	2	↓	27.80	6.74	36,400	clear	0.5	-83	0.55	24.88	
10:10	~~8:24~~	3		27.71	6.78	36,400	clear	0.4	-87	0.51	24.95	
10:15	~~8:31~~	4		27.36	6.81	36,400	clear	0.2	-89	0.50	24.99	

Water Level (ft. BMP) at End of Purge: 24.99 **Sample Intake Depth (ft. BMP):** 45'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:25	500	P	1	N	HNO_3	Total metals
10:25	250	↓	1	Y	HNO_3	Dissolved Metals
↓	250		1	N	H_2SO_4	NH_4
	250		1	N	—	Anions
	1L		2	N	—	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525	**Project Name:** Copano GW Sampling 3Q19	**Date:** 9/19/19	
Sample Number: MW-4		**Starting Water Level (ft. BMP):** ~~7.78~~ 8.46	
Sampling Location (well ID, etc.): MW-4		**Casing Stickup (ft.):** 3.6	
Sampled by: CC		**Starting Water Level (ft. BGL):** ~~3.58~~ 4.86	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 21.21	
Screened Interval (ft. BGL): 18.6 - 21.1		**Casing Diameter (in ID):** 3	
Filter Pack Interval (ft. BGL): 13.6 - 18.6		**Casing Volume (gal.):** 4.68	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + 0.45 µ

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
9:53 ~~8.16~~	9:53 -	0.2	-	-	-	-	-	-	-	9.01	Pump is on
10:03 ~~8.26~~	10:03 -	↓	30.03	6.87	43,700	neutral	3.4	-61	0.50	9.70	↓
10:08 ~~8.31~~	10:08 -	↓	30.11	6.84	43,700	↓	3.3	-57	0.47	10.08	↓
10:13 ~~8.36~~	10:13 -	↓	30.42	6.84	43,900	↓	3.1	-54	0.44	10.44	↓

Water Level (ft. BMP) at End of Purge: 10.44 **Sample Intake Depth (ft. BMP):** 20

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:18	1L	P	2	N	—	
↓	250mL	↓	3	↓	H_2SO_4, HNO_3	diss. met. filtered w/ 0.45µ
↓	500mL	↓	1	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 3Q19 **Date:** 9/19/19

Sample Number: MW-5	**Starting Water Level (ft. BMP):** 5.49
Sampling Location (well ID, etc.): MW-5	**Casing Stickup (ft.):** 3.8
Sampled by: CC	**Starting Water Level (ft. BGL):** 1.69
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 21.78
Screened Interval (ft. BGL): 16.6-21.6	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): 11.6-16.6	**Casing Volume (gal.):** 6.01

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + 0.45 µ

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:12	-	0.2	-	-	-	-	-	-	-	6.10	Pump is on
11:22	↓	↓	31.47	6.53	29,000	neutral	0.3	514	0.41	6.29	↓
11:27	↓	↓	31.47	6.54	29,200	↓	0.4	515	0.37	6.50	↓
11:32	↓	↓	31.47	6.55	29,200	↓	0.2	515	0.34	6.78	↓

Water Level (ft. BMP) at End of Purge: 6.78 **Sample Intake Depth (ft. BMP):** 18

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:37	1L	P	2	N	—	* DUP: MW-303
↓	250mL	↓	3	↓	H_2SO_4, HNO_3	diss. met. filtered w/ 0.45µ
↓	500mL	↓	1	↓	HNO_3	

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 3Q19 **Date:** 9/19/19	
Sample Number: MW-5B	**Starting Water Level (ft. BMP):** 5.79
Sampling Location (well ID, etc.): MW5-B	**Casing Stickup (ft.):** 2.8
Sampled by: CC	**Starting Water Level (ft. BGL):** 2.99
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 51.40
Screened Interval (ft. BGL): 31.8-51.8	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): 26.8-31.8	**Casing Volume (gal.):** 7.48

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + 0.45 µ

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:38	-	0.2	-	-	-	-	-	-	-	5.97	Pump is on
10:48	↓	↓	31.51	6.63	26,900	neutral	2.7	-23	0.60	5.92	↓
10:53	↓	↓	31.59	6.63	26,300	↓	1.7	-27	0.51	5.92	↓
10:58	↓	↓	31.55	6.63	26,100	↓	0.7	-29	0.46	5.92	↓

Water Level (ft. BMP) at End of Purge: 5.92 **Sample Intake Depth (ft. BMP):** 40

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:03	1L	P	2	N	—	
↓	250mL	↓	3	↓	H_2SO_4, HNO_3	diss. met. filtered w/ 0.45 µ
↓	500mL	↓	1	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1912525 **Project Name:** Copano 3219	**Date:** 9-18-19
Sample Number: mw-6R	**Starting Water Level (ft. BMP):** 9.3
Sampling Location (well ID, etc.): mw-6R	**Casing Stickup (ft.):** 2.7
Sampled by: BL	**Starting Water Level (ft. BGL):** 6.6
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 20.21
Screened Interval (ft. BGL): 14.7 - 19.7	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 7.12

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Real 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron # 145

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
16:00	-	.2	-	-	-	-	-	-	-	9.3	Pump is on
16:10	2	↓	28.36	6.52	31,200	clear	0.0	131	0.75	9.55	
16:15	3	↓	28.38	6.51	31,200	clear	0.0	155	0.59	9.55	
16:20	4	↓	28.34	6.49	31,200	clear	0.0	205	0.52	9.55	

Water Level (ft. BMP) at End of Purge: 9.55 **Sample Intake Depth (ft. BMP):** 16'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
16:30	500	P	1	N	HNO_3	T. metals
↓	250	↓	1	Y	HNO_3	D. Metals
	250		1	N	H_2SO_4	NH_4
	250		1	N	—	anions
↓	1L	↓	2	N	—	Rg 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number:	19125525	**Project Name:** Copano GW Sampling 3Q19	**Date:** 9/19/19
Sample Number:	MW-6RB	**Starting Water Level (ft. BMP):**	7.82
Sampling Location (well ID, etc.):	MW-6RB	**Casing Stickup (ft.):**	2.6
Sampled by:	C C	**Starting Water Level (ft. BGL):**	5.22
Measuring Point (MP) of Well:	TOC/PVC	**Total Depth (ft. BMP):**	50.20
Screened Interval (ft. BGL):	38.9-48.9	**Casing Diameter (in ID):**	2
Filter Pack Interval (ft. BGL):	33.9-38.9	**Casing Volume (gal.):**	6.91

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + 0.45 µm

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:35	-	0.2	-	-	-	-	-	-	-	8.09	Pump is on
13:45	↓	↓	33.69	6.77	24,000	neutral	1.3	7	0.57	8.03	↓
13:50			34.06	6.79	24,300	↓	0.4	8	0.46	8.03	
13:55	↓	↓	34.08	6.80	24,300	↓	0.2	7	0.42	8.03	↓

Water Level (ft. BMP) at End of Purge: 8.03 **Sample Intake Depth (ft. BMP):** 42

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:00	1L	P	2	N	—	—
↓	250mL	↓	3	↓	H_2SO_4, HNO_3	diss. met. filtered w/ 0.45 µm
↓	500mL	↓	1	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1912 5525 **Project Name:** Cupano 3Q19	**Date:** 8.30 9-19-19
Sample Number: MW-7#	**Starting Water Level (ft. BMP):** 8.30
Sampling Location (well ID, etc.): MW-7	**Casing Stickup (ft.):** 3.7
Sampled by: GL	**Starting Water Level (ft. BGL):** 4.6
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 22.62
Screened Interval (ft. BGL): 17.6–19.6	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 9.35

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Barrel

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron # 145

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:08	-	.2	-	-	-	-	-	-	-	8.30	Pump is on
13:18	2	↓	34.20	6.93	47,300	clear	2.8	-115	0.65	9.68	
13:23	3	↓	34.05	6.93	47,200	clear	0.0	-116	0.54	9.68	
13:28	4	↓	33.71	6.93	47,200	clear	0.0	-116	0.50	9.68	

Water Level (ft. BMP) at End of Purge: 9.68 **Sample Intake Depth (ft. BMP):** 18

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:35	500	P	1	N	HNO_3	Total Metals
↓	250	↓	1	Y	HNO_3	Dissolved Metals
	250		1	N	H_2SO_4	NH_4
	250		1	N	—	anions
↓	1L	↓	2	N	—	Rs 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 412525 **Project Name:** Capano 3Q19	**Date:** 9-19-19
Sample Number: MW-7B	**Starting Water Level (ft. BMP):** 8.51
Sampling Location (well ID, etc.): MW-7B	**Casing Stickup (ft.):** 2.7
Sampled by: GL	**Starting Water Level (ft. BGL):** 5.81
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 52.53
Screened Interval (ft. BGL): 38.7-53.7	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): 36-53.7	**Casing Volume (gal.):** 7.12

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:35	-	1.2	-	-	-	-	-	-	-	8.51	Pump is on
12:45	2	↓	27.70	6.69	59,100	Clear	2.9	-62	1.55	8.85	
12:50	3	↓	27.64	6.69	59,056	Clear	2.3	-59	1.57	8.85	
12:55	4	↓	27.24	6.69	58,800	Clear	0.6	-56	1.56	8.85	

Water Level (ft. BMP) at End of Purge: 8.85 **Sample Intake Depth (ft. BMP):** 45'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:05	500	P	1	N	HNO_3	Total metals
↓	250	↓	1	~~N~~ Y	HNO_3	Dissolved metals
↓	250	↓	1	N	H_2SO_4	NH_4
↓	250	↓	1	N	—	anions
	1L	↓	2	N	—	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 Project Name: Capano GW Sampling 3Q19 Date: 9/23/19	
Sample Number: MW-8	Starting Water Level (ft. BMP): 5.26
Sampling Location (well ID, etc.): MW-8	Casing Stickup (ft.): 1.2
Sampled by: CC	Starting Water Level (ft. BGL): 4.06
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 18.49
Screened Interval (ft. BGL): 13-18	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL): 8-13	Casing Volume (gal.): 8.64

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 7

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + 0.45 µ

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:06	-	0.2	-	-	-	-	-	-	-	5.33	Pump is on
12:16	↓	↓	32.18	6.60	27,280	neutral	0.0	500	5.52	5.62	↓
12:21	↓	↓	32.35	6.59	27,100	↓	0.0	498	5.31	5.66	↓
12:26	↓	↓	32.53	6.59	26,900	↓	0.0	496	5.07	5.69	↓

Water Level (ft. BMP) at End of Purge: 5.69 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:31	1L	P	2	N	-	
↓	250 mL	↓	3	↓	H_2SO_4, HNO_3	diss. met. filtered w/ 0.45µm
↓	500 mL	↓	1	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: ~~Eq~~ 19125525 Project Name: Capano GW Sampling 3Q19	Date: 9/19/19
Sample Number: MW-9	Starting Water Level (ft. BMP): 8.21
Sampling Location (well ID, etc.): MW-9	Casing Stickup (ft.): 1.7
Sampled by: CC	Starting Water Level (ft. BGL): 6.51
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 18.94
Screened Interval (ft. BGL): 13.5 - 18.5	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL): 8.5 - 13.5	Casing Volume (gal.): 7.01

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Roll off

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + 0.45 µm

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:49	-	0.2	-	-	-	-	-	-	-	8.32	Pump is on
12:59	↓	↓	33.03	6.35	22,200	neutral	0.0	494	2.29	8.27	↓
13:04	↓	↓	33.10	6.35	22,200	↓	0.0	497	1.49	8.27	↓
13:09	↓	↓	33.19	6.35	22,100	↓	0.0	501	1.46	8.27	↓

Water Level (ft. BMP) at End of Purge: 8.27 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:14	1L	P	2	N	—	
↓	250 mL	↓	3	↓	H_2SO_4, HNO_3	diss. met. filtered w/ 0.45 µm
↓	500 mL	↓	1	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525	**Project Name:** Copano GW Sampling 3Q19	**Date:** 9/19/19	
Sample Number: MW-10		**Starting Water Level (ft. BMP):** 7.72	
Sampling Location (well ID, etc.): MW-10		**Casing Stickup (ft.):** 1.6	
Sampled by: CC		**Starting Water Level (ft. BGL):** ~~6.12~~ 6.12	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 18.99	
Screened Interval (ft. BGL): 13.4 - 18.4		**Casing Diameter (in ID):** 4	
Filter Pack Interval (ft. BGL): 8.4 - 13.4		**Casing Volume (gal.):** 11.93	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & 0.45 µ

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
14:20 ~~2:20~~	-	0.2	-	-	-	-	-	-	-	7.85	Pump is on
14:30	↓	↓	33.21	6.51	22,300	neutral	0.0	295	0.64	7.85	↓
14:35	↓	↓	33.19	6.50	22,200	↓	0.0	327	0.54	7.86	↓
14:40	↓	↓	33.15	6.49	22,300	↓	0.0	337	0.53	7.86	↓

Water Level (ft. BMP) at End of Purge: 7.86 **Sample Intake Depth (ft. BMP):** 15'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:45	1L	P	2	N	-	
↓	250 mL	↓	3	↓	H_2SO_4, HNO_3	diss. met. filtered w/ 0.45µ
↓	500mL	↓	1	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Capano 3Q19	**Date:** 9-9-19
Sample Number: MW-11	**Starting Water Level (ft. BMP):** 8.55
Sampling Location (well ID, etc.): MW-11	**Casing Stickup (ft.):** 1.7
Sampled by: CL	**Starting Water Level (ft. BGL):** 6.85
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 19.02
Screened Interval (ft. BGL): 14.1 - 19.1	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 6.85

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Soil

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
14:21	-	.2	-	-	-	-	-	-	-	8.55	Pump is on
14:31	2	↓	29.65	6.50	23,000	Clear	0.0	244	0.91	9.60	
14:36	3		29.59	6.49	23,000	Clear	0.0	269	6.78	9.60	
14:41	4		29.73	6.49	23,000	Clear	0.0	298	0.68	9.60	

Water Level (ft. BMP) at End of Purge: 9.60 **Sample Intake Depth (ft. BMP):** 15'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:50	500	P	1	N	HNO_3	Total Metals
↓	250	↓	1	Y	HNO_3	Dissolved Metals
	250		1	N	H_2SO_4	NH_4
	250		1	N	—	anions
↓	1L	↓	2	N	—	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 191255.05 **Project Name:** Capano 2019	**Date:** 9-19-19
Sample Number: MW-11B	**Starting Water Level (ft. BMP):** 9.00
Sampling Location (well ID, etc.): MW-11B	**Casing Stickup (ft.):** 2.5
Sampled by: CL	**Starting Water Level (ft. BGL):** 6.5
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 36.45
Screened Interval (ft. BGL): 30.6 - 35.6	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): 28 - 35.6	**Casing Volume (gal.):** 4.47

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:50	-	.2	-	-	-	-	-	-	-	9.00	Pump is on
14:00	2	↓	29.39	6.75	26,300	Clear	0.0	2	0.45	10.55	
14:05	3	↓	29.02	6.72	26,300	Clear	0.0	-6	0.38	10.85	
14:10	4	↓	29.16	6.71	26,400	Clear	0.0	-8	0.36	10.85	

Water Level (ft. BMP) at End of Purge: 10.85 **Sample Intake Depth (ft. BMP):** 32'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:20	500	P	1	N	HNO_3	Total metals
↓	250	↓	1	Y	HNO_3	Dissolved metals
↓	250	↓	1	N	H_2SO_4	NH_4
↓	250	↓	1	N	—	anions
↓	1L	↓	2	N	—	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525	**Project Name:** Copano 3Q19		**Date:** 9-17-19
Sample Number: MW3-1		**Starting Water Level (ft. BMP):** 7.70	
Sampling Location (well ID, etc.): MW3-1		**Casing Stickup (ft.):** 4.2	
Sampled by: LR		**Starting Water Level (ft. BGL):** 3.5	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 18.5	
Screened Interval (ft. BGL): 15.6-18.1		**Casing Diameter (in ID):** 4	
Filter Pack Interval (ft. BGL): —		**Casing Volume (gal.):** 7.05	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Reed

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
15:35	-	.2	-	-	-	-	-	-	-	7.70	Pump is on
15:45	2	1	31.70	6.37	41,800	Clear	0.0	115	0.64	7.85	
15:50	3	1	31.46	6.37	41,800	Clear	0.0	115	0.49	7.86	
15:55	4	1	31.38	6.42	41,800	Clear	0.0	115	0.45	7.86	

Water Level (ft. BMP) at End of Purge: 7.86 **Sample Intake Depth (ft. BMP):** 16'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
16:25	500	P	1	N	HNO_3	T. Metals
|	250	P	1	Y	HNO_3	D. Metals
|	250	P	1	N	H_2SO_4	NH_4
|	250	P	1	N	—	anions
↓	1L	P	2	N	—	Ra 226/228

Comments: Duplicate Sample MW-101 16:15

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Cooper 3Q19 **Date:** 9-18-19

Sample Number: MW3-2	**Starting Water Level (ft. BMP):** 8.79
Sampling Location (well ID, etc.): MW3-2	**Casing Stickup (ft.):** 4.1
Sampled by: LC	**Starting Water Level (ft. BGL):** 4.69
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 19.91
Screened Interval (ft. BGL): 16.9 - 19.4	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 7.26

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:01	-	.2	-	-	-	-	-	-	-	8.79	Pump is on
13:11	2	↓	28.17	6.81	40,200	clear	0.2	71	0.70	9.48	
13:16	3		28.12	6.80	40,200	clear	0.1	69	0.62	9.44	
13:21	4		28.06	6.80	40,100	clear	0.0	66	0.57	9.50	

Water Level (ft. BMP) at End of Purge: 9.50 **Sample Intake Depth (ft. BMP):** 18.5'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:40	500	P	3		HNO_3	T. Metals MS
↓	250	↓	3	Y	HNO_3	D. Metals MSD
	250		3	N	H_2SO_4	NH4 Collected
	250		3	N	—	Anions
	1L		6	N	—	Ra 226/228

Comments: MS/MSD collected

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GROUNDWATER SAMPLING RECORD

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Project Number: 1912525 **Project Name:** Cosmo 3Q19	**Date:** 9-18-19
Sample Number: MW3-3	**Starting Water Level (ft. BMP):** 8.94
Sampling Location (well ID, etc.): MW3-3	**Casing Stickup (ft.):** 4.2
Sampled by: CL	**Starting Water Level (ft. BGL):** 4.74
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 20.3
Screened Interval (ft. BGL): 17.2 - 19.7	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 7.41

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Barrel

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
14:15	-	.2	-	-	-	-	-	-	-	8.94	Pump is on
14:25	2	↓	28.91	6.80	41,000	clear	2.5	58	0.74	9.24	
14:30	3	↓	29.15	6.80	41,000	clear	3.1	58	0.74	9.20	
14:35	4	↓	29.07	6.80	41,000	clear	3.0	58	0.74	9.20	

Water Level (ft. BMP) at End of Purge: 9.2 **Sample Intake Depth (ft. BMP):** 18'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:50	500	P	1		HNO_3	Total metals
↓	250	↓	1	Y	HNO_3	Diss/wet metals
	250		1	N	H_2SO_4	NH_4
	250		1	N	—	anions
↓	1L	↓	2	N	—	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525	**Project Name:** Copano GW Sampling 3Q19		**Date:** 9/18/19
Sample Number: MW3-4		**Starting Water Level (ft. BMP):** 6.22	
Sampling Location (well ID, etc.): MW3-4		**Casing Stickup (ft.):** 4.3	
Sampled by: CC		**Starting Water Level (ft. BGL):** 1.92	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 15.86	
Screened Interval (ft. BGL): 12.8-15.3		**Casing Diameter (in ID):** 4	
Filter Pack Interval (ft. BGL): —		**Casing Volume (gal.):** 6.29	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 32

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron ↓ 0.45 µ

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
14:40	-	0.2	-	-	-	-	-	-	-	6.45	Pump is on
14:50	2	↓	32.60	6.84	54,300	neutral	1.7	49	0.45	6.50	↓
14:55	3	↓	32.63	6.83	54,300	↓	1.3	21	0.43	6.50	↓
15:00	4	↓	32.67	6.81	54,200	↓	1.0	-24	0.39	6.52	↓
15:05	5	↓	32.69	6.80	54,200	↓	1.0	-56	0.36	6.52	↓

Water Level (ft. BMP) at End of Purge: 6.52 **Sample Intake Depth (ft. BMP):** 14

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
15:10	1L	P	2	N	—	* DUP: MW-102
↓	250mL	↓	3	↓	H_2SO_4, HNO_3	diss. met. filtered w/ 0.45µ
↓	500mL	↓	1	↓	HNO_3	

Comments: DUP: MW-101

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 3Q19	**Date:** 9/18/19
Sample Number: MW3-4B	**Starting Water Level (ft. BMP):** 5.78
Sampling Location (well ID, etc.): MW3-4B	**Casing Stickup (ft.):** 2.5
Sampled by: CC	**Starting Water Level (ft. BGL):** 3.28
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 44.58
Screened Interval (ft. BGL): 30.0-45.0	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): ~28-45	**Casing Volume (gal.):** 6.32

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 32

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + 0.45 µ

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
15:44	-	0.7	-	-	-	-	-	-	-	6.24	Pump is on
15:54	2	↓	31.37	6.70	79,800	neutral	0.0	53	5.04	6.24	↓
15:59	3	↓	31.44	6.69	78,800	↓	0.0	73	4.83	6.24	↓
16:04	4	↓	31.40	6.70	77,100	↓	0.0	82	4.64	6.24	↓

Water Level (ft. BMP) at End of Purge: 6.24 **Sample Intake Depth (ft. BMP):** 35

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
16:09	1L	P	2	N	—	
↓	250 mL	↓	3	↓	H_2SO_4, HNO_3	diss. met. filtered w/ 0.45 µ
↓	500 mL	↓	1	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 3Q19 **Date:** 9/18/19

Sample Number: MW3-5	**Starting Water Level (ft. BMP):** 7.85
Sampling Location (well ID, etc.): MW3-5	**Casing Stickup (ft.):** 3.4
Sampled by: CC	**Starting Water Level (ft. BGL):** 4.45
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 16.69
Screened Interval (ft. BGL): 14-16.5	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 5.77

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed #2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + 0.45 µm

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:43	-		-	-	-	-	-	-	-	8.02	Pump is on
13:53	2	↓	31.26	6.75	44,500	neutral	0.0	112	5.96	8.09	↓
13:58	3	↓	31.46	6.74	44,500	↓	0.0	102	5.61	8.09	
14:03	4	↓	31.64	6.73	44,000	↓	0.0	88	5.38	8.10	↓

Water Level (ft. BMP) at End of Purge: 8.10 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:08	1L	P	2	N	—	
↓	250 mL	↓	3	↓	H_2SO_4, HNO_3	filtered diss. met. w/ 0.45 µm
↓	500 mL	↓	1	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1417525 **Project Name:** Copano GW Sampling 3Q19	**Date:** 9/18/19
Sample Number: MW3-6	**Starting Water Level (ft. BMP):** 8.41
Sampling Location (well ID, etc.): MW3-6	**Casing Stickup (ft.):** 3.8
Sampled by: CC	**Starting Water Level (ft. BGL):** 4.61
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 16.92
Screened Interval (ft. BGL): 14-16.5	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 5.56

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: BCA 3Q2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron + 0.45 µ

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:00	-	0.2	-	-	-	-	-	-	-	8.51	Pump is on
13:10	2	↓	30.82	6.69	43,600	neutral	0.0	133	6.16	8.51	↓
13:15	3	↓	30.91	6.70	43,700	↓	0.0	138	5.54	8.52	↓
13:20	4	↓	30.94	6.69	43,700	↓	0.0	137	5.29	8.52	↓

Water Level (ft. BMP) at End of Purge: 8.52 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:25	1L	P	2	N	—	
↓	250mL	↓	3	↓	HNO_3, H_2SO_4	filter diss. met. w/ 0.45µ
↓	500mL	↓	1	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Capna 2019	**Date:** 9-17-19
Sample Number: MW3-7	**Starting Water Level (ft. BMP):** 8.10
Sampling Location (well ID, etc.): MW3-7	**Casing Stickup (ft.):** 4.2
Sampled by: GL	**Starting Water Level (ft. BGL):** 3.9
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 20.63
Screened Interval (ft. BGL): 17.7-20.2	**Casing Diameter (in ID):** 4
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 8.18

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Barrel

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
14:45	-	.2	-	-	-	-	-	-	-	8.10	Pump is on
14:55	2	↓	31.15	6.48	49,300	clear	0.0	106	3.61	8.18	
15:00	3	↓	31.50	6.48	49,300	clear	0.0	109	3.58	8.18	
15:05	4	↓	31.70	6.49	49,400	clear	0.0	111	3.72	8.18	

Water Level (ft. BMP) at End of Purge: 8.18 **Sample Intake Depth (ft. BMP):** 18'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
15:15	500	P	1	N	HNO_3	Total metals
15:15	250	P	1	Y	HNO_3	Dissolved metals
↓	250	P	1	N	H_2SO_4	NH_4
↓	250	P	1	N	—	anions
↓	1L	P	2	N	—	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1912552 **Project Name:** Capano 3819	**Date:** 9-17-19
Sample Number: MW3-7B	**Starting Water Level (ft. BMP):** 7.60
Sampling Location (well ID, etc.): MW3-7B	**Casing Stickup (ft.):** 3.2
Sampled by: GL	**Starting Water Level (ft. BGL):** 4.40
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 51.91
Screened Interval (ft. BGL): 33.2 - 53.2	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): 31 - 53	**Casing Volume (gal.):** 7.22

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Barrel

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:51	-	.2	-	-	-	-	-	-	-	7.60	Pump is on
14:01	2	↓	30.09	8.88	44,000	clear	0.0	5	1.57	7.74	
14:06	3	↓	30.01	8.98	44,500	clear	0.0	-7	1.72	7.74	
14:11	4	↓	29.88	8.01	45,900	clear	0.0	17	1.47	7.74	
14:16	5	.2	29.91	7.44	46,800	clear	0.0	23	1.36	7.74	
14:21	6	↓	30.02	7.24	46,800	clear	0.0	11	1.25	7.74	
14:24	6.4	↓	30.02	7.23	46,800	clear	0.0	7	1.22	7.74	

Water Level (ft. BMP) at End of Purge: 7.74 **Sample Intake Depth (ft. BMP):** 43

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:30	500mL	P	1	N	HNO_3	Total Metals
14:30	250mL	P	1	Y	HNO_3	Dissolved Metals
14:30	250mL	P	1	N	H_2SO_4	Ammonia
14:30	250mL	P	1	N	—	anions
14:30	2L	P	2	N	—	RL 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1412525 **Project Name:** Capano 2019	**Date:** 9-17-19
Sample Number: MW4-1	**Starting Water Level (ft. BMP):** 5.58
Sampling Location (well ID, etc.): MW4-1	**Casing Stickup (ft.):** 3.6
Sampled by: LE	**Starting Water Level (ft. BGL):** 1.98
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 13.32
Screened Interval (ft. BGL): 10.2 - 12.7	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): ~	**Casing Volume (gal.):** 1.26

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Barrel

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
17:15	-	.2	-	-	-	-	-	-	-	5.58	Pump is on
17:25	2	↓	30.18	6.88	30,100	Clear	6.4	-177	0.43	6.71	
17:30	3		29.82	7.04	30,200	clear	7.4	-171	0.41	6.88	
17:35	4		29.47	7.01	30,300	clear	6.9	-186	0.32	7.08	

Water Level (ft. BMP) at End of Purge: 7.62 **Sample Intake Depth (ft. BMP):** 11

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
17:45	500	P	1		HNO_3	T. Metals
↓	250	↓	1	Y	HNO_3	D. Metals
	250		1	N	H_2SO_4	NH4
	250		1	N	—	anions
↓	1L	↓	2	N	—	R< 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1912552S **Project Name:** Copano 3Q19 **Date:** 9/17/19

Sample Number: MW4-2	**Starting Water Level (ft. BMP):** 6.64
Sampling Location (well ID, etc.): MW4-2	**Casing Stickup (ft.):** 4.2
Sampled by: RL	**Starting Water Level (ft. BGL):** 2.44
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 17.56
Screened Interval (ft. BGL): 12.9-17.9	**Casing Diameter (in ID):** ~~2~~ 3"
Filter Pack Interval (ft. BGL): -	**Casing Volume (gal.):** 4.00

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: (Peristaltic) or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
14:34	-	.2	-	~~6~~	-	-	-	-	-	6.64	Pump is on
14:44	2	↓	29.57	5.60	49000	Clear	0.0	155	0.26	9.13	
14:54	3	↓	29.61	5.60	48900	Clear	0.0	157	0.23	10.13	
15:00	4	↓	29.58	5.60	48900	Clear	0.0	159	0.22	11.06	
				6.69							

Water Level (ft. BMP) at End of Purge: 11.00 **Sample Intake Depth (ft. BMP):** 15'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
15:15	250	P	1	Y	HNO_3	Dissolved Metals
15:15	250	P	1	N	-	~~Metals~~ Wet Chem
15:15	~~500~~ 250	P	1	N	H_2SO_4	Ammonia
15:15	~~500~~ 500	P	1	N	HNO_3	Metals
15:15	1000	P	1	N	-	R-226
15:15	1000	P	1	N	-	R-228

Comments: pH calibration solution was bad when first field parameters where collected. Recalibrated and double checked field pH readings the next day.

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GROUNDWATER SAMPLING RECORD

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Project Number: 1917525 **Project Name:** Copano 3Q19	**Date:** 9/17/19
Sample Number: MW4-2A	**Starting Water Level (ft. BMP):** 5.45
Sampling Location (well ID, etc.): MW4-2A	**Casing Stickup (ft.):** 3.6
Sampled by: RG	**Starting Water Level (ft. BGL):** 1.85
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 17.09
Screened Interval (ft. BGL): 6.4-16.7	**Casing Diameter (in ID):** 2"
Filter Pack Interval (ft. BGL): -	**Casing Volume (gal.):** ~~1.84~~ 1.90

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
15:21	-	.2	-	~~6.66~~	-	-	-	-	-	5.45	Pump is on
15:31	2	↓	31.45	~~5.59~~	35300	Clear	0.0	162	1.72	6.80	
15:34	3	↓	31.58	~~5.59~~	35500	Clear	0.0	158	1.59	7.00	
15:39	4	↓	31.45	~~5.60~~	35300	Clear	0.0	156	1.52	7.27	
				6.66							

Water Level (ft. BMP) at End of Purge: 7.27 **Sample Intake Depth (ft. BMP):** 10'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
15:48	250	P	1	N	-	Wet Chem
15:48	250	↓	1	N	H_2SO_4	Ammonia
15:48	250	↓	1	Y	HNO_3	Dissolved Metals
15:49	500	↓	1	N	HNO_3	Metals
15:48	1000	↓	1	N	-	R-226
15:48	1000	↓	1	N	-	R-228

Comments: Field pH readings were incorrect the first time due to bad calibration solution. pH readings were collected the next day w/ a good calibration

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 3Q19 **Date:** 9/18/19	
Sample Number: MW4-3	**Starting Water Level (ft. BMP):** 5.86
Sampling Location (well ID, etc.): MW4-3	**Casing Stickup (ft.):** 3.8
Sampled by: CC	**Starting Water Level (ft. BGL):** 2.06
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 16.11
Screened Interval (ft. BGL): 12-16	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** ~~3.75~~ 3.76

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed #2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron , 0.45 µ

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:15	-	0.2	-	-	-	-	-	-	-	6.03	Pump is on
11:25	~2	↓	31.93	6.61	44,100	neutral	0.7	250	0.68	6.04	↓
11:30	~3	↓	32.34	6.60	44,000	↓	0.6	237	0.63	6.04	↓
11:35	~4	↓	32.63	6.61	43,900	↓	0.7	226	0.71	6.04	↓

Water Level (ft. BMP) at End of Purge: 6.04 **Sample Intake Depth (ft. BMP):** 14

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:40	1L	P	2	N	none	
↓	250mL	↓	3	↓	HNO_3, H_2SO_4, none	Dissolved filtered w/ 0.45µ
↓	500mL	↓	1	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525	**Project Name:** Copano GW Sampling 3Q19	**Date:** 9/18/19	
Sample Number: MW4-3B		**Starting Water Level (ft. BMP):** 5.95	
Sampling Location (well ID, etc.): MW4-3B		**Casing Stickup (ft.):** 2.3	
Sampled by: CC		**Starting Water Level (ft. BGL):** 3.65	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 31.05	
Screened Interval (ft. BGL): 20.3 - 30.3		**Casing Diameter (in ID):** 2	
Filter Pack Interval (ft. BGL): 18-30		**Casing Volume (gal.):** 4.09	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed # 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keek~~ Solinst

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron, 0.45 µ

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:54	-	0.2	-	-	-	-	-	-	-	6.02	Pump is on
12:04	2	↓	32.98	6.55	43,000	neutral	2.5	16	3.51	6.02	↓
12:09	3	↓	33.51	6.54	42,600	↓	2.3	-20	3.22	6.02	↓
12:14	4	↓	33.52	6.54	42,500	↓	2.3	-30	3.11	6.02	↓

Water Level (ft. BMP) at End of Purge: 6.02 **Sample Intake Depth (ft. BMP):** 25

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:19	1L	P	2	N	—	
↓	250mL	↓	3	↓	H_2SO_4, HNO_3	Diss. Met. filtered w/ 0.45 µ
↓	500mL	↓	1	↓	HNO_3	

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: MW4-4 1512525 **Project Name:** Crane 3Q19 **Date:** 9-18-19

Sample Number: MW4-4	**Starting Water Level (ft. BMP):** 8.49
Sampling Location (well ID, etc.): MW4-4	**Casing Stickup (ft.):** 2.2
Sampled by: GL	**Starting Water Level (ft. BGL):** 5.29
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 17.19
Screened Interval (ft. BGL): 12-17	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 3.10

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Roof

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: ~~Keck~~ Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & 1.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:11	-	.2	-	-	-	-	-	-	-	8.49	Pump is on
12:21	2	↓	28.48	6.74	38,800	clear	0.0	19	0.49	9.30	
12:26	3		28.58	6.74	38,800	clear	0.0	20	0.49	9.30	
12:31	4		28.77	6.74	38,800	clear	0.0	21	0.46	9.30	

Water Level (ft. BMP) at End of Purge: 9.30 **Sample Intake Depth (ft. BMP):** 15'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12.40	500	P	1	N	HNO_3	Total metals
↓	250	↓	1	Y	HNO_3	Dissolved metals
	250		1	N	H_2SO_4	NH_4
	250		1	N	—	Chloride
↓	1L	↓	2	N	—	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 1912 5525 **Project Name:** Closure 2019	**Date:** 9-18-19
Sample Number: MW4-7	**Starting Water Level (ft. BMP):** 8.28
Sampling Location (well ID, etc.): MW4-7	**Casing Stickup (ft.):** 2.9
Sampled by: GL	**Starting Water Level (ft. BGL):** 5.38
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 19.69
Screened Interval (ft. BGL): 14.5-19.0	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL):	**Casing Volume (gal.):** 4.18

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Roof

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck Geotech

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:29	-	.2	-	-	-	-	-	-	-	8.28	Pump is on
11:34	2	↓	28.09	6.81	32,800	clear	0.0	-76	0.55	8.35	
11:44	3		27.98	6.80	32,800	Clear	0.0	-61	0.48	8.35	
11:49	4		27.82	6.79	32,800	Clear	0.0	-50	0.43	8.35	

Water Level (ft. BMP) at End of Purge: 8.35 **Sample Intake Depth (ft. BMP):** 17'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:00	500	P	1	N	HNO_3	Total metals
↓	250	↓	1	Y	HNO_3	Dissolved metals
	250		1	N	H_2SO_4	NH4
	250		1	N	—	anions
↓	1L	↓	2	N	—	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 1912525 **Project Name:** Copano 3919 **Date:** 9/17/19

Sample Number: MW4-7A	**Starting Water Level (ft. BMP):** 4.16
Sampling Location (well ID, etc.): MW4-7A	**Casing Stickup (ft.):** 3.2
Sampled by: RO	**Starting Water Level (ft. BGL):** 0.96
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 16.06
Screened Interval (ft. BGL): 9.5-14.5	**Casing Diameter (in ID):** 2" 3
Filter Pack Interval (ft. BGL): —	**Casing Volume (gal.):** 4.37

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron & 0.045

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:45	-	.2	-	~~6~~	-	-	-	-	-	4.16	Pump is on
12:55	2	↓	29.02	5.68	34100	clear	0.0	112	0.64	4.58	
~~12~~:1300	3	↓	29.04	5.69	34100	clear	0.0	115	0.52	4.61	
13:05	4	↓	29.07	5.70	34000	clear	0.0	117	0.43	4.63	
				6.65							

Water Level (ft. BMP) at End of Purge: 4.63 **Sample Intake Depth (ft. BMP):** 12'

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:05	500	P	1	N	HNO_3	Metals
13:05	250	P	1	Y	HNO_3	Dissolved metals
13:05	250	P	1	N	—	Wet Chem
13:05	250	P	1	N	~~—~~ H_2SO_4	Ammonia
13:20	1000	P	1	N	—	R-226
13:20	1000	P	1	N	—	R-228

Comments: Sampling Finished @ 13:20
Started @ 13:05

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Incorrect field pH readings were recorded the first day due to bad pH calibration solution from rental company (Farwest). Recalibrated and double check pH the next day. This is the correct field pH reading.

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 1912525 **Project Name:** Copano 3919 **Date:** 9/17/19

Sample Number: MW4-7B	**Starting Water Level (ft. BMP):** 4.00
Sampling Location (well ID, etc.): MW4-7B	**Casing Stickup (ft.):** 2.5
Sampled by: DM	**Starting Water Level (ft. BGL):** 1.5
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 50.85
Screened Interval (ft. BGL): 35.5-50.5	**Casing Diameter (in ID):** 2"
Filter Pack Interval (ft. BGL): 33-50	**Casing Volume (gal.):** 7.63

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: (Peristaltic or) bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Other: **Filter / Filter Size:** 10 micron & .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:49	-	.2	-	6.68	-	-	-	-	-	4	Pump is on
13:54	2	↓	28.91	5.70	52000	Clear	0.0	127	0.22	4.54	
13:59	3	↓	29.22	5.70	52000	Clear	0.0	126	0.20	4.56	
14:04	4	↓	29.38	5.70	52000	Clear	0.0	124	0.21	4.58	
				6.68							

Water Level (ft. BMP) at End of Purge: 4.58 **Sample Intake Depth (ft. BMP):** 40

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:15	250	P	1	—	—	~~Wet~~ Wet Chem
14:15	250	P	1	—	H_2SO_4	Ammonia
14:15	250	P	1	Y	HNO_3	Dissolved Metals
14:15	500	P	1	—	HNO_3	Metals
14:15	1000	P	1	—	—	R-226
14:15	1000	P	1	—	—	R-228

Comments: Bad pH readings the first purge. Repurged and collected field pH reading the next day.

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/4/19

Sample Number: MW4 - 7B	Starting Water Level (ft. BMP): 4.94
Sampling Location (well ID, etc.): MW4 - 7B	Casing Stickup (ft.): 2.5
Sampled by: KM	Starting Water Level (ft. BGL): 2.44
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 50.85
Screened Interval (ft. BGL): 35.5 - 50.5	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 33 - 50	Casing Volume (gal.): 7.90 = 29.90 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:34	-	0.2	-	-	-	-	-	-	-	4.94	Pump is on
13:44	2	↓	24.43	7.03	59,300		0.0	79	3.46	6.57	
13:49	3		24.51	7.03	59,300		0.0	74	3.37	6.65	
13:54	4		24.61	7.03	59,200		0.0	69	3.33	6.67	

Water Level (ft. BMP) at End of Purge: 6.67 **Sample Intake Depth (ft. BMP):** 40

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:04	500 ml	P	1		HNO_3	Toatal Metals
14:04	250 ml	P	1	Y 45	HNO_3	Dissolved Metals
14:04	250 ml	P	1		H_2SO_4	NH_4
14:04	250 ml	P	1			Anions
14:04	1 L	P	2		HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/4/19

Sample Number: MW4 - 7	**Starting Water Level (ft. BMP):** 8.61
Sampling Location (well ID, etc.): MW4 - 7	**Casing Stickup (ft.):** 2.90
Sampled by: RA	**Starting Water Level (ft. BGL):** ~~5.5~~ 5.71
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 19.69
Screened Interval (ft. BGL): 16.5 - 19.0	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL):	**Casing Volume (gal.):** 5.13 = 19.42 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
	-	0.2	-	-	-	-	-	-	-	8.61	Pump is on
12:02	2	↓	21.92	7.16	28,800	Clear	0.0	-87	5.67	8.67	
12:12	3	↓	22.29	7.09	32,700	↓	0.0	-84	4.96	8.68	
12:17	4	↓	22.41	7.08	32,800	↓	0.0	-111	4.67	8.68	
12:22											

Water Level (ft. BMP) at End of Purge: 8.68 **Sample Intake Depth (ft. BMP):** 17

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:31	500 ml	P	1		HNO_3	Toatal Metals
12:31	250 ml	P	1	Y 45	HNO_3	Dissolved Metals
12:31	250 ml	P	1		H_2SO_4	NH_4
12:31	250 ml	P	1			Anions
12:31	1 L	P	2		HNO_3	Ra 226/228

Comments: *~~From Monitoring Well Mgmnt Spreadsheet & 2H18 Field Records~~

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/4/19

Sample Number: MW4 - 7A	**Starting Water Level (ft. BMP):** 5.34
Sampling Location (well ID, etc.): MW4 - 7A	**Casing Stickup (ft.):** 3.2
Sampled by: RL	**Starting Water Level (ft. BGL):** 2.14
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 16.06
Screened Interval (ft. BGL): 9.5 - 14.5	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL):	**Casing Volume (gal.):** 5.11 = 19.34 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:50	-	0.2	-	-	-	-	-	-	-	5.34	Pump is on
13:00	2	↓	24.28	7.14	42,100	Very light yellow	0.0	210	5.46	5.78	
13:05	3		24.38	7.13	42,100	↓	0.0	208	5.36	5.85	
13:10	4		24.45	7.15	42,000		0.0	201	5.39	5.89	

Water Level (ft. BMP) at End of Purge: 5.89 **Sample Intake Depth (ft. BMP):** 12

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:18	500 ml	P	1		HNO_3	Toatal Metals
13:18	250 ml	P	1	Y 45	HNO_3	Dissolved Metals
13:18	250 ml	P	1		H_2SO_4	NH_4
13:18	250 ml	P	1			Anions
13:18	1 L	P	2		HNO_3	Ra 226/228
13:19						

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/4/19

Sample Number: MW4 - 3B	**Starting Water Level (ft. BMP):** 6.35
Sampling Location (well ID, etc.): MW4 - 3B	**Casing Stickup (ft.):** 2.3
Sampled by: RM	**Starting Water Level (ft. BGL):** 4.05
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 31.05
Screened Interval (ft. BGL): 20.3 - 30.3	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): 18 - 30	**Casing Volume (gal.):** 4.41 = 16.69 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + 45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
09:28	-	0.2	-	-	-	-	-	-	-	6.35	Pump is on
09:38	2	↓	20.51	6.92	51,700	Clear	1.0	-92	4.10	6.44	
09:43	3	↓	20.63	6.91	51,400	↓	0.0	-97	3.97	6.49	
09:48	4	↓	20.53	6.91	51,300	↓	0.2	-99	3.93	7.01	

Water Level (ft. BMP) at End of Purge: 7.01 **Sample Intake Depth (ft. BMP):** 25

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
09:56	500 ml	P	1		HNO_3	Toatal Metals
09:56	250 ml	P	1	Y 45	HNO_3	Dissolved Metals
09:56	250 ml	P	1		H_2SO_4	NH_4
09:56	250 ml	P	1			Anions
09:56	1 L	P	2		HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/4/19

Sample Number: MW4 - 4	**Starting Water Level (ft. BMP):** 7.64
Sampling Location (well ID, etc.): MW4 - 4	**Casing Stickup (ft.):** 3.2
Sampled by: RM	**Starting Water Level (ft. BGL):** 4.44
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 17.19
Screened Interval (ft. BGL): 12 - 17	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL): -	**Casing Volume (gal.):** 4.68 = 17.72 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:52	-	0.2	-	-	-	-	-	-	-	7.64	Pump is on
11:02	2	↓	20.14	7.13	45400	clear	0.0	-105	0.76	8.07	
11:07	3	↓	21.01	7.11	45600	↓	0.0	-111	0.79	8.13	
11:12	4	↓	20.21	7.12	45400	↓	0.0	-108	0.74	8.14	

Water Level (ft. BMP) at End of Purge: 8.14 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:20	500 ml	P	1		HNO_3	Toatal Metals
11:20	250 ml	P	1	Y 45	HNO_3	Dissolved Metals
11:20	250 ml	P	1		H_2SO_4	NH_4
11:20	250 ml	P	1			Anions
11:20	1 L	P	2		HNO_3	Ra 226/228

Comments: DUPE MW4-102 Sampled @ 11:32, almost forgot it.

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GROUNDWATER SAMPLING RECORD

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Project Number: 9125525	**Project Name:** Cepuro GW Sampling 4Q19	**Date:** 12/4/19	
Sample Number: MW3-1		**Starting Water Level (ft. BMP):** 7.1	
Sampling Location (well ID, etc.): MW 3-1		**Casing Stickup (ft.):** 4.2	
Sampled by: S. Fenner		**Starting Water Level (ft. BGL):** 3.9	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 18.5	
Screened Interval (ft. BGL): 15.6 - 18.1		**Casing Diameter (in ID):** 4	
Filter Pack Interval (ft. BGL):		**Casing Volume (gal.):** 9.53 gal = 36.07 L	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Roll 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1113	-	0.7	-	-	-	-	-	-	-	7.1	Pump is on
1123	2	↓	22.52	7.25	50700	Clear	3.5	117	2.72	7.38	
1128	3		22.25	7.29	50600	↓	3.3	113	2.66	7.51	
1133	4	↓	22.72	7.31	50300		3.0	102	2.56	7.51	

Water Level (ft. BMP) at End of Purge: 7.51 **Sample Intake Depth (ft. BMP):** 16

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1133	~~250ml~~ 500ml	P	1	N	HNO_3	Total Metals
1133	250ml	↓	1	Y. 45µ	HNO_3	Dissolved Metals
1133	250ml		1	N	H_2SO_4	NH_4
1133	250ml		1	N	Neat	Anions
1133	1L x 2	↓	2	N	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191X5525	**Project Name:** Capano GW Sampling 4Q19	**Date:** 12/4/19	
Sample Number: MW-3-3		**Starting Water Level (ft. BMP):** 8.5	
Sampling Location (well ID, etc.): MW-3-3		**Casing Stickup (ft.):** 4.2	
Sampled by: S. Fenner		**Starting Water Level (ft. BGL):** 4.3	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 20.30	
Screened Interval (ft. BGL): 17.2-19.7		**Casing Diameter (in ID):** @ 4"	
Filter Pack Interval (ft. BGL):		**Casing Volume (gal.):** 10.44 gal = 39.52 L	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1321	-	0.2	-	-	-	-	-	-	-	8.53	Pump is on
1326	2	↓	25.24	7.29	49300	Clear	0.0	326	1.67	8.56	
1336	3		25.20	7.21	49300	↓	↓	363	1.15	↓	
1341	4	↓	25.21	7.22	49200	↓	↓	374	1.26	↓	

Water Level (ft. BMP) at End of Purge: 8.56 **Sample Intake Depth (ft. BMP):** 18

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1341	500 ml	P	1	N	HNO_3	Total metals
1341	250 ml	↓	1	Y. 45µ	HNO_3	Dissolved Metals
1341	250 ml		1	N	H_2SO_4	Ammonia NH_4
1341	250 ml		1	N	Neat	Anions
1341	1L x2	↓	2	N	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1412555 25	**Project Name:** Copano GW Sampling 4Q19	**Date:** 12/4/19	
Sample Number: MW-3-2		**Starting Water Level (ft. BMP):** 8.59	
Sampling Location (well ID, etc.): MW-3-2		**Casing Stickup (ft.):** 4.1	
Sampled by: S. Fennell		**Starting Water Level (ft. BGL):** 4.49	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 19.91	
Screened Interval (ft. BGL): 16.9 - 19.4		**Casing Diameter (in ID):** 4	
Filter Pack Interval (ft. BGL):		**Casing Volume (gal.):** 10.07 gal = 38.11	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 7

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1238	-	0.2	-	-	-	-	-	-	-	8.90	Pump is on
1248	2	↓	24.00	7.58	~~42100~~ 47100	White	84.6	120	2.93	8.99	
1253	3	↓	24.07	7.49	47000	Clear	34.8	120	2.70	9.12	
1258	4	↓	24.06	7.47	46900	↓	19.1	119	2.63	9.12	

Water Level (ft. BMP) at End of Purge: 9.12 **Sample Intake Depth (ft. BMP):** 18.8

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1258	500 ml	P	1	Y 10M	HNO_3	Total Metals
1258	250 ml	↓	1	Y .45M	HNO_3	Dissolved Metals
1258	250 ml		1	Y 10M	H_2SO_4	NH_4
1258	250 ml		1	Y 10M	Neat	Anions
1258	1L X2	↓	2	Y 10M	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525 Project Name: Conoco GW Sampling 4Q19	Date: 12/4/19
Sample Number: MW-3-4	Starting Water Level (ft. BMP): 6.32
Sampling Location (well ID, etc.): MW-3-4	Casing Stickup (ft.): 4.3
Sampled by: S. Fenner	Starting Water Level (ft. BGL): 2.02
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 15.86
Screened Interval (ft. BGL): 12.8 – 15.3	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 9.03 gal = 34.18

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1402	-	0.2	-	-	-	-	-	-	-	6.32	Pump is on
1412	2	↓	25.17	7.65	68000	Clear	87.6	487	2.46	6.90	
1417	3		25.16	7.65	68100		83.7	489	2.44	6.91	
1422	4		25.08	7.65	68200	↓	76.7	491	2.45	6.91	

Water Level (ft. BMP) at End of Purge: 6.91 **Sample Intake Depth (ft. BMP):** 14

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1422	~~250ml~~ 500ml	P	1	Y 10M	HNO_3	Total Metals
1422	250ml	↓	1	Y .45M	HNO_3	Dissolved Metals
1422	250ml		1	Y 10M	H_2SO_4	NH_4
1422	250ml		1	Y 10M	Neat	Anions
1422	1L x 2	↓	2	Y 10M	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 9175525	**Project Name:** Coppano GW Samplings 4Q19	**Date:** 12/4/19	
Sample Number: MW-3-4B		**Starting Water Level (ft. BMP):** 5.89	
Sampling Location (well ID, etc.): MW-3-4B		**Casing Stickup (ft.):** 2.5	
Sampled by: S. Fenner		**Starting Water Level (ft. BGL):** 3.39	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 44.58	
Screened Interval (ft. BGL): 30.0 - 45.0		**Casing Diameter (in ID):** 2	
Filter Pack Interval (ft. BGL): 28-45		**Casing Volume (gal.):** 6.72 gal = 25.44 L	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1452	-	0.2	-	-	-	-	-	-	-	6.9	Pump is on
1502	2	↓	24.94	7.31	98300	Clear	0.0	167	0.63	7.25	
1507	3	↓	25.38	7.33	96900	↓	↓	227	0.62	7.28	
1512	4	↓	25.66	7.33	96300	↓	↓	272	0.61	7.50	

Water Level (ft. BMP) at End of Purge: 7.50 **Sample Intake Depth (ft. BMP):** 35

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1512	500ml	P	1	N	HNO_3	Total Metals
1512	250ml	↓	1	Y. 45M	HNO_3	Dissolved Metals
1512	250ml	↓	1	N	H_2SO_4	NH_4
1512	250ml	↓	1	N	Neat	Anions
1512	1L x2	↓	2	N	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/5/19

Sample Number: MW3 - 7B	Starting Water Level (ft. BMP): 7.39
Sampling Location (well ID, etc.): MW3 - 7B	Casing Stickup (ft.): 3.2
Sampled by: S. Ferrer	Starting Water Level (ft. BGL): 4.19
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 51.91
Screened Interval (ft. BGL): 33.2 - 53.2	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 31 - 53	Casing Volume (gal.): 7.79 = 29.49 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + 45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
0943	-	0.2	-	-	-	-	-	-	-	7.66	Pump is on
0953	2	↓	24.30	8.92	49000	Clear	0.0	-125	0.84	7.79	
0958	3	↓	24.34	8.23	49500	↓	0.0	-107	0.65	7.79	
1003	4	↓	24.46	7.73	49700	↓	0.0	-108	0.53	7.81	
1008	5	0.2	24.48	7.60	49800	↓	0.0	-112	0.48	7.82	
1013	6	0.2	24.54	7.58	49900	↓	0.0	-103	0.52	7.83	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 43

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1013	500 ml	P	1	N	HNO_3	Toatal Metals
1013	250 ml	P	1	Y 0.45µ	HNO_3	Dissolved Metals
1013	250 ml	P	1	N	H_2SO_4	NH_4
1013	250 ml	P	1	N	Neat	Anions
1013	1 L	P	2	N	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/5/19

Sample Number: MW3 - 7	Starting Water Level (ft. BMP): 7.93
Sampling Location (well ID, etc.): MW3 - 7 OUA	Casing Stickup (ft.): 4.2
Sampled by: S. Fenner	Starting Water Level (ft. BGL): 3.73
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 20.63
Screened Interval (ft. BGL): 17.7 - 20.2	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 11.03 = 41.75 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1051	-	0.2	-	-	-	-		-	-	7.98	Pump is on
1101	2	↓	25.37	7.16	49800	Clear	0.0	467	1.84	8.21	
1106	3		25.01	7.14	50400	↓	0.0	496	1.45	8.23	
1111	4		24.96	7.15	50306	↓	0.0	498	1.37	8.23	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 18

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1111	500 ml	P	1x2	N	HNO_3	Toatal Metals
1111	250 ml	P	1x2	Y, 45M	HNO_3	Dissolved Metals
1111	250 ml	P	1x2	N	H_2SO_4	NH_4
1111	250 ml	P	1x2	N	Neat	Anions
1111	1 L	P	2x2	N	HNO_3	Ra 226/228

Comments:

Duplicate Sample MW-103 collected at 1116

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/5/19

Sample Number: MW3 - 6	Starting Water Level (ft. BMP): 8.05
Sampling Location (well ID, etc.): MW3 - 6	Casing Stickup (ft.): 3.8
Sampled by: RLL	Starting Water Level (ft. BGL): 4.25
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 16.92
Screened Interval (ft. BGL): 14 - 16.5	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL)	Casing Volume (gal.): 8.27 = 31.30 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + 45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:00	-	0.2	-	-	-	-	-	-	-	8.05	Pump is on
10:10	2	↓	23.83	7.24	49,400		0.0	125	2.97	8.17	
10:15	3	↓	23.76	7.23	49,600		0.0	117	3.08	8.19	
10:20	4	↓	23.80	7.23	49,700		0.0	115	3.08	8.19	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:28	500 ml	P	1		HNO_3	Toatal Metals
10:28	250 ml	P	1	Y	HNO_3	Dissolved Metals
10:28	250 ml	P	1		H_2SO_4	NH_4
10:28	250 ml	P	1			Anions
10:28	1 L	P	2		HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/5/19

Sample Number: MW3 - 5	Starting Water Level (ft. BMP): 7.62
Sampling Location (well ID, etc.): MW3 - 5	Casing Stickup (ft.): 3.4
Sampled by: KG	Starting Water Level (ft. BGL): 4.22
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 16.69
Screened Interval (ft. BGL): 14 - 16.5	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 8.14 = 30.81 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
09:19	-	0.2	-	-	-	-	-	-	-	7.62	Pump is on
09:29	2	↓	27.03	6.71	53,100	clear	25.5	181	0.46	8.14	
09:24	3	↓	23.12	6.78	53,000	↓	20.3	176	0.41	8.22	
09:29	4	↓	23.18	6.80	53,000	↓	18.2	172	0.40	8.29	

Water Level (ft. BMP) at End of Purge: 8.29 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
09:38	500 ml	P	1	Y 10	HNO_3	Toatal Metals
09:38	250 ml	P	1	Y 10	HNO_3	Dissolved Metals
09:38	250 ml	P	1	Y 10	H_2SO_4	NH_4
09:38	250 ml	P	1	Y 10		Anions
09:38	1 L	P	2	Y 10	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: MW - 7	Starting Water Level (ft. BMP): 8.35
Sampling Location (well ID, etc.): MW - 7	Casing Stickup (ft.): 3.7
Sampled by: S. Kenner	Starting Water Level (ft. BGL): 4.65
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 22.62
Screened Interval (ft. BGL): 19.6 - 19.6	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 11.73 = 44.40 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1120	-	0.2	-	-	-	-	-	-	-	8.37	Pump is on
1130	2	↓	25.13	7.05	52900	Clear	0.0	475	1.62	8.40	↓
1135	3	↓	25.10	7.06	52900	Clear	0.0	475	1.55	8.41	↓
1140	4	↓	25.15	7.06	53000	↓	0.0	474	1.40	↓	↓

Water Level (ft. BMP) at End of Purge: 8.41 **Sample Intake Depth (ft. BMP):** 18

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1140	500 ml	P	1	N	HNO_3	Toatal Metals
1140	250 ml	P	1	F. Soln	HNO_3	Dissolved Metals
1140	250 ml	P	1	N	H_2SO_4	NH_4
1140	250 ml	P	1	N	Near	Anions
1140	1 L	P	2	N	HNO_3	Ra 226/228
				N		

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: MW - 7B	Starting Water Level (ft. BMP): 8.58
Sampling Location (well ID, etc.): MW - 7B	Casing Stickup (ft.): 2.7
Sampled by: S. Fenner	Starting Water Level (ft. BGL): 5.88
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 52.53
Screened Interval (ft. BGL): 38.7 - 53.7	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 36 - 53.7	Casing Volume (gal.): 7.61 = 28.81 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + 45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1213	-	0.2	-	-	-	-	-	-	-	8.58	Pump is on
1223	2	↓	26.22	7.01	62,400	Clear	14.9	279	0.42	↓	↓
1228	3	↓	25.95	6.96	64400	↓	5.5	254	0.41	↓	↓
1233	4	↓	25.96	6.81	64,300	↓	7.1	250	0.39	↓	↓
1238	5	↓	25.84	6.76	64400	↓	4.3	227	0.33	↓	↓
1243	6	↓	25.86	6.74	64600	↓	3.3	208	0.31	↓	↓

Water Level (ft. BMP) at End of Purge: 8.58 **Sample Intake Depth (ft. BMP):** 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1243	500 ml	P	1	N	HNO_3	Toatal Metals
1243	250 ml	P	1	Y .45µ	HNO_3	Dissolved Metals
1249	250 ml	P	1	N	H_2SO_4	NH_4
1243	250 ml	P	1	N	Neat	Anions
1243	1 L	P	2	N	HNO_3	Ra 226/228

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: MW-3R	Starting Water Level (ft. BMP): 4.24
Sampling Location (well ID, etc): MW-3R	Casing Stickup (ft.): 2.8
Sampled by: S. Flores	Starting Water Level (ft. BGL): 1.44
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 22.98
Screened Interval (ft. BGL): 17 - 22	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 14.06 = 53.22 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1422	-	0.2	-	-	-	-	-	-	-	4.28	Pump is on
1432	2	↓	25.61	6.79	58300	Clear	0.0	768	1.09	4.97	
1437	3	↓	25.37	6.79	58300	↓	↓	366	1.82	5.00	
1442	4	↓	25.31	6.78	58200	↓	↓	428	1.29	↓	

Water Level (ft. BMP) at End of Purge: 5.00 **Sample Intake Depth (ft. BMP):** 19

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1442	500 ml	P	1	N	HNO_3	Toatal Metals
1442	250 ml	P	1	Y, 45µ	HNO_3	Dissolved Metals
1442	250 ml	P	1	N	H_2SO_4	NH_4
1442	250 ml	P	1	N	Neat	Anions
1442	1 L	P	2	N	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/5/19

Sample Number: MW - 3RB	Starting Water Level (ft. BMP): 4.78
Sampling Location (well ID, etc.): MW - 3RB	Casing Stickup (ft.): 3.00
Sampled by: S. Fenner	Starting Water Level (ft. BGL): 1.72
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 50.04
Screened Interval (ft. BGL): 35 - 55	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 33 - 55	Casing Volume (gal.): 7.89 = 29.87 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + 45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1511	-	0.2	-	-	-	-	-	-	-	5.35	Pump is on
1521	2	↓	25.57	6.81	58100	Clear	0.0	362	1.22	5.40	
1526	3	↓	24.77	6.78	58200	↓	↓	366	0.97	↓	
1531	4	↓	24.75	6.77	58100	↓	↓	352	0.87	↓	

Water Level (ft. BMP) at End of Purge: 5.40 **Sample Intake Depth (ft. BMP):** 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1531	500 ml	P	1	N	HNO_3	Toatal Metals
1531	250 ml	P	1	Y .45M	HNO_3	Dissolved Metals
1531	250 ml	P	1	N	H_2SO_4	NH_4
1531	250 ml	P	1	N	Neat	Anions
1531	1 L	P	2	N	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: MW - 10	Starting Water Level (ft. BMP): 7.29
Sampling Location (well ID, etc.): MW - 10	Casing Stickup (ft.): 1.6
Sampled by: S. Fenner	Starting Water Level (ft. BGL): 5.69
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 18.99
Screened Interval (ft. BGL): 13.4 - 18.4	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL): 8.4 - 13.4	Casing Volume (gal.): 8.04 = 32.86 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
8:36	-	0.2	-	-	-	-	-	-	-	7.31	Pump is on
8:46	2	↓	21.50	6.85	29,200	Yellowish	35.7	489	5.90	7.36	↓
8:51	3	↓	22.74	6.86	28,300	↓	35.1	482	4.82	↓	↓
8:56	4	↓	22.54	6.85	28,600	↓	24.0	476	4.49	↓	↓
9:01	5	↓	22.80	6.85	28,300	↓	16.5	474	4.47	↓	
9:06	6	↓	23.08	6.85	28,500	↓	8.3	474	4.32	↓	

Water Level (ft. BMP) at End of Purge: 7.31 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
0906	500 ml	P	1	~~Y~~ 10µM	HNO_3	Toatal Metals
0906	250 ml	P	1	~~Y~~ 0.45M	HNO_3	Dissolved Metals
0906	250 ml	P	1	~~Y~~	H_2SO_4	NH_4
0906	250 ml	P	1	N	Neat	Anions
0906	1 L	P	2	N	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: MW - 11	Starting Water Level (ft. BMP): 7.42
Sampling Location (well ID, etc.): MW - 11	Casing Stickup (ft.): 1.7
Sampled by: S. Fenner	Starting Water Level (ft. BGL): 5.72
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 19.02
Screened Interval (ft. BGL): 14.1 - 19.1	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 8.68 = 32.86 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
0932	-	0.2	-	-	-	-	-	-	-	7.44	Pump is on
0942	2	↓	23.84	6.80	26000	Clear	1.7	503	2.57	7.48	
0947	3		24.05	6.79	25900	↓	1.7	500	2.33	↓	
0952	4		23.70	6.79	25600	↓	1.1	498	2.29	↓	

Water Level (ft. BMP) at End of Purge: 7.48 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
0952	500 ml	P	1	N	HNO_3	Toatal Metals
0952	250 ml	P	1	Y. 45M	HNO_3	Dissolved Metals
0952	250 ml	P	1	N	H_2SO_4	NH_4
0952	250 ml	P	1	N	Neat	Anions
0952	1 L	P	2	N	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/18/19

Sample Number: MW4 - 1	**Starting Water Level (ft. BMP):** 5.21
Sampling Location (well ID, etc.): MW4 - 1	**Casing Stickup (ft.):** 3.6
Sampled by: S. Fenner	**Starting Water Level (ft. BGL):** 1.61
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 13.32
Screened Interval (ft. BGL): 10.2 - 12.7	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL):	**Casing Volume (gal.):** 1.91 = 7.23 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1603	-	0.2	-	-	-	-	-	-	-		Pump is on
1613	2	↓	23.16	7.42	34700	Reddish Brn	102	-24	1.17	6.88	
1618	3	↓	23.27	7.06	37000	↓	69.2	-65	1.38	↓	
1623	4	↓	28.57	6.55	37400	↓	67.2	-66	0.86	↓	
1628	5	0.2	23.80	6.51	37200	↓	58.2	-69	0.79	↓	
1633	6	↓	23.82	6.49	37100	↓	57.4	-71	0.95	↓	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 11

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1633	500 ml	P	1	Y 10M	HNO_3	Toatal Metals
1633	250 ml	P	1	Y .45M	HNO_3	Dissolved Metals
1633	250 ml	P	1	Y 10M	H_2SO_4	NH_4
1633	250 ml	P	1	Y 10M	Neat	Anions
1633	1 L	P	2	Y 10M	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/4/19

Sample Number: MW4 - 2	**Starting Water Level (ft. BMP):** 4.61
Sampling Location (well ID, etc.): MW4 - 2	**Casing Stickup (ft.):** 4.2
Sampled by: RM	**Starting Water Level (ft. BGL):** 0.41
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 17.56
Screened Interval (ft. BGL): 12.9 - 17.9	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL):	**Casing Volume (gal.):** 6.30 = 23.84 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + 45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
08:50	-	0.2	-	-	-	-	-	-	-	4.61	Pump is on
09:00	2	↓	18.76	6.91	58,800	Clear	1.2	150	1.83	7.28	
09:05	3	↓	19.06	6.97	58,200	↓	0.2	147	1.86	7.94	
09:10	4	↓	19.03	6.99	58,300	↓	0.0	144	1.82	8.52	

Water Level (ft. BMP) at End of Purge: 8.52 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
09:19	500 ml	P	1		HNO_3	Toatal Metals
09:19	250 ml	P	1	Y	HNO_3	Dissolved Metals
09:19	250 ml	P	1		H_2SO_4	NH_4
09:19	250 ml	P	1			Anions
09:19	1 L	P	2		HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: MW - 6R	Starting Water Level (ft. BMP): 9.69
Sampling Location (well ID, etc.): MW - 6R	Casing Stickup (ft.): 2.7
Sampled by:	Starting Water Level (ft. BGL): 6.99
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 20.21
Screened Interval (ft. BGL): 14.7 - 19.7	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 8.63 = 32.66 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
08:27	-	0.2	-	-	-	Tan	-	-	-	9.69	Pump is on
08:37	2	↓	13.39	6.47	44300	~~Tan~~	11.0	180	1.07	9.90	
08:42	3	↓	14.60	6.58	43000	Tan	10.7	164	0.73	9.93	
08:47	4	↓	14.69	6.62	43000	Tan	7.4	149	0.65	9.94	
08:52		↓	14.72	6.64	43100	Tan	5.1	142	0.63	9.95	

Water Level (ft. BMP) at End of Purge: 9.95 **Sample Intake Depth (ft. BMP):** 16

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
08:52	500 ml	P	1		HNO_3	Toatal Metals
↓	250 ml	P	1	Y 45	HNO_3	Dissolved Metals
↓	250 ml	P	1		H_2SO_4	NH_4
↓	250 ml	P	1			Anions
↓	1 L	P	2		HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:**

Sample Number: MW - 6RB	Starting Water Level (ft. BMP): 8.29
Sampling Location (well ID, etc.): MW - 6RB	Casing Stickup (ft.): 2.6
Sampled by: RU	Starting Water Level (ft. BGL): 5.69
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 50.20
Screened Interval (ft. BGL): 38.9 - 48.9	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 3.9 - 38.9	Casing Volume (gal.): 7.26 = 27.48 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + 45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
09:15	-	0.2	-	-	-	-	-	-	-	8.29	Pump is on
09:25	2	↓	16.27	7.12	68400	Clear	1.3	-147	0.65	8.37	
09:30	3	↓	16.32	7.10	67900	↓	1.2	-143	0.63	8.39	
09:35	4	↓	16.52	7.05	67600	↓	1.4	-137	0.61	8.39	

Water Level (ft. BMP) at End of Purge: 8.39 **Sample Intake Depth (ft. BMP):** 42

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
09:40	500 ml	P	1		HNO_3	Toatal Metals
↓	250 ml	P	1	Y. 45	HNO_3	Dissolved Metals
↓	250 ml	P	1		H_2SO_4	NH_4
↓	250 ml	P	1			Anions
↓	1 L	P	2		HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: MW - 8	Starting Water Level (ft. BMP): 4.61
Sampling Location (well ID, etc.): MW - 8	Casing Stickup (ft.): 1.2
Sampled by:	Starting Water Level (ft. BGL): 3.41
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 18.49
Screened Interval (ft. BGL): 13 - 18	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL): 8 - 13	Casing Volume (gal.): 9.84 = 37.25 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + 45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:42	-	0.2	-	-	-	-	-	-	-	4.61	Pump is on
10:52	2	↓	28.85	7.09	70,300	tea	0.0	509	1.33	6.17	
10:57	3	↓	23.32	7.10	69,600	↓	0.0	517	1.46	6.43	
11:02	4	↓	27.46	7.13	69,700	↓	0.0	520	1.50	6.57	

Water Level (ft. BMP) at End of Purge: 6.52 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:10	500 ml	P	1		HNO_3	Toatal Metals
11:10	250 ml	P	1	Y. 45	HNO_3	Dissolved Metals
11:10	250 ml	P	1		H_2SO_4	NH_4
11:10	250 ml	P	1		-	Anions
11:10	1 L	P	2		HNO_3	Ra 226/228

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: MW - 9	Starting Water Level (ft. BMP): 7.39
Sampling Location (well ID, etc.): MW - 9	Casing Stickup (ft.): 1.7
Sampled by:	Starting Water Level (ft. BGL): 5.69
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 18.94
Screened Interval (ft. BGL): 13.5 - 18.5	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL): 8.5 - 13.5	Casing Volume (gal.): 8.65 = 32.74 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:05	-	0.2	-	-	57100	-	-	-	-	7.39	Pump is on
10:15	2	↓	23.35	6.76	~~57100~~	tea	4.2	515	1.53	7.65	
10:20	3	↓	23.49	6.81	57400	↓	1.2	503	1.26	7.69	
10:25	4	↓	23.54	6.78	57500	↓clear	0.0	500	1.19	7.74	water became clear during sampling

Water Level (ft. BMP) at End of Purge: 7.74 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:32	500 ml	P	1		HNO_3	Toatal Metals
10:32	250 ml	P	1	Y.45	HNO_3	Dissolved Metals
10:32	250 ml	P	1		H_2SO_4	NH_4
10:32	250 ml	P	1			Anions
10:32	1 L	P	2		HNO_3	Ra 226/228

Comments: Color change tea → Clear during Sampling.

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: MW - 5	Starting Water Level (ft. BMP): 4.79
Sampling Location (well ID, etc): MW - 5	Casing Stickup (ft.): 3.8
Sampled by: RM	Starting Water Level (ft. BGL): 0.99
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 21.78
Screened Interval (ft. BGL): 16.6 - 21.6	Casing Diameter (in ID): 3
Filter Pack Interval (ft. BGL): 11.6 - 16.6	Casing Volume (gal.): 7.63 = 28.88 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:29	-	0.2	-	-	-	-	-	-	-	4.79	Pump is on
11:39	2	↓	22.59	7.05	69,600	Clear	0.0	526	4.00	6.15	
11:44	3	↓	22.55	7.05	69,300	↓	0.0	525	3.99	6.79	
11:49	4	↓	22.54	7.05	69,400	↓	0.0	525	3.93	6.98	
						Tea					

Water Level (ft. BMP) at End of Purge: 6.98 **Sample Intake Depth (ft. BMP):** 18

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:57	500 ml	P	1		HNO_3	Toatal Metals
11:57	250 ml	P	1	Y. c/s	HNO_3	Dissolved Metals
11:57	250 ml	P	1		H_2SO_4	NH_4
11:57	250 ml	P	1			Anions
11:57	1 L	P	2		HNO_3	Ra 226/228

Comments: Color Change from Clear to tea color during sampling.

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: MW-5B	Starting Water Level (ft. BMP): 5.20
Sampling Location (well ID, etc.): MW-5B	Casing Stickup (ft.): 2.8
Sampled by: RY	Starting Water Level (ft. BGL): 2.40
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 51.40
Screened Interval (ft. BGL): 31.8 - 51.8	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 26.8 - 31.8	Casing Volume (gal.): 8.00 = 30.28 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:09	-	0.2	-	-	-	-	-	-	-	5.20	Pump is on
12:19	2	↓	23.15	6.92	67,800	Clear	0.0	3	0.72	5.43	
12:24	3	↓	23.25	6.91	67,700	↓	0.0	-3	0.67	5.44	
12:29	4	↓	23.21	6.89	67,500	↓	0.0	-7	0.72	5.44	

Water Level (ft. BMP) at End of Purge: 5.44 **Sample Intake Depth (ft. BMP):** 40

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:36	500 ml	P	1		HNO_3	Toatal Metals
12:36	250 ml	P	1	Y. 45	HNO_3	Dissolved Metals
12:36	250 ml	P	1		H_2SO_4	NH_4
12:36	250 ml	P	1			Anions
12:36	1 L	P	2		HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: DB-5	Starting Water Level (ft. BMP): 23.97
Sampling Location (well ID, etc.): DB-5	Casing Stickup (ft.): 5.6
Sampled by: RN	Starting Water Level (ft. BGL): ~~23~~ 18.37
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 44
Screened Interval (ft. BGL): 40.2 - 50.2	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 16.73 = 63.33 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
14:02	-	0.2	-	-	-	-	-	-	-	23.97	Pump is on
14:12	2	↓	23.70	7.11	84,800	Clear	10.6	-267	1.48	24.76	
14:17	3	↓	23.77	7.10	84,800	↓	11.3	-281	1.21	25.04	
14:22	4	↓	23.81	7.11	84,700	↓	8.6	-292	1.34	25.13	

Water Level (ft. BMP) at End of Purge: 25.13 **Sample Intake Depth (ft. BMP):** 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:29	500 ml	P	1	Y N	HNO_3	Toatal Metals
14:29	250 ml	P	1	Y N	HNO_3	Dissolved Metals
14:29	250 ml	P	1	Y N	H_2SO_4	NH_4
14:29	250 ml	P	1	Y N		Anions
14:29	1 L	P	2	Y N	HNO_3	Ra 226/228
14:29						

Comments: - used a 10 micron filter because NTU's kept jumping above 10.

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: MW-4	Starting Water Level (ft. BMP): 5.72
Sampling Location (well ID, etc.): MW-4	Casing Stickup (ft.): 3.6
Sampled by: [illegible]	Starting Water Level (ft. BGL): 2.12
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 21.21
Screened Interval (ft. BGL): 18.6 - 21.1	Casing Diameter (in ID): 3
Filter Pack Interval (ft. BGL): 13.6 - 18.6	Casing Volume (gal): 7.01 = 26.54 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Kock

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:59	-	0.2	-	-	-	-	-	-	-	5.72	Pump is on
13:09	2	↓	22.93	7.12	99,900		0.0	-143	0.78	7.00	
13:14	3		22.89	7.12	99,100		0.0	-140	0.78	7.27	
13:19	4		22.92	7.12	99,100		0.0	-136	0.79	7.31	

Water Level (ft. BMP) at End of Purge: 7.31 **Sample Intake Depth (ft. BMP):** 19

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:26	500 ml	P	1		HNO_3	Toatal Metals
13:25	250 ml	P	1	Y.45	HNO_3	Dissolved Metals
13:25	250 ml	P	1		H_2SO_4	NH_4
13:26	250 ml	P	1			Anions
13:25	1 L	P	2		HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/19

Sample Number: MW4 - 2A	Starting Water Level (ft. BMP): 5.51
Sampling Location (well ID, etc.): MW4 - 2A	Casing Stickup (ft.): 3.6
Sampled by:	Starting Water Level (ft. BGL): 1.91
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 17.09
Screened Interval (ft. BGL): 6.4 - 16.7	Casing Diameter (in.ID): 2
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 2.48 = 9.39 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
15:35	-	0.2	-	-	-	-	-	-	-	5.51	Pump is on
~~15:46~~	~~2~~	↓	~~24.16~~	~~7.94~~	~~680~~		~~150~~	~~43~~	~~9.01~~	~~7.69~~	
15:50	3										
15:56	4	↓	23.30	7.40	87700	Clear	15.1	71	3.29	7.12	line was clogged
16:00			23.32	7.30	88600	↓	17.7	77	2.14	7.46	
16:05			23.24	7.27	88300		19.4	74	2.29	7.61	
16:10			23.31	7.26	88300		17.0	75	2.36	7.67	

Water Level (ft. BMP) at End of Purge: 7.67 **Sample Intake Depth (ft. BMP):** 10

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
16:18	500 ml	P	1	Y 10	HNO_3	Toatal Metals
16:18	250 ml	P	1	Y .45	HNO_3	Dissolved Metals
16:18	250 ml	P	1	Y 10	H_2SO_4	NH_4
16:18	250 ml	P	1	Y 10		Anions
16:18	1 L	P	2	Y 10	HNO_3	Ra 226/228
16:18						

Comments: MW-101 Sampled @ 16:28
— Filters used 10 micron + .45

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/4/19

Sample Number: MW4 - 3	Starting Water Level (ft. BMP): 6.16
Sampling Location (well ID, etc.): MW4 - 3	Casing Stickup (ft.): 3.8
Sampled by: RG	Starting Water Level (ft. BGL): 2.36
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 16.11
Screened Interval (ft. BGL): 12 - 16	Casing Diameter (in ID): 3
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 5.05 = 19.13 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + 45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:07	-	0.2	-	-	-	-				6.16	Pump is on
10:17	2	↓	20.48	7.11	53,100	Light yellow	0.0	503	1.44	6.30	
10:22	3	↓	20.85	7.08	53,100	↓	0.0	508	1.32	6.33	
10:27	4	↓	20.96	7.07	53,800	↓	0.0	509	1.27	6.34	

Water Level (ft. BMP) at End of Purge: 6.34 **Sample Intake Depth (ft. BMP):** 14

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:36	500 ml	P	1		HNO_3	Toatal Metals
10:36	250 ml	P	1	Y 46	HNO_3	Dissolved Metals
10:36	250 ml	P	1		H_2SO_4	NH_4
10:36	250 ml	P	1			Anions
10:36	1 L	P	2		HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 Project Name: Cooper GW Sampling 4Q19 Date: 12/3/19

Sample Number: MW-11B

Sampling Location (well ID, etc.): MW-11B

Sampled by: S. Fenner

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): 30.6 - 35.6

Filter Pack Interval (ft. BGL): 28 - 35.6

Starting Water Level (ft. BMP): 8.05

Casing Stickup (ft.): 2.5

Starting Water Level (ft. BGL): 6.55

Total Depth (ft. BMP): 36.45

Casing Diameter (in ID): 2

Casing Volume (gal.): 4.88 = 18.47 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Other: **Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1023	-	0.2	-	-	-	-	-	-	-	8.06	Pump is on
1033	2	↓	25.43	6.74	30000	Cloudy Yellow-Brown	0.0	340	0.57	8.06	↓
1038	3		25.61	6.74	29800	↓	↓	333	0.54	↓	
1043	4		25.59	6.74	29700	↓	↓	330	0.48	↓	

Water Level (ft. BMP) at End of Purge: 8.06 Sample Intake Depth (ft. BMP): 32

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1043	500ml	P	1	N	HNO_3	Total Metals
1043	250ml	↓	1	Y 45µ	HNO_3	Dissolved Metals
1043	250ml		1	N	H_2SO_4	NH_4
1043	250ml		1	N	Neat	Anions
1043	1L x2		2	N	HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 4Q19 **Date:** 12/3/17

Sample Number: MW-1	Starting Water Level (ft. BMP): 8.63
Sampling Location (well ID, etc.): MW-1	Casing Stickup (ft.): 3.2
Sampled by: S Kenner	Starting Water Level (ft. BGL): 5.43
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 20.48
Screened Interval (ft. BGL): 12.5 - 17.5	Casing Diameter (in ID): 3
Filter Pack Interval (ft. BGL): 5.5 - 15.0	Casing Volume (gal.): 5.53 = 20.93 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1319	-	0.2	-	-	-	-	-	-	-	8.63	Pump is on
1329	2	↓	24.92	6.97	50,200	clear	19.6	-208	0.97	8.68	
1334	3		24.93	6.96	47600	↓	15.4	-197	0.90	↓	
1339	4	↓	25.05	6.96	46,600	↓	12.0	-191	0.87	↓	
1344	5		25.25	6.99	46,100	↓	10.6	-190	0.99	8.69	
1349	6	↓	25.25	6.93	46,00	↓	6.9	-190	1.01	8.69	

Water Level (ft. BMP) at End of Purge: 8.68 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1349	500 ml	P	1		HNO_3	Toatal Metals
1349	250 ml	P	1		HNO_3	Dissolved Metals
1349	250 ml	P	1		H_2SO_4	NH_4
1349	250 ml	P	1		Neat	Anions
1349	1 L	P	2		HNO_3	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/6/20

Sample Number: MW-1	Starting Water Level (ft. BMP): 7.76
Sampling Location (well ID, etc.): MW-1	Casing Stickup (ft.): 3.2
Sampled by: S. Kenner	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 20.48
Screened Interval (ft. BGL): 12.5 - 17.5	Casing Diameter (in ID): 3
Filter Pack Interval (ft. BGL): 5.5 - 15.0	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1030	-	0.2	-	-	-	-	-	-	-	9.00	Pump is on
1040	2	↓	19.52	7.39	62600	Clear	1.4	-179	0.82	9.51	
1045	3	↓	19.81	7.32	64100	Clear	2.1	-251	0.93	9.62	
1050	4	↓	19.71	7.37	63500	↓	6.0	-246	1.30	9.69	
1056	5	0.2	19.88	7.38	63200	↓	5.4	-242	1.26	9.68	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1055	500 ml	P	1		HNO_3	Toatal Metals
1055	250 ml	P	1		HNO_3	Dissolved Metals
1055	250 ml	P	1		H_2SO_4	NH_4
1055	250 ml	P	1			Anions
1056	1 L	P	2			Ra 226/228
1059	Sludge Samples					

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/6/20

Sample Number: MW-3R	Starting Water Level (ft. BMP): 3.96
Sampling Location (well ID, etc.): MW-3R	Casing Stickup (ft.): 2.8
Sampled by: S. Flores	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 22.98
Screened Interval (ft. BGL): 17 - 22	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1304	-	0.2	-	-	-	-	-	-	-	4.58	Pump is on
1314	2	↓	20.49	7.00	65600	Clear	0.0	463	0.60	5.02	
1319	3	↓	20.83	↓	65300	↓	0.0	463	0.58	↓	
1324	4	↓	21.07	↓	65100	↓	0.0	464	0.55	↓	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP): 19**

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1324	500 ml	P	1		HNO_3	Toatal Metals
1324	250 ml	P	1		HNO_3	Dissolved Metals
1324	250 ml	P	1		H_2SO_4	NH_4
1324	250 ml	P	1			Anions
1324	1 L	P	2			Ra 226/228
1345	Sludge Samples					

Comments:
APAR Duplicate MW-202 1329

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/6/20

Sample Number: MW - 3RB	Starting Water Level (ft. BMP): 4.68
Sampling Location (well ID, etc.): MW - 3RB	Casing Stickup (ft.): 3.00
Sampled by: S. Flemmer	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 50.04
Screened Interval (ft. BGL): 35 - 55	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 33 - 55	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron +.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1417	-	0.2	-	-	-	-	-	-	-	5.24	Pump is on
1427	2	↓	21.54	7.32	64100	Clear	0.0	421	2.30	5.66	
1432	3	↓	21.48	7.32	64100	"	0.0	424	2.31	5.71	
1437	4	↓	21.60	7.31	64100	"	0.0	424	2.25	5.72	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1437	500 ml	P	1		HNO_3	Toatal Metals
1437	250 ml	P	1		HNO_3	Dissolved Metals
1437	250 ml	P	1		H_2SO_4	NH_4
1437	250 ml	P	1			Anions
1437	1 L	P	2			Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/5/20

Sample Number: MW-4	Starting Water Level (ft. BMP): 4.41
Sampling Location (well ID, etc.): MW-4	Casing Stickup (ft.): 3.6
Sampled by: VG	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 21.21
Screened Interval (ft. BGL): 18.6 - 21.1	Casing Diameter (in ID): 3
Filter Pack Interval (ft. BGL): 13.6 - 18.6	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
15:24	-	0.2	-	-	-	-	-	-	-		Pump is on
15:34	2	↓	13.38	7.20	59300		2.2	-100	1.03	6.24	
15:39	3	↓	13.70	7.19	58700		0.0	-102	0.63	6.82	
15:44	4	↓	13.81	7.19	58400		0.0	-105	0.37	7.48	
15:46	4.5		13.75	7.19	58300		0.0	-106	0.36	7.65	

Water Level (ft. BMP) at End of Purge: 11.65 @ 16:15 **Sample Intake Depth (ft. BMP):** 19

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
16:05	~~500~~ 250 ml	P	1	N	HNO_3	Toatal Metals
↓	250 ml	P	1	Y	HNO_3	Dissolved Metals
	250 ml	P	1		H_2SO_4	NH_4
	250 ml	P	1			Anions
↓	1 L	P	2			Ra 226/228
16:42	Field	Blank - 1 (Sludge)				

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/5/20

Sample Number: MW - 5	Starting Water Level (ft. BMP): 4.31
Sampling Location (well ID, etc.): MW - 5	Casing Stickup (ft.): 3.8
Sampled by: MG	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 21.78
Screened Interval (ft. BGL): 16.6 - 21.6	Casing Diameter (in ID): 3
Filter Pack Interval (ft. BGL): 11.6 - 16.6	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:20	-	0.2	-	-	-	-	-	-	-		Pump is on
12:30	2	↓	15.90	7.16	34200		9.6	500	1.41	6.22	
12:35	3	↓	15.83	7.15	39100		6.0	500	1.51	6.72	
12:40	4	↓	15.86	7.14	39000		1.7	500	1.19	7.27	

Water Level (ft. BMP) at End of Purge: 9.14 @ 13:42 **Sample Intake Depth (ft. BMP):** 18

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:25	~~500~~ 250 ml	P	1	N	HNO_3	Toatal Metals
	250 ml	P	1	Y	HNO_3	Dissolved Metals
	250 ml	P	1		H_2SO_4	NH_4
	250 ml	P	1			Anions
	1 L	P	2			Ra 226/228
13:35						Dup (sludge) MW-101

Comments:

stopped purge before collecting APAR samples ~ 10-15 min.

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/5/20

Sample Number: MW-5B	Starting Water Level (ft. BMP): 4.37
Sampling Location (well ID, etc.): MW-5B	Casing Stickup (ft.): 2.8
Sampled by: VG	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 51.40
Screened Interval (ft. BGL): 31.8 - 51.8	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 26.8 - 31.8	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
14:10	-	0.2	-	-	-	-	-	-	-		Pump is on
14:20	2	↓	15.68	7.03	33600		10.0	-10	0.45	4.57	
14:25	3		14.89	7.02	33900		0.8	-26	0.91	4.57	
14:30	4		14.62	7.00	34000		0.0	-36	0.80	4.57	
14:32	4.5		14.43	6.99	33900		0.0	-38	0.62	4.57	

Water Level (ft. BMP) at End of Purge: 4.53 @ 14:50 **Sample Intake Depth (ft. BMP):** 40

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:40	250 ml	P	1	N	HNO_3	Toatal Metals
	250 ml	P	1	Y	HNO_3	Dissolved Metals
↓	250 ml	P	1		H_2SO_4	NH_4
↓	250 ml	P	1			Anions
	1 L	P	2			Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:**

Sample Number: MW - 6R	Starting Water Level (ft. BMP): 8.42
Sampling Location (well ID, etc.): MW - 6R	Casing Stickup (ft.): 2.7
Sampled by:	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 20.21
Screened Interval (ft. BGL): 14.7 - 19.7	Casing Diameter (in ID): 4
FilterPack Interval (ft. BGL):	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
0858	-	0.2	-	-	-	-	-	-	-	8.59	
0907	2	↓	17.58	6.87	34900	Clear	0.0	496	5.95	8.63	Pump is on
0913	3		17.83	6.90	34800	"	0.0	496	5.41	8.65	
0918	4										

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 16

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
0918	500 ml	P	1		HNO_3	Toatal Metals
0918	250 ml	P	1		HNO_3	Dissolved Metals
0918	250 ml	P	1		H_2SO_4	NH_4
0918	250 ml	P	1			Anions
0918	1 L	P	2			Ra 226/228
0925		Sludge Sample	1			

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/5/20

Sample Number: MW - 6RB	Starting Water Level (ft. BMP): 7.77
Sampling Location (well ID, etc.): MW - 6RB	Casing Stickup (ft.): 2.6
Sampled by: S. Fuller	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 50.20
Screened Interval (ft. BGL): 38.9 - 48.9	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 3.9 - 38.9	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1000	-	0.2	-	-	-	-	-	-	-	7.87	Pump is on
1010	2	↓	15.60	7.06	30400	Clear	6.3	-82	1.54	7.98	
1015	3	↓	15.65	7.04	30500	↓	0.0	-90	1.18	7.99	
1020	4	↓	15.83	7.04	30500	↓	0.0	-93	1.07	7.99	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 42

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1020	500 ml	P	1	N	HNO_3	Toatal Metals
1020	250 ml	P	1	Y .45µ	HNO_3	Dissolved Metals
1020	250 ml	P	1	N	H_2SO_4	NH_4
1020	250 ml	P	1	N		Anions
1020	1 L	P	2	N		Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/5/20

Sample Number: MW - 7	Starting Water Level (ft. BMP): 6.30
Sampling Location (well ID, etc.): MW - 7	Casing Stickup (ft.): 3.7
Sampled by: S. Fenner	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 22.62
Screened Interval (ft. BGL): 19.6 - 19.6	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1542	-	0.2	-	-	-	-	-	-	-	6.92	Pump is on
1552	2	↓	18.54	7.15	53800	Clear	7.3	351	1.00	7.03	
1557	3	↓	18.83	7.14	53700	↓	0.0	341	0.90	7.07	
1602	4	↓	18.72	7.14	53900	↓	0.0	410	0.88	7.09	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 18

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1602	500 ml	P	1		HNO_3	Toatal Metals
1602	250 ml	P	1		HNO_3	Dissolved Metals
1602	250 ml	P	1		H_2SO_4	NH_4
1602	250 ml	P	1			Anions
1602	1 L	P	2			Ra 226/228
1618		Silylgy Sample Time				

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/18/20

Sample Number: MW - 7B	Starting Water Level (ft. BMP): 6.83
Sampling Location (well ID, etc.): MW - 7B	Casing Stickup (ft.): 2.7
Sampled by: S. Green	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 52.53
Screened Interval (ft. BGL): 38.7 - 53.7	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 36 - 53.7	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron +.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
0832	-	0.2	-	-	-	-	-	-	-	7.00	Pump is on
0842	2	↓	19.11	6.80	70700	Clear	31.7	-125	0.88	7.20	
0847	3	↓	19.83	6.89	71700	↓	15.8	-96	0.70	7.31	
0852	4	↓	19.90	6.93	72700	↓	0.0	-86	0.70	7.34	
0857	5	0.2	20.27	6.93	73300	↓	0.0	-91	0.67	7.36	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 45

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
0857	500 ml	P	1		HNO_3	Toatal Metals
0857	250 ml	P	1		HNO_3	Dissolved Metals
0857	250 ml	P	1		H_2SO_4	NH_4
0857	250 ml	P	1			Anions
0857	1 L	P	2			Ra 226/228

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/5/20

Sample Number: MW - 8	Starting Water Level (ft. BMP): 3.40
Sampling Location (well ID, etc.): MW - 8	Casing Stickup (ft.): 1.2
Sampled by: VG	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 18.49
Screened Interval (ft. BGL): 13 - 18	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL): 8 - 13	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:30	-	0.2	-	-	-	-	-	-	-		Pump is on
10:40	2	↓	12.87	7.35	36200		0.0	519	6.43	3.86	
10:45	3	↓	12.67	7.36	36300		0.0	520	5.55	3.93	
10:50	4	↓	12.79	7.36	36200		0.0	520	5.51	3.97	

Water Level (ft. BMP) at End of Purge: 4.46 @ 11:22 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:30	~~500~~ ml	P	1	N	HNO_3	Toatal Metals
	250 ml	P	1	Y	HNO_3	Dissolved Metals
	250 ml	P	1		H_2SO_4	NH_4
	250 ml	P	1			Anions
	1 L	P	2			Ra 226/228

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/5/20

Sample Number: MW - 9	Starting Water Level (ft. BMP): 5.59
Sampling Location (well ID, etc.): MW - 9	Casing Stickup (ft.): 1.7
Sampled by: VCM	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 18.94
Screened Interval (ft. BGL): 13.5 - 18.5	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL): 8.5 - 13.5	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
9:03	-	0.2	-	-	-	-	-	-	-		Pump is on
9:13	2	↓	15.81	6.62	29800		11.9	542	4.52	5.72	
9:18	3	↓	15.95	6.75	29600		8.3	537	3.86	5.72	
9:23	4	↓	16.22	6.81	29600		5.0	529	3.48	5.73	
9:28	5		16.34	6.83	29760		3.0	526	3.25	5.73	
9:30	5.5		16.29	6.84	29600		1.1	520	3.28	5.73	
9:33	6		16.16	6.85	29600		0.0	518	3.30	5.73	

Water Level (ft. BMP) at End of Purge: 5.79 @ 9:35 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:00	~~250~~ 500 ml	P	1	~~Y~~ N	HNO_3	Toatal Metals
	250 ml	P	1	Y	HNO_3	Dissolved Metals
	250 ml	P	1		H_2SO_4	NH_4
	250 ml	P	1			Anions
	1 L	P	2			Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/5/20

Sample Number: MW - 10	Starting Water Level (ft. BMP): 5.28
Sampling Location (well ID, etc.): MW - 10	Casing Stickup (ft.): 1.6
Sampled by: S. Fenner	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 18.99
Screened Interval (ft. BGL): 13.4 - 18.4	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL): 8.4 - 13.4	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1120	-	0.2	-	-	-	-	-	-	-	5.78	Pump is on
1130	2	↓	17.57	7.30	28000	Clear	6.3	498	4.64	5.79	
1135	3		17.71	7.29	28000	↓	0.0	497	4.48	5.82	
1140	4		18.26	7.27	28000	↓	0.0	494	4.28	5.86	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1140	500 ml	P	1	N	HNO_3	Toatal Metals
1140	250 ml	P	1	Y .45µ	HNO_3	Dissolved Metals
1140	250 ml	P	1	N	H_2SO_4	NH_4
1140	250 ml	P	1	N		Anions
1140	1 L	P	2	N		Ra 226/228
1156	Slushy Sample time					

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/5/20

Sample Number: MW - 11	Starting Water Level (ft. BMP): 6.31
Sampling Location (well ID, etc.): MW - 11	Casing Stickup (ft.): 1.7
Sampled by: S. Ferrer	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 19.02
Screened Interval (ft. BGL): 14.1 - 19.1	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1225	-	0.2	-	-	-	-	-	-	-	6.39	Pump is on
1235	2	↓	16.49	7.25	25500	Clear	0.0	504	4.66	6.28	
1240	3	↓	16.12	7.25	25500	↓	0.0	504	4.45	6.81	
1245	4	↓	16.32	7.24	25500	↓	0.0	505	4.36	↓	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1245	500 ml	P	1	N	HNO_3	Toatal Metals
1245	250 ml	P	1	Y .45µ	HNO_3	Dissolved Metals
1245	250 ml	P	1	N	H_2SO_4	NH_4
1245	250 ml	P	1	N		Anions
1245	1 L	P	2	N		Ra 226/228
1259	Shuttle	Samples				

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/5/20

Sample Number: MW - 11B	Starting Water Level (ft. BMP): 7.38
Sampling Location (well ID, etc.): MW - 11B	Casing Stickup (ft.): 2.5
Sampled by: S. Fenner	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 36.45
Screened Interval (ft. BGL): 30.6 - 35.6	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 28 - 35.6	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1322	-	0.2	-	-	-	-	-	-	-	7.49	Pump is on
1332	2	↓	20.31	7.14	29700	Clear	19.3	-8	3.20	7.57	
1337	3	↓	21.35	6.97	29800	↓	15.4	-60	1.14	7.64	
1342	4	↓	21.85	6.95	29800	↓	0.0	-65	0.92	7.68	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 32

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1342	500 ml	P	1		HNO_3	Toatal Metals
↓	250 ml	P	1		HNO_3	Dissolved Metals
	250 ml	P	1		H_2SO_4	NH_4
	250 ml	P	1			Anions
	1 L	P	2			Ra 226/228
1347		Duplicate				

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 18131309 **Project Name:** Copano Sludge Permit **Date:** 2/6/20

Sample Number: DB-5	**Starting Water Level (ft. BMP):** 23.31
Sampling Location (well ID, etc.): DB-5	**Casing Stickup (ft.):** 5.6 *
Sampled by: S. Fenner	**Starting Water Level (ft. BGL):**
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 44.0*
Screened Interval (ft. BGL): 40.2 - 50.2*	**Casing Diameter (in ID):** 4 *
Filter Pack Interval (ft. BGL): -	**Casing Volume :** gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic or Bladder pump with dedicated tubing or disposable bailer **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Other: **Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
1130	-	0.2	-	-	-	-	-	-	-	23.79	Pump is on
1140	2	↓	18.54	7.07	45600	Clear	0.3	-157	1.41	24.02	
1145	3	↓	18.05	7.05	45500	↓	0.7	-169	1.57	24.07	
1150	4	↓	18.69	7.01	45500	↓	0.0	-174	1.33	24.13	

Water Level (ft. BMP) at End of Purge: **Sample Intake Depth (ft. BMP):** 45.0*

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1159	Various	G, P	5	N	HNO_3, H_2SO_4	Various
1150	APAR	Samples				

Comments: *From Monitoring Well Mgmnt Spreadsheet & 4Q18 Field Records

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GROUNDWATER SAMPLING RECORD

Project Number: 18131309 **Project Name:** Copano Sludge Permit **Date:** 2/11/20

Sample Number: MW3-1	**Starting Water Level (ft. BMP):** 6.15
Sampling Location (well ID, etc.): MW3-1	**Casing Stickup (ft.):** 4.2*
Sampled by: VG	**Starting Water Level (ft. BGL):**
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 18.55*
Screened Interval (ft. BGL): 15.6-18.1*	**Casing Diameter (in ID):** 4 *
Filter Pack Interval (ft. BGL): -	**Casing Volume :** gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic or Bladder pump with dedicated tubing or disposable bailer **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
8:42	-	0.2	-	-	-	-	-	-	-		Pump is on
8:52	2	↓	16.24	6.73	47900		0.0	203	3.42	6.28	
8:57	3	↓	16.32	6.84	48100		0.0	187	3.85	6.31	
9:02	4	↓	17.03	6.92	48100		0.0	165	4.16	6.33	

Water Level (ft. BMP) at End of Purge: 6.42 @ 9:26 **Sample Intake Depth (ft. BMP):** 16.5*

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
9:26	Various	G, P	5		HNO_3, H_2SO_4	Various

Comments: *From Monitoring Well Mgmnt Spreadsheet & 4Q18 Field Records

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GROUNDWATER SAMPLING RECORD

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Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** ~~2~~ 2/11/20

Sample Number: MW3 - 2	Starting Water Level (ft. BMP): 7.63
Sampling Location (well ID, etc.): MW3 - 2	Casing Stickup (ft.): 4.1
Sampled by: VG	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 19.91
Screened Interval (ft. BGL): 16.9 - 19.4	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
9:53	-	0.2	-	-	-	-	-	-	-		Pump is on
10:03	2	↓	17.85	7.32	46600		46.5	322	10.04	8.26	
10:08	3	↓	17.69	7.40	48900		45.9	312	6.17	8.31	
10:13	4	↓	17.76	7.44	45700		~~18~~ 16.2	292	5.88	8.42	
10:15	4.5		17.81	7.44	45800		14.4	285	5.17	8.44	
10:18	5		17.84	7.43	45900		14.8	277	4.20	8.44	

Water Level (ft. BMP) at End of Purge: 8.94 @ 10:39 **Sample Intake Depth (ft. BMP): 18.8**

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10540	500 ml	P	1		HNO_3	Toatal Metals
	250 ml	P	1		HNO_3	Dissolved Metals
	250 ml	P	1		H_2SO_4	NH_4
	250 ml	P	1			Anions
	1 L	P	2			Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 18131309 **Project Name:** Copano Sludge Permit **Date:** 2/11/20

Sample Number: MW3-3	**Starting Water Level (ft. BMP):** 8.03
Sampling Location (well ID, etc.): MW3-3	**Casing Stickup (ft.):** 4.2*
Sampled by: VG	**Starting Water Level (ft. BGL):**
Measuring Point (MP) of Well: TOC/(PVC)	**Total Depth (ft. BMP):** 20.30*
Screened Interval (ft. BGL): 17.2 - 19.7*	**Casing Diameter (in ID):** 4*
Filter Pack Interval (ft. BGL): -	**Casing Volume :** gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic or Bladder pump with dedicated tubing or disposable bailer **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:10	-	0.2	-	-	-	-	-	-	-		Pump is on
11:20	2	↓	16.93	7.35	47500		0.0	335	3.23	8.23	
11:25	3	↓	17.08	7.31	47500		0.0	364	3.06	8.25	
11:30	4	↓	17.35	7.28	417600		~~2~~ 34.6	386	3.28	8.27	
11:35	5		17.81	7.26	47100		4.9	383	2.70	8.30	
11:37	5.5		17.86	7.25	46600		3.2	383	3.21	8.31	
11:40	6		17.99	7.25	46400		2.6	384	2.89	8.32	

Water Level (ft. BMP) at End of Purge: 8.36 @ 12:00 **Sample Intake Depth (ft. BMP):** 18.0*

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:00	Various	G, P	5		HNO_3, H_2SO_4	Various

Comments: *From Monitoring Well Mgmnt Spreadsheet & 4Q18 Field Records

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/11/20

Sample Number: MW3 - 4	Starting Water Level (ft. BMP): 6.22
Sampling Location (well ID, etc.): MW3 - 4	Casing Stickup (ft.): 4.3
Sampled by: VG	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 15.86
Screened Interval (ft. BGL): 12.8 - 15.3	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
~~15:00~~	-	0.2	-	-	-	-	-	-	-		Pump is on
15:10	2	↓	17.68	7.81	66400		78.2	100	4.56	6.71	
15:15	3	↓	17.82	7.74	65800		54.4	77	3.43	6.78	
15:20	4	↓	17.96	7.64	66000		33.8	64	2.94	6.82	
15:23	4.5		17.89	7.63	66100		29.8	63	2.79	6.83	

Water Level (ft. BMP) at End of Purge: 7.03 @ 15:56 **Sample Intake Depth (ft. BMP):** 14

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
15:55 ~~15:15~~	500 ml	P	1		HNO_3	Toatal Metals
	250 ml	P	1		HNO_3	Dissolved Metals
	250 ml	P	1		H_2SO_4	NH_4
	250 ml	P	1			Anions
	1 L	P	2			Ra 226/228
15:35						Dupe MW-204

Comments:

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slidsk Field Blank 4- @ 16:45

GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/11/20

Sample Number: MW3 - 4B	Starting Water Level (ft. BMP): 5.79
Sampling Location (well ID, etc.): MW3 - 4B	Casing Stickup (ft.): 2.5
Sampled by: VG	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 44.58
Screened Interval (ft. BGL): 30.0 - 45.0	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 28 - 45	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:52	-	0.2	-	-	-	-	-	-	-		Pump is on
13:02	2	↓	17.52	7.20	100000		4.7	282	1.50	6.45	
13:07	3	↓	17.55	7.19	100000		5.8	273	1.07	6.42	
13:12	4	↓	17.50	7.20	98800		3.1	268	1.02	6.42	
13:15	4.5		17.52	7.21	97700		1.5	266	0.59	6.42	
13:17	5		17.49	7.22	97300		0.60	265	0.53	6.42	

Water Level (ft. BMP) at End of Purge: 6.87 @ 13:58 **Sample Intake Depth (ft. BMP):** 35

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:00	500 ml	P	1		HNO_3	Toatal Metals
↓	250 ml	P	1		HNO_3	Dissolved Metals
↓	250 ml	P	1		H_2SO_4	NH_4
↓	250 ml	P	1			Anions
↓	1 L	P	2			Ra 226/228
						MS / MSD

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/12/20

Sample Number: MW3 - 5	Starting Water Level (ft. BMP): 7.19
Sampling Location (well ID, etc.): MW3 - 5	Casing Stickup (ft.): 3.4
Sampled by: VG	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 16.69
Screened Interval (ft. BGL): 14 - 16.5	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
8:41	-	0.2	-	-	-	-	-	-	-		Pump is on
8:51	2	↓	16.74	6.68	56100		20.9	485	1.40	7.56	
8:56	3	↓	17.09	6.87	55700		10 ~~5.4~~	483	1.26	7.59	
9:01	4	↓	17.25	6.96	55800		5.2	475	0.93	7.60	
9:03	4.5		17.34	6.99	55800		4.5	466	0.91	7.60	

Water Level (ft. BMP) at End of Purge: 8.08 @ 9:29 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
9:30	500 ml	P	1		HNO_3	Toatal Metals
	250 ml	P	1		HNO_3	Dissolved Metals
	250 ml	P	1		H_2SO_4	NH_4
	250 ml	P	1			Anions
	1 L	P	2			Ra 226/228
9:15						Sludge Dupe MW-103

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/12/20

Sample Number: MW3 - 6	Starting Water Level (ft. BMP): 7.44
Sampling Location (well ID, etc.): MW3 - 6	Casing Stickup (ft.): 3.8
Sampled by: VG	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 16.92
Screened Interval (ft. BGL): 14 - 16.5	Casing Diameter (in ID): 4
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron +.45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
9:54	-	0.2	-	-	-	-	-	-	-		Pump is on
10:04	2	↓	17.15	7.31	54400		3.2	355	7.14	7.57	
10:09	3		17.16	7.30	54200		2.6	344	8.69	7.59	
10:14	4		17.00	7.29	54100		1.3	329	6.89	7.59	
10:16	4.5		16.91	7.29	54000		1.1	326	6.84	7.59	

Water Level (ft. BMP) at End of Purge: 7.69 @ 10:40 **Sample Intake Depth (ft. BMP):** 15

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:40	500 ml	P	1		HNO_3	Toatal Metals
↓	250 ml	P	1		HNO_3	Dissolved Metals
↓	250 ml	P	1		H_2SO_4	NH_4
↓	250 ml	P	1			Anions
	1 L	P	2			Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 18131309 **Project Name:** Copano Sludge Permit **Date:** 2/12/26

Sample Number: MW3-7	**Starting Water Level (ft. BMP):** 7.26
Sampling Location (well ID, etc.): MW3-7	**Casing Stickup (ft.):** 4.2*
Sampled by: VG	**Starting Water Level (ft. BGL):**
Measuring Point (MP) of Well: TOC/(PVC)	**Total Depth (ft. BMP):** 20.63*
Screened Interval (ft. BGL): 17.7 - 20.2*	**Casing Diameter (in ID):** 4*
Filter Pack Interval (ft. BGL): -	**Casing Volume :** gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic or Bladder pump with dedicated tubing or disposable bailer **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Other: **Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:10	-	0.2	-	-	-	-	-	-	-		Pump is on
11:20	2	↓	16.02	7.21	55200	tan	0.0	495	0.89	7.43	
11:25	3	↓	16.06	7.18	55306	↓	0.0	496	1.10	7.44	
11:30	4	↓	16.47	7.16	55400	↓	0.0	496	0.87	7.45	

Water Level (ft. BMP) at End of Purge: ~~11:50~~ 7.38 @ 11:50 **Sample Intake Depth (ft. BMP):** 18.5*

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:50	Various	G, P	5		HNO_3, H_2SO_4	Various

Comments: *From Monitoring Well Mgmnt Spreadsheet & 4Q18 Field Records

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GROUNDWATER SAMPLING RECORD

Project Number: 18131309 **Project Name:** Copano Sludge Permit **Date:** 2/12/20

Sample Number: MW3-7B	**Starting Water Level (ft. BMP):** 6.85
Sampling Location (well ID, etc.): MW3-7B	**Casing Stickup (ft.):** 3.2*
Sampled by: VG	**Starting Water Level (ft. BGL):**
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 51.91*
Screened Interval (ft. BGL): 33.2 - 52.2*	**Casing Diameter (in ID):** 2*
Filter Pack Interval (ft. BGL): 32.0 - 53.2	**Casing Volume :** gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic or Bladder pump with dedicated tubing or disposable bailer **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Other: **Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:16	-	0.2	-	-	-	-	-	-	-		Pump is on
12:26	2	↓	17.97	10.00	53,700	clear	1.0	-83	0.45	7.08	
12:31	3	↓	18.08	8.71	54500	↓	0.3	127	0.65	7.08	
12:36	4	↓	18.15	8.09	55100	↓	0.2	26	1.09	7.08	
12:41	5	↓	18.19	8.67	52900	↓	9.4	-97	0.95	7.08	
12:46	6	↓	18.26	8.03	55300	↓	1.1	-47	0.89	7.08	
12:51	7	↓	18.31	7.89	55300	↓	0.2	-49	0.85	7.08	
12:53	7.5	↓	18.34	7.85	55300	↓	0.3	-50	0.84	7.08	

Water Level (ft. BMP) at End of Purge: 7.15 @ 13:14 **Sample Intake Depth (ft. BMP):** 43.0*

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:15	Various	G, P	5		HNO_3, H_2SO_4	Various
13:05						APAR Dupe MW-205
13:30						Field Blank - 5 (Sludge)
13:45						Equip. Blank-1 ↓

Comments: *From Monitoring Well Mgmnt Spreadsheet & 4Q18 Field Records

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/6/20

Sample Number: MW4 - 1	**Starting Water Level (ft. BMP):** 4.53
Sampling Location (well ID, etc.): MW4 - 1	**Casing Stickup (ft.):** 3.6
Sampled by: VCT	**Starting Water Level (ft. BGL):**
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 13.32
Screened Interval (ft. BGL): 10.2 - 12.7	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL):	**Casing Volume (gal.):** = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
8:55	-	0.2	-	-	-	-	-	-	-		Pump is on
9:05	2	↓	9.88	7.14	37800	light tan	42.2	-16	4.50	6.09	
9:10	3	↓	9.25	7.34	37800	↓	28.2	-20	5.04	6.03	
9:15	4	↓	10.09	7.61	37,700	↓	19.7	-4	5.05	5.92	
9:17	4.5		10.14	7.69	37406	↓	17.3	M2	3.97	5.92	
9:20	5		10.27	7.74	37800	↓	15.2	-6	3.72	5.92	
9:22	5.5		10.65	7.62	39200	↓	16.5	-29	3.75	5.92	
9:25	6		11.28	7.33	39600	↓	17.5	-39	3.34	5.92	

Water Level (ft. BMP) at End of Purge: 6.01 @ 9:5-1 **Sample Intake Depth (ft. BMP):** 11

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
9:50	250 ml	P	1	Y	HNO_3	Toatal Metals
	250 ml	P	1	Y	HNO_3	Dissolved Metals
	250 ml	P	1		H_2SO_4	NH_4
	250 ml	P	1			Anions
	1 L	P	2			Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 18131309 **Project Name:** Copano Sludge Permit **Date:** 2/6/20

Sample Number: MW4-2	**Starting Water Level (ft. BMP):** 4.07
Sampling Location (well ID, etc.): MW4-2	**Casing Stickup (ft.):** 4.2*
Sampled by: VG	**Starting Water Level (ft. BGL):**
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 17.56*
Screened Interval (ft. BGL): 12.9 - 17.9*	**Casing Diameter (in ID):** 3*
Filter Pack Interval (ft. BGL): -	**Casing Volume :** gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic or Bladder pump with dedicated tubing or disposable bailer **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:28	-	0.2	-	-	-	-	-	-	-		Pump is on
11:38	2	↓	15.80	7.48	58800	Clear	0.0	143	5.99	5.57	
11:43	3	↓	16.16	7.45	58800	↓	0.0	144	5.63	6.04	
11:48	4	↓	16.31	7.44	58600	↓	0.0	142	5.62	6.52	

Water Level (ft. BMP) at End of Purge: 10.66 @ 12:16 **Sample Intake Depth (ft. BMP):** 15.0*

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:25	Various	G, P	5		HNO_3, H_2SO_4	Various

Comments: *From Monitoring Well Mgmnt Spreadsheet & 4Q18 Field Records

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/6/20

Sample Number: MW4 - 2A	Starting Water Level (ft. BMP): 5.03
Sampling Location (well ID, etc.): MW4 - 2A	Casing Stickup (ft.): 3.6
Sampled by: JG	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC (PVC)	Total Depth (ft. BMP): 17.09
Screened Interval (ft. BGL): 6.4 - 16.7	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:16	-	0.2	-	-	-	-	-	-	-		Pump is on
10:26	2	↓	15.15	7.54	44800	Clear	6.4	110	12.41	6.44	
10:31	3	↓	15.30	7.53	44900	↓	4.2	111	10.23	6.52	
10:36	4	↓	15.34	7.51	44700	↓	0.0	110	9.85	6.60	
10:38	4.5		15.46	7.50	45400	↓	0.0	109	9.65	6.62	

Water Level (ft. BMP) at End of Purge: 7.82 @ 11:02 **Sample Intake Depth (ft. BMP):** 10

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:05	~~500~~ ml	P	1	N	HNO_3	Toatal Metals
↓	250 ml	P	1	Y	HNO_3	Dissolved Metals
	250 ml	P	1		H_2SO_4	NH_4
	250 ml	P	1			Anions
↓	1 L	P	2			Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/6/20

Sample Number: ~~MW3 - 7B:~~ MW4-3	Starting Water Level (ft. BMP): 5.73
Sampling Location (well ID, etc.): MW3 - 7B	Casing Stickup (ft.): 3.2
Sampled by: VG	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 51.91
Screened Interval (ft. BGL): 33.2 - 53.2	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 31 - 53	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:40	-	0.2	-	-	-	-	-	-	-		Pump is on
13:50	2	↓	18.24	7.29	55000	tea	0.0	500	2.07	5.86	
13:55	3	↓	18.25	7.27	54900	↓	0.0	498	1.67	5.87	
14:00	4	↓	18.53	7.25	54900	↓	0.0	497	1.70	5.87	

Water Level (ft. BMP) at End of Purge: 5.92 @ 14:36 **Sample Intake Depth (ft. BMP):** 43

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:35	~~250~~ 500 ml	P	1	N	HNO_3	Toatal Metals
↓	250 ml	P	1	Y	HNO_3	Dissolved Metals
↓	250 ml	P	1		H_2SO_4	NH_4
↓	250 ml	P	1			Anions
↓	1 L	P	2			Ra 226/228
14:25						Dupe MW-102

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/6/20

Sample Number: MW4 - 3B	**Starting Water Level (ft. BMP):** 5.61
Sampling Location (well ID, etc.): MW4 - 3B	**Casing Stickup (ft.):** 2.3
Sampled by: VC	**Starting Water Level (ft. BGL):**
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 31.05
Screened Interval (ft. BGL): 20.3 - 30.3	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): 18 - 30	**Casing Volume (gal.):** = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:57	-	0.2	-	-	-	-	-	-	-		Pump is on
13:07	2	↓	18.13	7.19	53600	Clear	0.0	-6	1.12	5.70	
13:12	3	↓	17.96	7.16	53800	↓	0.0	-15	1.03	5.70	
13:17	4	↓	18.13	7.15	53400	↓	0.0	-9	0.75	5.70	

Water Level (ft. BMP) at End of Purge: 5.70 @ 13:33 **Sample Intake Depth (ft. BMP):** 25

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:25	~~500~~ 250 ml	P	1	N	HNO_3	Toatal Metals
↓	250 ml	P	1	Y	HNO_3	Dissolved Metals
↓	250 ml	P	1	↓	H_2SO_4	NH_4
↓	250 ml	P	1	↓	↓	Anions
↓	1 L	P	2	↓	↓	Ra 226/228

Comments:

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GROUNDWATER SAMPLING RECORD

Project Number: 18131309 **Project Name:** Copano Sludge Permit **Date:** 2/10/20

Sample Number: MW4-4	**Starting Water Level (ft. BMP):** 5.72
Sampling Location (well ID, etc.): MW4-4	**Casing Stickup (ft.):** 3.2*
Sampled by: VG	**Starting Water Level (ft. BGL):**
Measuring Point (MP) of Well: TOC/(PVC)	**Total Depth (ft. BMP):** 17.19*
Screened Interval (ft. BGL): 12.0 - 17.0*	**Casing Diameter (in ID):** 3*
Filter Pack Interval (ft. BGL): -	**Casing Volume :** gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic or Bladder pump with dedicated tubing or disposable bailer **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:00	-	0.2	-	-	-	-	-	-	-		Pump is on
10:10	2	↓	20.88	6.87	42800	Clear	0.0	230	1.92	6.76	
10:15	3	↓	20.96	7.00	42900	↓	0.0	254	2.24	10.89	
10:20	4	↓	20.95	7.08	42900	↓	0.0	~~285~~ 254	1.74	6.98	

Water Level (ft. BMP) at End of Purge: 7.54 @ 10:44 **Sample Intake Depth (ft. BMP):** 15.0*

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:50	Various	G, P	6 ~~5~~	Y / N	HNO_3, H_2SO_4	Various

Comments: *From Monitoring Well Mgmnt Spreadsheet & 4Q18 Field Records

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/10/20

Sample Number: MW4 - 7	**Starting Water Level (ft. BMP):** 8.18
Sampling Location (well ID, etc.): MW4 - 7	**Casing Stickup (ft.):** 2.90
Sampled by: VG	**Starting Water Level (ft. BGL):**
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 19.69
Screened Interval (ft. BGL): 16.5 - 19.0	**Casing Diameter (in ID):** 3
Filter Pack Interval (ft. BGL):	**Casing Volume (gal.):** = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:20	-	0.2	-	-	-	-	-	-	-		Pump is on
11:30	2	↓	22.56	7.23	37000	Clear	0.0	169	2.54	8.23	
11:35	3	↓	22.47	7.21	37000	↓	0.0	146	2.07	8.23	
11:40	4	↓	22.52	7.21	37000	↓	0.0	164	2.37	8.26	

Water Level (ft. BMP) at End of Purge: 8.27 @ 12:03 **Sample Intake Depth (ft. BMP):** 17

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:05	500 ml	P	1		HNO_3	Toatal Metals
	250 ml	P	1		HNO_3	Dissolved Metals
	250 ml	P	1		H_2SO_4	NH_4
	250 ml	P	1			Anions
	1 L	P	2			Ra 226/228

Comments: *From Monitoring Wll Mgmnt Spreadsheet & 2H18 Field Records

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GROUNDWATER SAMPLING RECORD

Project Number: 18131309 **Project Name:** Copano Sludge Permit **Date:** 2/10/20

Sample Number: MW4-7A
Sampling Location (well ID, etc.): MW4-7A
Sampled by: VG
Measuring Point (MP) of Well: TOC/PVC
Screened Interval (ft. BGL): 9.5 - 14.5*
Filter Pack Interval (ft. BGL): -

Starting Water Level (ft. BMP): 5.06
Casing Stickup (ft.): 3.2*
Starting Water Level (ft. BGL):
Total Depth (ft. BMP): 16.06*
Casing Diameter (in ID): 3*
Casing Volume : gal = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic or Bladder pump with dedicated tubing or disposable bailer **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck
pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52
Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other: **Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:50	-	0.2	-	-	-	-	-	-	-		Pump is on
14:00	2	↓	22.67	7.33	40600	tan	0.0	515	12.75	5.78	
14:05	3	↓	22.80	7.32	40500	↓	0.7	505	6.93	5.666	
14:10	4	↓	22.82	7.31	40200	↓	1.0	496	5.89	5.66	

Water Level (ft. BMP) at End of Purge: 5.74 @ 14:32 **Sample Intake Depth (ft. BMP):** 12.0*

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
14:32	Various	G, P	5		HNO_3, H_2SO_4	Various
15:00						Field Blank - 3

Comments: *From Monitoring Well Mgmnt Spreadsheet & 4Q18 Field Records

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GROUNDWATER SAMPLING RECORD

Project Number: 19125525 **Project Name:** Copano GW Sampling 1Q20 **Date:** 2/10/20

Sample Number: MW4 - 7B	Starting Water Level (ft. BMP): 4.54
Sampling Location (well ID, etc.): MW4 - 7B	Casing Stickup (ft.): 2.5
Sampled by: VG	Starting Water Level (ft. BGL):
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 50.85
Screened Interval (ft. BGL): 35.5 - 50.5	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 33 - 50	Casing Volume (gal.): = L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Triple wash and rinse (DI Water and Liquidnox), dedicated equipment.

Purging: Peristaltic pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: Bed 2

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Filter / Filter Size:** 10 micron + .45

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:40	-	0.2	-	-	-	-	-	-	-		Pump is on
12:50	2	↓	23.21	7.20	59000		0.0	73	1.84	5.06	
12:55	3	↓	23.27	7.20	58900		0.0	77	2.00	5.08	
13:00	4	↓	13.48	7.19	58800		0.0	83	1.96	5.10	

Water Level (ft. BMP) at End of Purge: 5.30 @ 13:25 **Sample Intake Depth (ft. BMP):** 40

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:25	500 ml	P	1		HNO_3	Toatal Metals
↓	250 ml	P	1		HNO_3	Dissolved Metals
↓	250 ml	P	1		H_2SO_4	NH_4
↓	250 ml	P	1			Anions
↓	1 L	P	2			Ra 226/228
13:10						MW-203 (Dupe)

Comments:

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Appendix 5

Water Well Records

APPENDIX 5
WATER WELL INFORMATION
COPANO ENTERPRISES LLC (CE RANCH LLC)

Figure 2 ID No.	Banks ID No.[1]	State Well ID No.	Distance to Perimeter of Nearest Waste Disposal Unit[2] (ft)	Groundwater Conservation District	Well Location		Location Method[3]	Horizontal Datum[4]	Horizontal Accuracy[5]	Horizontal Reference[6]	Date Well Installed	Well Type[7]	Well Status[8]	Well Use[9]	Well Depth (ft BGS)[10]	Aquifer Code Name	Aquifer Method[11]	Screened Interval (or Gravel Packed) (ft BGS)	Cemented Interval (ft BGS)	Well Owner Physical/Mailing Address/ Contact Information[12]	Well Users Address/ Contact Information[12]
					Address	Latitude, Longitude															
-	1	79-63-8	NA- Plotted Incorrectly	None[13]	Unknown. Greater than 0.5-miles from site. Copano Retreat Rd. Bayside, TX.	Unknown. Coordinates incorrect in Banks report.	NA	NA	NA	NA	11/5/1997	U	U	Unknown	338	112GLFC	X	298 - 338	0-10	A.P. Mariculture Mailing: P.O. Box 2259 Rockport, TX 78381	A.P. Mariculture Mailing: P.O. Box 2259 Rockport, TX 78381
2	2	79-63-802	475	None	No physical address. Aransas County, Texas	28.02465°, -97.18696°	GPS-PP$_4$	84	P	WH	1967±	S	O	Non-Drinking Water	190	112GLFC	D	No data on state well report	No data on state well report	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785
-	3	79-63-803	NA - Well not present at plotted location	Unknown - Well not present at plotted location	Aransas County, TX	Unknown - Well not present at plotted location	NA	NA	NA	NA	1938±	U	U	Unknown	190	112GLFC	D	No data on state well report	No data on state well report	Unknown - Well not present at plotted location	Unknown - Well not present at plotted location
-	4	83-07-102	NA - Well not present at plotted location	Unknown - Well not present at plotted location	San Patricio County, TX	Unknown - Well not present at plotted location	NA	NA	NA	NA	1965±	U	U	Unknown	190	112GLFC	X	No data on state well report	No data on state well report	Unknown - Well not present at plotted location	Unknown - Well not present at plotted location
-	5	161837	Plotted Incorrectly. Approximately >11,000 ft from Site.	None	221 King Rd. Rockport, TX 78382	27.98787°, -97.1385°	AddMat	84	U	DR	2/13/2005	U	U	Unknown	150	112GLFC	X	90-150	0-90	Max Kluge Physical: 221 King Road Rockport, TX 78382	Max Kluge Physical: 221 King Road Rockport, TX 78382
-	6	66549	Plotted Incorrectly. Approximately >30,000 ft from Site.	None	2nd St. and S. Verne off I-35 Rockport, TX	28.00996°, -97.06734°	AddMat	84	U	Notes[14]	2/19/2004	U	U	Unknown	185	112GLFC	X	165-185	0-100	Vic & Linda Ostrum Physical: 8109 Hwy 77 Sinton, TX 78387	Vic & Linda Ostrum Physical: 8109 Hwy 77 Sinton, TX 78387
-	7	143052	NA- Plotted Incorrectly	Unknown - Well not present at plotted location	Unknown. Greater than 0.5-miles from site. CR 2047 Odem, TX 78370	Unknown. Coordinates incorrect in Banks report.	NA	NA	NA	NA	8/16/2004	U	U	Unknown	233	112GLFC	X	193-233	0-10	Xeric Oil & Gas Corp. Mailing: P.O.Box 352 Midland, TX 79702	Xeric Oil & Gas Corp. Mailing: P.O.Box 352 Midland, TX 79702
-	8	79-63-8	NA - Well not present at plotted location	Unknown - Well not present at plotted location	14-miles NW of Rockport, TX. Aransas County.	Unknown - Well not present at plotted location	NA	NA	NA	NA	4/18/1984	U	U	Unknown	278	112GLFC	X	258-278	No data on state well report	Unknown - Well not present at plotted location	Unknown - Well not present at plotted location
-	9	79-63-8B	NA - Well not present at plotted location	Unknown - Well not present at plotted location	14-miles NW of Rockport, TX. Aransas County.	Unknown - Well not present at plotted location	NA	NA	NA	NA	4/14/1984	U	U	Unknown	280	112GLFC	X	240-280	No data on state well report	Unknown - Well not present at plotted location	Unknown - Well not present at plotted location
-	10	160290	NA - Plotted Incorrectly	None	Unknown. Greater than 0.5-miles from site. Aransas Pass, TX	Unknown. Coordinates incorrect in Banks report.	NA	NA	NA	NA	4/26/2005	U	U	Unknown	385	112GLFC	X	365-385	0-100	Owen Stowe Mailing: P.O. Box 1719 Rockport, TX 78381	Owen Stowe Mailing: P.O. Box 1719 Rockport, TX 78381
-	10	159947	NA - Plotted Incorrectly	None	Unknown. Greater than 0.5-miles from site. 3 miles from Hwy 181 on Copano Retreat Rd.[15] Rockport, TX	Unknown. Coordinates incorrect in Banks report.	NA	NA	NA	NA	5/16/2005	U	U	Unknown	320	112GLFC	X	290-320	0-100	John Hurt Physical: 4122 Russell Corpus Christi, TX 78408	John Hurt Physical: 4122 Russell Corpus Christi, TX 78408
-	11	79-63-8B	NA - Well not present at plotted location	Unknown - Well not present at plotted location	14-miles NW of Rockport, TX. Aransas County.	Unknown - Well not present at plotted location	NA	NA	NA	NA	4/20/1984	U	U	Unknown	282	112GLFC	X	262-282	No data on state well report	Unknown - Well not present at plotted location	Unknown - Well not present at plotted location
-	12	79-63-8B	NA - Well not present at plotted location	Unknown - Well not present at plotted location	14-miles NW of Rockport, TX. Aransas County.	Unknown - Well not present at plotted location	NA	NA	NA	NA	4/19/1984	U	U	Unknown	275	112GLFC	X	255-275	No data on state well report	Unknown - Well not present at plotted location	Unknown - Well not present at plotted location
-	13	160284	NA - Plotted Incorrectly	None	Unknown. Greater than 0.5-miles from site. 2.6 miles N of Hwy 181 on Copano Retreat Rd.[15] Rockport, TX	Unknown. Coordinates incorrect in Banks report.	NA	NA	NA	NA	5/2/2005	U	U	Unknown	400	112GLFC	X	370-400	0-100	Owen Stowe Mailing: P.O. Box 1719 Rockport, TX 78381	Owen Stowe Mailing: P.O. Box 1719 Rockport, TX 78381
-	14	428609	Plotted Incorrectly. Approximately >25,000 ft from Site.	None	1731 Ruby Allen St. Rockport, TX	28.00337°, -97.07836°	AddMat	84	U	SC	6/14/2016	U	U	Unknown	160	112GLFC	X	100-160	0-96	Bobby Tedder Physical: 1731 Ruby Allen St. Rockport, TX 78382	Bobby Tedder Physical: 1731 Ruby Allen St. Rockport, TX 78382
-	15	83-07-1	NA - Well not present at plotted location	Unknown - Well not present at plotted location	CR 93 Gregory, TX 78359	Unknown - Well not present at plotted location	NA		NA	NA	3/7/2002	U	U	Unknown	243	112GLFC	X	203-243	0-10	Unknown - Well not present at plotted location	Unknown - Well not present at plotted location
-	16	168554	Plotted Incorrectly. Approximately >50,000 ft from Site.	San Patricio GCD	220 Woodhaven Ingleside on the Bay, TX	27.83543°, -97.21926°	AddMat	84	U	SC	2/16/2009	U	U	Unknown	91	112GLFC	X	81-91	0-81	Oscar Osorto Physical: 220 Woodhaven Ingleside on the Bay, TX	Oscar Osorto Physical: 220 Woodhaven Ingleside on the Bay, TX
18	17	79-63-801	2604	None	No physical address. Aransas County, TX	28.02439°, -97.16743°	GPS-PP$_4$	84	P	WH	1955±	S	O	Non-Drinking Water	199	112BMNT	D	187-199	No data on state well report	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785
-	18	79-63-9F	NA - Well not present at plotted location	Unknown - Well not present at plotted location	3.0-miles S from Rockport, TX. Aransas County.	Unknown - Well not present at plotted location	NA	NA	NA	NA	11/29/1984	U	U	Unknown	200	112GLFC	X	160-200	0-15	Unknown - Well not present at plotted location	Unknown - Well not present at plotted location
-	19	83-07-1	NA - Well not present at plotted location	Unknown - Well not present at plotted location	San Patricio County, TX	Unknown - Well not present at plotted location	NA	NA	NA	NA	11/29/1999	U	U	Unknown	159	112GLFC	X	139-159	0-10	Unknown - Well not present at plotted location	Unknown - Well not present at plotted location
-	20	441047	Plotted Incorrectly. Approximately >23,000 ft from Site.	None	1502 W. 12th St. Rockport, TX 78382	28.00188°, -97.08788°	AddMat	84	U	DR	1/11/2017	U	U	Unknown	167	112GLFC	X	147-167	0-100	Wells Collection McLean Residence Physical: 1502 W 12th St. Rockport, TX 78382	Wells Collection McLean Residence Physical: 1502 W 12th St. Rockport, TX 78382
-	21	83-07-1B	NA - Well not present at plotted location	Unknown - Well not present at plotted location	7.0-miles NE from Gregory, TX. San Patricio County.	Unknown - Well not present at plotted location	NA	NA	NA	NA	No data on state well report	U	U	Unknown	215	112GLFC	X	195-215	No data on state well report	Unknown - Well not present at plotted location	Unknown - Well not present at plotted location
23	22	136832	2213	None	No physical address. Aransas County, TX	28.01929°, -97.20719°	GPS-PP$_4$	84	P	WH	8/2/2007	S	C	Non-Drinking Water	300	112GLFC	X	260-300	0-10	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785

APPENDIX 5
WATER WELL INFORMATION
COPANO ENTERPRISES LLC (CE RANCH LLC)

Figure 2 ID No.	Banks ID No.[1]	State Well ID No.	Distance to Perimeter of Nearest Waste Disposal Unit[2] (ft)	Groundwater Conservation District	Well Location		Location Method[3]	Horizontal Datum[4]	Horizontal Accuracy[5]	Horizontal Reference[6]	Date Well Installed	Well Type[7]	Well Status[8]	Well Use[9]	Well Depth (ft BGS)[10]	Aquifer Code Name	Aquifer Method[11]	Screened Interval (or Gravel Packed) (ft BGS)	Cemented Interval (ft BGS)	Well Owner Physical/Mailing Address/ Contact Information[12]	Well Users Address/ Contact Information[12]
					Address	Latitude, Longitude															
-	22	136831	NA - Well not present at plotted location	Unknown - Well not present at plotted location	Rockport, TX	Unknown - Well not present at plotted location	NA	NA	NA	NA	7/30/2007	U	U	Unknown	326	112GLFC	X	280-320	0-10	Unknown - Well not present at plotted location	Unknown - Well not present at plotted location
-	23	42379	NA - Plotted Incorrectly	San Patricio GCD	Unknown. Greater than 0.5-miles from site. CR 93 8/10-miles from Hwy 136 Portland, TX 78374	Unknown. Coordinates incorrect in Banks report.	NA	NA	NA	NA	6/20/2003	U	U	Unknown	247	112GLFC	X	207-247	0-100	Abel Adame Physical: 208 Wilshire Portland, TX 78374	Abel Adame Physical: 208 Wilshire Portland, TX 78374
-	24	83-07-104	NA - Well not present at plotted location	Unknown - Well not present at plotted location	San Patricio County, TX	Unknown - Well not present at plotted location	NA	NA	NA	NA	1965±	U	U	Unknown	280	112GLFC	D	No data on state well report	No data on state well report	Unknown - Well not present at plotted location	Unknown - Well not present at plotted location
-	25	79-63-7	NA- Plotted Incorrectly	San Patricio GCD	Unknown. Greater than 0.5-miles from site. Leo Miller Rd. 188 Rd. and 136 Rd. Bayside, TX. San Patricio County.	Unknown. Coordinates incorrect in Banks report.	NA	NA	NA	NA	5/4/1998	U	U	Unknown	250	112GLFC	X	228-248	0-100	David Martinez Physical: 2553 Dan Forth Ingleside, TX 78362	David Martinez Physical: 2553 Dan Forth Ingleside, TX 78362
28	-	-	2945	None	111 Miller Rd. Taft, TX 78390	28.01871°, -97.21111°	GPS-PP$_4$	84	P	WH	U[16]	Prv*	O	Non-Drinking Water	U[16]	112GLFC	X	U[16]	U[16]	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785
29	-	-	2760	None	141 Miller Rd. Taft, TX 78390	28.01727°, -97.21139°	Map	84	U	NE-CL	U[16]	Prv	U	Drinking Water[17]	U[16]	112GLFC	X	U[16]	U[16]	Marta Velasquez Mailing/Physical: 141 Leo Miller Rd. Taft, TX 78390	Marta Velasquez Mailing/Physical: 141 Leo Miller Rd. Taft, TX 78390
30	-	-	3127	None	161 Miller Rd. Taft, TX 78390	28.01590°, -97.21303°	GPS-PP$_4$	84	P	WH	U[16]	Prv*	O	Non-Drinking Water	U[16]	112GLFC	X	U[16]	U[16]	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785
31	-	-	3322	None	221 Miller Rd. Taft, TX 78390	28.01355°, -97.21399°	GPS-PP$_4$	84	P	WH	U[16]	Prv*	O	Non-Drinking Water	U[16]	112GLFC	X	U[16]	U[16]	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785
32	-	485920	3383	San Patricio GCD	261 Leo Miller Rd. Taft, TX 78390	28.01188°, -97.21500°	Map	84	Q	E-CL	4/24/2018	Prv-	O	Non-Drinking Water	310	112GLFC	X	270-310	0-100	Isidro and Yvonne Arismendez Mailing/Physical: 261 Leo Miller Rd. Taft, TX 78390 Phone: (512) 658-0643	Isidro and Yvonne Arismendez Mailing/Physical: 261 Leo Miller Rd. Taft, TX 78390 Phone: (512) 658-0643
33	-	-	3616	San Patricio GCD	8153 CR 4351 Portland, TX 78374	28.01148°, -97.2158°	GPS-PP$_4$	84	P	WH	U[16]	Prv*	O	Non-Drinking Water	U[16]	112GLFC	X	U[16]	U[16]	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785
34	-	249208	3038	San Patricio GCD	8115 CR 4351 Taft, TX 78390	28.01015°, -97.21667°	Map	84	Q	S-CL	3/23/2011	Prv-	O	Non-Drinking Water	320	112GLFC	X	280-320	0-100	Charles McCarley Mailing/Physical: 8115 CR 4351 Taft, TX 78390	Randy Stasney Mailing/Physical: 8115 CR 4351 Taft, TX 78390
35	-	-	2910	San Patricio GCD	8097 CR 4351 Taft, TX 78390	28.00930°, -97.21722°	Map	84	P	S-CL	U[16]	Prv*	O	Non-Drinking Water	U[16]	112GLFC	X	U[16]	U[16]	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785	Copano Enterprises LLC Physical: 7037 CR 93 Aransas Pass, TX 78336 Mailing: 201 Isabella St. Pittsburgh, PA 15212 Ronald Morosky (412)-315-2785

Notes:
1) See map in Banks Report, Attachment 3
2) Distance to nearest waste disposal unit (Bed 1, 2, 3, or 4).
3) Location Method:
GPS-PP$_4$ - GPS coordinates, Pathfinder Office P.P.
AddMat - Address Matching
Map - Map Interpolation, Digital
NA - Coordinates were not able to be obtained
4) Horizontal Datum:
NA - Coordinates were not able to be obtained
84 - World Geodetic System 1984 (WGS 84)
5) Horizontal Accuracy:
P - Less than 2 meters
Q - Within 2 to 5 meters
U - Unknown
NA - Coordinates were not able to be obtained
6) Horizontal Reference:
WH - Wellhead
DR - Private driveway at the road
SC - Site center
NE-CL - Northeast corner of land parcel
E-CL - East corner of land parcel
S-CL - South corner of land parcel
NA - Coordinates were not able to be obtained
Notes - See additional comments regarding why the location was taken at a particular spot
7) Well Type:
Prv - Private. Well meets definition of private drinking water well in Texas Water Code, Section 26.408, and guidance document RG-428.
S - Stock
U - Unknown
Prv- - No appropriate well type available. Well is on private property and is not used for drinking water.
Prv* - No appropriate well type available. Well is on private property owned by Copano Enterprises LLC and is not in use.
8) Well Status:
O - Well is operational
C - Well is capped according to TDLR Rules
U - Well status is unknown
9) Well Use:
Non-Drinking Water
Drinking Water
Note: Copano Enterprises LLC has confirmed the wells on their property are not used for drinking water.
10) ft BGS - feet below ground surface
11) Aquifer Method:
X - Aquifer Code assumed from geographic location
D - Interpretation of Driller's Log
12) Address/contact information of well owner(s) and/or user(s) has been updated to reflect current property owner(s) information, as possible. Shaded cells indicate address/contact information of well owner(s) and/or user(s) was provided by the Banks well reports and is unable to be verified.
13) The Aransas County Groundwater Conservation District (ACGCD) was created by the 84th Texas Legislature and was running as a temporary organization in 2015. In 2016, county voters rejected the creation of a permanent Groundwater Conservation District. Therefore, ACGCD is non-existent.
14) Coordinates represent the intersection of 2nd St. and S. Verne St. in Rockport, TX.
15) Hwy 181 does not exist. Copano Retreat Rd. is off of Hwy 188 and is 2.65-miles long.
16) No state well record available. Owner not able to provide information.
17) Owners of the well were not able to be contacted. Could not confirm whether well was used for drinking water.
18) Shaded cells indicate the information was provided by the associated well report and is unable to be verified.

Prepared for:

GOLDER ASSOCIATES INC-Victoria
620 E. Airline
Victoria, TX 77901

BANKS ENVIRONMENTAL DATA
A DIVISION OF THE BANKS GROUP

Water Well Report

Copano Beds

TX

San Patricio County

ES-128816

Friday, August 17, 2018

Banks Environmental Data, Inc. - 1601 Rio Grande, Ste. 331 - Austin, TX 78701 - 800.531.5255 P - 512.478.1433 F
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Geographic Summary

Location
San Patricio County, TX
Target location is 6.84 square miles and has a 11.36 mile perimeter

Coordinates	
Longitude & Latitude in Degrees Minutes Seconds	NA
Longitude & Latitude in Decimal Degrees	NA
X and Y in UTM	NA

Elevation
NA

Zip Codes Searched	
Search Distance	**Zip Codes (historical zip codes included)**
Target Property	78336, 78382, 78358
0.5 miles	78336, 78374, 78359, 78382, 78358, 78390, 78359

Topos Searched	
Search Distance	**Topo Name**
Target Property	Bayside (1979), Aransas Pass (1977)
0.5 miles	Bayside (1979), Aransas Pass (1977)

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Summary Map - 0.5 Mile Buffer



Copano Beds

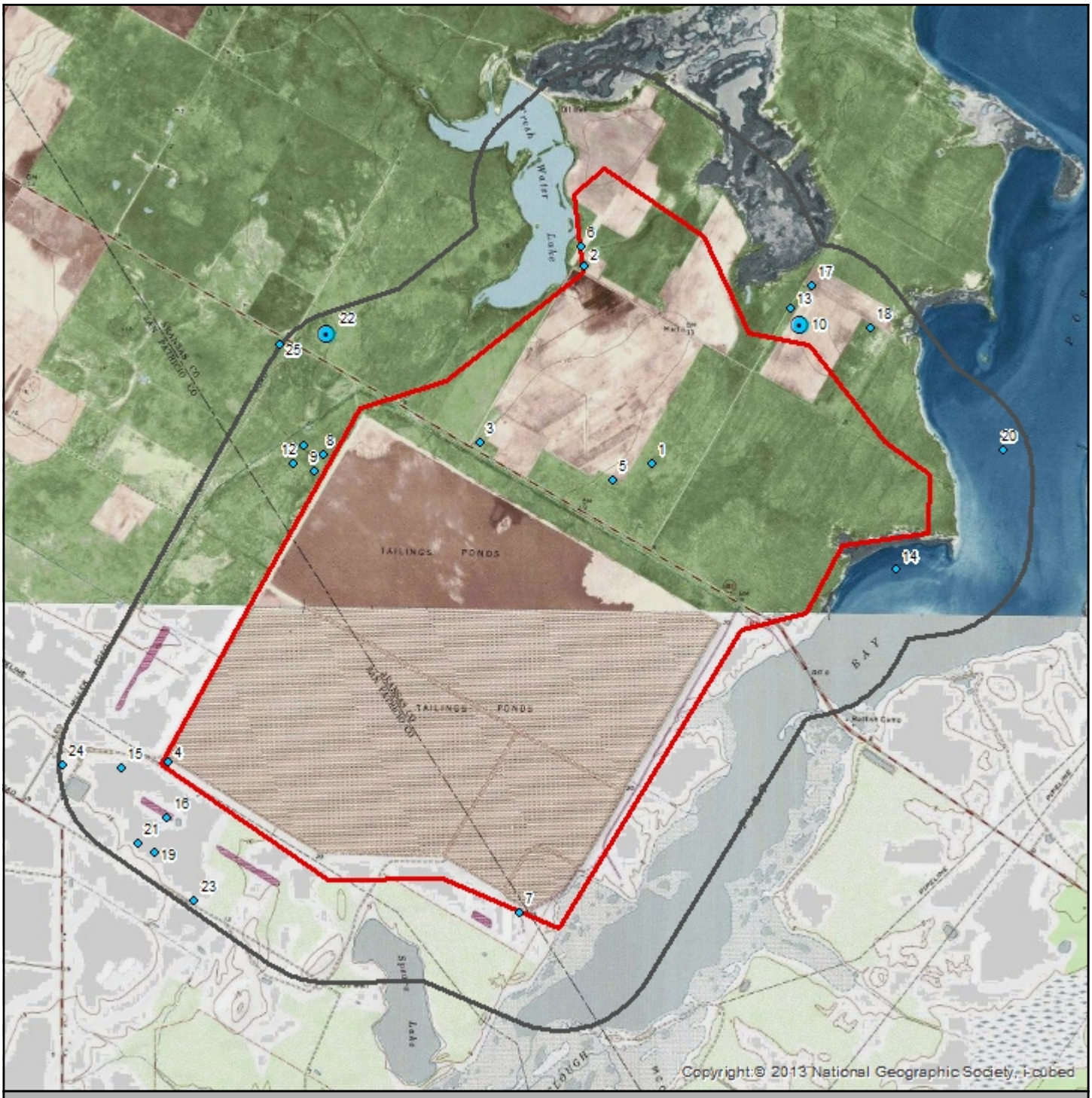
- Well
- Well Cluster
- Target Property
- Search Buffer
- Texas Quad Index

1 : 45,000
1 inch = 0.710 miles
1 inch = 3750 feet
1 centimeter = 0.450 kilometers
1 centimeter = 450 meters

N

Lambert Conformal Conic Projection
1983 North American Datum
First Standard Parallel: 33 0' 00" North
Second Standard Parallel: 45 0' 00" North
Central Meridian: 96 0' 00" West
Latitude of Origin: 39 0' 00" North

Topographic Overlay Map - 0.5 Mile Buffer



Copano Beds

Well

Well Cluster

Target Property

Search Buffer

Target Property Quad Name(s)
Bayside (1979), Aransas Pass (1977)

1 : 45,000
1 inch = 0.710 miles
1 inch = 3750 feet

Lambert Conformal Conic Projection
1983 North American Datum
First Standard Parallel: 33 0' 00" North
Second Standard Parallel: 45 0' 00" North
Central Meridian: 96 0' 00" West
Latitude of Origin: 39 0' 00" North

N

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Current Imagery Overlay Map - 0.5 Mile Buffer

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Copano Beds

Well

Well Cluster

Target Property

Search Buffer

1 : 45,000
1 inch = 0.710 miles
1 inch = 3750 feet
1 centimeter = 0.450 kilometers
1 centimeter = 450 meters

N

Lambert Conformal Conic Projection
1983 North American Datum
First Standard Parallel: 33 0' 00" North
Second Standard Parallel: 45 0' 00" North
Central Meridian: 96 0' 00" West
Latitude of Origin: 39 0' 00" North

Water Well Details

Map ID	Source ID	Dataset	Owner of Well	Type of Well	Depth Drilled	Completion Date	Longitude	Latitude	Elevation	Driller's Logs
1	79-63-8	TX TCEQ HIST	A.P. Mariculture	Irrigation	338	11/06/1997	-97.1811	28.010649	3 ft	View
2	79-63-802	TX TWDB GW	Bankers Mortgage Co.	Stock	190	01/01/1962	-97.186667	28.024444	3 ft	View
3	79-63-803	TX TWDB GW	Bankers Mortgage Co.	Stock	190	01/01/1938	-97.194722	28.011945	6 ft	View
4	83-07-102	TX TWDB GW	Leo A. Miller	Stock	190	n/a	-97.219167	27.989167	12 ft	View
5	161837	TX TWDB SDR	Max Kluge	Domestic	150	2/13/2005	-97.184167	28.009445	3 ft	View
6	66549	TX TWDB SDR	Vic & Linda Ostrum	Domestic	185	2/19/2004	-97.186945	28.025833	5 ft	View
7	143052	TX TWDB SDR	Xeric Oil & Gas Corp.	Industrial	233	8/16/2004	-97.191111	27.978889	5 ft	View
8	79-63-8	TX TCEQ HIST	Stephen Bodnar	Domestic	278	04/18/1984	-97.207149	28.01099	9 ft	View
9	79-63-8B	TX TCEQ HIST	Larry Morgan	Domestic	280	04/14/1984	-97.207933	28.009787	9 ft	View
10	160290	TX TWDB SDR	Owen Stowe	Domestic	385	4/26/2005	-97.169444	28.020555	9 ft	View
10	159947	TX TWDB SDR	John Hurt	Domestic	320	5/16/2005	-97.17	28.019444	9 ft	View
11	79-63-8B	TX TCEQ HIST	Carole Bennett	Domestic	282	04/20/1984	-97.208791	28.01153	9 ft	View
12	79-63-8B	TX TCEQ HIST	JJ Parker	Domestic	275	04/19/1984	-97.209563	28.010317	10 ft	View
13	160284	TX TWDB SDR	Owen Stowe	Domestic	400	5/2/2005	-97.170278	28.021667	7 ft	View
14	428609	TX TWDB SDR	Bobby Tedder	Domestic	160	6/14/2016	-97.161639	28.003389	ft	View
15	83-07-1	TX TCEQ HIST	Ken Smith	Domestic	243	03/07/02	-97.222867	27.988757	14 ft	View
16	168554	TX TWDB SDR	Oscar Osorto	Irrigation	91	2/16/2009	-97.219167	27.985278	13 ft	View
17	79-63-801	TX TWDB GW	Bankers Mortgage Co.	Unused	199	01/01/1956	-97.168611	28.023333	6 ft	View
18	79-63-9F	TX TCEQ HIST	Resource Management	Industrial	200	11/29/1984	-97.163904	28.020403	6 ft	View
19	83-07-1	TX TCEQ HIST	Keith Hood	Irrigation	159	11/29/1999	-97.22012	27.982807	14 ft	View
20	441047	TX TWDB SDR	Wells Collection McLean Residence	Domestic	167	1/13/2017	-97.153333	28.011944	ft	View
21	83-07-1B	TX TCEQ HIST	Jacques Valley	Domestic	215	05/05/76	-97.221494	27.983413	14 ft	View
22	136832	TX TWDB SDR	DAN A HUGHES	Rig Supply	300	8/3/2007	-97.206945	28.019444	10 ft	View
22	136831	TX TWDB SDR	DAN A HUGHES	Rig Supply	326	7/31/2007	-97.207223	28.019167	10 ft	View
23	42379	TX TWDB SDR	Abel Adame	Domestic	247	6/20/2003	-97.216944	27.979444	14 ft	View
24	83-07-104	TX TWDB GW	Bankers Mortgage Co.	Domestic	280	01/01/1927	-97.2275	27.988889	15 ft	View
25	79-63-7	TX TCEQ HIST	David Martinez	Domestic	250	05/04/1998	-97.210759	28.018613	10 ft	View

Well Summary

Water Well Dataset	# of Wells
TX TCEQ HIST	10
TX TWDB GW	5
TX TWDB SDR	12
Total Count	**27**

Dataset Descriptions and Sources

Dataset	Source	Dataset Description	Update Schedule	Data Requested	Data Obtained	Data Updated	Source Updated
TX HGSD - Texas HGSD	Harris Galveston Subsidence District/Fort Bend Subsidence District	This dataset contains all groundwater well records compiled by Harris Galveston Subsidence District/Fort Bend Subsidence District.	Quarterly	08/13/2018	04/19/2018	04/22/2018	04/19/2018
TX TCEQ HIST - Texas TCEQ Historical	Texas Commission on Environmental Quality	This dataset contains all historical water well records searched from the TCEQ Public Water Well Viewer. Banks Environmental Data plots each well record based on location information found on the log.	As requested	N/A	N/A	N/A	N/A
TX TCEQ PWS - Texas TCEQ PWS	Texas Commission on Environmental Quality	This dataset contains a collection of records from Texas Water Districts, Public Drinking Water Systems and Water and Sewer Utilities who submit information to the TCEQ.	Quarterly	08/13/2018	04/18/2018	04/22/2018	04/18/2018
TX TWDB GW - Texas TWDB Groundwater Database	Texas Water Development Board	This dataset contains water well records contained within Texas Water Development Board Groundwater Database.	Quarterly	04/20/2018	04/20/2018	04/22/2018	04/19/2018
TX TWDB SDR - Texas TWDB Submitted Drillers Reports	Texas Water Development Board	This dataset contains water well records from the Texas Water Development Board Submitted Drillers Reports Database.	Quarterly	04/17/2018	04/17/2018	04/22/2018	04/16/2018
WW USGS - USGS Water Wells	U.S. Geological Survey	This dataset contains groundwater well records from the U.S. Geological Survey.	Semi-annually	06/06/2018	06/06/2018	06/10/2018	06/06/2018

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Disclaimer

The Banks Environmental Data Water Well Report was prepared from existing state water well databases and/or additional file data/records research conducted at the state agency and the U.S. Geological Survey. Banks Environmental Data has performed a thorough and diligent search of all groundwater well information provided and recorded. All mapped locations are based on information obtained from the source. Although Banks performs quality assurance and quality control on all research projects, we recognize that any inaccuracies of the records and mapped well locations could possibly be traced to the appropriate regulatory authority or the actual driller. It may be possible that some water well schedules and logs have never been submitted to the regulatory authority by the water driller and, thus, may explain the possible unaccountability of privately drilled wells. It is uncertain if the above listing provides 100% of the existing wells within the area of review. Therefore, Banks Environmental Data cannot fully guarantee the accuracy of the data or well location(s) of those maps and records maintained by the regulatory authorities.

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Send original copy by certified return receipt requested m[illegible] TNRCC, MC 177, P.O. Box 13087, Austin, TX 78711-30[illegible]

ATTENTION OWNER: *Confidentiality Privilege Notice on on reverse side of Well Owner's copy (pink)*

State of Texas
WELL REPORT

Texas Water Well Drillers Advisory Council
MC 177
P.O. Box 13087
Austin, TX 78711-3087
512-239-0530

1) **OWNER** A. & P. Mariculture (Name) **ADDRESS** P.O. Box 2259 (Street or RFD) Rockport (City) Tx (State) 78381 (Zip)

2) **ADDRESS OF WELL:** County Aransas Copano Retreat Rd. (Street, RFD or other) Bayside (City) Tx (State) (Zip) **GRID #** 79-63-8

3) **TYPE OF WORK (Check):** ☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):** ☐ Monitor ☐ Environmental Soil Boring ☐ Domestic ☐ Industrial ☑ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell
If Public Supply well, were plans submitted to the TNRCC? ☐ Yes ☐ No

5)

6) **WELL LOG:**
Date Drilling: Started 11-5 19 97 Completed 11-6 19 97

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 3/4	Surface	338

7) **DRILLING METHOD (Check):** ☐ Driven ☐ Air Rotary ☑ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☐ Other

N

From (ft.)	To (ft.)	Description and color of formation material
0	17	top soil
17	27	Sand
27	67	Clay
67	77	Fine Sand
77	179	Clay
179	197	Sand
197	300	Clay
300	338	Sand

(Use reverse side of Well Owner's copy, if necessary)

8) **Borehole Completion (Check):** ☐ Open Hole ☑ Straight Wall ☐ Underreamed ☐ Gravel Packed ☐ Other
If Gravel Packed give interval ... from _____ ft. to _____ ft.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	PVC Casing	0	298	
4	N	PVC Screen	298	338	

9) **CEMENTING DATA** [Rule 338.44(1)]
Cemented from 0 ft. to 10 ft. No. of sacks used 2
ft. to _____ ft. No. of sacks used _____
Method used Poured
Cemented by Amos Martin
Distance to septic system field lines or other concentrated contamination _____ ft.
Method of verification of above distance N/A

10) **SURFACE COMPLETION**
☑ Specified Surface Slab Installed [Rule 338.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 338.44(3)(A)]
☐ Pitless Adapter Used [Rule 338.44(3)(b)]
☐ Approved Alternative Procedure Used [Rule 338.71]

13) **TYPE PUMP:**
☐ Turbine ☐ Jet ☑ Submersible ☐ Cylinder ☐ Other
Depth to pump bowls, cylinder, jet, etc., 60 ft.

14) **WELL TESTS:**
Type test: ☐ Pump ☐ Bailer ☑ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

11) **WATER LEVEL:**
Static level 4 ft. below land surface Date 11-6-97
Artesian flow _____ gpm. Date _____

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☑ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☑ No

12) **PACKERS:**

Type	Depth
Rubber	780'

FILE ID SEO # DESC CO EMP # JUN 17 1998 COMMENT TEMP

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Martin Water Wells (Type or print) **WELL DRILLER'S LICENSE NO.** 1669

ADDRESS 257 N. Hwy 77 (Street or RFD) Robstown (City) Tx (State) 78380 (Zip)

(Signed) Amos Martin (Licensed Well Driller) **(Signed)** _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TNRCC-0199 (Rev. 05-21-96) *White - TNRCC Yellow - DRILLER Pink - WELL OWNER*

A/t. W.L. = +3' (1964)

WRD Exp. (GW)
April 1966

Well No. AH 79-63-802

WELL SCHEDULE

5 SE Bayside

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by Sam Shelton Source of data Tenant, Bay Sons + Oth. Date 1-18-67 Map Rockport Quad. 1:62,500

State Texas (27) County (or town) Aransas (09)

Latitude: 28 01 28 N (1-7) Longitude: 097 11 12 (8-14) Sequential number: 1 (15-19)

Lat-long accuracy: (20) T. ____ N S, R ____ E W, Sec ____, ____, ____, ____

Local well number: AH 79 63 802 (21-34) Other number: Replaces A.H. 79-63-801 - WD well 7

Local use: (35-42) Owner or name: Bankers Mortgage Co.

Owner or name: BANKERS MORTGAGE (52-66) Address: Houston, Texas

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co., (P) Private, (S) State Agency, (W) Water Dist, (L) Leasehold — (67) N

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Mnd, (N) Ind, P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Dual-P S, (Y) Dual-other, (#) Other — (68) S

Use of well: (A) Anoda, (D) Drain, (G) Seismic, (H) Heat Rem, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (S) Destroyed — (69) W

DATA AVAILABLE: Well data (70) Freq. W/L meas.: (71) Field aquifer char. (72)

Hyd. lab. data: (73)

Qual. water data; type: Partial (74)

Freq. sampling: (75) Pumpage inventory: yes / no; period: (76)

Aperture cards: yes (77)

Log data: (78-79)

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD (1-19) Depth well: 190 ft (20-25) 1190 Meas. (rep) Tenant accuracy (26) 6

Depth cased; (first perf.) ____ ft (28-29) Casing type: ____; Diam. 4 in (30-32) 4

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (Φ) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (B) other (31) P

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (B) other (32) H

Date Drilled: 1962 ± (33-35) 962 Pump intake setting: Near bottom ft (36-38)

Driller: H. Eichblatt (name), Dec'd. (formerly Taft) (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (B) other (39) P Deep Shallow (40) D

Power (type): diesel, elec, gas, nat, gasoline, hand, LP gas, wind; H.P. ____ (41) 6 Trans. or meter no. ____

Descrip. MP Top of well casing 1.5 ft above/below LSD. Alt. MP ____

Alt. LSD: 8 (42-43) 0 0 0 8 Accuracy: (source) Topo map (47)

Water Level 6.35 ft above/below MP; Ft above/below LSD (48-51) 0005 Accuracy: Measured (52) 9

Date meas: 1-18-67 (53-55) 1 1 6 7 Yield: ____ gpm (56-60) Method determined (61)

Drawdown: ____ ft (62-64) Accuracy: ____ (65) Pumping period ____ hrs (66-68)

QUALITY OF WATER DATA: Iron ____ ppm (69) Sulfate ____ ppm (70) Chloride ____ ppm (71) Hard. ____ ppm (72)

Sp. Conduct ____ K x 10^6 (73) Temp. ____ °F (74-76) Date sampled 1-18-67 (77-78) 1 6 7

Taste, color, etc. Silty, weak supply, not used for drinking

See also WH # 7

6.34 - 1.5 = 4.84

Well No. AH 79-63-802

Well No. HH PR-63-802

Latitude-longitude N S d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: Coastal Plain (20–21) Section: West

Gulf (22) Drainage Basin: (23–25) Subbasin: (26)

Topo of well site: (D) depression, (C) stream channel, (E) dune, (F) flat, (H) hilltop, (K) sink, (L) swamp, (Φ) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat (27)

MAJOR AQUIFER: Quaternary system, Pleistocene series (28–29) Gulf Coast aquifer, formation, group (30–31)

Lithology: Sand (32–33) Origin: (34) Aquifer Thickness: ft

Length of well open to: ft (35–37) Depth to top of: ft (38–40)

MINOR AQUIFER: system, series (41–43) aquifer, formation, group (44–47)

Lithology: (48–49) Origin: (50) Aquifer Thickness: ft

Length of well open to: ft (51–53) Depth to top of: ft (54–56)

Intervals Screened:

Depth to consolidated rock: ft (57–60) Source of data: (61)

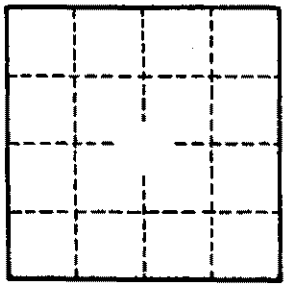
Depth to basement: ft (62–65) Source of data: (66)

Surficial material: (67–68) Infiltration characteristics: (69)

Coefficient Trans: gpd/ft (70–72) Coefficient Storage: (73–75)

Coefficient Perm: gpd/ft^2; Spec cap: gpm/ft; Number of geologic cards: (76)

Drilled to replace well 7 in 1950 report. Old well "turned salty" rept'd.



Well No. HH PR-63-802

GPO 857-700

Geological Survey
104586

UNITED STATES DEPARTMENT OF THE INTERIOR
Ground Water Analysis

Water Resources Division
Austin, Texas

State: Texas (42) County: Aransas (A H) Well No. | Latitude 28012811 | Longitude 097111 12 | Seq. No. 1 | Date M 01 D 18 Y 67 | Sampling Depth 190 | Type G

KEY PUNCHED

Local Well No. AH 79-63-802 Location 5 SE Bayside
Owner: Bankers Mortgage Co., Houston Date drilled: 1962 Depth 190 WBF Gulf Coast Aquifer Prod. intervals Water level Stat. 4.8 blw LSD
Sampled after pumping Yield GPM Pt. of coll. Appearance clear Use dom., stock Collector Shafer

		ppm	epm
K x 10^6		6560	
R KCl 351	R sample 510		
pH 7.8	Temperature °F		
Density at 20°C			
SiO_2	5 ml, A sample .369	9.6	
A	ml, A 0.00250 mg, .00625 mg, .0125 mg, .025 mg, Sample	ppm	
Fe	A 0.025 mg, ml, Sample Total ppm, ml, Sample Diss. ppm		
Mn	Total ppm, Dissolved ppm		
Ca	50 ml, 4.30	143	2.15
Mg		43	3.54
Na	28.8 X 50 (10→500)	1440	62.64
Na + K Calc.			
K	0.81 X 8 (25→200)	65	.17
Percent error +1.0	Total cations 1.30/135	701	68.50

		ppm	epm
HCO_3	25 ml, Total Alk as CO_3 222	452	7.41
CO_3	2.5 ml	0	.00
SO_4	10 ml (50→100), Blk, Std, Sample 2.34	914	1.96
Cl	25 ml, 10.25 5/mg	2050	57.83
Source	Card No. Q		
F	ml, A 1.00 ppm, 2.00 ppm, A sample		
NO_3	ml std., ml, A sample, A ml std, A ml std, Factor		
NO_2	ml, ppm, A 0.01 mg, .02 mg, .05 mg, Sample		
PO_4	ml Ortho Total, A 0.0050 mg, .0100 mg, .0250 mg, .0500 mg, Sample		
Total anions			67.20

Equivalents per million
Na+K — Cl
Ca — HCO_3+CO_3
Mg — SO_4

B A mg, mg, mg, mg, ml
Al, Fe, Mn
Cu, Pb, Zn
Dissolved solids: Determined, Calculated 3910
Hardness ml, epm Ca + Mg 5.69, epm Alk 7.41, epm NCH —, Ca+Mg 284, NCH 0
Color, Card No. R
Br, I
Alk. as $CaCO_3$, Free CO_2
Percent Na 91, SAR 37, RSC 1.72
MBAS, NO_2, Card No. S

Analyst A. J. DUPUY Checked by
Date begun FEB 1 - 1967 Completed FEB 2 0 1967

Transmittals	Date
Records processing----	
Collector----	
Owner----	

Recorded by: Punched by: Date

TWDBE-GW ONLY

Program No. _____

Proj. No. _____

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P.O. Box 13087
Austin, Texas 78711

County ARANSAS RH

State Well No. 79-63-802

Well No. _____

Date Collected 1-18-67

By _____

Location _____

Source (type of well) _____ Owner _____

Date Drilled _____ Depth 190 ft. WW Gulf Coast

Producing intervals _____ Water level _____ ft.

Sampled after pumping _____ hrs. Yield _____ GPM meas. est. Temperature _____ °F _____ °C

Point of collection _____ Appearance _____
clear - turbid - colored

Use _____ Remarks _____

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

KEY PUNCHED

Laboratory No. _____ Date Received _____ Date Reported _____

	MG/L	ME/L		MG/L	ME/L
Silica	10		Carbonate		
Calcium	43		Bicarbonate	222 452	
Magnesium	43		Sulfate	94	
Sodium	1440		Chloride	2050	
Total			Fluoride		
☐ Potassium	6.5		Nitrate		
☐ Manganese		%Na	pH 7.8	Total	
☐ Boron		SAR 37	1/ Dissolved Solids (sum)	3910	
☐ Total Iron		RSC 1.72	Phenolphthalein Alkalinity as C aCO_3		
☐ ____ (other)			Total Alkalinity as C aCO_3		
Specific Conductance (micromhos/cm3)	6880		Total Hardness as C aCO_3	284	
Diluted Conductance (micromhos/cm3)	x				

"☐" items will be analyzed if checked.

Analyst _____

Total Iron requires separate sample.

Checked by Copy

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

TWDBE-GW-50

WRD Exp. (GW)
April 1966

Well No. GH 79-63-803

WELL SCHEDULE 5½ S. Boyside

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by Geo. Sutton Source of data Farmers S. Bank, 1940 Date 1-15-57 Map Rockport Quad. 1:62,500

State Texas (42) County (or town) Aransas (9 M)

Latitude: 28 deg 02 min 41 sec N Longitude: 97 degrees 11 min 39 sec W Sequential number: 1

Lat-long accuracy: T. ___ N, S, R ___ W, Sec ___, ___, ___, ___

Local well number: GH 79 63 803 Other number: WPA # 9 B & M

Local use: Owner of name: Barker Mortgage Co. Rincon Land Co.

Owner or name: Geo. Sutton Address:

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist N

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Ind, (N) P S, (P) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other 5

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed W

DATA AVAILABLE: Well data Freq. W/L meas.: Field aquifer char.

Hyd. lab. data:

Qual. water data; type: Partial (1939)

Freq. sampling: Pumpage inventory: yes / no, period:

Aperture cards: yes

Log data:

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 190 ft 190 Meas. (rept) accuracy 6

Depth cased; (first perf.) ___ ft Casing type: Iron; Diam. 4 in 4

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., screen, sd. pt., (S) shored, (T) open hole, (Z) other

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other 1

Date Drilled: 1938 38 Pump intake setting: ___ ft

Driller: name, address

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other P Deep / Shallow

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind, H.P. ___ 6 Trans. or meter no.

Descrip. MP ___ ft above/below LSD. Alt. MP

Alt. LSD: 9 00009 Accuracy: (source) Topo map 3

Water Level ___ ft above/below MP; Ft above/below LSD Accuracy:

Date meas: Yield: ___ gpm Method determined

Drawdown: ___ ft Accuracy: Pumping period ___ hrs

QUALITY OF WATER DATA: Iron ___ ppm Sulfate ___ ppm Chloride ___ ppm Hard. ___ ppm

Sp. Conduct ___ K x 10⁶ Temp. ___ °F Date sampled 6-20-39 6 3 9

Taste, color, etc.

Well No. GH 79-63-803

Well No. BH 77-43-803

Latitude-longitude N S d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD

Physiographic Province: Coastal Plain [03] Section: West

Gulf [1] Drainage Basin: [ ] Subbasin: [ ]

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (S) offshore, (P) pediment, (I) hillside, (T) terrace, (U) undulating, (V) valley flat [F]

MAJOR AQUIFER: Quaternary system, Pleistocene series [A] Gulf Coast Aquifer aquifer, formation, group [GC]

Lithology: Sand [ ] Origin: [ ] Aquifer Thickness: [ ] ft

Length of well open to: [ ] ft Depth to top of: [ ] ft

MINOR AQUIFER: [ ] system, [ ] series [ ] aquifer, formation, group [ ]

Lithology: [ ] Origin: [ ] Aquifer Thickness: [ ] ft

Length of well open to: [ ] ft Depth to top of: [ ] ft

Intervals Screened: [ ]

Depth to consolidated rock: [ ] ft Source of data: [ ]

Depth to basement: [ ] ft Source of data: [ ]

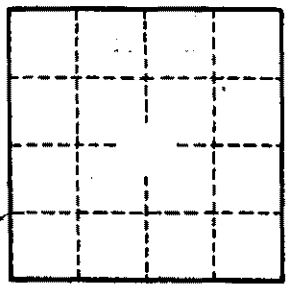
Surficial material: [ ] Infiltration characteristics: [ ]

Coefficient Trans: [ ] gpd/ft Coefficient Storage: [ ]

Coefficient Perm: [ ] gpd/ft^2; Spec cap: [ ] gpm/ft; Number of geologic cards: [ ]

Water report slightly salty — Supplied water for 10 head of cattle and 1 family in 1939.

There is a well here — don't know if this is a replacement or not, but it looks old — probably same well.



Well No. BH 77-43-803

GPO 857-700

Geological Survey

UNITED STATES DEPARTMENT OF THE INTERIOR
Ground Water Analysis

Water Resources Division
Austin, Texas

State: Texas (48) County: ARANSAS (AH) Well No. Latitude 280041N Longitude 0971139 Seq. No. 1 Date M 6 D 20 Y 79 Sampling Depth 190 Type

AH-

Local Well No. 79-63-803 Location

Owner: BANKERS MORTGAGE Co. Date drilled: Depth: WBP Prod. intervals Water level

Sampled after pumping Yield GPM Pt. of coll. Appearance Use KEY PUNCHED Collector WPA

	mg/l	me/l
$K \times 10^6$ R KCl ____ R sample ____ (31–35)		
pH (36–38) Temperature °C (39–41)		
Density at 20°C		
SiO_2 ____ml A sample ____ (42–44)		
Al ____ml A 0.00250 mg ____ .00625 mg ____ .0125 mg ____ .025 mg ____ Sample ____	____ mg/l	
Fe A 0.025 mg ____ ____ml ____ Sample Total ____ mg/l ____ml ____ Sample Diss. ____ mg/l		
Mn Total ____ mg/l Dissolved ____ mg/l		
Ca ____ml (45–49) 32		
Mg (50–53) 26		
Na (54–58) Na + K Calc. (54–58) 1240		
K (59–61)		
Percent error Total cations		

	mg/l	me/l
HCO_3 ____ml Total Alk as CO_3 ____ (62–65) 512		
CO_3 ____ml (66–67)		
SO_4 ____ml Blk ____ Std ____ Sample ____ (68–72) 117		
Cl ____ml (73–78) 1660		
Source (79) 8 Card No. (80) 8		
F ____ml A 1.00 mg/l ____ 2.00 mg/l ____ A sample ____ (26–28)		
NO_3 ____ml std. ____ml A sample ____ A ____ml std ____ A ____ml std ____ Factor ____ (29–32)		
NO_2 ____ml ____mg/l A 0.01 mg ____ .02 mg ____ .05 mg ____ Sample ____		
PO_4 ____ml Ortho ____ Total (33–35) A 0.0050 mg ____ .0100 mg ____ .0250 mg ____ .0500 mg ____ Sample ____		
Total anions		

Milliequivalents per liter

Na+K — Cl

Ca — HCO_3+CO_3

Mg — SO_4

B A ____mg ____ml (36–38) ____mg ____mg ____mg	
Al (39–41) Fe (42–45) Mn (46–49)	
Cu (50–52) Pb (53–54) Zn (55–57)	
Dissolved solids: Determined (58–63) Calculated (64–69) 3327	
Hardness ____ml me/l Ca + Mg ____ me/l Alk ____ me/l NCH ____ Ca+Mg (70–73) 186 NCH (74–77)	
Color (78–79) Card No. (80) R	
Br (26–28) I (29–31)	
Alk. as $CaCO_3$ (32–35) Free CO_2 (36–38)	
Percent Na SAR (39–41) RSC (42–44)	
MBAS (45–47) NO_2 (67–68) Card No. (80) S	

Analyst ____ Checked by ____

Date begun ____ Completed ____

Transmittals	Date
Records processing----	
Collector----------	
Owner----------	

Recorded by: ____ Punched by: ____ Date: ____

TWDBE-GW ONLY

Program No. _____

Proj. No. _____

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P.O. Box 13087
Austin, Texas 78711

County BRAZOS AH

State Well No. 79 - 63 - 803

_____ Well No. _____

Date Collected 6 - 20 - 39

By _____

Location _____

Source (type of well) _____ Owner _____

Date Drilled _____ Depth 190 ft. WBE Gulf Coast

Producing intervals _____ Water level _____ ft.

Sampled after pumping _____ hrs. Yield _____ GPM meas. est. Temperature _____ °F _____ °C

Point of collection _____ Appearance _____
clear - turbid - colored

Use _____ Remarks _____

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

KEY PUNCHED

Laboratory No. _____ Date Received _____ Date Reported _____

	MG/L	ME/L		MG/L	ME/L
Silica			Carbonate		
Calcium	32		Bicarbonate	512	
Magnesium	26		Sulfate	117	
Sodium+K	1240		Chloride	1660	
	Total		Fluoride		
☐ Potassium			Nitrate		
☐ Manganese		%Na	pH	Total	
☐ Boron		SAR	1/Dissolved Solids (sum)	3327	
☐ Total Iron		RSC	Phenolphthalein Alkalinity as C aCO_3		
☐ ____(other)			Total Alkalinity as C aCO_3		
Specific Conductance (micromhos/cm³)			Total Hardness as C aCO_3	186	
Diluted Conductance (micromhos/cm³)	x				

"☐" items will be analyzed if checked.

Analyst _____

Total Iron requires separate sample.

Checked by Copy

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

Alt. WL = +9' (1965)

WRD Exp. (OR)
Aug. 1964

U. S. DEPARTMENT OF THE INTERIOR — GEOLOGICAL SURVEY

Water Resources Division Well Schedule Form

Well Number

HYDROLOGIC CARD

SAME AS ON MASTER CARD — Physiographic Province: — Section:

Drainage Basin: — Subbasin:

Topo of well site: (B) (F) (H) (S) (T) (V) local depression, flat surface, hilltop, hillside, terrace, valley flat,

MAJOR AQUIFER: — system — series — aquifer, formation, group

Lithology: — Origin: — Aquifer Thickness: ft

Length of well open to: ft — Depth to top of: ft

MINOR AQUIFER: — system — series — aquifer, formation, group

Lithology: — Origin: — Aquifer Thickness: ft

Length of well open to: ft — Depth to top of: ft

Interval Screened:

Depth to consolidated rock: ft — Source of data:

Depth to basement: ft — Source of data:

Surficial material: — Infiltration characteristics:

Coefficient Trans: gpd/ft — Coefficient Storage:

Coefficient Perm: gpd/ft; Perm coe: gpm/ft; Number of geologic cards:

Converted oil test
Gas perf. at about 190'

Salt water at 20'

OPO 844-825

Record by Geo. H. Shaler — Source of data Field — Date 5-19-65 — Map Pleasant Hill

State Texas — County (or town) Van Zandt — Pleasant Hill

Latitude: 32 59 20 N — Longitude: 095 43 08 — Sequential number: 1

Lat-long Accuracy: 2 — Method: M

Local well number: KWB3A7102 — Other number:

Local use: — Owner of water: Lee R. Miller

Owner or name: LEE R MILLER — Address: Grand Saline

Ownership: (C) County, (F) Fed Gov't, (M) City, Corp or Co., (P) Private, (S) State Agency, (W) Water Dist

Use of water: (A) Air cond, (C) Comm, (D) Domestic, (F) Fire, (H) Hos, (I) Irr, (N) Ind, (P) Pub Supply, (S) Stock, (T) Instit, (U) Unused

Use of well: (A) Anode, (D) Drain, (H) Hydrologic, (O) Observation, (Q) Oil-gas, (R) Recharge, (S) Spring, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed — W

DATA AVAILABLE: Well data — Freq. W/L meas.: — Field aquifer chars.

Hyd. lab. data:

Qual. water data: Types:

Freq. sampling: — Pumpage inventory: yes/no, period:

Aperture cards: yes

Log data:

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD — Depth well: 190+ ft — 190 — Meas. — Accuracy — 6

Depth cased (first perf.): ft — Casing type: — Diam. 4 in — 4

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (B) bored, (O) open gallery, and, (P) perf., screen, pd. pt., (S) shot, (W) shuttered, (X) open hole, (Z) other — (X)

Method Drilled: (A) air rot, (B) bored, cable, (D) dug, (E) hyd rot, (J) jetted, (V) air percussion, rotary, (R) traverse, (T) trenching, (V) driven, (W) drive wash, (Z) other — (T)

Data Drilled: — Pump intake setting: ft

Driller: — name — address

Lift (type): (A) air, (B) bucker, (C) cent, (J) jet, (L) multiple, (cent.), (M) multiple, (turb.), (N) none, (P) piston, (R) rot, submerg, (S) turb, (T) other, (Z) — Deep/Shallow: S

Power (type): diesel, elec, gas, gasoline, hand, gas, wind, (N) not LPG, (P) LPG, H.P. — Items, or meter no.

Descrip. MP: Wooden S.C. — 15 ft above/below land, Alt. MP

Alt. LSD: 14 — 0031 — Accuracy (source): T — 3

Water Level: 8.14 ft above/below MP; Ft above/below land — 07 — Accuracy: R — 0

Date meas: 5-14-65 — 666 — Yield: gpm — Method determined

Drawdown: ft — Accuracy: — Pumping period: hrs

QUALITY OF WATER DATA: Iron ppm — Sulfate ppm — Chloride ppm — Hard. ppm

Sp. Conduct: x 10 — Temp. °F — Date sampled

Taste, color, etc.

STATE OF TEXAS WELL REPORT for Tracking #161837

Owner:	**Max Kluge**	Owner Well #:	**No Data**
Address:	**221 King Road Rockport, TX 78382**	Grid #:	**79-63-8**
Well Location:	**221 King Road Rockport, TX 78382**	Latitude:	**28° 00' 34" N**
		Longitude:	**097° 11' 03" W**
Well County:	**Aransas**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **2/13/2005** Drilling End Date: **2/13/2005**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7**	**0**	**150**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**90**	**6**

Seal Method: **Pressure Grouted-Tremmie Pipe**

Sealed By: **US**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **90**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **Tapeline**

Surface Completion: **Surface Sleeve Installed**

Water Level: **21 ft.** below land surface on **2005-02-13** Measurement Method: **Unknown**

Packers: **Umbrella 90' & 130'**

Type of Pump: **No Data**

Well Tests: **Jetted** **Yield: 30 GPM with 35 ft. drawdown after 1 hours**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Carter Water Well Drilling**

P. O. Box 856
Woodsboro, TX 78393

Driller Name: **Joe Vega** License Number: **4932**

Comments: **$dfs**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**6**	**Sand**
6	**15**	**Clay**
15	**27**	**Sand**
27	**91**	**Clay**
91	**102**	**Sand**
102	**135**	**Clay**
135	**142**	**Sand**
142	**150**	**Clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
4	**New**	**PVC**	**0 90**
4	**New**	**Screen Slotted**	**90 110 .006**
4	**New**	**Screen Slotted**	**130 150 .006**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #66549

Owner:	**Vic & Linda Ostrum**	Owner Well #:	**No Data**
Address:	**8109 Highway 77 Sinton, TX 78387**	Grid #:	**79-63-8**
		Latitude:	**28° 01' 33" N**
Well Location:	**2nd. St. and S. Verne off I-35 Rockport, TX**	Longitude:	**097° 11' 13" W**
Well County:	**Aransas**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **2/19/2004** Drilling End Date: **2/19/2004**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7**	**0**	**185**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**100**	**9**

Seal Method: **Pressure Pump**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Septic**

Surface Completion: **Surface Sleeve Installed**

Water Level: **40 ft.** below land surface on **2004-02-19** Measurement Method: **Unknown**

Packers: **Rubber Packer 100'**
Rubber Packer 165'

Type of Pump: **No Data**

Well Tests: **Jetted** **Yield: 100 GPM**

	Strata Depth (ft.)	Water Type
Water Quality:	**25'**	**Fair**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **B.T. Sikes Water Wells, Inc.**

5030 FM 666
Mathis, TX 78368

Driller Name: **Randy Sikes** License Number: **4975**

Comments: **$dfs**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**3**	**Sandy Loam**
3	**6**	**Clay and Sand**
6	**80**	**Gray Coarse Sand**
80	**120**	**Red Clay**
120	**140**	**Gray Fine Sand**
140	**160**	**Sand and Clay**
160	**185**	**Gray Med. Sand T.D.**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
4	**New**	**Plastic**	**+2 185**
4	**New**	**Slotted Plastic**	**165 185 .013**
		Mfg. Jet Stream	

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #143052

Owner:	**Xeric Oil & Gas Corp.**	Owner Well #:	**No Data**
Address:	**P. O. Box 352** **Midland, TX 79702**	Grid #:	**83-07-2**
		Latitude:	**27° 58' 44" N**
Well Location:	**CR 2047** **Odem, TX 78370**	Longitude:	**097° 11' 28" W**
Well County:	**San Patricio**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Industrial**

Drilling Start Date: **8/16/2004** Drilling End Date: **8/16/2004**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7.875**	**0**	**233**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**10**	**2**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **n/a**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Water Level: **40 ft.** below land surface on **2004-08-16** Measurement Method: **Unknown**

Packers: **Rubber 185'**

Type of Pump: **Submersible** Pump Depth (ft.): **100**

Well Tests: **Jetted** **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Martin Water Wells**

2151 N. Highway 77
Robstown, TX 78380

Driller Name: **Larry Martin** License Number: **2094**

Comments: **$dfs**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**4**	**Top Soil**
4	**13**	**Clay**
13	**26**	**Sand**
26	**36**	**Clay**
36	**48**	**Sandy Caliche**
48	**60**	**Clay**
60	**80**	**Broken Sand**
80	**103**	**Clay**
103	**117**	**Sand**
117	**121**	**Clay**
121	**140**	**Broken Sand**
140	**170**	**Clay**
170	**180**	**Sandy Caliche**
180	**190**	**Clay**
190	**233**	**Sand**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
4.5	**New**	**PVC**	**Casing 0 193**
4.5	**New**	**PVC**	**Screen 193 233 12**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

Send original copy by certified mail to the Texas Department of Water Resources P. O. Box 13087 Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board P. O. Box 13087 Austin, Texas 78711

1) OWNER Stephen Bodnar (Name) Address RFD#2 Box 334 (Street or RFD) TAFT (City) TX. (State) 78390 (Zip)

2) LOCATION OF WELL: County Aransas 14 miles in N.W. (N.E., S.W., etc.) direction from Rockport (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. _____ Block No. _____ Township _____
Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☑ See attached map.

3) TYPE OF WORK (Check): ☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☑ Domestic ☐ Industrial ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Other _____

5) DRILLING METHOD (Check): ☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other _____

6) WELL LOG:

Date drilled 4-18-84

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 3/4	Surface	278

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 258 ft. to 278 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	5	Black dirt
5	20	Clay
20	30	Sand
30	55	Clay
55	65	Sand
65	100	Clay
100	120	Sand
120	150	Clay
150	170	Sand
170	200	Clay
200	220	Sand
220	235	Clay
235	245	Sand
245	260	Clay
260	278	Sand

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	PVC	0	258	
4	N	PVC -Perf	258	278	

CEMENTING DATA
Cemented from _____ ft. to _____ ft.
Method used _____
Cemented by _____ (Company or Individual)

9) WATER LEVEL:
Static level 1 ft. below land surface Date 4-18-84
Artesian flow _____ gpm. Date _____

10) PACKERS: Type Depth

RECEIVED
JUN 20 1984
DEPT. OF WATER RESOURCES

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☑ Jetted ☐ Estimated
Yield: 60 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☑ No

(Use reverse side if necessary)

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

COMPANY NAME M-C Water Well Drlg. (Type or Print) Water Well Driller's License No. 2290

ADDRESS P.O. Box 223 (Street or RFD) Pettus (City) TX. (State) 78146 (Zip)

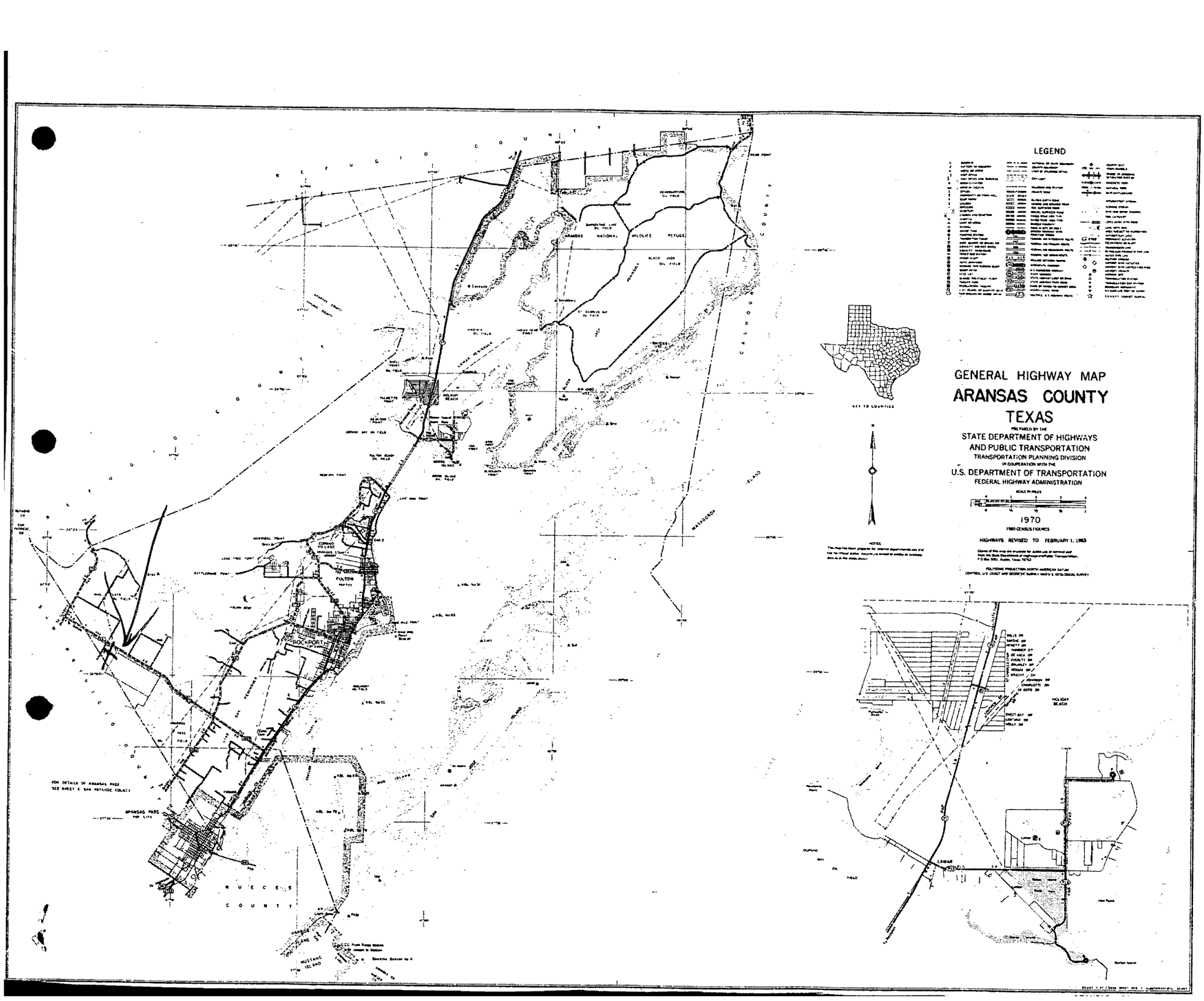
(Signed) Steve O. Carroll (Licensed Water Well Driller) (Signed) _____ (Registered Driller Trainee) Dril

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TDWR use only
Well No. 79-63-8B
Located on map YESC-F-S-

TDWR-0392 (Rev. 5-27-82)

DEPARTMENT OF WATER RESOURCES COPY


LEGEND
GENERAL HIGHWAY MAP
ARANSAS COUNTY
TEXAS
PREPARED BY THE
STATE DEPARTMENT OF HIGHWAYS
AND PUBLIC TRANSPORTATION
TRANSPORTATION PLANNING DIVISION
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
1970
1980 CENSUS FIGURES
HIGHWAYS REVISED TO FEBRUARY 1, 1983
ROCKPORT
FULTON
HOLIDAY BEACH
LAMAR
ARANSAS PASS
NUECES COUNTY

Send original copy by certified mail to the Texas Department of Water Resources P. O. Box 13087 Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board P. O. Box 13087 Austin, Texas 78711

1) OWNER Larry Morgan (Name) Address Rt. 2 Box 304 (Street or RFD) Taft (City) TX. (State) 78390 (Zip)

2) LOCATION OF WELL: County Aransas 14 miles in NW (N.E., S.W., etc.) direction from Rockport (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. _____ Block No. _____ Township _____
Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☑ See attached map.

3) TYPE OF WORK (Check): ☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☑ Domestic ☐ Industrial ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Other _____

5) DRILLING METHOD (Check): ☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other _____

6) WELL LOG:

Date drilled 4-14-84

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 3/4	Surface	280

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 240 ft. to 280 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	5	Black dirt
5	20	Clay
20	30	Sand
30	55	Clay
55	65	Sand
65	100	Clay
100	120	Sand
120	150	Clay
150	170	Sand
170	200	Clay
200	220	Sand
220	235	Clay
235	245	Sand
245	260	Clay
260	280	Sand

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	PVC	0	240	
4	N	PVC - Perf	240	280	

CEMENTING DATA
Cemented from _____ ft. to _____ ft.
Method used _____
Cemented by _____ (Company or Individual)

9) WATER LEVEL:
Static level 1 ft. below land surface Date 4-14-84
Artesian flow _____ gpm. Date _____

10) PACKERS: Type Depth

RECEIVED
JUN 20 1984
DEPT. OF WATER RESOURCES

(Use reverse side if necessary)

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☑ No

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☑ Jetted ☐ Estimated
Yield: 60 gpm with 0 ft. drawdown after 1 hrs.

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

COMPANY NAME M+C Water Well Drlg. (Type or Print) Water Well Driller's License No. 2290

ADDRESS P.O. Box 223 (Street or RFD) Petty's (City) TX. (State) 78146 (Zip)

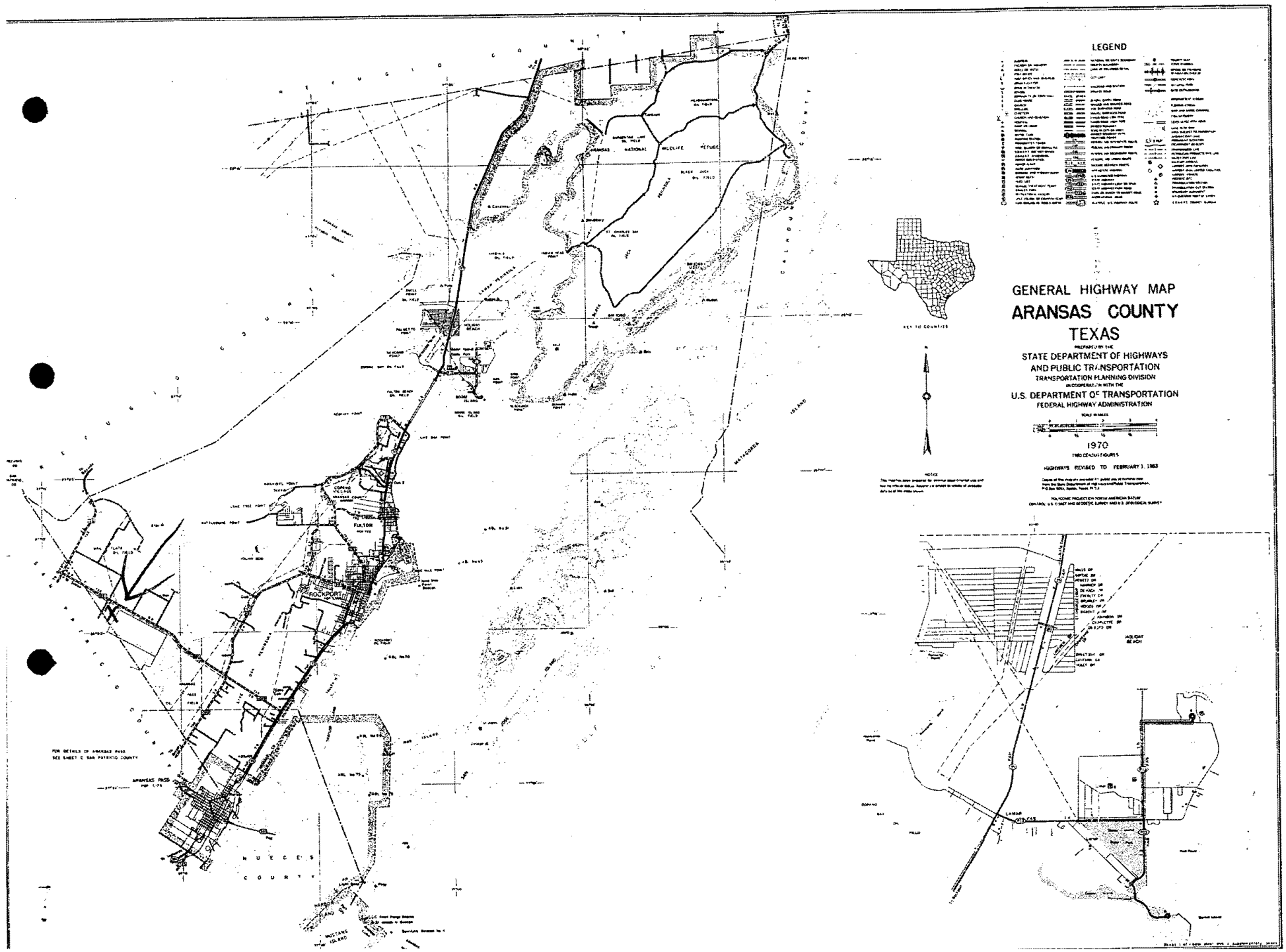
(Signed) Steve P. Carroll (Licensed Water Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TDWR use only
Well No. 79-63-88
Located on map YES C.F.S.

TDWR-0392 (Rev. 5-27-82)

DEPARTMENT OF WATER RESOURCES COPY


LEGEND
GENERAL HIGHWAY MAP
ARANSAS COUNTY
TEXAS
PREPARED BY THE
STATE DEPARTMENT OF HIGHWAYS
AND PUBLIC TRANSPORTATION
TRANSPORTATION PLANNING DIVISION
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
1970
1980 CENSUS FIGURES
HIGHWAYS REVISED TO FEBRUARY 1, 1980
KEY TO COUNTIES
NOTICE
POLYCONIC PROJECTION NORTH AMERICAN DATUM
CONTROL U.S. COAST AND GEODETIC SURVEY AND U.S. GEOLOGICAL SURVEY
ROCKPORT
FULTON
CORPUS CHRISTI
ARANSAS PASS
HOLIDAY BEACH
LAMAR
NUECES COUNTY
SAN PATRICIO COUNTY
MUSTANG ISLAND
ARANSAS NATIONAL WILDLIFE REFUGE
MATAGORDA
CALHOUN COUNTY

STATE OF TEXAS WELL REPORT for Tracking #160290

Owner:	**Owen Stowe**	Owner Well #:	**No Data**
Address:	**P .O. Box 1719 Rockport, TX 78381**	Grid #:	**79-63-8**
Well Location:	**Aransas Pass, TX**	Latitude:	**28° 01' 14" N**
		Longitude:	**097° 10' 10" W**
Well County:	**Aransas**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **4/26/2005** Drilling End Date: **4/26/2005**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7**	**0**	**385**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**100**	**7**

Seal Method: **Pressure Grouted-Tremie Pipe**

Sealed By: **US**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Septic**

Surface Completion: **Surface Sleeve Installed**

Water Level: **No Data** on **2005-04-26** Measurement Method: **Unknown**

Packers: **Umbrella 100'**

Type of Pump: **No Data**

Well Tests: **Jetted** **Yield: 6 GPM**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Carter Water Well Drilling**

P. O. Box 856
Woodsboro, TX 78393

Driller Name: **Jeffrey Heldenfels** License Number: **1868**

Comments: **$dfs**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**21**	**Clay**
21	**27**	**Sand**
27	**77**	**Clay**
77	**90**	**Clay and Sand**
90	**294**	**Clay**
294	**310**	**Sand**
310	**320**	**Sand and Clay**
320	**370**	**Clay**
370	**385**	**Sand**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
4	**New**	**PVC**	**0 365**
4	**New**	**Screen Slotted**	**365 385 .006**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #159947

Owner:	**John Hurt**	Owner Well #:	**No Data**
Address:	**4122 Russell Corpus Christi, TX 78408**	Grid #:	**79-63-8**
Well Location:	**3 miles from Highway 181 on Copano Retreat Road Rockport, TX**	Latitude:	**28° 01' 10" N**
		Longitude:	**097° 10' 12" W**
Well County:	**Aransas**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **5/16/2005** Drilling End Date: **5/16/2005**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7**	**0**	**320**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**100**	**7**

Seal Method: **Pressure Grouted-Tremie Pipe**

Sealed By: **US**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Septic**

Surface Completion: **Surface Sleeve Installed**

Water Level: **2 ft.** below land surface on **2005-05-16** Measurement Method: **Unknown**

Packers: **Umbrella 100'**

Type of Pump: **No Data**

Well Tests: **Jetted** **Yield: 50 GPM with 20 ft. drawdown after 1 hours**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Carter Water Well Drilling**

P. O. Box 856
Woodsboro, TX 78393

Driller Name: **Jeffrey Heldenfels** License Number: **1868**

Comments: **$dfs**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**17**	**Clay**
17	**39**	**Sand**
39	**54**	**Clay**
54	**70**	**Sandstone**
70	**80**	**Sandstone and Clay**
80	**100**	**Clay**
100	**140**	**Sand and Clay**
140	**180**	**Clay**
180	**200**	**Sand and Clay**
200	**283**	**Clay**
283	**290**	**Sand**
290	**297**	**Sand and Clay**
297	**312**	**Sand**
312	**320**	**Sand and Clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
4	**New**	**PVC**	**0 290**
4	**New**	**Screen Slotted**	**290 320 .006**

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Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

Send original copy by certified mail to the Texas Department of Water Resources P. O. Box 13087 Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board P. O. Box 13087 Austin, Texas 78711

1) OWNER Carole Bennett (Name) Address Rt 2 Box 302 (Street or RFD) Taft (City) TX. (State) 78390 (Zip)

2) LOCATION OF WELL: County Aransas 14 miles in N. W. (N.E., S.W., etc.) direction from Lockport (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. _____ Block No. _____ Township _____
Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☑ See attached map.

3) TYPE OF WORK (Check): ☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☑ Domestic ☐ Industrial ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Other _____

5) DRILLING METHOD (Check): ☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other _____

6) WELL LOG:

Date drilled 4-20-84

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 3/4	Surface	282

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 262 ft. to 282 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	5	Black dirt
5	20	Clay
20	30	Sand
30	55	Clay
55	65	Sand
65	100	Clay
100	120	Sand
120	150	Clay
150	170	Sand
170	200	Clay
200	220	Sand
220	235	Clay
235	245	Sand
245	260	Clay
260	282	Sand

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	PVC	0	262	
4	N	PVC - Perf	262	282	

CEMENTING DATA
Cemented from _____ ft. to _____ ft.
Method used _____
Cemented by _____ (Company or Individual)

9) WATER LEVEL:
Static level 1 ft. below land surface Date 4-20-84
Artesian flow _____ gpm. Date _____

10) PACKERS: Type Depth

RECEIVED
JUN 20 1984
DEPT. OF WATER RESOURCES
(Use reverse side if necessary)

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☑ Jetted ☐ Estimated
Yield: 60 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☑ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

COMPANY NAME M+C Water Well Drlg (Type or Print) Water Well Driller's License No. 2290

ADDRESS P.O. Box 223 (Street or RFD) Pettus (City) TX. (State) 78146 (Zip)

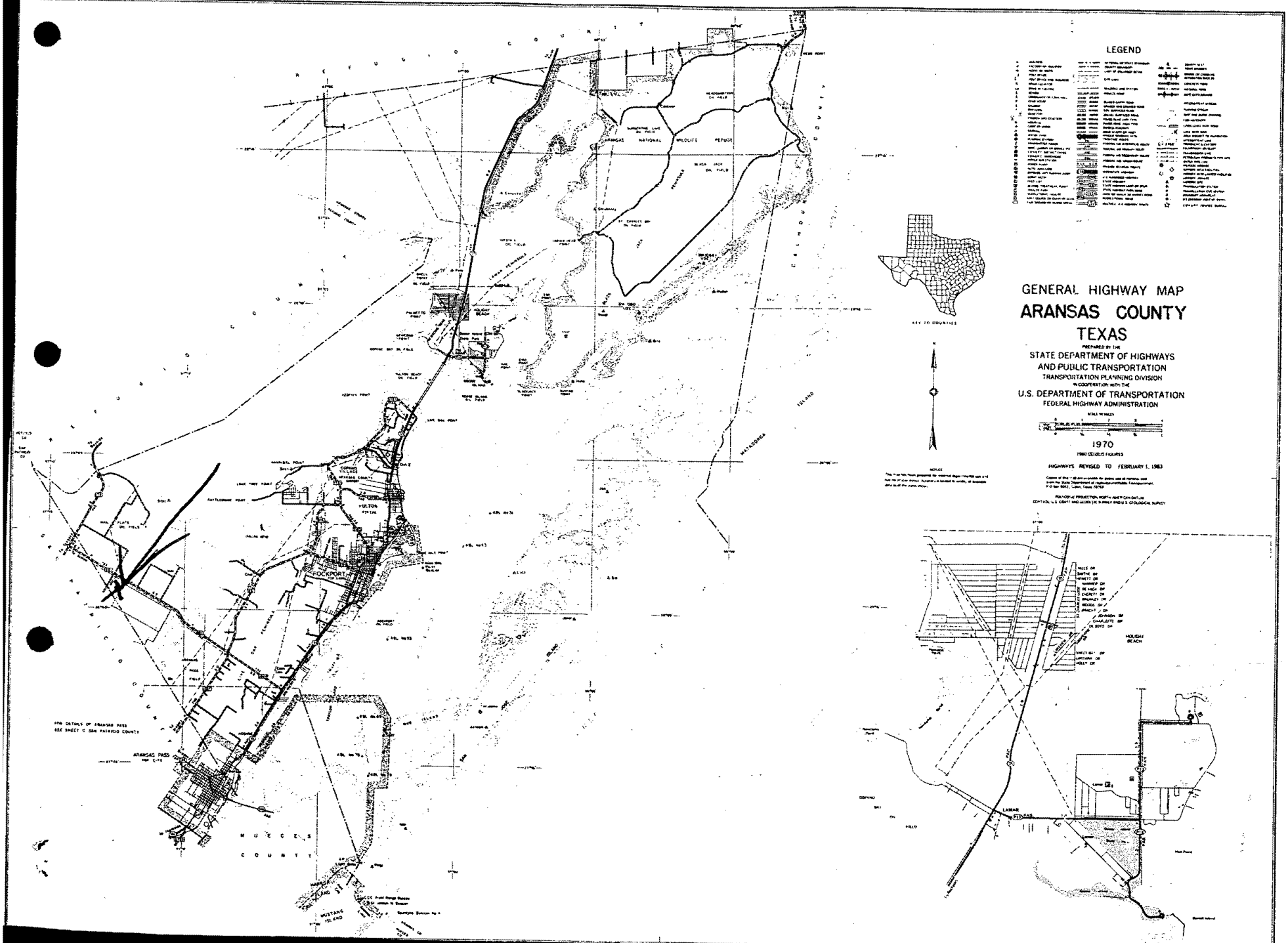
(Signed) Steve A Carroll (Licensed Water Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TDWR use only
Well No. 29-63-8B
Located on map yes C.F.S.

TDWR-0392 (Rev. 5-27-82)

DEPARTMENT OF WATER RESOURCES COPY


LEGEND
GENERAL HIGHWAY MAP
ARANSAS COUNTY
TEXAS
PREPARED BY THE
STATE DEPARTMENT OF HIGHWAYS
AND PUBLIC TRANSPORTATION
TRANSPORTATION PLANNING DIVISION
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
1970
1980 CENSUS FIGURES
HIGHWAYS REVISED TO FEBRUARY 1, 1983
KEY TO COUNTIES
NOTICE
ARANSAS NATIONAL WILDLIFE REFUGE
ROCKPORT
FULTON
HOLIDAY BEACH
ARANSAS PASS
MUSTANG ISLAND
MATAGORDA ISLAND
SAN PATRICIO COUNTY
NUECES COUNTY
LAMAR
FIELDS

Send original copy by certified mail to the Texas Department of Water Resources P. O. Box 13087 Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board P. O. Box 13087 Austin, Texas 78711

1) OWNER J. J. Parker (Name) Address (Street or RFD) Taft (City) TX. (State) 78390 (Zip)

2) LOCATION OF WELL: County Aransas 14 miles in N. W. (N.E., S.W., etc.) direction from Rockport (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. _____ Block No. _____ Township _____
Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☑ See attached map.

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Other _____

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other _____

6) WELL LOG:
Date drilled 4-19-84

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 3/4	Surface	275

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 255 ft. to 275 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	5	Black dirt
5	20	Clay
20	30	Sand
30	55	Clay
55	65	Sand
65	100	Clay
100	120	Sand
120	150	Clay
150	170	Sand
170	200	Clay
200	220	Sand
220	235	Clay
235	245	Sand
245	260	Clay
260	275	Sand

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	PVC	0	255	
4	N	PVC - Perf	255	275	

CEMENTING DATA
Cemented from _____ ft. to _____ ft.
Method used _____
Cemented by _____ (Company or Individual)

9) WATER LEVEL:
Static level 1 ft. below land surface Date 4-14-84
Artesian flow _____ gpm. Date _____

10) PACKERS: Type Depth

RECEIVED
JUN 20 1984
DEPT. OF
WATER RESOURCES
(Use Reverse Side If Necessary)

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☑ Jetted ☐ Estimated
Yield: 60 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☑ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

COMPANY NAME H+C Water Well Drlg. (Type or Print) Water Well Driller's License No. 2290

ADDRESS P.O. Box 223 (Street or RFD) Petty (City) TX. (State) 78146 (Zip)

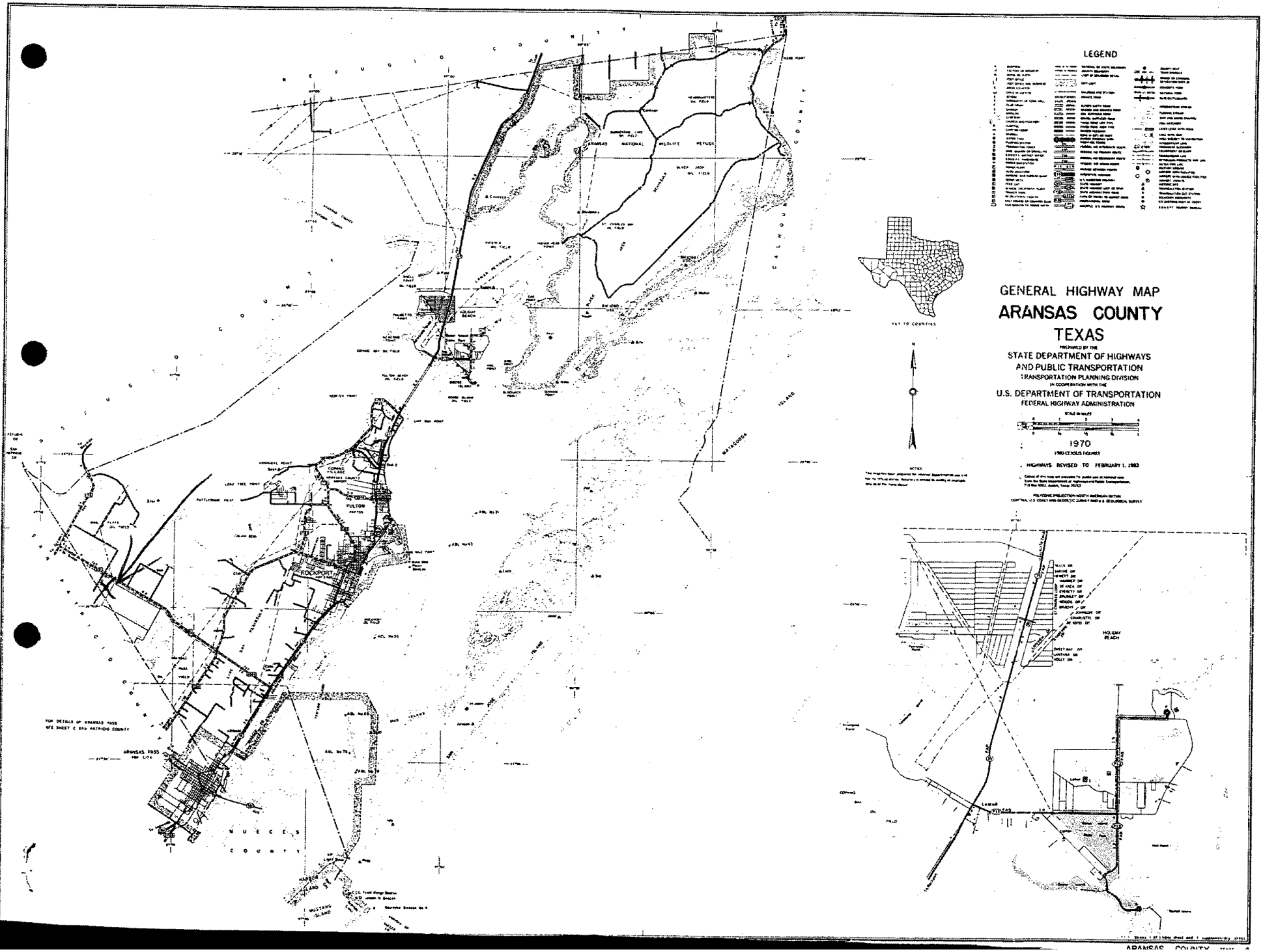
(Signed) Steve P. Carroll (Licensed Water Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TDWR use only
Well No. 79-63-8B
Located on map Yes C.F.S.

TDWR-0392 (Rev. 5-27-82)

DEPARTMENT OF WATER RESOURCES COPY


LEGEND
GENERAL HIGHWAY MAP
ARANSAS COUNTY
TEXAS
PREPARED BY THE
STATE DEPARTMENT OF HIGHWAYS
AND PUBLIC TRANSPORTATION
TRANSPORTATION PLANNING DIVISION
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
1970
1980 CENSUS FIGURES
HIGHWAYS REVISED TO FEBRUARY 1, 1983
KEY TO COUNTIES
NOTICE
ROCKPORT
FULTON
ARANSAS PASS
HOLIDAY BEACH
CORPUS CHRISTI
NUECES
COUNTY
CALHOUN COUNTY
ARANSAS NATIONAL WILDLIFE REFUGE

STATE OF TEXAS WELL REPORT for Tracking #160284

Owner:	**Owen Stowe**	Owner Well #:	**No Data**
Address:	**P .O. Box 1719 Rockport, TX 78381**	Grid #:	**79-63-8**
Well Location:	**2.6 Miles N. of Hwy. 181 on Copano Retreat Road Rockport, TX 78381**	Latitude:	**28° 01' 18" N**
		Longitude:	**097° 10' 13" W**
Well County:	**Aransas**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **5/2/2005** Drilling End Date: **5/2/2005**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7**	**0**	**400**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**100**	**7**

Seal Method: **Pressure Grouted-Tremie Pipe**

Sealed By: **US**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Septic**

Surface Completion: **Surface Sleeve Installed**

Water Level: **No Data** on **2005-05-02** Measurement Method: **Unknown**

Packers: **Umbrella 100'**

Type of Pump: **No Data**

Well Tests: **Jetted** **Yield: 60 GPM with 20 ft. drawdown after 1 hours**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Carter Water Well Drilling**

P. O. Box 856
Woodsboro, TX 78393

Driller Name: **Jeffrey Heldenfels** License Number: **1868**

Comments: **$dfs. Water Level is 3 ft above surface.**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	17	Clay
17	34	Sand
34	40	Sandstone
40	80	Sand and Clay
80	93	Sand
93	120	Sand and Clay
120	207	Clay
207	215	Sand and Clay
215	280	Clay
280	286	Sand
286	307	Sand and Clay
307	315	Sand
315	340	Sand and Clay
340	370	Clay
370	396	Sand
396	400	Sand and Clay

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
4	New	PVC	0 370
4	New	Screen Slotted	370 400 .010

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #428609

Owner:	**Bobby Tedder**	Owner Well #:	**No Data**
Address:	**1731 Ruby Allen St. Rockport, TX 78382**	Grid #:	**79-63-9**
Well Location:	**1731 Ruby Allen St. Rockport, TX**	Latitude:	**28° 00' 12.2" N**
		Longitude:	**097° 09' 41.9" W**
Well County:	**Aransas**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **6/14/2016** Drilling End Date: **6/14/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7**	**0**	**160**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**96**	**Grout 2 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **10**

Distance to Septic Field or other concentrated contamination (ft.): **No Septic**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **Tapeline**

Surface Completion: **Surface Sleeve Installed** **Surface Completion by Driller**

Water Level: **35 ft.** below land surface on **2016-06-14** Measurement Method: **Tapeline**

Packers: **Umbrella at 98 ft.**

Type of Pump: **Submersible** Pump Depth (ft.): **120**

Well Tests: **Jetted** **Yield: 25 GPM**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **CARTER WATER WELL DRILLING**

P.O. BOX 856
WOODSBORO, TX 78393

Driller Name: **Scott Carter** License Number: **2530**

Apprentice Name: **Andres R. Flores, Jr.**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	30	Sand
30	45	Sand & Shell
45	60	Sand & Clay
60	75	Clay & Sand
75	90	Clay
90	120	Sandstone
120	135	Sand
135	165	Sand & Clay

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
4	Screen	New Plastic (PVC)	40 0.006	100	160

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Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

Attention Owner: Confidentiality Privilege Notice on reverse side of owner's copy.

Texas Department of License and Regulation

Water Well Driller/Pump Installer Program
P.O. Box 12157 Austin, Texas 78711 (512) 463-7880 FAX (512) 463-8616
Toll free (800) 803-9202
Email address: water.well@license.state.tx.us

This form must be completed and filed with the department and owner within 60 days upon completion of the well.

WELL REPORT

A. WELL IDENTIFICATION AND LOCATION DATA

1) OWNER

Name	Address	City	State	Zip
KEN SMITH	7186 C.R 1432	ARANSAS PASS	TX	78336

2) WELL LOCATION

County	Physical Address	City	State	Zip
SAN PATRICIO	C.R 93	GREGORY	TX	78359

3) Type of Work
☑ New Well ☐ Deepening ☐ Reconditioning

Lat. | Long. | Grid # 83-07-1

4) Proposed Use (check) ☐ Monitor ☐ Environmental Soil Boring ☑ Domestic ☐ Industrial ☐ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell
If Public Supply well, were plans submitted to the TNRCC? ☐ Yes ☐ No

5) NT

6) Drilling Date
Started 3/7/02
Completed 3/7/02

Diameter of Hole

Dia. (in)	From (ft)	To (ft)
6 ¾	0	243

7) Drilling Method (check) ☐ Driven ☐ Air Rotary ☑ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☐ Other

From (ft)	To (ft)	Description and color of formation material
0	10	CLAY
10	12	SAND
12	43	CLAY
43	60	SAND
60	144	CLAY
144	178	SAND
178	200	CLAY
200	243	SAND

(Use reverse side of Well Owner's copy, If necessary)

8) Borehole Completion ☐ Open Hole ☑ Straight Wall ☐ Under-reamed ☐ Gravel Packed ☐ Other
If Gravel Packed give the interval from ft. to ft.

Casing, Blank Pipe, and Well Screen Data

Dia. (in.)	New Or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft) From	Setting (ft) To	Gage Casing Screen
4	N	PVC CASING	0	203	
4	N	PVC SCREEN	203	243	12

9) Cementing Data
Cementing from 0 ft. to 10 ft. # of sacks used 2
ft. to ft. # of sacks used
Method Used POURED
Cementing By LARRY MARTIN
Distance to septic system field or other concentrated contamination 110 ft.
Method of verification of above distance MEASURED

RECEIVED
TDLR MAIL ROOM
5H

13) Plugged ☐ Well plugged within 48 hours

Casing left in well: Cement/Bentonite placed in well:

From (ft)	To (ft)	From (ft)	To (ft)	Sacks used

10) Surface Completion MAY 17 2002
☑ Specified Surface Slab Installed
☐ Specified Surface Sleeve Installed
☐ Pitless Adapter Used
☐ Approved Alternative Procedure Used

RECEIPT # AMOUNT

14) Typepump N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other
Depth to pump bowls, cylinder, jet, etc., ft.

15) Water Test
Typetest ☐ Pump ☐ Bailer ☑ Jetted ☐ Estimated
Yield: gpm with ft. drawdown after hrs.

11) Water Level
Static level 10 ft. below Date 3/7/02
Artesian Flow gpm. Date / /

16) Water Quality
Did you knowingly penetrate any strata which contain undesirable constituents?
☐ Yes ☑ NO If yes, did you submit a REPORT OF UNDESIRABLE WATER?
Type of water Depth of Strata
Was a chemical analysis made? ☐ Yes ☑ No

12) Packers

Type	Depth
RUBBER	197

Company or Individual's Name (type or print) MARTIN WATER WELLS | Lic. No. 2094WI

Address 2151 N. HWY 77 | City ROBSTOWN | State TX | Zip 78380

Signature (Licensed Driller/Pump Installer) | Date / / | Signature (Apprentice) | Date / /

STATE OF TEXAS WELL REPORT for Tracking #168554

Owner:	**Oscar Osorto**	Owner Well #:	**No Data**
Address:	**220 Woodhaven Ingelside on the Bay, TX**	Grid #:	**83-07-1**
Well Location:	**220 Woodhaven Ingelside on the Bay, TX**	Latitude:	**27° 59' 07" N**
		Longitude:	**097° 13' 09" W**
Well County:	**San Patricio**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Irrigation**

Drilling Start Date: **2/16/2009** Drilling End Date: **2/16/2009**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7**	**0**	**91**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**81**	**91**	**Gravel**	

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**2 cement**
	2	**81**	**4 bentoinite**

Seal Method: **Tremmie Line grout pump**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Sleeve Installed**

Water Level: **20 ft.** below land surface on **2009-02-16** Measurement Method: **Unknown**

Packers: **No Data**

Type of Pump: **Submersible** Pump Depth (ft.): **70**

Well Tests: **Jetted** **Yield: 18 GPM with 75 ft. drawdown after .5 hours**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**No Data**	**good with a slite saline**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Mikes Drilling and Pump Service**

Po Box 1473
Aransas Pass, TX 78335

Driller Name: **Michael Deyo** License Number: **4936**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	*Bottom (ft.)*	*Description*
0	**12**	**top soil**
12	**47**	**sand**
47	**80**	**broken sand**
80	**91**	**white sand**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	*New/Used*	*Type*	*Setting From/To (ft.)*
4	**new**	**pvc**	**0-81**
4	**new**	**pvc screen**	**81-91 .010**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Beaumont Clay Field No. AR-13 State Well No. 79-63-801

Owner's Well No. _____ County ARANSAS

1. Location: ___ 1/4, ___ 1/4 Sec. _____, Block _____ Survey _____

2. Owner: Bankers Mortgage Co. Address: Baker's Bldg, Bldg, Houston, Tex

Tenant: L. L. Skyrca Address: Rockport

Driller: H. Eichblatt Address: 449 College, Taft, Tex

3. Elevation of LSD is 9 ft. above msl, determined by Topo

4. Drilled: _____ 19 56 ; Dug, Cable Tool, Rotary, _____

5. Depth: Rept. 199 ft. Meas. _____ ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed Cylinder

7. Pump: Mfgr. _____ Type None

No. Stages _____, Bowls Diam. ___ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel wind Make & Model _____ HP. _____

9. Yield: Flow ___ gpm, Pump ___ gpm, Meas., Rept., Est. _____

10. Performance Test: Date _____ Length of Test ___ Made by _____

Static Level ___ ft. Pumping Level ___ ft. Drawdown ___ ft.

Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: 6.8 ft. rept. meas. 11-13-1959 above (below) Top of 4x4 WPC which is 2.00 ft. (above) below surface.

_____ ft. rept. meas. 19__ above below which is ___ ft. above below surface.

_____ ft. rept. meas. 19__ above below which is ___ ft. above below surface.

_____ ft. rept. meas. 19__ above below which is ___ ft. above below surface.

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, (Not Used)

13. Quality: (Remarks on taste, odor, color, etc.) _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test, _____

15. Record by: Copied Date 6-24-1976

Source of Data USGS Schedule

16. Remarks: _____

M.P. Top of 4X4 WPC .5 casing broke off

CASING & BLANK PIPE

Cemented From ___ ft. to ___ ft.

Diam. (in.)	Type	Setting, ft. from	to
4"	Steel	0	187

WELL SCREEN

Screen Openings _____

Diam. (in.)	Type	Setting, ft. from	to
4"		187	199

TWDBE-WD-2 (Sketch)

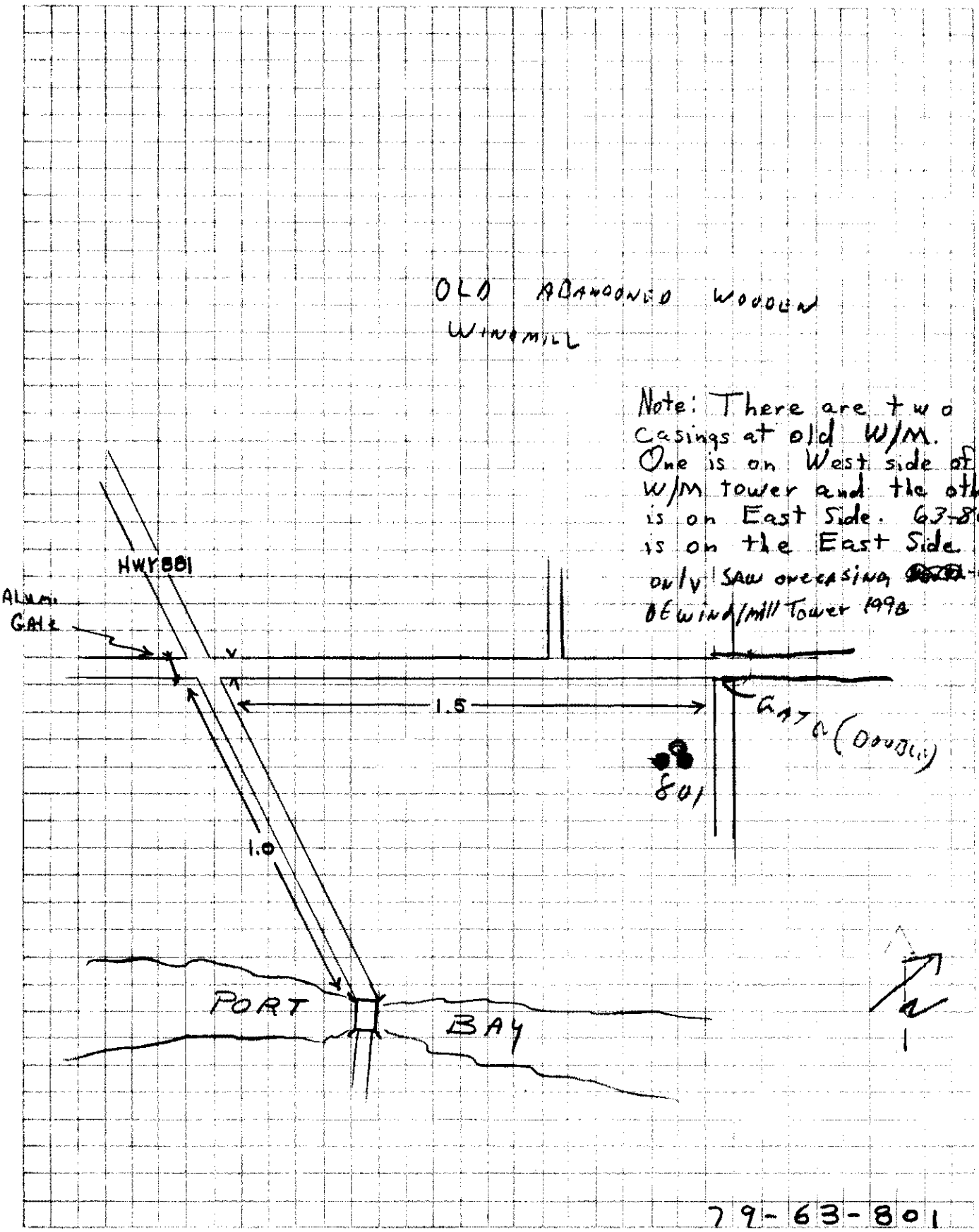
79-63-801

TEXAS WATER DEVELOPMENT BOA

BY_____ DATE_____ DIVISION _____ SHEET NO._____ OF_____

CHKD_____ DATE_____ JOB NAME _____

_____ JOB NO._____ PROG. CODE _____



79-63-801

TWDBS-SI-3

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer BEAUMONT CLAY Field No. AR-13 State Well No. AH-79-6380 1

Owner's Well No. _____ County ARANSAS

1. Location: _____ 1/4, _____ 1/4 Sec. _____, Block _____ Survey _____

2. Owner: RUNSON INVESTMENT CO. Address: HOUSTON, TEX.
   Tenant: L. L. SKUPPA Address: ROCKPORT, TEX.
   Driller: H. EICHBLATT Address: 409 COLLEGE TAFT, TEX.

3. Elevation of _____ is _____ ft. above msl, determined by _____

4. Drilled: _____ 1955-56 Dug, Cable Tool, Rotary, _____

5. Depth: Rept. 199 ft. Meas. _____ ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. _____ Type CYL
   No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
   Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel WIND MILL Make & Model _____ HP. _____

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. _____

10. Performance Test: Date _____ Length of Test _____ Made by _____
    Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
    Production _____ gpm Specific Capacity _____ gpm/ft.

CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. from	Setting, ft. to
4	IRON		

11. Water Level: 6.9 ft. rept. (meas.) 11-13 1958 above (below) TOP OF 4X4 WPC ON TOP OF CASING which is 6.6 ft. above (below) surface.
    _____ ft. rept. meas. _____ 19__ above below _____ which is _____ ft. above below surface.
    _____ ft. rept. meas. _____ 19__ above below _____ which is _____ ft. above below surface.
    _____ ft. rept. meas. _____ 19__ above below _____ which is _____ ft. above below surface.

12. Use: (Dom.) (Stock) Public Supply, Ind., Irr., Waterflooding, Observation, Not Used, ABANDONED

13. Quality: (Remarks on taste, odor, color, etc.) FAIR PUMP BROKEN

    Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
    Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
    Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

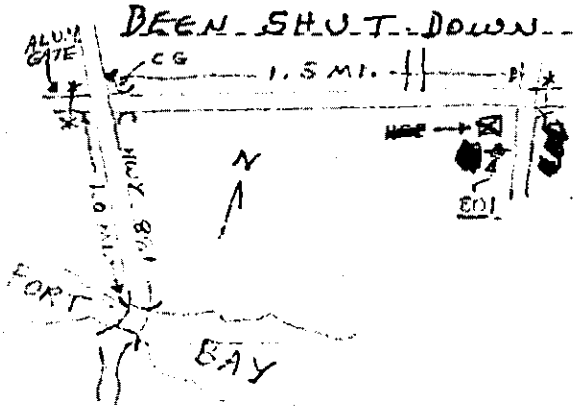
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
    Formation Samples, Pumping Test, _____

WELL SCREEN
Screen Openings _____

Diam. (in.)	Type	Setting, ft. from	Setting, ft. to

15. Record by: J.C. SKRABANEK Date 8-18 1966
    Source of Data USGS SCHEDULE R. MARVIN 6-13-59

16. Remarks: THIS IS A REPLACEMENT WELL FOR DHD #16 IN 1940 REPORT. THIS WELL IS 10' NE OF OLD WELL. WELL CASING HAS BEEN ENCLOSED IN CEMENT FROM SURFACE UP TO 6" OR MORE. WELL HAS BEEN SHUT DOWN FOR SEVERAL YEARS.



(Sketch)

MP = TOP OF 4 X 4 WPC + 2.0 FT.

79-63-801

A/L W.L. = [illegible] in old well 190' away —
[illegible] = 0.90 ft
[illegible] = +1' elev.

WRD Exp. (GW)
April 1966

Well No. AH 79-63-801

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

L. L. Skoruppa, Transit 1967

MASTER CARD

Record by [illegible] Source of data obs Date 12-6-66 Map Rocky Ford 1:62,500

State Texas (48) County (or town) Terrell (443)

Latitude: 30° 01' 21" N Longitude: 101° 41' 03" W Sequential number: 1

Lat-long accuracy: [ ] T. [ ] S, R [ ] W, Sec [ ], [ ], [ ], [ ]

Local well number: AH 79-63-801 Other number: WPA #16 Crockett

Local use: [ ] Owner or name: Parker's Mart Inc. Co.

Owner or name: PARKERS MKT. CO. Address: Houston, Texas

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist — P

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Ind, (N) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other — D

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdrew, (X) Waste, (Z) Destroyed — O

DATA AVAILABLE: Well data [ ] Freq. W/L meas.: [ ] Field aquifer char. [ ]

Hyd. lab. data: [ ]

Qual. water data; type: [ ]

Freq. sampling: [ ] Pumpage inventory: yes / no, period: [ ]

Aperture cards: [ ] yes

Log data: [ ]

Comm. Obs. well (TWDB)

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 199 ft 1949 Meas. rept Miller Ranch Foreman accuracy 6

Depth cased; (first perf.) 187 ft 1947 Casing type: iron ; Diam. 4 in

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other — S

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot, (J) jetted, (P) air percussion, rotary, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other — H

Date Drilled: 1956 ± 9 5 6 Pump intake setting: [ ] ft

Driller: H. Eichholz name, Tyler, Texas address

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple, (cent.), (M) multiple, (turb.), (N) none, (P) piston, (R) rot, submerg, (S) turb, (T) other — P Deep Shallow S

Power (type): diesel, elec, gas, gasoline, hand, nat gas, LP gas, wind, H.P. [ ] — 6 Trans. or meter no. [ ]

Descrip. MP Top of casing 1.6 ft above / below LSD. Alt. MP [ ]

Alt. LSD: 900 Accuracy: (source) Topo map — 2

Water Level 6.10 ft above / below MP; Ft above / below LSD 0005 Accuracy: Measured — 1

Date meas: 11-13-59 Yield: [ ] gpm Method determined [ ]

Drawdown: [ ] ft Accuracy: [ ] Pumping period [ ] hrs

QUALITY OF WATER DATA: Iron [ ] ppm Sulfate [ ] ppm Chloride [ ] ppm Hard. [ ] ppm

Sp. Conduct [ ] K x 10^6 Temp. [ ] °F Date sampled 1-12-67

Tests, color, etc. [ ]

Well No. 79-63-801

06's Well *

* W.L. = 4.90 below lsd 2-28-67
* W.L. = 5.95 below lsd 1-12-67

Well No. (AR 72-13-601)

Latitude-longitude N S d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD

Physiographic Province: Basin and Range (01 2) Section: West

Drainage Basin: E Subbasin:

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (Φ) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat — F

MAJOR AQUIFER: Quaternary system, Pleistocene series (Q) Gila Conglomerate aquifer, formation, group (GC)

Lithology: Origin: Aquifer Thickness: ft

Length of well open to: 12 ft Depth to top of: ft

MINOR AQUIFER: system, series aquifer, formation, group

Lithology: Origin: Aquifer Thickness: ft

Length of well open to: ft Depth to top of: ft

Intervals Screened: 169-199 ft.

Depth to consolidated rock: ft Source of data:

Depth to basement: ft Source of data:

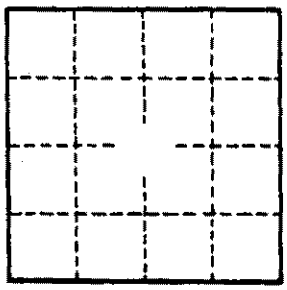
Surficial material: Infiltration characteristics:

Coefficient Trans: gpd/ft Coefficient Storage:

Coefficient Perm: gpd/ft²; Spec cap: gpm/ft; Number of geologic cards:

This is a replacement well for old #16 in 1940 report. This well is 10' ± NE of old well. Well casing has been encased in cement from surface up to 6" or more. Well has been S.D. for several hrs. (1959)

WL = 4.90' below lsd 2-28-67



Well No. AR 72-13-601

GPO 857-700

TEXAS DEPARTMENT OF WATER RESOURCES—WATER LEVEL MEASUREMENTS (IN FT.)

AS OF 02-27-84

☒ Normal
☐ Publ.
☐ USGS

OLD WELL NUMBER AR13

COORDINATES 28-01-19N
097-10-02W

YR. REC. BEGINS 59

LAST CHEMICAL ANALYSIS 05-69

STATE WELL NUMBER AH-79-63-801

LAND SURFACE DATUM ELEVATION 5.00

DEPTH OF WELL 199

COMPLETION INTERVAL 0187-0199

DATE OF CURRENT MEASUREMENT MO. DAY YR.	CURRENT DEPTH TO WATER FROM LSD	CHANGE IN LEVEL SINCE THE LAST MEASUREMENT	Measurement Number	DEPTH TO WATER FROM MP	MP	Measuring Agency	Measurement Method	REMARKS	WELL USE	FIELD OBSERVATIONS
12 08 80	+ 0.08	-0.08		1.92	+2.00	01	1		B	
12 14 81	+ 0.38	+0.30		1.62	+2.00	01	1		B	
12 07 82	+ 0.98	+0.60		1.02	+2.00	01	1		B	
12 14 83	+ 0.93	-0.05		1.07	+2.00	01	1		B	
12 10 84	+0.76			1.24	2.00	1	1		B	
12 12 85				2.84	2.00	1	1		B	
1 6 87				3.78	2.00	1	1		B	
3 30 88				4.06	2.00	1	1		B	
1 19 89	2.06				2.00	01	1		B	
12 08 89	2.20			4.20	+2.00	01	1		B	
12 12 90	2.67			4.67	+ 2.00	01	1		B	
12 4 91	3.40			3.90	+0.5	01	1		U	
1 28 93	3.08			3.58	+0.5	01	1		U	
1 13 94	~~3~~33			3.8	+0.5	01	1		U	

AQUIFER 006 - BEAUMONT CLAY

WATERSHED 20 - SAN ANTONIO-NUECES COASTAL BASIN

COUNTY 004 - ARANSAS

CURRENT 79-63-801

TDWR-0518

B.H.D.

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

KEY PUNCHED

County ARANSAS

State Well No. A479-63-801

Well No.

Date Collected 5-15-69

By HERSHEL D. DAVIDSON

Location 1.5 MI OFF F.R. 881 WEST OF ROCKPORT

Source (type of well) W.M. DOM STOCK Owner RINCON INVESTMENT CO. HOUSTON, TEXAS

Date Drilled 1955-56 Depth 199 ft. WHF

Producing intervals Water level 004.12 ft.

Sampled after pumping hrs. Yield GPM meas. est. Temperature 82° °F °C

Point of collection FAUCET Appearance CLEAR
clear - turbid - colored

Use DOM STOCK Remarks

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

Laboratory No. 122874W Date Received MAY 19 1969 Date Reported MAY 28 1969

	MG/L	ME/L		MG/L	ME/L
Silica	8		Carbonate		0
Calcium	38	1.88	Bicarbonate	478	7.84
Magnesium	45	3.68	Sulfate	205	4.27
Sodium	1680	70.92	Chloride	2280	64.26
	Total	76.48	Fluoride	1.1	
☐ Potassium			Nitrate	<0.4	
☐ Manganese		%Na	pH 8.3	Total	76.36
☐ Boron		SAR	1/ Dissolved Solids (sum)		4440
☐ Total Iron		RSC	Phenolphthalein Alkalinity as C aCO_3		0
☐ ____ (other)			Total Alkalinity as C aCO_3	(7.84)	392
Specific Conductance (micromhos/cm3)	6910		Total Hardness as C aCO_3	(5.56)	278
Diluted Conductance (micromhos/cm3)	51 x 176				
	8976				

"☐" items will be analyzed if checked.

Analyst

Total Iron requires separate sample.

Checked by MAY 28 1969

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

TWDBE-GW-50

TWDBE-GW ONLY

Program No. _____

Proj. No. _____

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P.O. Box 13087
Austin, Texas 78711

County ARANSAS AH

State Well No. 79 - 63 - 801

_____ Well No. _____

Date Collected 1-12-67

By _____

Location _____

Source (type of well) _____ Owner _____

Date Drilled _____ Depth 199 ft. WBU Gulf Coast

Producing intervals _____ Water level _____ ft.

Sampled after pumping _____ hrs. Yield _____ GPM meas. est. Temperature _____ °F _____ °C

Point of collection _____ Appearance _____
clear - turbid - colored

Use _____ Remarks _____

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

KEY PUNCHED

Laboratory No. _____ Date Received _____ Date Reported _____

	MG/L	ME/L		MG/L	ME/L
Silica	14		Carbonate		
Calcium	42		Bicarbonate	512	
Magnesium			Sulfate	209	
Sodium	1630		Chloride	2300	
Total			Fluoride		
☐ Potassium	8.7		Nitrate		
☐ Manganese		%Na	pH 8.1	Total	
☐ Boron		SAR 43	1/ Dissolved Solids (sum)	4500	
☐ Total Iron		RSC 2.84	Phenolphthalein Alkalinity as C aCO_3		
☐ ____ (other)			Total Alkalinity as C aCO_3		
Specific Conductance (micromhos/cm^3)	7820		Total Hardness as C aCO_3	278	
Diluted Conductance (micromhos/cm^3)	x				

"☐" items will be analyzed if checked.

Analyst _____

Total Iron requires separate sample.

Checked by Copy

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

Geological Survey

104588

UNITED STATES DEPARTMENT OF THE INTERIOR
Ground Water Analysis

M

Water Resources Division
Austin, Texas

State: Texas 48 County: Aransas AH Well No. Latitude 280121N Longitude 0971004 Seq. No. 1 Date M D Y 01 26 67 Sampling Depth 199 Type G

KEY PUNCHED

Local Well No. AH 79-63-801 Location 7 W. Rockport

Owner Rincon Investment Co., Houston Date drilled: 1956 ± Depth 199 WBF Gulf Coast Aquifer Prod. intervals 187-199 Water level 7.05 blw MP+1.

Sampled after pumping Yield GPM Pt. of coll. Appearance clear Use dom., stock Collector Shafer

	ppm	epm
K x 10^6 R KCl 351 R sample 44.9	750	
pH 8.1 Temperature °F		
Density at 20°C		
SiO_2 5 ml A sample .540	14.	
A ml A 0.00250 mg .00625 mg .0125 mg .025 mg Sample	ppm	
Fe A 0.025 mg ml Sample Total ppm ml Sample Diss. ppm		
Mn Total ppm Dissolved ppm		
Ca 4.20 50 ml	42	2.10
Mg	38	3.15
Na 32.6 x 50 (10→500) Na + K Calc.	1630.	70.90
K 1.09 x 8 (25→200)	8.7	.22
Percent error − 0.6 Total cations	92/2	76.67

	ppm	epm
HCO_3 2.5 ml Total Alk as CO_3 252	512	8.39
CO_3 2.5 ml	0	.00
SO_4 10 ml (50→2100) Blk Std Sample 5.20	208	4.33
Cl 25 ml 11.50 57 mg	2300	64.88
Source Card No. Q		
F ml A 1.00 ppm 2.00 ppm A sample		
NO_3 ml std. ml A sample A ml std A ml std Factor		
NO_2 ml ppm A 0.01 mg .02 mg .05 mg Sample		
PO_4 ml Ortho Total A 0.0050 mg .0100 mg .0250 mg .0500 mg Sample		
Total anions		77.60

Equivalents per million

Na+K — Cl

Ca — HCO_3+CO_3

Mg — SO_4

B A mg mg mg mg ml	
Al	
Fe	
Mn	
Cu	
Pb	
Zn	
Dissolved solids: Determined	Calculated 450
Hardness ml epm Ca + Mg 5.55 epm Alk 8.39 epm NCH —	Ca+Mg 278 NCH 0
Color	Card No. R
Br	I
Alk. as $CaCO_3$	Free CO_2
Percent Na 92	SAR 43. RSC 2.84
MBAS	NO_2 Card No. S

Analyst A. J. DUPUY Checked by

Date begun FEB 1 - 1967 Completed FEB 2 0 1967

Transmittals	Date
Records processing----	
Collector----	
Owner----	

Recorded by: Punched by: Date:

Please use black ink.
Send original copy by certified mail to the
Texas Department of Water Resources
P. O. Box 13087
Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board
P. O. Box 13087
Austin, Texas 78711

1) OWNER Resource Management (Name) Address P.O. Box 72954, Corpus Christi, Tx 78472 (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL:
County Aransas 3 miles in S (N.E., S.W., etc.) direction from Rockport (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. _____ Block No. _____ Township _____
Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☒ See attached map.

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☒ Industrial ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Other _____

5) DRILLING METHOD (Check):
☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other _____

6) WELL LOG:
Date drilled 11-29-84

DIAMETER OF HOLE Dia. (in.)	From (ft.)	To (ft.)
6 3/4	Surface	200

From (ft.)	To (ft.)	Description and color of formation material
0-	28	Top soil and shell
28-	50	Sandy shell
50-	120	Shale
120-	140	Sand
140-	157	Shale
157-	200	Sand

7) BOREHOLE COMPLETION:
☐ Open Hole ☒ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from _____ ft. to _____ ft.

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	PVC Casing	0-	160	
4	N	PVC Screen	160-	200	

9) CEMENTING DATA (Rule 319.44(b))
Cemented from 15 ft. to surface ft.
_____ ft. to _____ ft.
Method used _____
Cemented by Martin Water Wells

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed (Rule 319.44(c))
☐ Pitless Adapter Used (Rule 319.44(d))
☒ Approved Alternative Procedure Used (Rule 319.71)

11) WATER LEVEL:
Static level 9 ft. below land surface Date 11-29-84
Artesian flow _____ gpm. Date _____

12) PACKERS: Type: Rubber Depth: 150'

RECEIVED
APR - 3 1985
DEPT. OF
WATER RESOURCES

13) TYPE PUMP: N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

(Use reverse side if necessary)

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☒ No

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☒ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 12 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Martin Water Wells (Type or Print) Water Well Driller's License No. 1669

ADDRESS Hwy 77 North (Street or RFD) Robstown (City) Texas (State) 78380 (Zip)

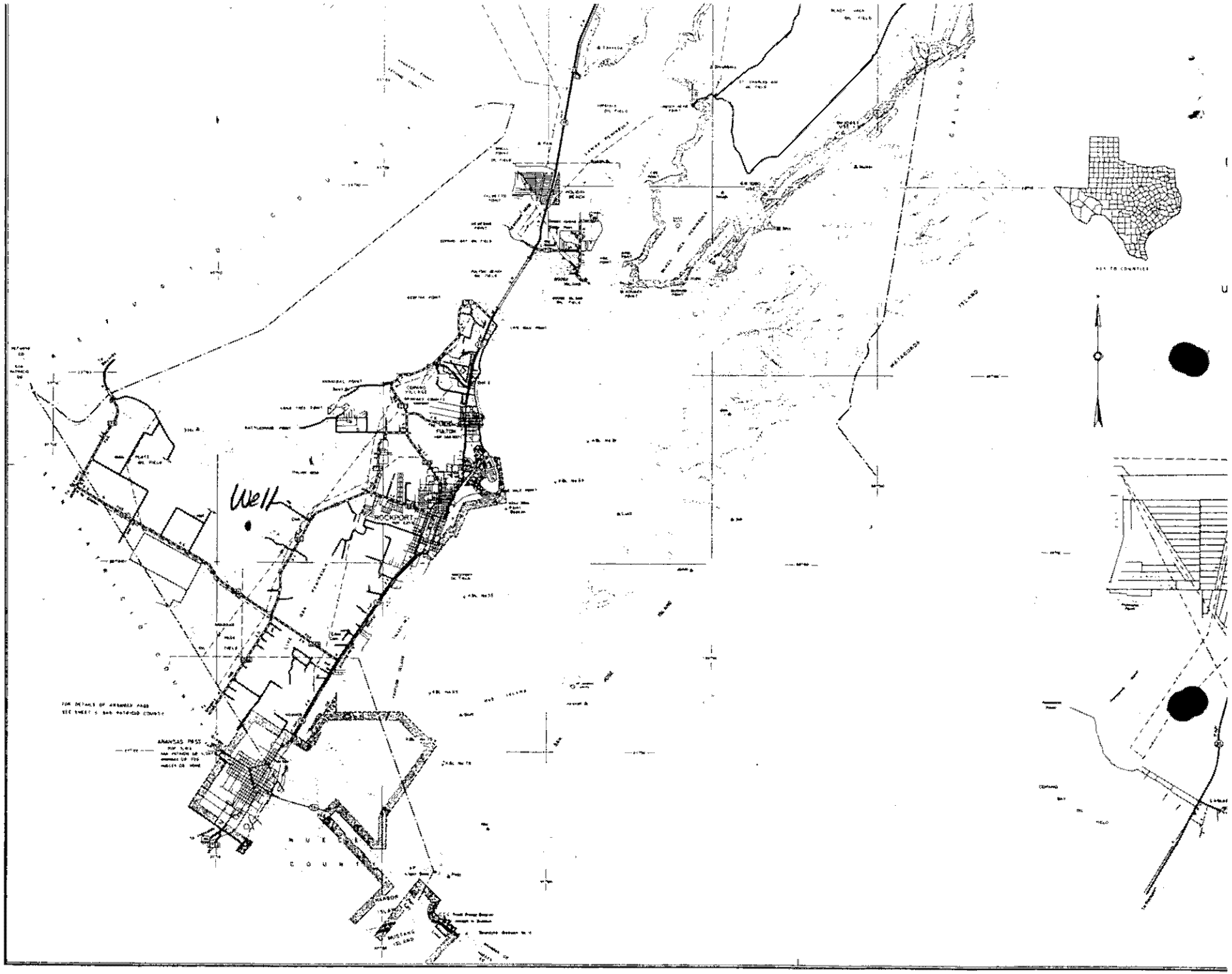
(Signed) _____ (Licensed Water Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TDWR use only
Well No. 79-63-9F
Located on map YRSC-F.S.

DEPARTMENT OF WATER RESOURCES COPY

TDWR-0392 (12/29/83)


Well

Send original copy by certified return receipt requested mail to: TDLR, P.O. Box 12157, Austin, TX 78711

ATTENTION OWNER: *Confidentiality Privilege Notice on reverse side of Well Owner's copy (pink)*

State of Texas
WELL REPORT

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
512-463-7880

1) OWNER Keith Hood (Name) ADDRESS (Street or RFD) (City) (State) (Zip)

2) ADDRESS OF WELL'S LOCATION: County Stanpatrick (Street, RFD or other) (City) (State) (Zip) Long. Lat. Grid # 87-07-1

3) TYPE OF WORK (Check): ☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☐ Monitor ☐ Environmental Soil Boring ☐ Domestic ☐ Industrial ☑ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell
If Public Supply well, were plans submitted to the TNRCC? ☐ Yes ☐ No

5)

6) WELL LOG:
Date Drilling: Started 11-26 19 99 Completed 11-29 19 99

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
7"	Surface	159

7) DRILLING METHOD (Check): ☐ Driven ☐ Air Rotary ☑ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☐ Other

From (ft.)	To (ft.)	Description and color of formation material
0	6	Black Soil
6	15	caliche
15	60	Sand
60	90	Clay
90	159	Shale

(Use reverse side of Well Owner's copy, if necessary)

8) Borehole Completion (Check): ☐ Open Hole ☐ Straight Wall ☐ Underreamed ☑ Gravel Packed ☐ Other
If Gravel Packed give interval from 139 ft. to 159 ft.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4"	N	PVC	0	139	
4"	N	PVC Screen	139	159	.010

9) CEMENTING DATA
Cemented from 0 ft. to 10 ft. No. of sacks used 8
ft. to ft. No. of sacks used
Method used 338.043A
Cemented by Michael Dingo
Distance to septic system field lines or other concentrated contamination 300 ft
Method of verification of above distance

13) ☐ Well plugged within 48 hours

Casing left in well: From (ft)	Casing left in well: To (ft)	Cement/bentonite plug(s) placed in well: From (ft)	Cement/bentonite plug(s) placed in well: To (ft)	Sacks used:
		N/A		

14) TYPE PUMP:
☐ Turbine ☐ Jet ☑ Submersible ☐ Cylinder ☐ Other
Depth to pump bowls, cylinder, jet, etc., 100 ft.

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed
☑ Specified Steel Sleeve Installed
☐ Pitless Adapter Used
☐ Approved Alternative Procedure Used

15) WELL TESTS:
Type test: ☐ Pump ☐ Bailer ☑ Jetted ☐ Estimated
Yield: 50 gpm with 70 ft. drawdown after 5 hrs.

11) WATER LEVEL:
Static level 6 ft. below land surface Date 11-26-99
Artesian flow N/A gpm. Date

16) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☑ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? Depth of strata
Was a chemical analysis made? ☐ Yes ☑ No

12) PACKERS:

Type	Depth
N/A	

I certify that I drilled this well (or the well was drilled under my direct supervision) and that each and all of the statements herein are true and correct. I understand that failure to complete items 1 thru 16 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Metcalf Drilling (Type or print) WELL DRILLER'S LICENSE NO. 4436 WP

ADDRESS 1314 S. McCampbell St (Street or RFD) Sonora (City) Texas (State) 76950 (Zip)

(Signed) Michael Dingo (Licensed Well Driller) (Signed) (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDLR FORM 001WWD (4/98) White - TDLR Yellow - DRILLER Pink - WELL OWNER

STATE OF TEXAS WELL REPORT for Tracking #441047

Owner:	**Wells Collection McLean Residence**	Owner Well #:	**No Data**
Address:	**1502 W !2 th St Rockport , TX 78382**	Grid #:	**79-63-9**
Well Location:	**1502 W !2 th St Rockport, TX 78382**	Latitude:	**28° 00' 43" N**
		Longitude:	**097° 09' 12" W**
Well County:	**Aransas**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **1/11/2017** Drilling End Date: **1/13/2017**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7**	**0**	**167**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**147**	**167**	**Sand**	

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Cement 4 Bags/Sacks**
	2	**100**	**Bentonite 8 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No septic**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Sleeve Installed** **Surface Completion by Driller**

Water Level: **44 ft.** below land surface on **2017-01-13** Measurement Method: **Weighted Line**

Packers: **No Data**

Type of Pump: **Submersible** Pump Depth (ft.): **120**

Well Tests: **Jetted** **Yield: 35 GPM with 125 ft. drawdown after 1 hours**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Mikes Drilling and Pump Service**

P O Box 2363
Aransas Pass, TX 78335

Driller Name: **Michael Deyo** License Number: **4936**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	12	sand
12	34	clay
34	89	sand/seashell
89	136	red clay
136	167	red sand

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
4		New Plastic (PVC)	40	0	147
4	Screen	New Plastic (PVC)	40 0.008	147	167

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

93-01-1B

Send original copy by certified mail to the Texas Water Development Board P. O. Box 13087 Austin, Texas 78711

State of Texas

WATER WELL REPORT

For TWDB use only
Well No. 83-09-1B
Located on map 4 DS
Received: 76
C.C.

1) OWNER:
Person having well drilled Jacques Valley (Name) Address 547 Crayton (Street or RFD) (City) (State)

Landowner (Name) Same Address Corpus Christi, Tx. 78418 (Street or RFD) (City) (State)

2) LOCATION OF WELL:
County San Patricio, 7 miles in N.E. (N.E., S.W., etc.) direction from Gregory, Tex (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.* Copano Bay Retreat, COPANO BAY, WELL, CARANCHO, North, PASS, CREEK, HIGHSIDE, 77, (Use reverse side if necessary)

or Give legal location with distances and directions from adjacent sections or survey lines.

Labor _____ League _____

Block _____ Survey _____

Abstract No. _____

(NW¼ NE¼ SW¼ SE¼) of Section _____

3) TYPE OF WORK (Check):
✓ New Well | Deepening | Reconditioning | Plugging

4) PROPOSED USE (Check):
✓ Domestic | Industrial | Municipal | Irrigation | Test Well | Other

5) TYPE OF WELL (Check):
✓ Rotary | Driven | Dug | Cable | Jetted | Bored

6) WELL LOG:
Diameter of hole 6 1/8 in. Depth drilled 215 ft. Depth of completed well 215 ft. Date drilled 5-5-76

All measurements made from 0 ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material
	80	shale
80	95	sand
95	195	shale
195	215	sand

9) Casing:
Type: Old | ✓ New | Steel | ✓ Plastic | Other

Cemented from _____ ft. to _____ ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage
4 1/2 od	0	215	Sched 40

10) SCREEN:
Type _____

Perforated | ✓ Slotted

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size
4 1/2 od	195	215	.016

(Use reverse side if necessary)

7) COMPLETION (Check):
✓ Straight wall | Gravel packed | Other | Under reamed | Open Hole

8) WATER LEVEL:
Static level 2 ft. below land surface Date 5-6-76

Artesian pressure _____ lbs. per square inch Date _____

Depth to pump bowls, cylinder, jet, etc., _____ ft. below land surface.

11) WELL TESTS:
Was a pump test made? Yes No If yes, by whom? _____

Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

Bailer test _____ gpm with _____ ft. drawdown after _____ hrs.

Artesian flow _____ gpm

Temperature of water _____

12) WATER QUALITY:
Was a chemical analysis made? Yes ✓ No

Did any strata contain undesirable water? Yes ✓ No

Type of water? salty depth of strata 20 ft

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Ben H. Welty (Type or Print) Water Well Drillers Registration No. 543

ADDRESS 318 Kisling (Street or RFD) Robstown (City) Tx 78380 (State)

(Signed) Ben H. Welty (Water Well Driller) Welty Water Wells (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

TWDBE-WD-8

46

STATE OF TEXAS WELL REPORT for Tracking #136832

Owner:	**DAN A HUGHES**	Owner Well #:	**HOUSTONENDOWMEN**
Address:	**PO BOX 669** **BEEVILLE, TX 78104**	Grid #:	**79-63-8**
Well Location:	**ROCKPORT, TX**	Latitude:	**28° 01' 10" N**
		Longitude:	**097° 12' 25" W**
Well County:	**Aransas**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Rig Supply**

Drilling Start Date: **8/2/2007** Drilling End Date: **8/3/2007**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10**	**0**	**10**
	8	**10**	**300**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**10**	**6 CEMENT**

Seal Method: **Slurry**

Sealed By: **PAGE**

Distance to Property Line (ft.): **RANCH**

Distance to Septic Field or other concentrated contamination (ft.): **NONE**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **VISUAL**

Surface Completion: **Surface Sleeve Installed**

Water Level: **12 ft.** below land surface on **2007-08-04** Measurement Method: **Unknown**

Packers: **NEOPREME 10**
CEMENTBASKET 260

Type of Pump: **Submersible** Pump Depth (ft.): **200**

Well Tests: **Jetted** **Yield: 100 GPM**

	Strata Depth (ft.)	*Water Type*
Water Quality:	**260-300**	**FAIR**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **PAGE WATERWELL**

PO BOX 3588
ALICE, TX 78333

Driller Name: **C O PAGE** License Number: **2601**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

From (ft)	*To (ft)*	*Description*
0	**3**	**TOP SOIL**
3	**50**	**CLAY**
50	**200**	**SANDYSHALE**
200	**260**	**CLAY**
260	**300**	**SAND**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	*New/Used*	*Type*	*Setting From/To (ft.)*
4.5	**NEW**	**PVC**	**CASING 0-260 SDR 17**
4	**NEW**	**PVC**	**SCREEN 260-300 8T**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #136831

Owner:	**DAN A HUGHES**	Owner Well #:	**HOUSTONENDOWMEN**
Address:	**PO BOX 669** **BEEVILLE, TX 78104**	Grid #:	**79-63-8**
Well Location:	**ROCKPORT, TX**	Latitude:	**28° 01' 09" N**
		Longitude:	**097° 12' 26" W**
Well County:	**Aransas**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Rig Supply**

Drilling Start Date: **7/30/2007** Drilling End Date: **7/31/2007**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10**	**0**	**10**
	8	**10**	**326**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**10**	**6 CEMENT**

Seal Method: **Slurry**

Sealed By: **PAGE**

Distance to Property Line (ft.): **RANCH**

Distance to Septic Field or other concentrated contamination (ft.): **NONE**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **VISUAL**

Surface Completion: **Surface Sleeve Installed**

Water Level: **55 ft.** below land surface on **2007-08-01** Measurement Method: **Unknown**

Packers: **NEOPREME 10**
CEMENTBASKET 280

Type of Pump: **Submersible** Pump Depth (ft.): **220**

Well Tests: **Jetted** **Yield: 15 GPM**

	Strata Depth (ft.)	Water Type
Water Quality:	**280-320**	**FAIR**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **PAGE WATERWELL**

PO BOX 3588
ALICE, TX 78333

Driller Name: **C O PAGE** License Number: **2601**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**3**	**TOP SOIL**
3	**50**	**CLAY**
50	**200**	**SANDY SHALE**
200	**200**	**SAND**
200	**260**	**CLAY**
260	**320**	**SAND**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
4.5	**NEW**	**PVC**	**CASING 0-280 SDR 17**
4	**NEW**	**PVC**	**SCREEN 280-320 16T**

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #42379

Owner:	**Abel Adame**	Owner Well #:	**No Data**
Address:	**208 Wilshire Portland, TX 78374**	Grid #:	**83-07-1**
Well Location:	**CR 93 8/10 mi from Hwy. 136 Portland, TX 78374**	Latitude:	**27° 58' 46" N**
		Longitude:	**097° 13' 01" W**
Well County:	**San Patricio**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **6/20/2003** Drilling End Date: **6/20/2003**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7**	**0**	**247**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**100**	**8 cement**

Seal Method: **Pressure Grouted-Tremie Pipe**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **no septic**

Surface Completion: **Surface Sleeve Installed**

Water Level: **11 ft.** below land surface on **2003-06-20** Measurement Method: **Unknown**

Packers: **Umbrella 100' and 207'**

Type of Pump: **No Data**

Well Tests: **Jetted** **Yield: 100 GPM with 25 ft. drawdown after 1 hours**

	Strata Depth (ft.)	Water Type
Water Quality:	**40**	**Fresh**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Carter Water Well Drilling**

P. O. Box 856
Woodsboro, TX 78393

Driller Name: **Joe Vega** License Number: **4932**

Comments: **$dfs**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**60**	**Clay**
60	**78**	**Sand**
78	**124**	**Clay**
124	**140**	**Sand**
140	**160**	**Clay**
160	**172**	**Sand**
172	**207**	**Clay**
207	**247**	**Sand**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
4	**New**	**PVC**	**0 207**
4	**New**	**Screen-Slotted**	**207 247 .006**

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

Alt. WL. = +6' (CALC)

WRD Exp. (DW)
Aug. 1964

U. S. DEPARTMENT OF THE INTERIOR — GEOLOGICAL SURVEY

Water Resources Division Well Schedule Form

Well Number

HYDROLOGIC CARD

SAME AS ON MASTER CARD — Physiographic Province: Coastal Plain 03 — Section: West

Gulf F — Drainage Basin: Nueces River — Subbasin:

Topo of well site: (A) local depression, (B) flat surface, (C) hilltop, (D) hillside, (E) mountain, (F) valley flat, — F

MAJOR AQUIFER: Quaternary system — Pleistocene series — QG — Gulf Coast aquifer, formation, group

Lithology: — Origin: — Aquifer Thickness: — ft

Length of well open to: — ft — Depth to top of: — ft

MINOR AQUIFER: — system — series — aquifer, formation, group

Lithology: — Origin: — Aquifer Thickness: — ft

Length of well open to: — ft — Depth to top of: — ft

Isotopic Screened:

Depth to consolidated rock: — ft — Source of data:

Depth to basement: — ft — Source of data:

Surficial material: — Infiltration characteristics:

Coefficient Trans: — gpd/ft — Coefficient Storage:

Coefficient Perm: — gpd/ft²; Spec cap: — gpm/ft; Number of geologic cards:

Willie Polk: Tenant

Record by: G. H. Sutton — Source of data: Mar. — Date: 6-16-65 — Map: Aransas Pass

State: Texas 49 — County (or town): San Patricio

Latitude: 27 59 19 N — Longitude: 097 13 39 — Sequential number: 1

Lat-long accuracy: 2 — T. — S, R. — W. Sec. — , — k, — k, — k

Local well number: KNB3 97 10 4 — Other number: WRD 7-33

Local use: — Owner of Water: Burton Mineral Co.

Owner or name: BANKERS MORTGAGE — Address: Mr. Miller, Mgr.

Ownership: (C) County, (F) Fed Gov't, (M) City, (B) Corp or Co, (Pr) Private, (S) State Agency, (W) Water Dist — P

Use of water: (A) Air cond, (C) Comm, (D) Dewatering, (F) Fire, (H) Horse, (I) Irr, (Ind) Ind, (P) Pub, (Stoc) Stock, (U) Unsatis, (V) Unused — W

Use of well: (A) Anode, (D) Drain, (G) Seismic, (Ob) Observ, (O) Oil-gas, (R) Recharge, (S) Spring, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed — W

DATA AVAILABLE: Well data — Freq. W/L meas.: — Field aquifer chgr.

Hyd. lab. data:

Qual. water data; type:

Freq. sampling: — Pumpage inventory: yes/no, period:

Aperture cards: yes

Log data:

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD — Depth well: 280 ft — 280 Meas. (Est.) — accuracy: 6

Depth cased (first perf.): — ft — Casing type: — Diam. 4 in — 4

Finish: (C) porous concrete, (F) gravel w. (perf.), (C) gravel w. (screen), (B) bottle, (G) gallery, (O) open end, (P) perf., screen, sl. pt., (S) sheeted, (T) tele, (X) other, (Z) other — 6

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd jetted, (J) hyd rot., (P) air percussion, rotary, (R) reverse trenching, (T) driven, (V) drive wash, (X) other, (Z) other — 1

Date Drilled: 1927 — 9 2 7 — Pump intake setting: — ft

Driller: — name — address

Lift (type): (A) air, bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (curb.), (N) none, (P) piston, (R) rot, submerg, turb, other (Z) — Deep/Shallow

Power (type): diesel, elec, gas, gasoline, hand, gas, nat, LPG, wind, H.P. — Trans. MP — water mp.

Descrip. MP: Top 4X4 pipe dp 2.0 ft above/below led, Alt. MP

Alt. LSD: 15± — 0 0 0 1 5 — Accuracy (source): Topographic map — 3

Water Level: 11.16 ft above/below MP; Ft above/below led — 9 — Accuracy: Measured — 0

Date meas: 6-16-65 — 6 6 5 — Yield: — gpm — Method determined

Drawdown: — ft — Accuracy: — Pumping period — hrs

QUALITY OF WATER DATA: Iron — ppm — Sulfate — ppm — Chloride — ppm — Hard. — ppm

Sp. Conduct — x 10⁵ — Temp. — °F — Date sampled 6-16-65

Taste, color, etc.

GPO 844-220

USGS-WRD Form 9-331
Well No. WW 83-07-104

ANALYTICAL STATEMENT

COUNTY SAN PATRICIO
LAB NO. 93779

Location

Source (type of well) C. W.
Owner Bankers Mortgage Co.

Date drld. 1927 Depth 280 ft
WDF
Producing intervals
Water level st 9.16 ft blw LSD
Sampled after pumping
Yield GPM
Ft of coll
Appearance clear
Temp (°F) Use Dom. stock
Collector G. H. Shafer
Chemist D. K. Leifeste
Date completed July 1, 1965
Checked by MWF
Date transmitted JUL 2-2-1965

Date of collection June 15, 1965

Ignition Loss
Dissolved Solids:
Calculated (sum) 3,310
Residue at 180°C
Tons per acre foot 4.50
Hardness as $CaCO_3$ 75
N.C. hardness 0
% Na 97 SAR 64 RSC 3.32
Specific conductance (micromhos at 25°C) 6,100
pH 8.2 Color
Resample-WPA #33

	epm	ppm
SiO_2		3.9
Fe		
Fe (total)		
Ca	.60	12
Mg	.90	11
Na		
K		
	1.50	
Na+K	55.61	1,280
HCO_3	4.82	294
CO_3	.00	0
SO_4	.10	4.8
Cl	52.19	1,850
F		
NO_3	.00	.0
	57.11	

KEY PUNCHED

Geological Survey

Ground Water Analysis

Water Resources Division
Austin, Texas

State: Texas 42 (1 2) County: SAN PATRICIO WW (3 4) Well No. Latitude 27591 9N (5–11) Longitude 097 13 38 (12–18) Seq. No. 1 (19) Date M 10 D 13 Y 38 (20–25) Sampling Depth 280 (26–29) Type (30)

KEY PUNCHED

Local Well No. WW-83-07-104 Location

Owner: BANKERS MORTGAGE CO. Date drilled: Depth: WBF Prod. intervals Water level

Sampled after pumping Yield GPM Pt. of coll. Appearance Use Collector WPA

	mg/l	me/l
K x 10^6 R KCl ____ R sample ____ (31–35)		
pH (36–38) Temperature °C (39–41)		
Density at 20°C		
SiO_2 ____ ml A sample ____ (42–44)		
Al ____ ml A 0.00250 mg ____ .00625 mg ____ .0125 mg ____ .025 mg ____ Sample ____	____ mg/l	
Fe A 0.025 mg ____ ____ ml ____ Sample Total ____ mg/l ____ ml ____ Sample Diss. ____ mg/l		
Mn Total ____ mg/l Dissolved ____ mg/l		
Ca ____ ml (45–49) 52		
Mg (50–53) 17		
Na (54–58)		
Na + K Calc. 1281		
K (59–61)		
Percent error Total cations		

	mg/l	me/l
HCO_3 ____ ml Total Alk as CO_3 ____ (62–65) 329		
CO_3 ____ ml (66–67)		
SO_4 ____ ml Blk ____ Std ____ Sample ____ (68–72) 8		
Cl ____ ml (73–78) 1920		
Source 79 S Card No. 80 0		
F ____ ml A 1.00 mg/l ____ 2.00 mg/l ____ A sample ____ (26–28)		
NO_3 ____ ml std. ____ ml A sample ____ A ____ ml std ____ A ____ ml std ____ Factor ____ (29–32)		
NO_2 ____ ml ____ mg/l A 0.01 mg ____ .02 mg ____ .05 mg ____ Sample ____		
PO_4 ____ ml Ortho ____ Total A 0.0050 mg ____ .0100 mg ____ .0250 mg ____ .0500 mg ____ Sample ____ (33–35)		
Total anions		

Milliequivalents per liter

Na+K — Cl

Ca — HCO_3+CO_3

Mg — SO_4

B A ____ mg ____ ml (36–38)
____ mg
____ mg
____ mg

Al (39–41) Fe (42–45) Mn (46–49)

Cu (50–52) Pb (53–54) Zn (55–57)

Dissolved solids: Determined (58–63) Calculated 3410 (64–69)

Hardness ____ ml Ca+Mg 201 (70–73)
me/l Ca + Mg ____
me/l Alk ____
me/l NCH ____ NCR (74–77)

Color (78–79) Card No. R (80)

Br (26–28) I (29–31)

Alk. as $CaCO_3$ (32–35) Free CO_2 (36)

Percent Na SAR (39–41) RSC (42–44)

MBAS (45–47) NO_2 (67–68) Card No. S (80)

Analyst ____ Checked by ____

Date begun ____ Completed ____

Transmittals	Date	
Records processing----		
Collector----------		
Owner----------		

Recorded by: ____ Punched by: ____ Date: ____

Send original copy by certified return receipt requested r... : TNRCC, MC 177, P.O. Box 13087, Austin, TX 78711-3...

ATTENTION OWNER: *Confidentiality Privilege Notice on on reverse side of Well Owner's copy (pink)*

State of Texas
WELL REPORT

Texas Water Well Drillers Advisory Council
MC 177
P.O. Box 13087
Austin, TX 78711-3087
512-239-0530

1) **OWNER** David Martinez (Name) **ADDRESS** 2553 Dan Forth, Ingleside, Tx. 78362 (Street or RFD) (City) (State) (Zip)

2) **ADDRESS OF WELL:** County San Patricio Leo Miller Rd. / 188 Rd & 136 Rd Bayside, Tx. (Street, RFD or other) (City) (State) (Zip) **GRID #** 79-63-7

3) **TYPE OF WORK (Check):** ☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):** ☐ Monitor ☐ Environmental Soil Boring ☑ Domestic ☐ Industrial ☐ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell
If Public Supply well, were plans submitted to the TNRCC? ☐ Yes ☐ No

5)

6) **WELL LOG:**
Date Drilling: Started May 4 19 98 Completed May 4 19 98

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
6 3/4"	Surface 0	250'

7) **DRILLING METHOD (Check):** ☐ Driven ☐ Air Rotary ☑ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☐ Other

N

From (ft.)	To (ft.)	Description and color of formation material
0	3	Top Soil
3	77	Red Clay
77	140	Blue Clay
140	150	Blue fine Sand
150	200	Blue Clay
200	249	Blue fine Sand
249	250	Blue Clay T.D.

(Use reverse side of Well Owner's copy, if necessary)

8) **Borehole Completion (Check):** ☐ Open Hole ☑ Straight Wall ☐ Underreamed ☐ Gravel Packed ☐ Other
If Gravel Packed give interval ... from ____ ft. to ____ ft.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4"	New	Plastic 2' above		250'	sch.40
4"	New	Slotted Plastic	228	248'	.013
Mfg. Preferred Pump & Equip, Inc.					

9) **CEMENTING DATA** [Rule 338.44(1)]
Cemented from 0 ft. to 100 ft. No. of sacks used 9
____ ft. to ____ ft. No. of sacks used ____
Method used Pressure Pump
Cemented by B.T. Sikes, Jr.
Distance to septic system field lines or other concentrated contamination ____ ft.
Method of verification of above distance No Septic

10) **SURFACE COMPLETION**
☐ Specified Surface Slab Installed [Rule 338.44(2)(A)]
☑ Specified Steel Sleeve Installed [Rule 338.44(3)(A)]
☐ Pitless Adapter Used [Rule 338.44(3)(b)]
☐ Approved Alternative Procedure Used [Rule 338.71]

11) **WATER LEVEL:**
Static level 20' ft. below land surface Date May 4, 1998
Artesian flow ____ gpm. Date ____

12) **PACKERS:**

Type	Depth
Rubber Packer	100'
"	200'

13) **TYPE PUMP:** ☐ Turbine ☐ Jet ☑ Submersible ☐ Cylinder ☐ Other
Depth to pump bowls, cylinder, jet, etc., 65' ft.

14) **WELL TESTS:**
Type test: ☐ Pump ☐ Bailer ☑ Jetted ☐ Estimated
Yield: 100 gpm with ____ ft. drawdown after ____ hrs.

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☑ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? Good Depth of strata 49'
Was a chemical analysis made? ☐ Yes ☐ No

FILE ID ____ SEQ # ____
EMP # ____ DESC CO ____
COMMENT ____

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME B.T. Sikes Water Wells Inc. (Type or print) **WELL DRILLER'S LICENSE NO.** 2244

ADDRESS RR 2 Box 52 (Street or RFD) Mathis (City) TX (State) 78368 (Zip)

(Signed) B. T. Sikes (Licensed Well Driller) **(Signed)** B. T. Sikes (Registered Driller)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TNRCC-0199 (Rev. 05-21-96) *White - TNRCC Yellow - DRILLER Pink - WELL OWNER*

STATE OF TEXAS WELL REPORT for Tracking #485920

Owner:	**JOHNNY GALVAN**	Owner Well #:	**No Data**
Address:	**601 KING FISHER CREEK AUSTIN , TX 78748**	Grid #:	**79-63-7**
Well Location:	**261 LEO MILLER ROAD TAFT, TX**	Latitude:	**28° 00' 42.57" N**
		Longitude:	**097° 12' 53.74" W**
Well County:	**San Patricio**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **4/24/2018** Drilling End Date: **4/25/2018**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7**	**0**	**310**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**100**	**Grout 6 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **100**

Distance to Septic Field or other concentrated contamination (ft.): **NONE**

Distance to Septic Tank (ft.): **50**

Method of Verification: **TAPELINE**

Surface Completion: **Surface Sleeve Installed** **Surface Completion by Driller**

Water Level: **75 ft.** below land surface on **2018-04-25**

Packers: **UMBRELLA at 100 ft.**
UMBRELLA at 268 ft.

Type of Pump: **Submersible**

Well Tests: **Jetted** **Yield: 75 GPM**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **CARTER WATER WELL DRILLING**

P.O. BOX 856
WOODSBORO, TX 78393

Driller Name: **Daniel Rivera** License Number: **59586**

Comments: **~DG was contacted by Jonette w/ Carter Water Well Drilling about this report on 08/03/2018 12:20.**

Report Amended on 8/3/2018 by Request #25698

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**50**	**CLAY**
50	**60**	**CLAY AND SAND**
60	**88**	**CLAY**
88	**100**	**CLAY AND SAND**
100	**242**	**CLAY**
242	**260**	**FIND SAND**
260	**284**	**FINE SAND AND BLACK FLAKES**
284	**310**	**SAND STONE AND CLAY**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
4	**Screen**	**New Plastic (PVC)**	**SCH 40**	**270**	**310**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #249208

Owner:	**DOUGLAS DEJONGE**	Owner Well #:	**No Data**
Address:	**8115 C.R 4351 TAFT, TX 78390**	Grid #:	**79-63-7**
Well Location:	**8115 C.R 4351 TAFT, TX 78390**	Latitude:	**28° 00' 36" N**
		Longitude:	**097° 13' 00" W**
Well County:	**San Patricio**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **3/23/2011** Drilling End Date: **3/25/2011**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
7.875	**0**	**100**
6.75	**100**	**320**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**100**	**10 CEMENT**

Seal Method: **Pumped**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **N/A**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Water Level: **13 ft.** below land surface on **2011-03-25** Measurement Method: **Unknown**

Packers: **RUBBER 280**
RUBBER 100

Type of Pump: **Submersible** Pump Depth (ft.): **60**

Well Tests: **Jetted** **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **MARTIN WATER WELLS**

2151 N. HWY 77
ROBSTOWN, TX 78380

Driller Name: **AMOS MARTIN** License Number: **1669**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**10**	**CLAY**
10	**12**	**SAND**
12	**60**	**CLAY**
60	**90**	**SAND**
90	**135**	**CLAY**
135	**140**	**SAND**
140	**165**	**CLAY**
165	**180**	**SAND**
180	**202**	**CLAY**
202	**210**	**SAND**
210	**212**	**CLAY**
212	**220**	**SAND**
220	**225**	**CLAY**
225	**230**	**SAND**
230	**255**	**CLAY**
255	**275**	**CLAY**
275	**285**	**CLAY**
285	**320**	**SAND**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
4	**N**	**PVC**	**CASING 0-280**
4	**N**	**PVC**	**SCREEN 280-320 12**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

Appendix 7

Aquifer Testing Data

Hydraulic slug tests were conducted on four wells to estimate the hydraulic conductivity of the GWBUs. For Zone A, hydraulic slug tests were conducted on one upgradient well (MW-6R) and one downgradient well (MW3-4). For Zone B, hydraulic slug tests were conducted on one upgradient well (WM-6RB) and one downgradient well (MW3-4B). Refer to Figure 5A-1 and 5A-2 for an illustration of the well locations.

For Zone A, the estimated hydraulic conductivity ranged from 7.0 x 10-4 centimeters per second (cm/s) to 1.6 x 10-3 cm/s. For Zone B, the estimated hydraulic conductivity ranged from 1.2 x 10-4 cm/s to 3.9 x 10-4 cm/s.

Field records, slug test calculations, and plots are provided on the following pages. Transducers (level loggers) were utilized during slug tests to provide water level data.

SLUG TEST FORM

PAGE 1 of 1

Project Number: 1913 4560-1005 **Project Name:** Copano APAR Slug Test **Date:** 12-18-19

WELL INFORMATION

Well ID: MW-6R	Measuring Point (MP) of Well: TOC
Well Diameter (Inner, in.): ~~4~~ 4"	MP Height (ft. above ground level):
Well Depth (ft. BGL): 20.20	Slug IN or OUT: IN
Screened Interval (ft. BGL): —	Static Water Level Prior to Testing (ft. BMP): 9.80
Starting Water Level (ft. BMP): 9.76	Date Static Water Level Taken: 12-18-19

SLUG TEST INFORMATION

Slug Type (stainless, PVC, Teflon): PVC	Expected Well Response (+/- ft.):
Slug Length (ft.): 5.0'	Transducer Depth (ft. BMP): 19.0'
Slug Diameter (Inner, in.): 1.5"	Test Performed by: Greg Logan Jr.
Slug Volume (cu. ft.): 0.06 ft^3 / 0.5 gallons	

QUALITY ASSURANCE

Decontamination Procedures: Li-Nox + DI H2O	
Disposal of Discharged Water: Roll	

SLUG TEST MEASUREMENTS

START TIME: 13:00 **END TIME:** 14:00 **Water Level at Completion (ft. BMP):** 9.76

Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)
0:16	9.13	5:00	9.60				
0.31	9.17	10:00	9.71				
0.43	9.21	15:00	9.73				
0.54	9.25	20:00	9.74				
1:06	9.28	13:46 hrs	9.76				
1:19	9.31	14:00 hrs	9.76				
1:32	9.35						
1:46	9.38						
1:58	9.40						
2:15	9.42						
2:27	9.44						
2:43	9.46						
2:58	9.49						
3:15	9.51						
3:35	9.53						
3:50	9.54						
4:21	9.56						
4:51	9.59						

Comments:

GOLDER
Golder Associates Inc.
620 E. Airline | Victoria, Texas 77901
O·361.573.6442 F·361.573.6449
www.golder.com

SLUG TEST FORM

PAGE 1 of 1

Project Number: 1913456D-1000 **Project Name:** Copano APAR Slug Test **Date:** 12-18-19

WELL INFORMATION

Well ID: MW-6R	Measuring Point (MP) of Well: TOC
Well Diameter (Inner, in.): 4	MP Height (ft. above ground level):
Well Depth (ft. BGL): 20.20	Slug IN or OUT: OUT
Screened Interval (ft. BGL): –	Static Water Level Prior to Testing (ft. BMP): 9.80
Starting Water Level (ft. BMP): 9.76	Date Static Water Level Taken: 12/18/19

SLUG TEST INFORMATION

Slug Type (stainless, PVC, Teflon): PVC	Expected Well Response (+/- ft.):
Slug Length (ft.): 5'	Transducer Depth (ft. BMP): 15'
Slug Diameter (Inner, in.): 1.5"	Test Performed by: Greg Logan S.
Slug Volume (cu. ft.): 0.06 ft³ / 0.5 gallon	

QUALITY ASSURANCE

Decontamination Procedures: Li-Nox & rinse

Disposal of Discharged Water: Beal

SLUG TEST MEASUREMENTS

START TIME: 14:00 **END TIME:** 14:45 **Water Level at Completion (ft. BMP):** 9.76

Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)
0:15	10.40	8:00	9.84				
0:40	10.23	9:00	9.82				
1:04	10.24	10:00	9.80				
1:39	10.16	15:00	9.78				
1:57	10.13	20.00	9.76				
2:12	10.10	14:34hrs	9.76				
2:29	10.08	14:45hrs	9.76				
2:47	10:04						
3:08	10.02						
3:23	10:01						
3:42	9.99						
3:58	9.96						
4:16	9.95						
4:40	9.93						
4:50	9.92						
5:00	9.91						
6:00	9.89						
7:00	9.85						

Comments:

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SLUG TEST FORM

PAGE 1 of 1

Project Number: 191345600-1000 **Project Name:** Copero APAR Slug Test **Date:** 12-18-19

WELL INFORMATION

Well ID: MW-60B	Measuring Point (MP) of Well: TOC
Well Diameter (Inner, in.): 6.2	MP Height (ft. above ground level):
Well Depth (ft. BGL): 50.07	Slug IN or OUT: IN
Screened Interval (ft. BGL): —	Static Water Level Prior to Testing (ft. BMP): 8.50'
Starting Water Level (ft. BMP): ~~8.50~~ 8.23	Date Static Water Level Taken: 12-18-19

SLUG TEST INFORMATION

Slug Type (stainless, PVC, Teflon): PVC	Expected Well Response (+/- ft.):
Slug Length (ft.): 5	Transducer Depth (ft. BMP): 25.0'
Slug Diameter (Inner, in.): 1.5'	Test Performed by: Greg Logan Jr.
Slug Volume (cu. ft.): 0.06 ft3 / 0.5 gallons	

QUALITY ASSURANCE

Decontamination Procedures:	Li-Nox + Rinse
Disposal of Discharged Water:	Roof 2

SLUG TEST MEASUREMENTS

START TIME: 12:30 **END TIME:** 13:30 **Water Level at Completion (ft. BMP):** 8.22

Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)
0:15	6.03	5:00	7.81				
:40	6.35	6:00	7.92				
:54	6.54	7:00	8.00				
1:11	6.71	8:00	8.05				
1:27	6.84	9:00	8.10				
1:44	6.96	10:00	8.11				
1:57	7.10	15:00	8.19				
2:13	7.17	20:00	8.20				
2:25	7.25	13:00 hrs	8.22				
2:39	7.32	13:17 hrs	8.22				
2:53	7.38	13:30 hrs	8.22				
3:07	7.44	~~14:00 hrs~~					
3:21	7.50						
3:36	7.55						
3:52	7.61						
4:04	7.65						
4:19	7.70						
4:36	7.74						

Comments:

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www.golder.com

SLUG TEST FORM

Project Number: 19134560-1000 **Project Name:** Copper Slug Test **Date:** 12-18-19

WELL INFORMATION

Well ID: MW-6RB	Measuring Point (MP) of Well: TOC
Well Diameter (Inner, in.): 2	MP Height (ft. above ground level):
Well Depth (ft. BGL): 50.07	Slug IN or OUT: OUT
Screened Interval (ft. BGL): —	Static Water Level Prior to Testing (ft. BMP): 8.50
Starting Water Level (ft. BMP): 8.22	Date Static Water Level Taken: 12-18-19

SLUG TEST INFORMATION

Slug Type (stainless, PVC, Teflon): PVC	Expected Well Response (+/- ft.):
Slug Length (ft.): 5	Transducer Depth (ft. BMP): 25.8'
Slug Diameter (Inner, in.): 1.5'	Test Performed by: Greg Logan Jr.
Slug Volume (cu. ft.): 0.06 ft³ / 0.5 gallon	

QUALITY ASSURANCE

Decontamination Procedures:	Li-Nox & rinse
Disposal of Discharged Water:	Real

SLUG TEST MEASUREMENTS

START TIME: 13:30 **END TIME:** 14:22 **Water Level at Completion (ft. BMP):** 8.23

Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)
0:04	10.04	5:00	8.59				
0:19	10.18	6:00	8.49				
0:32	10.03	7:00	8.42				
0.49	9.83	8:00	8.37				
1:05	9.66	9:00	—				
1:20	9.53	10:00	8.31				
1:35	9.41	15:00	8.25				
1:50	9.32	20:00	8.25				
2:08	9.21	13:00 hrs	8.23				
2:21	9.13	14:12 hrs	8.23				
2:39	9.05	14:22 hrs	8.23				
2:55	8.97						
3:12	8.90						
3:37	8.81						
3:55	8.76						
4:25	8.68						
4:42	8.64						
4:52	8.61						

Comments:

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SLUG TEST FORM

PAGE 1 of 1

Project Number: 1413456001000 **Project Name:** Capstone Slug Test **Date:** 12-19-19

WELL INFORMATION

Well ID: MW3-4	Measuring Point (MP) of Well: TOC
Well Diameter (Inner, in.): 4"	MP Height (ft. above ground level):
Well Depth (ft. BGL): 15.70'	Slug IN or OUT: IN
Screened Interval (ft. BGL): -	Static Water Level Prior to Testing (ft. BMP): 6.55
Starting Water Level (ft. BMP): 6.52	Date Static Water Level Taken: 12-19-19

SLUG TEST INFORMATION

Slug Type (stainless, PVC, Teflon): PVC	Expected Well Response (+/- ft.):
Slug Length (ft.): 5'	Transducer Depth (ft. BMP): 15'
Slug Diameter (Inner, in.): 1.5"	Test Performed by: Greg Logan Sr.
Slug Volume (cu. ft.): 0.06 ft³ / 0.5 gallons	

QUALITY ASSURANCE

Decontamination Procedures: Li-Nox & Rinse

Disposal of Discharged Water: Bed 2

SLUG TEST MEASUREMENTS

START TIME: 10:55 **END TIME:** 11:55 **Water Level at Completion (ft. BMP):** 6.51

Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)
0:16	5.88	6:00	6.22				
0:40	5.88	7:00	6.26				
0:57	5.92	8:00	6.28				
1:13	5.93	9:00	6.31				
1:31	5.95	10:00	6.34				
1:47	5.98	15:00	6.42				
2:03	6.00	20:00	6.46				
2:20	6.02	25.00	6.48				
2:39	6.03	11:36 hrs	6.51				
2:54	6.05						
3:11	6.07						
3:28	6.09						
3:44	6.11						
3:59	6.12						
4:15	6.13						
4:31	6.15						
4:48	6.16						
5:00	6.17						

Comments:

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SLUG TEST FORM

Project Number: 1913456.4000 **Project Name:** Capano Slug Test **Date:** 12-19-19

WELL INFORMATION

Well ID: MW3-4	Measuring Point (MP) of Well: TOC
Well Diameter (Inner, in.): 4	MP Height (ft. above ground level):
Well Depth (ft. BGL): 15.70'	Slug IN or OUT: OUT
Screened Interval (ft. BGL): –	Static Water Level Prior to Testing (ft. BMP): 6.55
Starting Water Level (ft. BMP): 6.51	Date Static Water Level Taken: 12-19-19

SLUG TEST INFORMATION

Slug Type (stainless, PVC, Teflon): PVC	Expected Well Response (+/- ft.):
Slug Length (ft.): 5'	Transducer Depth (ft. BMP): 15'
Slug Diameter (Inner, in.): 1.5"	Test Performed by: Greg Logan Jr.
Slug Volume (cu. ft.): 0.06 ft³ / 0.5 gallons	

QUALITY ASSURANCE

Decontamination Procedures: Li-Nox + rinse

Disposal of Discharged Water: Bail 2

SLUG TEST MEASUREMENTS

START TIME: 11:55 **END TIME:** 12:46 **Water Level at Completion (ft. BMP):** 6.52

Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)
0:15	7.22	5:00	6.85				
0:33	7.19	6:00	6.80				
0.46	7.15	7:00	6.76				
1:00	7.13	8:00	6.72				
1:15	7.11	~~9:00~~ 9:30	6.68				
1:31	7.09	10:00	6.68				
1:45	7:06	15:00	6.59				
2:00	7:04	20:00	6.55				
2:20	7.02	12:36 hrs.	6.52				
2:33	7:00	12:46 hrs	6.52				
2:53	6.99						
3:10	6.96						
3:23	6.95						
3:37	6.93						
3:53	6.91						
4:10	6.90						
4:29	6.88						
4:44	6.86						

Comments:

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SLUG TEST FORM

PAGE 1 of 1

Project Number: 19134560-1000 **Project Name:** Copano Slug Test **Date:** 12-19-19

WELL INFORMATION

Well ID: MW3-4B	Measuring Point (MP) of Well: TOC
Well Diameter (Inner, in.): 2	MP Height (ft. above ground level):
Well Depth (ft. BGL): 44.50'	Slug IN or OUT: IN
Screened Interval (ft. BGL): -	Static Water Level Prior to Testing (ft. BMP): 6.31
Starting Water Level (ft. BMP): 6.02	Date Static Water Level Taken: 12-19-19

SLUG TEST INFORMATION

Slug Type (stainless, PVC, Teflon): PVC	Expected Well Response (+/- ft.):
Slug Length (ft.): 5'	Transducer Depth (ft. BMP): 25'
Slug Diameter (Inner, in.): 1.5"	Test Performed by: Greg Logan Jr.
Slug Volume (cu. ft.): 0.06 ft^3 / 0.5 gallons	

QUALITY ASSURANCE

Decontamination Procedures: Li-Nox & Rinse

Disposal of Discharged Water: Back 2

SLUG TEST MEASUREMENTS

START TIME: 11:25 **END TIME:** 12:25 **Water Level at Completion (ft. BMP):** 6.02

Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)
0:15	4.02	6:00	5.68				
0:36	4.33	7:00	5.76				
0:51	4.55	8:00	5.81				
1:07	4:63	9:00	5.87				
1:22	4.75	10:00	5.89				
1:37	4.85	15:00	5.98				
1:53	4.94	20:00	6.00				
2:17	5.06	12:12hrs	6:01				
2:34	5.14	12:25hrs	6:02				
2:53	5.21						
3:08	5.27						
3:25	5.33						
3:44	5.39						
4:06	5.44						
4:22	5.49						
4:36	5.52						
4:49	5.56						
5:00	5.58						

Comments:

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SLUG TEST FORM

Project Number: 19134560-0000 **Project Name:** Logan Slug Test **Date:** 12-19-19

WELL INFORMATION

Well ID: MW3-4B	Measuring Point (MP) of Well: TOC
Well Diameter (Inner, in.): 2	MP Height (ft. above ground level):
Well Depth (ft. BGL): 44.50	Slug IN or OUT: OUT
Screened Interval (ft. BGL): -	Static Water Level Prior to Testing (ft. BMP): 6.31
Starting Water Level (ft. BMP): 6.02	Date Static Water Level Taken: 12-19-19

SLUG TEST INFORMATION

Slug Type (stainless, PVC, Teflon): PVC	Expected Well Response (+/- ft.):
Slug Length (ft.): 5'	Transducer Depth (ft. BMP): 25'
Slug Diameter (Inner, in.): 1.5"	Test Performed by: Greg Logan Jr.
Slug Volume (cu. ft.): 0.06 CF / 0.5 gallons	

QUALITY ASSURANCE

Decontamination Procedures:	Li-NOX & rinse
Disposal of Discharged Water:	Roof 2

SLUG TEST MEASUREMENTS

START TIME: 12:25 **END TIME:** 12:58 **Water Level at Completion (ft. BMP):** 6.02

Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)	Minutes Since Start	Water Level (ft. BMP)
0:17	8.30	4:36	6.65				
0:32	8.11	4:50	6.61				
0.46	7.96	5:00	6.59				
1:00	7.84	~~6:00~~ 6:30	6.38				
1:13	7.70	7:00	6.33				
1:24	7.61	8:00	6.26				
1:36	7.54	9:00	6.21				
1:50	7.43	10:00	6.16				
2:10	7.33	15:00	6.05				
2:26	7:20	20:00	6.03				
2:38	7.13	12:58 hrs	6.02				
2:53	7.05						
3:13	6.98						
3:26	6.90						
3.42	6.85						
3:55	6.79						
4:16	6.74						
4:21	6.70						

Comments:

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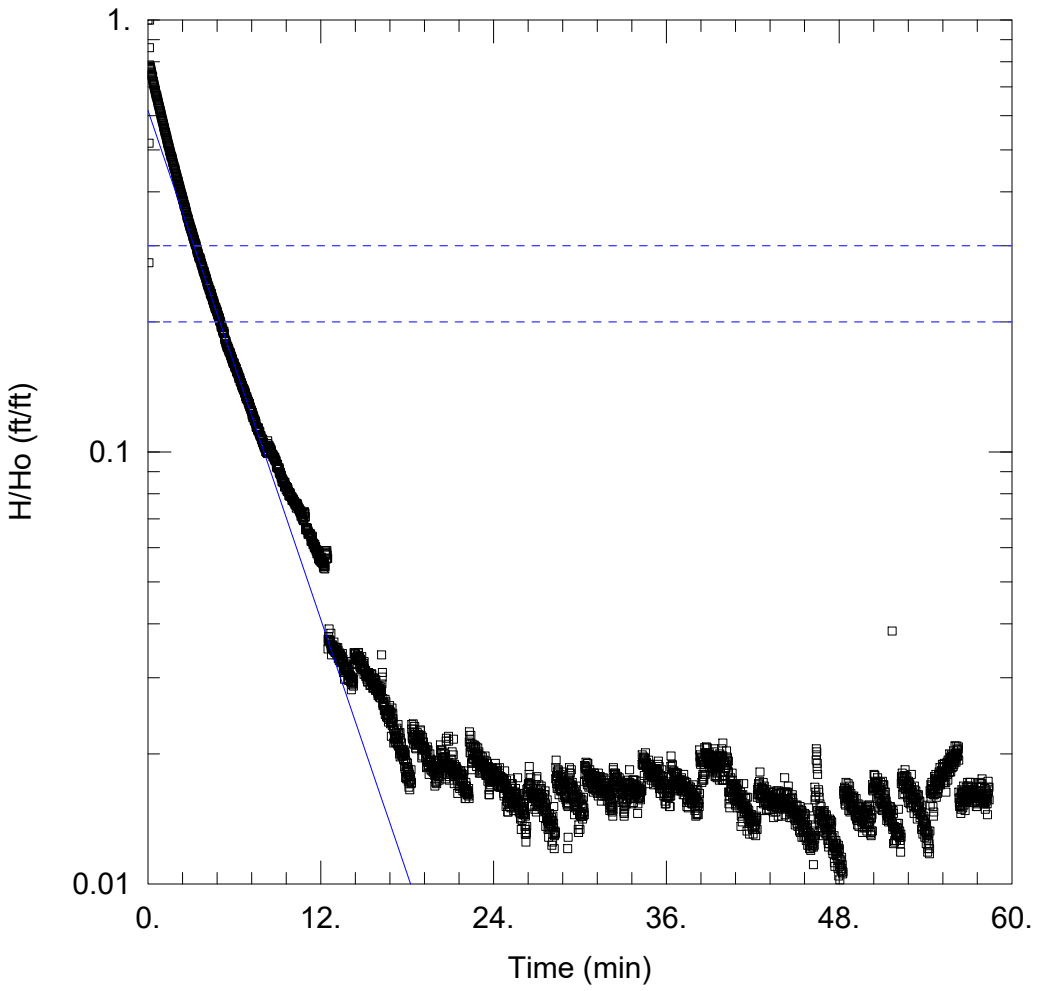
APPENDIX 7
SLUG TEST RESULTS
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COPANO PROPERTY

Well ID	Test Date	Test Type	Location	Hydrogeologic Unit	Aquifer Type	Analysis Method	Saturated Thickness (feet)	Results	
								K^1 (cm/sec)	T^2 (cm^2/sec)
MW-6R	12/19/2019	Slug-In	Upgradient	Zone A	Confined	Bouwer-Rice	5	1.6E-03	2.49E-01
MW-6R	12/19/2019	Slug-Out	Upgradient	Zone A	Confined	Bouwer-Rice	5	1.3E-03	1.92E-01
							MW-6R Average Results:	**1.4E-03**	**2.21E-01**
MW-6RB	12/18/2019	Slug In	Upgradient	Zone B	Confined	Bouwer-Rice	7.6	3.6E-04	8.24E-02
MW-6RB	12/18/2019	Slug Out	Upgradient	Zone B	Confined	Bouwer-Rice	7.6	3.9E-04	8.92E-02
							MW-6RB Average Results:	**3.7E-04**	**8.58E-02**
MW3-4	12/19/2019	Slug Out	Downgradient	Zone A	Confined	Bouwer-Rice	2.5	7.1E-04	5.41E-02
MW3-4	12/19/2019	Slug In	Downgradient	Zone A	Confined	Bouwer-Rice	2.5	7.0E-04	5.30E-02
							MW3-4 Average Results:	**7.0E-04**	**5.36E-02**
MW3-4B	12/19/2019	Slug Out	Downgradient	Zone B	Confined	Bouwer-Rice	12.2	2.0E-04	7.47E-02
MW3-4B	12/19/2019	Slug In	Downgradient	Zone B	Confined	Bouwer-Rice	12.2	1.2E-04	4.37E-02
							MW3-4B Average Results:	**1.6E-04**	**5.92E-02**

Notes:

1) K- Hydraulic Conductivity measured in centimeters per second

2) T - Transmissivity measured in centimeters squared per second



MW-6R SLUG-IN

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 1
Test Well: MW3-4
Test Date: 12/19/2019

AQUIFER DATA

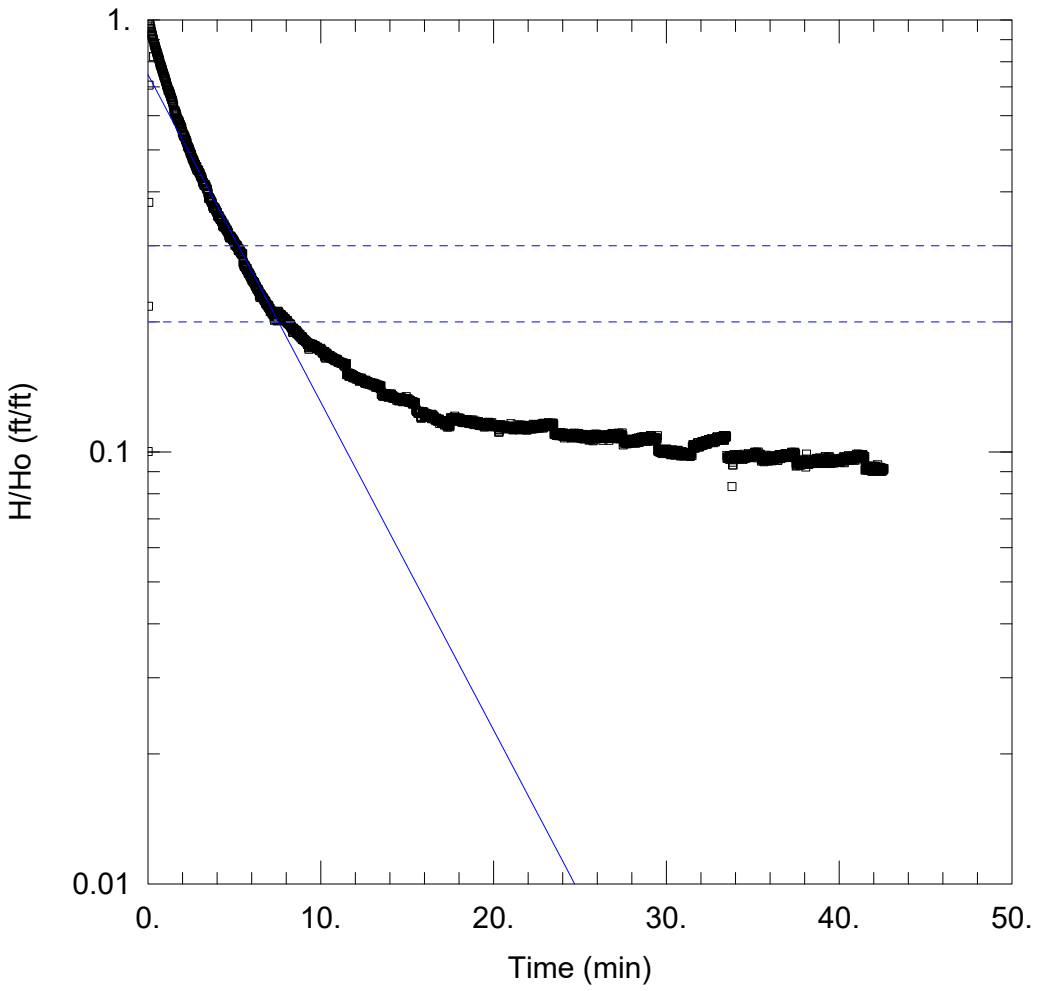
Saturated Thickness: 3. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-6R)

Initial Displacement: 0.92 ft
Total Well Penetration Depth: 17. ft
Casing Radius: 0.167 ft
Static Water Column Height: 9.94 ft
Screen Length: 5. ft
Well Radius: 0.167 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.001633 cm/sec
y0 = 0.5677 ft



MW-6R SLUG-OUT

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 1
Test Well: MW3-4
Test Date: 12/19/2019

AQUIFER DATA

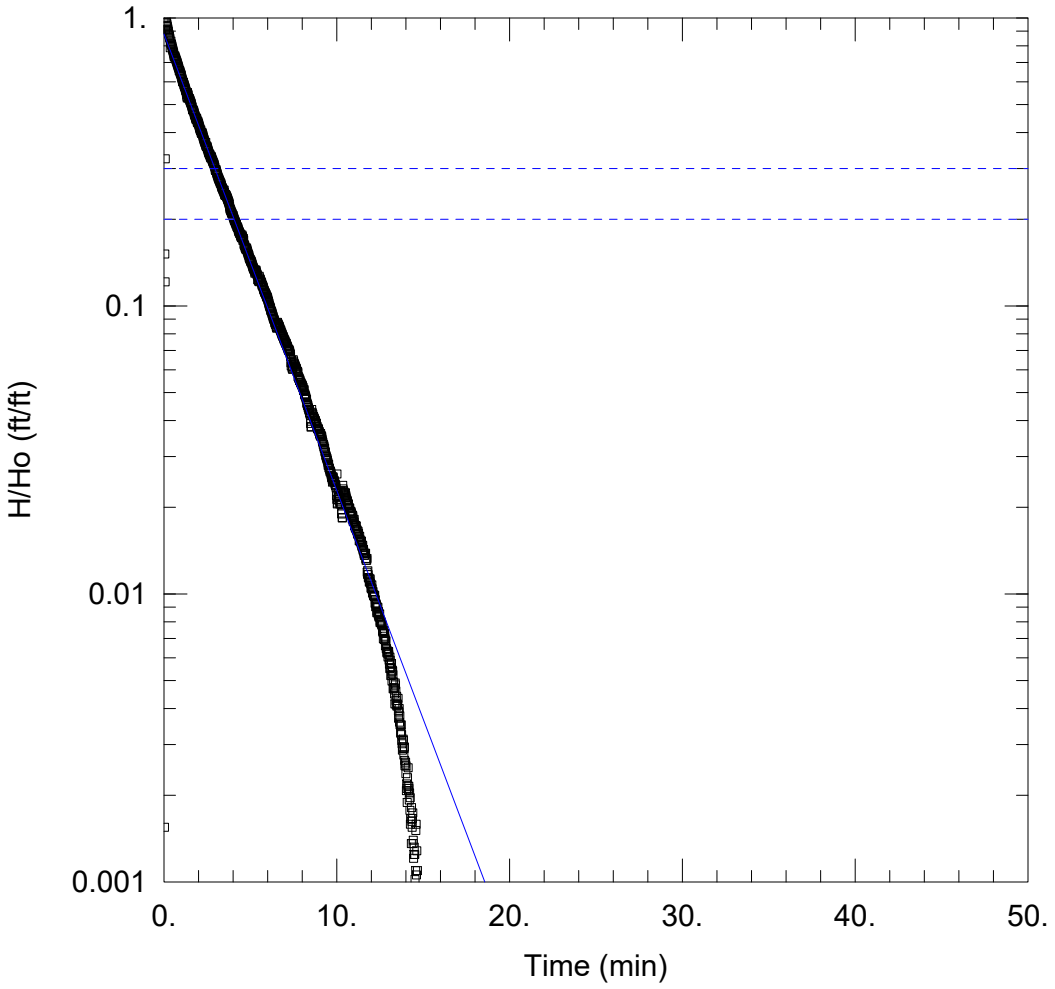
Saturated Thickness: 3. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-6R)

Initial Displacement: 0.8 ft
Total Well Penetration Depth: 17. ft
Casing Radius: 0.167 ft
Static Water Column Height: 9.94 ft
Screen Length: 5. ft
Well Radius: 0.167 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.001262 cm/sec
y0 = 0.5981 ft



MW-6RB SLUG-OUT

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 1
Test Well: MW-6RB
Test Date: 12/18/2019

AQUIFER DATA

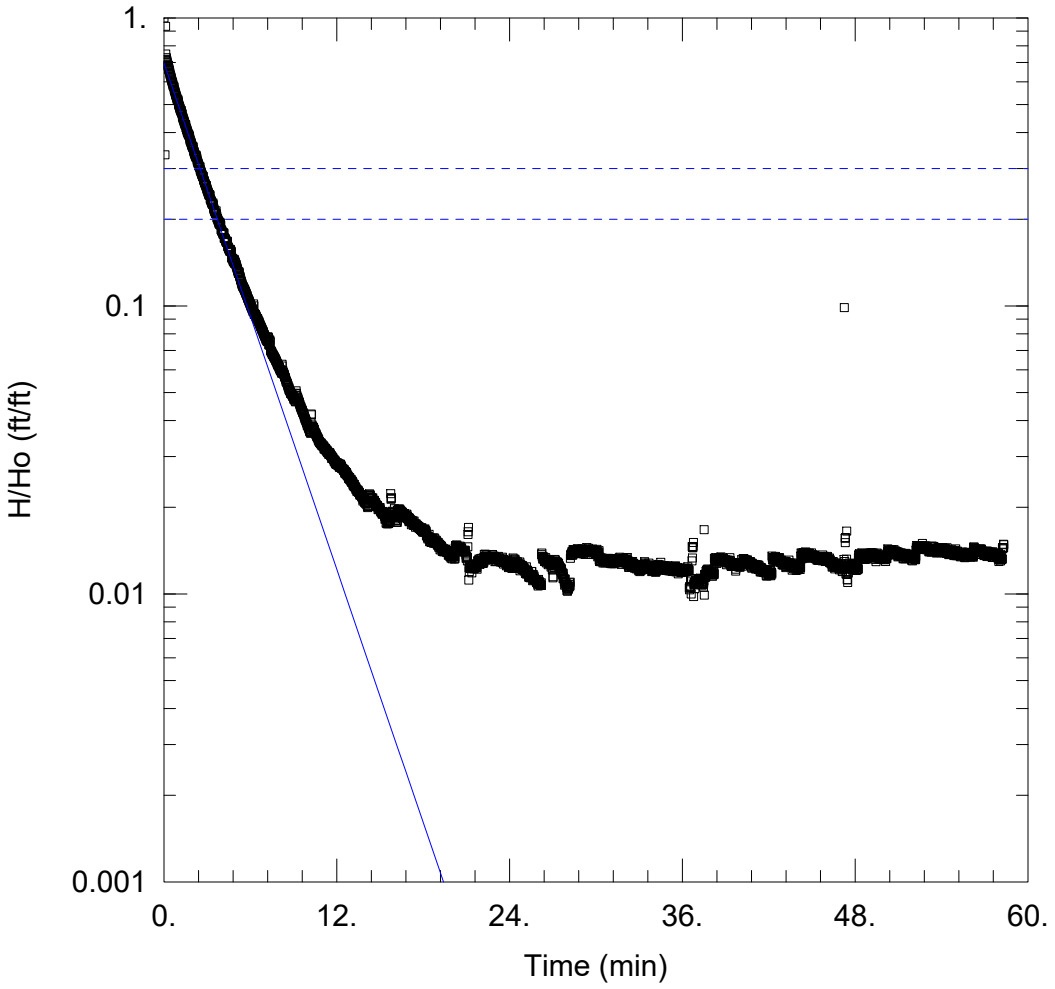
Saturated Thickness: 7.6 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-6RB)

Initial Displacement: 2.65 ft
Total Well Penetration Depth: 46.3 ft
Casing Radius: 0.083 ft
Static Water Column Height: 40.67 ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0003852 cm/sec
y0 = 2.332 ft



MW-6RB SLUG-IN

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 1
Test Well: MW-6RB
Test Date: 12/18/2019

AQUIFER DATA

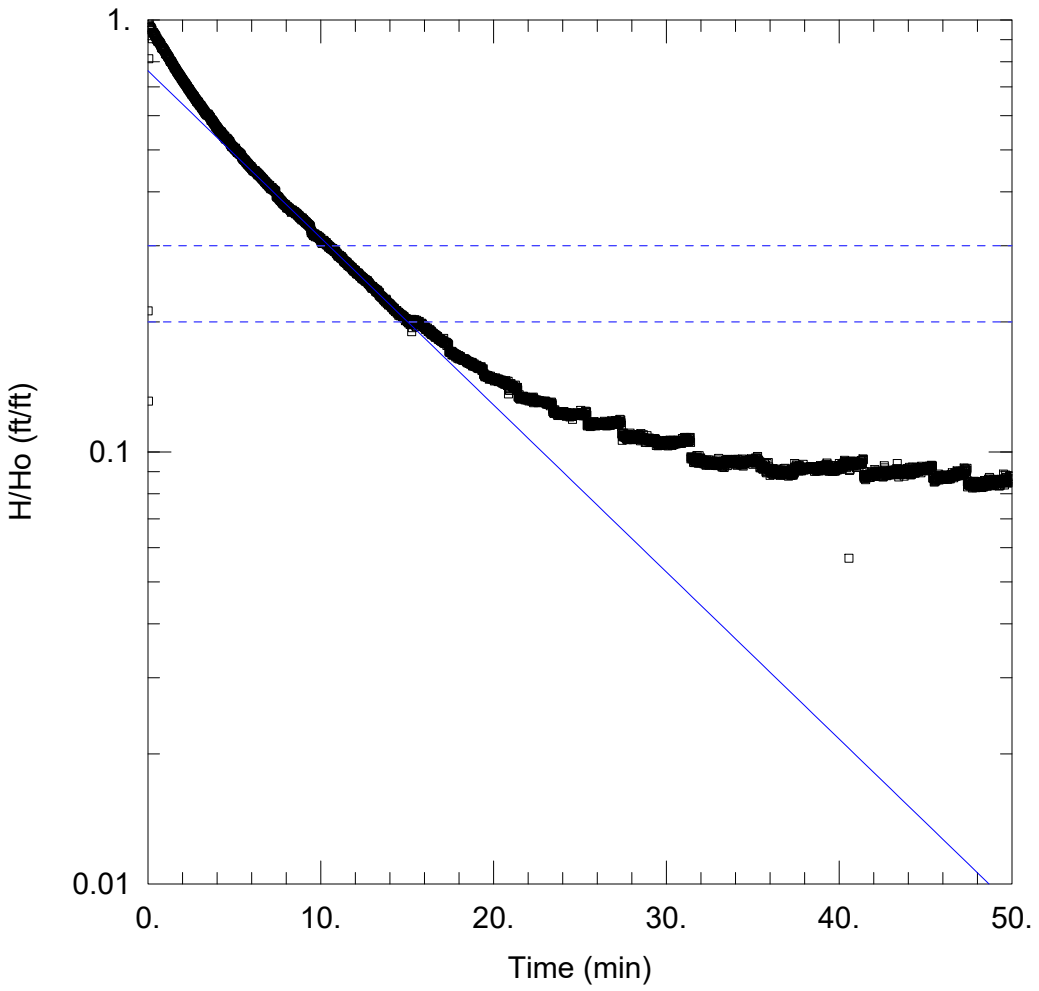
Saturated Thickness: 7.6 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-6RB)

Initial Displacement: 3.34 ft
Total Well Penetration Depth: 46.3 ft
Casing Radius: 0.083 ft
Static Water Column Height: 40.67 ft
Screen Length: 10. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0003557 cm/sec
y0 = 2.328 ft



MW3-4 SLUG-OUT

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 3
Test Well: MW3-4
Test Date: 12/19/2019

AQUIFER DATA

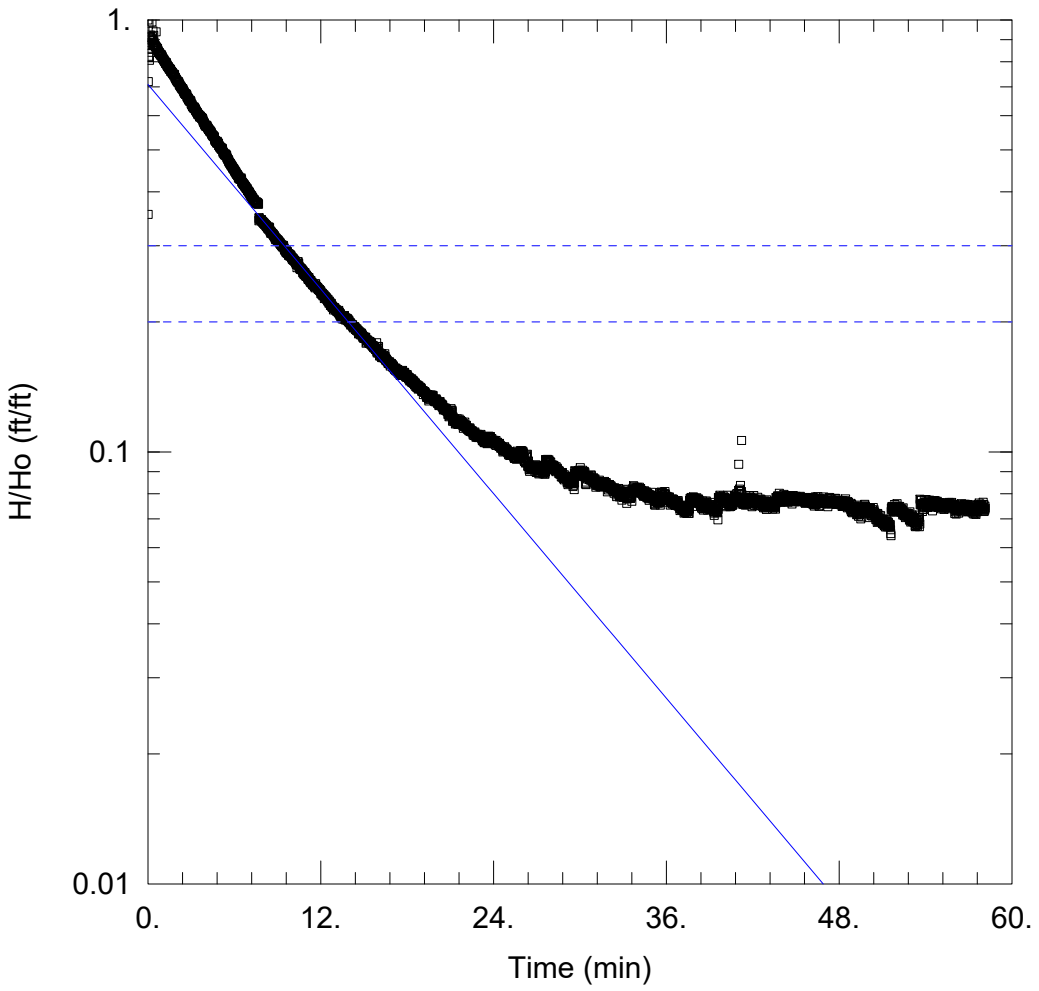
Saturated Thickness: 2.5 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW3-4)

Initial Displacement: 0.8 ft
Total Well Penetration Depth: 11. ft
Casing Radius: 0.167 ft
Static Water Column Height: 8.78 ft
Screen Length: 2.5 ft
Well Radius: 0.167 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0006957 cm/sec
y0 = 0.61 ft



MW3-4 SLUG-IN

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 3
Test Well: MW3-4
Test Date: 12/19/2019

AQUIFER DATA

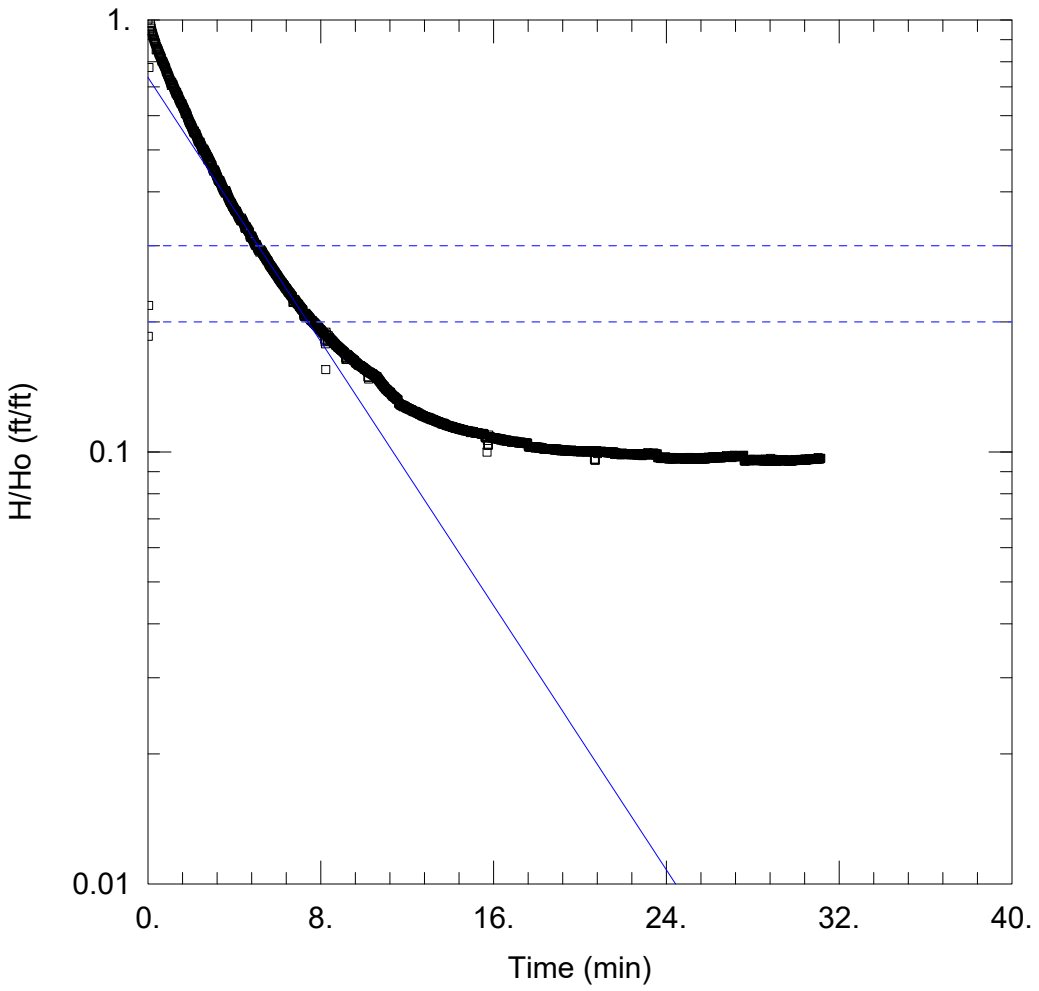
Saturated Thickness: 2.5 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW3-4)

Initial Displacement: 0.83 ft
Total Well Penetration Depth: 11. ft
Casing Radius: 0.167 ft
Static Water Column Height: 8.78 ft
Screen Length: 2.5 ft
Well Radius: 0.167 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0007099 cm/sec
y0 = 0.5882 ft



MW3-4B SLUG-OUT

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 3
Test Well: MW3-4B
Test Date: 12/19/2019

AQUIFER DATA

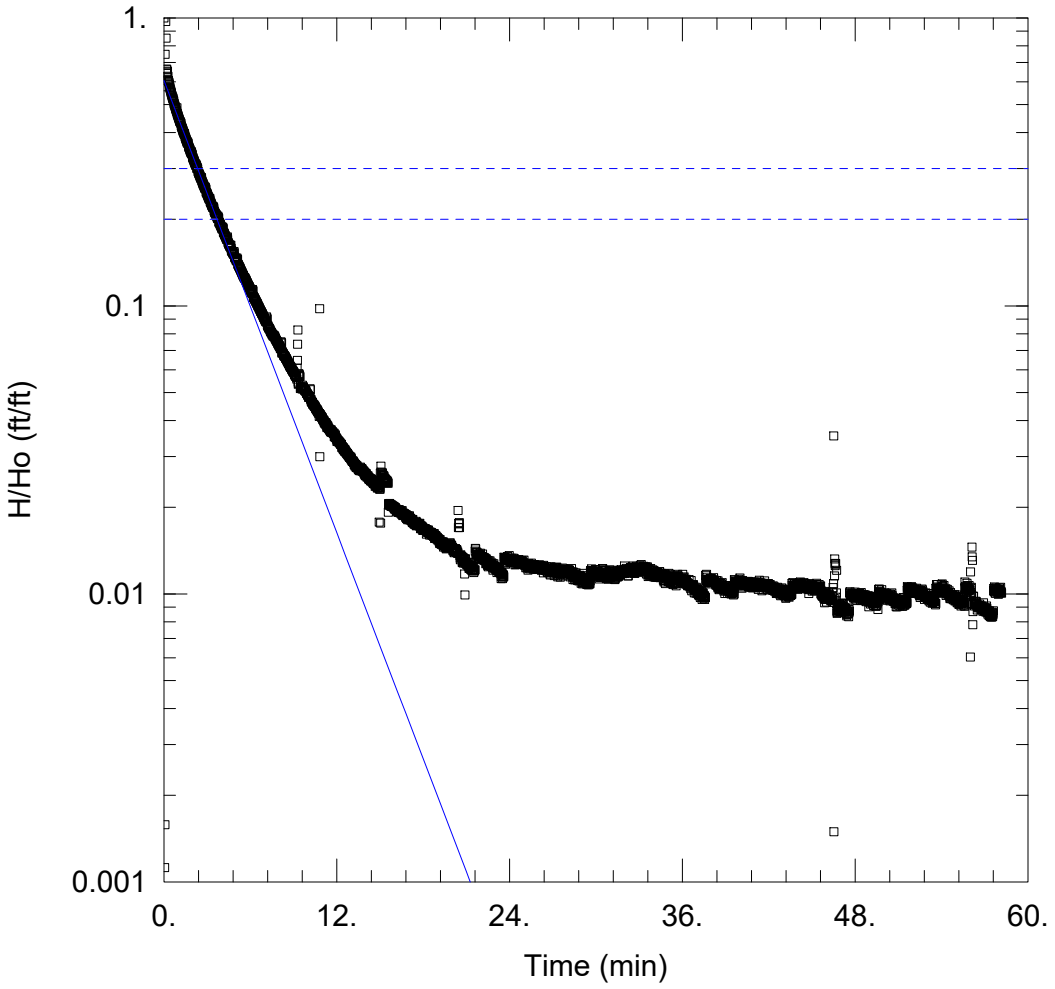
Saturated Thickness: 12.2 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW3-4B)

Initial Displacement: 3.11 ft
Total Well Penetration Depth: 42.5 ft
Casing Radius: 0.083 ft
Static Water Column Height: 38.98 ft
Screen Length: 15. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0001174 cm/sec
y0 = 2.288 ft



MW3-4B SLUG-IN

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 3
Test Well: MW3-4B
Test Date: 12/19/2019

AQUIFER DATA

Saturated Thickness: 12.2 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW3-4B)

Initial Displacement: 3.48 ft
Total Well Penetration Depth: 42.5 ft
Casing Radius: 0.083 ft
Static Water Column Height: 38.98 ft
Screen Length: 15. ft
Well Radius: 0.083 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
K = 0.000201 cm/sec
Solution Method: Bouwer-Rice
y0 = 2.109 ft

Data Set: C:\Users\ccarter\Golder Associates\19134560,Alcoa Copano APAR and SLERA - Project Files\5 Technic

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 1
Test Date: 12/19/2019
Test Well: MW-6R

AQUIFER DATA

Saturated Thickness: 3. ft
Anisotropy Ratio (Kz/Kr): 0.1

SLUG TEST WELL DATA

Test Well: MW-6R

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.92 ft
Static Water Column Height: 9.94 ft
Casing Radius: 0.167 ft
Well Radius: 0.167 ft
Well Skin Radius: 0.6875 ft
Screen Length: 5. ft
Total Well Penetration Depth: 17. ft
Corrected Casing Radius (Bouwer-Rice Method): 0.167 ft
Gravel Pack Porosity: 0.3

No. of Observations: 3506

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	0.	29.22	0.016
0.0167	0.001	29.23	0.015
0.0333	0.0021	29.25	0.0161
0.05	0.003	29.27	0.0171
0.0667	0.2523	29.28	0.0157
0.0833	0.4769	29.3	0.0166
0.1	0.7933	29.32	0.0157
0.1167	0.9188	29.33	0.0166
0.1333	0.7234	29.35	0.0153
0.15	0.7176	29.37	0.0155
0.1667	0.7141	29.38	0.0154
0.1833	0.7101	29.4	0.0169
0.2	0.706	29.42	0.0156
0.2167	0.7004	29.43	0.0145
0.2333	0.6966	29.45	0.0153
0.25	0.6922	29.47	0.0158
0.2667	0.6886	29.48	0.0146
0.2833	0.6837	29.5	0.0154
0.3	0.6791	29.52	0.0153
0.3167	0.6715	29.53	0.0155
0.3333	0.6814	29.55	0.0147
0.35	0.6643	29.57	0.0148
0.3667	0.6638	29.58	0.0139
0.3833	0.66	29.6	0.0143
0.4	0.6549	29.62	0.0151
0.4167	0.6518	29.63	0.0133
0.4333	0.6476	29.65	0.014
0.45	0.6433	29.67	0.014
0.4667	0.6407	29.68	0.0138
0.4833	0.6362	29.7	0.0152

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.5	0.6325	29.72	0.0145
0.5167	0.6287	29.73	0.0142
0.5333	0.6252	29.75	0.0155
0.55	0.6216	29.77	0.0147
0.5667	0.6176	29.78	0.0145
0.5833	0.6137	29.8	0.0139
0.6	0.6148	29.82	0.0137
0.6167	0.6121	29.83	0.0136
0.6333	0.6077	29.85	0.0148
0.65	0.6041	29.87	0.014
0.6667	0.6003	29.88	0.0123
0.6833	0.598	29.9	0.0121
0.7	0.5932	29.92	0.0145
0.7167	0.5907	29.93	0.0126
0.7333	0.587	29.95	0.0143
0.75	0.584	29.97	0.0133
0.7667	0.5811	29.98	0.0135
0.7833	0.578	30.	0.0123
0.8	0.5738	30.02	0.0146
0.8167	0.573	30.03	0.0134
0.8333	0.569	30.05	0.0132
0.85	0.5669	30.07	0.0144
0.8667	0.5635	30.08	0.0141
0.8833	0.5605	30.1	0.0132
0.9	0.5573	30.12	0.0132
0.9167	0.5538	30.13	0.0134
0.9333	0.5508	30.15	0.0144
0.95	0.5471	30.17	0.0139
0.9667	0.5452	30.18	0.013
0.9833	0.5406	30.2	0.014
1.	0.5381	30.22	0.0138
1.017	0.537	30.23	0.0132
1.033	0.5349	30.25	0.0146
1.05	0.5312	30.27	0.0138
1.067	0.5281	30.28	0.0135
1.083	0.5249	30.3	0.0133
1.1	0.522	30.32	0.0159
1.117	0.5187	30.33	0.0173
1.133	0.5168	30.35	0.0165
1.15	0.5134	30.37	0.017
1.167	0.5099	30.38	0.0172
1.183	0.5081	30.4	0.0171
1.2	0.5041	30.42	0.0171
1.217	0.5049	30.43	0.0176
1.233	0.5029	30.45	0.016
1.25	0.4991	30.47	0.0169
1.267	0.4957	30.48	0.0168
1.283	0.4921	30.5	0.0158
1.3	0.4909	30.52	0.0156
1.317	0.488	30.53	0.0175
1.333	0.4852	30.55	0.0175
1.35	0.4827	30.57	0.0166
1.367	0.4795	30.58	0.0163
1.383	0.4763	30.6	0.0163
1.4	0.4745	30.62	0.0154
1.417	0.4715	30.63	0.0162
1.433	0.4713	30.65	0.0161
1.45	0.4693	30.67	0.0161
1.467	0.4658	30.68	0.0169
1.483	0.4629	30.7	0.0155
1.5	0.4603	30.72	0.0166
1.517	0.4586	30.73	0.0158
1.533	0.4563	30.75	0.016
1.55	0.4536	30.77	0.0166
1.567	0.4518	30.78	0.0165
1.583	0.4494	30.8	0.0157

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.6	0.4462	30.82	0.0165
1.617	0.4443	30.83	0.0158
1.633	0.4436	30.85	0.0164
1.65	0.443	30.87	0.0153
1.667	0.4408	30.88	0.0162
1.683	0.438	30.9	0.016
1.7	0.4352	30.92	0.0159
1.717	0.4337	30.93	0.015
1.733	0.4303	30.95	0.016
1.75	0.4296	30.97	0.0154
1.767	0.4266	30.98	0.0166
1.783	0.4247	31.	0.0166
1.8	0.4224	31.02	0.0163
1.817	0.4204	31.03	0.0152
1.833	0.417	31.05	0.0164
1.85	0.418	31.07	0.0157
1.867	0.4161	31.08	0.0156
1.883	0.4142	31.1	0.0154
1.9	0.4111	31.12	0.0151
1.917	0.4089	31.13	0.0162
1.933	0.4061	31.15	0.0157
1.95	0.4056	31.17	0.0159
1.967	0.4027	31.18	0.0163
1.983	0.4008	31.2	0.0161
2.	0.3995	31.22	0.0149
2.017	0.3974	31.23	0.016
2.033	0.3947	31.25	0.0149
2.05	0.3935	31.27	0.0147
2.067	0.3905	31.28	0.0166
2.083	0.39	31.3	0.0157
2.1	0.3894	31.32	0.0158
2.117	0.3863	31.33	0.0161
2.133	0.3851	31.35	0.0163
2.15	0.3828	31.37	0.0153
2.167	0.3801	31.38	0.0152
2.183	0.3786	31.4	0.015
2.2	0.3771	31.42	0.0163
2.217	0.375	31.43	0.0151
2.233	0.3725	31.45	0.0158
2.25	0.3711	31.47	0.0152
2.267	0.369	31.48	0.0143
2.283	0.3672	31.5	0.016
2.3	0.3656	31.52	0.0155
2.317	0.3637	31.53	0.0151
2.333	0.3625	31.55	0.0152
2.35	0.3614	31.57	0.0151
2.367	0.3593	31.58	0.0147
2.383	0.3576	31.6	0.0155
2.4	0.3558	31.62	0.0162
2.417	0.3538	31.63	0.0155
2.433	0.3527	31.65	0.0153
2.45	0.3512	31.67	0.0151
2.467	0.3495	31.68	0.0151
2.483	0.3484	31.7	0.0157
2.5	0.3448	31.72	0.0152
2.517	0.3436	31.73	0.0147
2.533	0.3415	31.75	0.0158
2.55	0.3409	31.77	0.016
2.567	0.3399	31.78	0.0155
2.583	0.3386	31.8	0.0149
2.6	0.3357	31.82	0.0153
2.617	0.335	31.83	0.0147
2.633	0.333	31.85	0.0157
2.65	0.3315	31.87	0.0155
2.667	0.3294	31.88	0.0152
2.683	0.3288	31.9	0.0143

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2.7	0.3255	31.92	0.0161
2.717	0.3236	31.93	0.0151
2.733	0.3221	31.95	0.0153
2.75	0.3213	31.97	0.0147
2.767	0.3195	31.98	0.015
2.783	0.3195	32.	0.0149
2.8	0.3173	32.02	0.0144
2.817	0.3156	32.03	0.0151
2.833	0.3137	32.05	0.0147
2.85	0.3127	32.07	0.0136
2.867	0.3104	32.08	0.0138
2.883	0.3102	32.1	0.014
2.9	0.3092	32.12	0.0144
2.917	0.3066	32.13	0.0149
2.933	0.3058	32.15	0.0148
2.95	0.304	32.17	0.0138
2.967	0.3026	32.18	0.0136
2.983	0.3022	32.2	0.0139
3.	0.3008	32.22	0.0139
3.017	0.2989	32.23	0.0142
3.033	0.2988	32.25	0.0135
3.05	0.2976	32.27	0.014
3.067	0.2961	32.28	0.0132
3.083	0.2951	32.3	0.0137
3.1	0.2935	32.32	0.0169
3.117	0.2917	32.33	0.0171
3.133	0.29	32.35	0.0159
3.15	0.2896	32.37	0.0161
3.167	0.2887	32.38	0.0165
3.183	0.2868	32.4	0.0166
3.2	0.2856	32.42	0.0165
3.217	0.2848	32.43	0.0161
3.233	0.283	32.45	0.0154
3.25	0.2819	32.47	0.0166
3.267	0.2807	32.48	0.0165
3.283	0.2786	32.5	0.016
3.3	0.2788	32.52	0.0156
3.317	0.2782	32.53	0.0158
3.333	0.2772	32.55	0.0162
3.35	0.2757	32.57	0.016
3.367	0.2728	32.58	0.0156
3.383	0.2724	32.6	0.0154
3.4	0.2703	32.62	0.0163
3.417	0.2694	32.63	0.0155
3.433	0.2676	32.65	0.0149
3.45	0.2668	32.67	0.0159
3.467	0.2659	32.68	0.0156
3.483	0.2651	32.7	0.015
3.5	0.2635	32.72	0.0156
3.517	0.2616	32.73	0.0162
3.533	0.2611	32.75	0.0146
3.55	0.2597	32.77	0.0155
3.567	0.2588	32.78	0.0159
3.583	0.2584	32.8	0.0159
3.6	0.259	32.82	0.0158
3.617	0.2582	32.83	0.015
3.633	0.2567	32.85	0.0157
3.65	0.2555	32.87	0.0156
3.667	0.2553	32.88	0.0152
3.683	0.2522	32.9	0.0144
3.7	0.2516	32.92	0.0148
3.717	0.2507	32.93	0.0142
3.733	0.2496	32.95	0.0148
3.75	0.2488	32.97	0.0147
3.767	0.2472	32.98	0.0149
3.783	0.247	33.	0.0145

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
3.8	0.2456	33.02	0.0145
3.817	0.2448	33.03	0.0142
3.833	0.243	33.05	0.0135
3.85	0.2414	33.07	0.0132
3.867	0.2409	33.08	0.0134
3.883	0.2398	33.1	0.0137
3.9	0.2408	33.12	0.0139
3.917	0.2389	33.13	0.0148
3.933	0.2377	33.15	0.0152
3.95	0.2372	33.17	0.0157
3.967	0.2352	33.18	0.0156
3.983	0.2354	33.2	0.0151
4.	0.2339	33.22	0.0141
4.017	0.2326	33.23	0.0158
4.033	0.2321	33.25	0.0152
4.05	0.2311	33.27	0.015
4.067	0.2308	33.28	0.0144
4.083	0.2289	33.3	0.015
4.1	0.227	33.32	0.0157
4.117	0.227	33.33	0.016
4.133	0.2258	33.35	0.0148
4.15	0.2246	33.37	0.0148
4.167	0.2237	33.38	0.0152
4.183	0.2225	33.4	0.0158
4.2	0.2218	33.42	0.0156
4.217	0.2221	33.43	0.0148
4.233	0.2214	33.45	0.0169
4.25	0.2189	33.47	0.0158
4.267	0.2182	33.48	0.0154
4.283	0.219	33.5	0.0146
4.3	0.2176	33.52	0.0145
4.317	0.2175	33.53	0.0156
4.333	0.2149	33.55	0.0152
4.35	0.2136	33.57	0.0151
4.367	0.2124	33.58	0.0154
4.383	0.2145	33.6	0.0141
4.4	0.2141	33.62	0.0154
4.417	0.2124	33.63	0.0156
4.433	0.2111	33.65	0.0156
4.45	0.2104	33.67	0.0149
4.467	0.2092	33.68	0.016
4.483	0.2081	33.7	0.016
4.5	0.207	33.72	0.0142
4.517	0.2067	33.73	0.0157
4.533	0.2059	33.75	0.016
4.55	0.2047	33.77	0.0145
4.567	0.2029	33.78	0.0156
4.583	0.2044	33.8	0.0147
4.6	0.2024	33.82	0.0152
4.617	0.2012	33.83	0.016
4.633	0.2016	33.85	0.0149
4.65	0.1989	33.87	0.0148
4.667	0.1995	33.88	0.0149
4.683	0.1977	33.9	0.0155
4.7	0.1976	33.92	0.0153
4.717	0.1985	33.93	0.0156
4.733	0.197	33.95	0.0151
4.75	0.1963	33.97	0.0149
4.767	0.1949	33.98	0.0153
4.783	0.1941	34.	0.0134
4.8	0.1948	34.02	0.015
4.817	0.1937	34.03	0.0141
4.833	0.1914	34.05	0.0146
4.85	0.1919	34.07	0.0148
4.867	0.1903	34.08	0.0154
4.883	0.1905	34.1	0.0153

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
4.9	0.1892	34.12	0.0145
4.917	0.1888	34.13	0.0147
4.933	0.1885	34.15	0.0152
4.95	0.1878	34.17	0.0146
4.967	0.1871	34.18	0.015
4.983	0.1851	34.2	0.0144
5.	0.1847	34.22	0.0151
5.017	0.1847	34.23	0.015
5.033	0.1839	34.25	0.0159
5.05	0.1836	34.27	0.0152
5.067	0.1814	34.28	0.0155
5.083	0.1794	34.3	0.0151
5.1	0.1795	34.32	0.0174
5.117	0.179	34.33	0.0183
5.133	0.1785	34.35	0.0175
5.15	0.1786	34.37	0.0173
5.167	0.1771	34.38	0.0179
5.183	0.1753	34.4	0.0174
5.2	0.1764	34.42	0.0175
5.217	0.1752	34.43	0.0181
5.233	0.1737	34.45	0.018
5.25	0.1735	34.47	0.0164
5.267	0.173	34.48	0.0179
5.283	0.175	34.5	0.018
5.3	0.1729	34.52	0.0174
5.317	0.1691	34.53	0.0177
5.333	0.1687	34.55	0.0185
5.35	0.1672	34.57	0.0175
5.367	0.167	34.58	0.0175
5.383	0.166	34.6	0.0172
5.4	0.1656	34.62	0.0176
5.417	0.1641	34.63	0.0171
5.433	0.1659	34.65	0.0172
5.45	0.1633	34.67	0.0173
5.467	0.1633	34.68	0.0172
5.483	0.1615	34.7	0.0162
5.5	0.1618	34.72	0.0157
5.517	0.1605	34.73	0.0167
5.533	0.1608	34.75	0.0169
5.55	0.161	34.77	0.0178
5.567	0.1598	34.78	0.0171
5.583	0.1589	34.8	0.0164
5.6	0.1594	34.82	0.0169
5.617	0.1582	34.83	0.0174
5.633	0.1574	34.85	0.0165
5.65	0.1568	34.87	0.0172
5.667	0.1564	34.88	0.0166
5.683	0.1564	34.9	0.0174
5.7	0.1562	34.92	0.017
5.717	0.1556	34.93	0.0164
5.733	0.1546	34.95	0.016
5.75	0.1538	34.97	0.0163
5.767	0.1532	34.98	0.0168
5.783	0.1534	35.	0.0166
5.8	0.1527	35.02	0.017
5.817	0.152	35.03	0.0167
5.833	0.1508	35.05	0.0169
5.85	0.1512	35.07	0.0167
5.867	0.1508	35.08	0.0162
5.883	0.1491	35.1	0.0163
5.9	0.1487	35.12	0.0156
5.917	0.1482	35.13	0.0164
5.933	0.1475	35.15	0.0165
5.95	0.1475	35.17	0.0162
5.967	0.1477	35.18	0.0163
5.983	0.1476	35.2	0.0168

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
6.	0.1458	35.22	0.017
6.017	0.1455	35.23	0.017
6.033	0.1451	35.25	0.0167
6.05	0.1442	35.27	0.0168
6.067	0.1449	35.28	0.0158
6.083	0.1446	35.3	0.017
6.1	0.1435	35.32	0.0168
6.117	0.1436	35.33	0.017
6.133	0.1436	35.35	0.0159
6.15	0.1411	35.37	0.0168
6.167	0.1408	35.38	0.0168
6.183	0.1413	35.4	0.016
6.2	0.141	35.42	0.0174
6.217	0.14	35.43	0.0156
6.233	0.1406	35.45	0.0177
6.25	0.1398	35.47	0.0166
6.267	0.1388	35.48	0.0164
6.283	0.138	35.5	0.0172
6.3	0.1382	35.52	0.0158
6.317	0.1361	35.53	0.0153
6.333	0.1372	35.55	0.0157
6.35	0.1367	35.57	0.0149
6.367	0.1363	35.58	0.0149
6.383	0.1365	35.6	0.0164
6.4	0.1342	35.62	0.0154
6.417	0.1339	35.63	0.0155
6.433	0.1345	35.65	0.0158
6.45	0.1334	35.67	0.016
6.467	0.1328	35.68	0.0169
6.483	0.1331	35.7	0.0163
6.5	0.1317	35.72	0.0156
6.517	0.1312	35.73	0.0153
6.533	0.1307	35.75	0.0152
6.55	0.1313	35.77	0.0163
6.567	0.1302	35.78	0.016
6.583	0.1295	35.8	0.0159
6.6	0.1293	35.82	0.0157
6.617	0.1291	35.83	0.0147
6.633	0.1287	35.85	0.0157
6.65	0.1278	35.87	0.0153
6.667	0.1284	35.88	0.0149
6.683	0.1278	35.9	0.0157
6.7	0.1271	35.92	0.0143
6.717	0.1262	35.93	0.0141
6.733	0.1256	35.95	0.0157
6.75	0.1266	35.97	0.0157
6.767	0.1255	35.98	0.0141
6.783	0.1236	36.	0.015
6.8	0.1242	36.02	0.0146
6.817	0.1235	36.03	0.0147
6.833	0.1221	36.05	0.0152
6.85	0.1228	36.07	0.0146
6.867	0.1234	36.08	0.0157
6.883	0.1222	36.1	0.0154
6.9	0.1216	36.12	0.0157
6.917	0.1215	36.13	0.0163
6.933	0.1213	36.15	0.0147
6.95	0.1206	36.17	0.0156
6.967	0.1196	36.18	0.0146
6.983	0.1203	36.2	0.0149
7.	0.1194	36.22	0.0139
7.017	0.1185	36.23	0.015
7.033	0.1185	36.25	0.0147
7.05	0.1192	36.27	0.0139
7.067	0.1175	36.28	0.0151
7.083	0.117	36.3	0.0147

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
7.1	0.1168	36.32	0.0172
7.117	0.1164	36.33	0.0182
7.133	0.1163	36.35	0.0164
7.15	0.1154	36.37	0.0155
7.167	0.115	36.38	0.0169
7.183	0.1146	36.4	0.0174
7.2	0.1142	36.42	0.0173
7.217	0.1137	36.43	0.0157
7.233	0.1121	36.45	0.0153
7.25	0.1135	36.47	0.0159
7.267	0.1118	36.48	0.0156
7.283	0.1105	36.5	0.0159
7.3	0.112	36.52	0.0167
7.317	0.1107	36.53	0.0168
7.333	0.1112	36.55	0.0155
7.35	0.1105	36.57	0.0151
7.367	0.1099	36.58	0.0163
7.383	0.1087	36.6	0.0163
7.4	0.1084	36.62	0.0161
7.417	0.1092	36.63	0.0166
7.433	0.1089	36.65	0.0166
7.45	0.1082	36.67	0.0165
7.467	0.1081	36.68	0.0166
7.483	0.107	36.7	0.0163
7.5	0.107	36.72	0.0166
7.517	0.1052	36.73	0.0153
7.533	0.1049	36.75	0.0154
7.55	0.1053	36.77	0.0153
7.567	0.1047	36.78	0.0166
7.583	0.1046	36.8	0.0157
7.6	0.1045	36.82	0.0153
7.617	0.1034	36.83	0.0152
7.633	0.1038	36.85	0.016
7.65	0.1029	36.87	0.0158
7.667	0.1046	36.88	0.0158
7.683	0.1033	36.9	0.0157
7.7	0.1021	36.92	0.0155
7.717	0.103	36.93	0.0156
7.733	0.1025	36.95	0.016
7.75	0.1012	36.97	0.016
7.767	0.1025	36.98	0.016
7.783	0.1005	37.	0.0154
7.8	0.1004	37.02	0.0151
7.817	0.1	37.03	0.016
7.833	0.1004	37.05	0.0162
7.85	0.1002	37.07	0.0151
7.867	0.0992	37.08	0.016
7.883	0.0985	37.1	0.0159
7.9	0.0985	37.12	0.0153
7.917	0.098	37.13	0.0154
7.933	0.098	37.15	0.0154
7.95	0.0969	37.17	0.0148
7.967	0.0985	37.18	0.0153
7.983	0.0965	37.2	0.0165
8.	0.0969	37.22	0.0153
8.017	0.0968	37.23	0.0154
8.033	0.0956	37.25	0.015
8.05	0.0954	37.27	0.0148
8.067	0.0945	37.28	0.0159
8.083	0.0952	37.3	0.0157
8.1	0.0949	37.32	0.0152
8.117	0.0939	37.33	0.0155
8.133	0.094	37.35	0.0151
8.15	0.0947	37.37	0.0151
8.167	0.0937	37.38	0.0155
8.183	0.0921	37.4	0.0142

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
8.2	0.0928	37.42	0.0158
8.217	0.0921	37.43	0.0139
8.233	0.0924	37.45	0.0153
8.25	0.0917	37.47	0.0144
8.267	0.0916	37.48	0.0145
8.283	0.0914	37.5	0.0144
8.3	0.0913	37.52	0.0138
8.317	0.0976	37.53	0.015
8.333	0.0962	37.55	0.0152
8.35	0.0954	37.57	0.0155
8.367	0.0946	37.58	0.0153
8.383	0.0952	37.6	0.0142
8.4	0.0951	37.62	0.0146
8.417	0.0949	37.63	0.0146
8.433	0.0936	37.65	0.0148
8.45	0.094	37.67	0.0152
8.467	0.0941	37.68	0.0154
8.483	0.0941	37.7	0.0144
8.5	0.0925	37.72	0.0142
8.517	0.0928	37.73	0.0146
8.533	0.0926	37.75	0.0142
8.55	0.0932	37.77	0.0141
8.567	0.0925	37.78	0.0143
8.583	0.0921	37.8	0.0141
8.6	0.0911	37.82	0.0144
8.617	0.0909	37.83	0.0152
8.633	0.0908	37.85	0.015
8.65	0.0908	37.87	0.0156
8.667	0.0908	37.88	0.0144
8.683	0.0896	37.9	0.0147
8.7	0.0896	37.92	0.0146
8.717	0.0901	37.93	0.0147
8.733	0.09	37.95	0.0145
8.75	0.0894	37.97	0.0143
8.767	0.0888	37.98	0.0136
8.783	0.0895	38.	0.015
8.8	0.0883	38.02	0.0145
8.817	0.0893	38.03	0.0139
8.833	0.0879	38.05	0.0132
8.85	0.0881	38.07	0.0143
8.867	0.0877	38.08	0.0152
8.883	0.0881	38.1	0.0147
8.9	0.0874	38.12	0.0133
8.917	0.0862	38.13	0.0143
8.933	0.0848	38.15	0.0134
8.95	0.0858	38.17	0.0139
8.967	0.0853	38.18	0.0152
8.983	0.0849	38.2	0.0142
9.	0.0862	38.22	0.0133
9.017	0.0846	38.23	0.0141
9.033	0.0844	38.25	0.0141
9.05	0.0841	38.27	0.0144
9.067	0.0843	38.28	0.0139
9.083	0.0846	38.3	0.0149
9.1	0.0845	38.32	0.0188
9.117	0.0827	38.33	0.0181
9.133	0.0839	38.35	0.0176
9.15	0.0823	38.37	0.0183
9.167	0.0818	38.38	0.0174
9.183	0.0819	38.4	0.018
9.2	0.0825	38.42	0.0179
9.217	0.0815	38.43	0.0177
9.233	0.0815	38.45	0.0176
9.25	0.0804	38.47	0.0158
9.267	0.0811	38.48	0.0178
9.283	0.0803	38.5	0.0177

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
9.3	0.0786	38.52	0.016
9.317	0.0798	38.53	0.0163
9.333	0.0796	38.55	0.0165
9.35	0.0792	38.57	0.0161
9.367	0.0781	38.58	0.0176
9.383	0.0792	38.6	0.016
9.4	0.0786	38.62	0.0171
9.417	0.0785	38.63	0.0165
9.433	0.0782	38.65	0.0174
9.45	0.0785	38.67	0.019
9.467	0.0779	38.68	0.0185
9.483	0.0763	38.7	0.0165
9.5	0.0769	38.72	0.0184
9.517	0.0782	38.73	0.0182
9.533	0.0772	38.75	0.0179
9.55	0.077	38.77	0.0183
9.567	0.0763	38.78	0.0191
9.583	0.0763	38.8	0.0185
9.6	0.0752	38.82	0.018
9.617	0.0762	38.83	0.0181
9.633	0.0765	38.85	0.019
9.65	0.0761	38.87	0.018
9.667	0.0746	38.88	0.0183
9.683	0.0761	38.9	0.0184
9.7	0.0758	38.92	0.018
9.717	0.0744	38.93	0.0183
9.733	0.0753	38.95	0.0175
9.75	0.0743	38.97	0.0176
9.767	0.0745	38.98	0.0185
9.783	0.0729	39.	0.0181
9.8	0.0741	39.02	0.0171
9.817	0.074	39.03	0.0175
9.833	0.0727	39.05	0.0183
9.85	0.0738	39.07	0.0177
9.867	0.074	39.08	0.0174
9.883	0.0729	39.1	0.0181
9.9	0.0735	39.12	0.0174
9.917	0.0726	39.13	0.0178
9.933	0.0727	39.15	0.0172
9.95	0.0726	39.17	0.0179
9.967	0.0722	39.18	0.017
9.983	0.0723	39.2	0.0168
10.	0.0711	39.22	0.0167
10.02	0.0723	39.23	0.017
10.03	0.071	39.25	0.0181
10.05	0.0712	39.27	0.0179
10.07	0.0716	39.28	0.0182
10.08	0.071	39.3	0.0189
10.1	0.0715	39.32	0.0173
10.12	0.0712	39.33	0.0171
10.13	0.0706	39.35	0.0186
10.15	0.0703	39.37	0.0177
10.17	0.0707	39.38	0.0163
10.18	0.0706	39.4	0.0175
10.2	0.0696	39.42	0.017
10.22	0.0699	39.43	0.0164
10.23	0.0701	39.45	0.0173
10.25	0.0693	39.47	0.0168
10.27	0.0696	39.48	0.0172
10.28	0.0696	39.5	0.018
10.3	0.0682	39.52	0.0162
10.32	0.07	39.53	0.0166
10.33	0.0697	39.55	0.018
10.35	0.0696	39.57	0.0182
10.37	0.0698	39.58	0.0172
10.38	0.0688	39.6	0.0181

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
10.4	0.0691	39.62	0.0179
10.42	0.0687	39.63	0.0177
10.43	0.0684	39.65	0.0172
10.45	0.0678	39.67	0.0174
10.47	0.0681	39.68	0.016
10.48	0.0682	39.7	0.0176
10.5	0.0677	39.72	0.0184
10.52	0.0678	39.73	0.0176
10.53	0.0671	39.75	0.0182
10.55	0.0675	39.77	0.0178
10.57	0.0671	39.78	0.0173
10.58	0.0664	39.8	0.0178
10.6	0.067	39.82	0.0178
10.62	0.0672	39.83	0.0181
10.63	0.0653	39.85	0.0189
10.65	0.0665	39.87	0.018
10.67	0.0661	39.88	0.016
10.68	0.0653	39.9	0.0182
10.7	0.0659	39.92	0.0182
10.72	0.0648	39.93	0.0195
10.73	0.0646	39.95	0.016
10.75	0.0643	39.97	0.016
10.77	0.0659	39.98	0.0177
10.78	0.064	40.	0.0173
10.8	0.0638	40.02	0.0164
10.82	0.0638	40.03	0.0176
10.83	0.0642	40.05	0.0163
10.85	0.0661	40.07	0.0176
10.87	0.0669	40.08	0.0176
10.88	0.0666	40.1	0.0171
10.9	0.0663	40.12	0.016
10.92	0.0652	40.13	0.017
10.93	0.065	40.15	0.0171
10.95	0.0608	40.17	0.0173
10.97	0.0614	40.18	0.0187
10.98	0.0607	40.2	0.0178
11.	0.0615	40.22	0.0181
11.02	0.0614	40.23	0.0173
11.03	0.0608	40.25	0.018
11.05	0.0608	40.27	0.0168
11.07	0.0613	40.28	0.0177
11.08	0.0612	40.3	0.0177
11.1	0.0605	40.32	0.0167
11.12	0.0593	40.33	0.015
11.13	0.0598	40.35	0.0141
11.15	0.0601	40.37	0.0147
11.17	0.0595	40.38	0.015
11.18	0.0592	40.4	0.0138
11.2	0.0592	40.42	0.0145
11.22	0.0594	40.43	0.016
11.23	0.0596	40.45	0.015
11.25	0.0591	40.47	0.0162
11.27	0.0596	40.48	0.0153
11.28	0.0592	40.5	0.0152
11.3	0.0592	40.52	0.0156
11.32	0.0585	40.53	0.015
11.33	0.0571	40.55	0.0157
11.35	0.0575	40.57	0.0166
11.37	0.0583	40.58	0.016
11.38	0.0574	40.6	0.0146
11.4	0.0583	40.62	0.0156
11.42	0.0587	40.63	0.0148
11.43	0.0571	40.65	0.0152
11.45	0.0568	40.67	0.0151
11.47	0.0561	40.68	0.0156
11.48	0.0563	40.7	0.0154

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
11.5	0.0565	40.72	0.0155
11.52	0.0561	40.73	0.0144
11.53	0.0563	40.75	0.0157
11.55	0.0553	40.77	0.0156
11.57	0.0555	40.78	0.0147
11.58	0.0562	40.8	0.014
11.6	0.055	40.82	0.0155
11.62	0.0555	40.83	0.0149
11.63	0.0556	40.85	0.0145
11.65	0.0553	40.87	0.0143
11.67	0.0544	40.88	0.0153
11.68	0.0546	40.9	0.0156
11.7	0.0546	40.92	0.0138
11.72	0.0541	40.93	0.0152
11.73	0.0535	40.95	0.0141
11.75	0.0545	40.97	0.0151
11.77	0.0542	40.98	0.0143
11.78	0.0537	41.	0.0146
11.8	0.0531	41.02	0.0157
11.82	0.0539	41.03	0.0146
11.83	0.0544	41.05	0.0144
11.85	0.052	41.07	0.0145
11.87	0.0521	41.08	0.0142
11.88	0.0527	41.1	0.0148
11.9	0.0532	41.12	0.0138
11.92	0.0519	41.13	0.0144
11.93	0.0516	41.15	0.015
11.95	0.0526	41.17	0.0147
11.97	0.0522	41.18	0.0125
11.98	0.0518	41.2	0.0132
12.	0.0518	41.22	0.0148
12.02	0.0512	41.23	0.014
12.03	0.0512	41.25	0.0134
12.05	0.0525	41.27	0.0128
12.07	0.0511	41.28	0.014
12.08	0.0515	41.3	0.014
12.1	0.0511	41.32	0.0148
12.12	0.0511	41.33	0.0138
12.13	0.0508	41.35	0.0139
12.15	0.0514	41.37	0.0157
12.17	0.0506	41.38	0.0134
12.18	0.0499	41.4	0.0141
12.2	0.0495	41.42	0.0138
12.22	0.0503	41.43	0.0135
12.23	0.0507	41.45	0.0135
12.25	0.0502	41.47	0.0137
12.27	0.051	41.48	0.0139
12.28	0.0493	41.5	0.0145
12.3	0.05	41.52	0.0146
12.32	0.0543	41.53	0.0141
12.33	0.0535	41.55	0.0137
12.35	0.0539	41.57	0.0135
12.37	0.0544	41.58	0.0134
12.38	0.0532	41.6	0.0122
12.4	0.052	41.62	0.0138
12.42	0.0537	41.63	0.0146
12.43	0.0544	41.65	0.0137
12.45	0.0531	41.67	0.013
12.47	0.0522	41.68	0.0133
12.48	0.0522	41.7	0.0134
12.5	0.0322	41.72	0.0133
12.52	0.0339	41.73	0.0136
12.53	0.0336	41.75	0.0127
12.55	0.0344	41.77	0.0127
12.57	0.0338	41.78	0.012
12.58	0.0358	41.8	0.013

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
12.6	0.0338	41.82	0.013
12.62	0.0337	41.83	0.0128
12.63	0.0336	41.85	0.0132
12.65	0.0334	41.87	0.013
12.67	0.0332	41.88	0.0133
12.68	0.0336	41.9	0.0128
12.7	0.035	41.92	0.0133
12.72	0.0328	41.93	0.0129
12.73	0.0324	41.95	0.0125
12.75	0.0312	41.97	0.0124
12.77	0.0327	41.98	0.0123
12.78	0.0328	42.	0.0129
12.8	0.0322	42.02	0.0129
12.82	0.0329	42.03	0.012
12.83	0.0326	42.05	0.013
12.85	0.0323	42.07	0.0131
12.87	0.0323	42.08	0.0125
12.88	0.0326	42.1	0.0128
12.9	0.0319	42.12	0.0125
12.92	0.0334	42.13	0.0123
12.93	0.0321	42.15	0.0126
12.95	0.0319	42.17	0.0126
12.97	0.0322	42.18	0.0129
12.98	0.0317	42.2	0.0119
13.	0.0316	42.22	0.0123
13.02	0.0317	42.23	0.0131
13.03	0.0319	42.25	0.0129
13.05	0.0325	42.27	0.0132
13.07	0.0324	42.28	0.013
13.08	0.0324	42.3	0.0123
13.1	0.0315	42.32	0.0146
13.12	0.0312	42.33	0.0148
13.13	0.032	42.35	0.0152
13.15	0.0314	42.37	0.0152
13.17	0.0313	42.38	0.0154
13.18	0.0324	42.4	0.0157
13.2	0.0319	42.42	0.0148
13.22	0.0306	42.43	0.0152
13.23	0.031	42.45	0.0149
13.25	0.0306	42.47	0.0159
13.27	0.031	42.48	0.0156
13.28	0.0303	42.5	0.0167
13.3	0.0303	42.52	0.0147
13.32	0.0315	42.53	0.0145
13.33	0.0303	42.55	0.0147
13.35	0.0311	42.57	0.0148
13.37	0.0312	42.58	0.0136
13.38	0.0312	42.6	0.0148
13.4	0.0302	42.62	0.0154
13.42	0.03	42.63	0.0153
13.43	0.031	42.65	0.0148
13.45	0.0299	42.67	0.0152
13.47	0.03	42.68	0.0148
13.48	0.0307	42.7	0.0153
13.5	0.0314	42.72	0.0146
13.52	0.0302	42.73	0.0158
13.53	0.0302	42.75	0.0141
13.55	0.0305	42.77	0.0151
13.57	0.0291	42.78	0.0142
13.58	0.0284	42.8	0.0155
13.6	0.03	42.82	0.0152
13.62	0.0287	42.83	0.0149
13.63	0.0293	42.85	0.0143
13.65	0.0274	42.87	0.015
13.67	0.0289	42.88	0.0142
13.68	0.029	42.9	0.0149

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
13.7	0.0287	42.92	0.0149
13.72	0.0293	42.93	0.0143
13.73	0.0293	42.95	0.0137
13.75	0.0297	42.97	0.0136
13.77	0.0301	42.98	0.0152
13.78	0.0287	43.	0.0141
13.8	0.0295	43.02	0.014
13.82	0.0292	43.03	0.014
13.83	0.0293	43.05	0.0145
13.85	0.0288	43.07	0.0143
13.87	0.0293	43.08	0.0147
13.88	0.0273	43.1	0.014
13.9	0.0275	43.12	0.015
13.92	0.0289	43.13	0.0137
13.93	0.0281	43.15	0.0141
13.95	0.0272	43.17	0.0145
13.97	0.028	43.18	0.015
13.98	0.0286	43.2	0.0145
14.	0.0279	43.22	0.0145
14.02	0.028	43.23	0.015
14.03	0.0279	43.25	0.0143
14.05	0.0276	43.27	0.0147
14.07	0.0279	43.28	0.0141
14.08	0.027	43.3	0.0139
14.1	0.0277	43.32	0.0144
14.12	0.0271	43.33	0.0142
14.13	0.0259	43.35	0.0145
14.15	0.0269	43.37	0.0145
14.17	0.0275	43.38	0.0144
14.18	0.0266	43.4	0.0146
14.2	0.0271	43.42	0.0135
14.22	0.0277	43.43	0.0144
14.23	0.0271	43.45	0.0131
14.25	0.0268	43.47	0.0141
14.27	0.0264	43.48	0.0142
14.28	0.0273	43.5	0.0144
14.3	0.0285	43.52	0.0145
14.32	0.0315	43.53	0.0139
14.33	0.0296	43.55	0.0141
14.35	0.0314	43.57	0.0142
14.37	0.0315	43.58	0.0148
14.38	0.0315	43.6	0.0135
14.4	0.0304	43.62	0.0143
14.42	0.0313	43.63	0.0141
14.43	0.0305	43.65	0.015
14.45	0.0307	43.67	0.0138
14.47	0.0305	43.68	0.0151
14.48	0.0308	43.7	0.0138
14.5	0.0304	43.72	0.0145
14.52	0.0303	43.73	0.0145
14.53	0.031	43.75	0.0146
14.55	0.0311	43.77	0.0132
14.57	0.0297	43.78	0.0138
14.58	0.0309	43.8	0.0151
14.6	0.0315	43.82	0.0149
14.62	0.0305	43.83	0.0143
14.63	0.0316	43.85	0.0142
14.65	0.0305	43.87	0.014
14.67	0.0307	43.88	0.0138
14.68	0.0308	43.9	0.0141
14.7	0.0298	43.92	0.0149
14.72	0.0293	43.93	0.0143
14.73	0.0305	43.95	0.014
14.75	0.0305	43.97	0.0142
14.77	0.0291	43.98	0.0149
14.78	0.0304	44.	0.015

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
14.8	0.0302	44.02	0.0132
14.82	0.0301	44.03	0.0145
14.83	0.0289	44.05	0.0138
14.85	0.0309	44.07	0.014
14.87	0.0295	44.08	0.0137
14.88	0.0295	44.1	0.0145
14.9	0.0293	44.12	0.0142
14.92	0.0291	44.13	0.0145
14.93	0.0288	44.15	0.0142
14.95	0.0295	44.17	0.0141
14.97	0.0298	44.18	0.015
14.98	0.0294	44.2	0.0141
15.	0.0281	44.22	0.0162
15.02	0.0301	44.23	0.0138
15.03	0.029	44.25	0.0133
15.05	0.0288	44.27	0.014
15.07	0.0286	44.28	0.0143
15.08	0.0286	44.3	0.0141
15.1	0.0281	44.32	0.015
15.12	0.0287	44.33	0.015
15.13	0.0278	44.35	0.0148
15.15	0.0281	44.37	0.0139
15.17	0.0279	44.38	0.0139
15.18	0.0281	44.4	0.015
15.2	0.0274	44.42	0.014
15.22	0.0279	44.43	0.0142
15.23	0.0277	44.45	0.0149
15.25	0.027	44.47	0.0155
15.27	0.028	44.48	0.0143
15.28	0.027	44.5	0.0141
15.3	0.0281	44.52	0.0142
15.32	0.0284	44.53	0.0139
15.33	0.0278	44.55	0.0138
15.35	0.0283	44.57	0.0131
15.37	0.0281	44.58	0.0135
15.38	0.028	44.6	0.0144
15.4	0.0276	44.62	0.0138
15.42	0.0265	44.63	0.0145
15.43	0.0282	44.65	0.0138
15.45	0.0275	44.67	0.0131
15.47	0.0266	44.68	0.0137
15.48	0.0271	44.7	0.014
15.5	0.0272	44.72	0.0146
15.52	0.0275	44.73	0.0134
15.53	0.0282	44.75	0.0148
15.55	0.0281	44.77	0.0145
15.57	0.0274	44.78	0.0135
15.58	0.0268	44.8	0.0142
15.6	0.0268	44.82	0.0138
15.62	0.0261	44.83	0.0135
15.63	0.0266	44.85	0.0136
15.65	0.0276	44.87	0.0131
15.67	0.0262	44.88	0.0134
15.68	0.0262	44.9	0.0136
15.7	0.0262	44.92	0.013
15.72	0.0267	44.93	0.0136
15.73	0.0268	44.95	0.0126
15.75	0.0275	44.97	0.0136
15.77	0.0266	44.98	0.0129
15.78	0.0269	45.	0.014
15.8	0.0258	45.02	0.0133
15.82	0.0272	45.03	0.0135
15.83	0.0273	45.05	0.0133
15.85	0.0261	45.07	0.0127
15.87	0.0265	45.08	0.014
15.88	0.0259	45.1	0.0132

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
15.9	0.0261	45.12	0.0131
15.92	0.0265	45.13	0.0125
15.93	0.0265	45.15	0.0132
15.95	0.0256	45.17	0.0129
15.97	0.0254	45.18	0.0134
15.98	0.0251	45.2	0.0137
16.	0.0261	45.22	0.0133
16.02	0.026	45.23	0.0134
16.03	0.0252	45.25	0.0122
16.05	0.0264	45.27	0.0127
16.07	0.0261	45.28	0.0139
16.08	0.0249	45.3	0.0121
16.1	0.026	45.32	0.0129
16.12	0.0255	45.33	0.0132
16.13	0.0257	45.35	0.0132
16.15	0.0248	45.37	0.0126
16.17	0.0263	45.38	0.0128
16.18	0.0252	45.4	0.0136
16.2	0.0259	45.42	0.0118
16.22	0.0257	45.43	0.0135
16.23	0.0312	45.45	0.0126
16.25	0.0267	45.47	0.0123
16.27	0.0277	45.48	0.0122
16.28	0.0284	45.5	0.0132
16.3	0.0241	45.52	0.0121
16.32	0.0247	45.53	0.0124
16.33	0.0238	45.55	0.0118
16.35	0.0239	45.57	0.0126
16.37	0.0242	45.58	0.0126
16.38	0.0241	45.6	0.0134
16.4	0.024	45.62	0.0124
16.42	0.0232	45.63	0.0118
16.43	0.0236	45.65	0.0128
16.45	0.0233	45.67	0.0133
16.47	0.0246	45.68	0.0121
16.48	0.0227	45.7	0.0124
16.5	0.0232	45.72	0.0116
16.52	0.0232	45.73	0.0118
16.53	0.0243	45.75	0.0122
16.55	0.0226	45.77	0.0124
16.57	0.0224	45.78	0.0121
16.58	0.0233	45.8	0.0126
16.6	0.0227	45.82	0.0113
16.62	0.0227	45.83	0.0121
16.63	0.0226	45.85	0.0117
16.65	0.0223	45.87	0.0119
16.67	0.0227	45.88	0.0138
16.68	0.0226	45.9	0.0121
16.7	0.0218	45.92	0.0118
16.72	0.0233	45.93	0.0113
16.73	0.0221	45.95	0.0111
16.75	0.0232	45.97	0.0119
16.77	0.0231	45.98	0.0116
16.78	0.0238	46.	0.0111
16.8	0.0231	46.02	0.012
16.82	0.0221	46.03	0.011
16.83	0.023	46.05	0.0115
16.85	0.0216	46.07	0.0119
16.87	0.0229	46.08	0.013
16.88	0.0229	46.1	0.0116
16.9	0.0202	46.12	0.0112
16.92	0.0218	46.13	0.0113
16.93	0.0217	46.15	0.0114
16.95	0.0235	46.17	0.0118
16.97	0.0214	46.18	0.0126
16.98	0.0222	46.2	0.0119

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
17.	0.0228	46.22	0.0102
17.02	0.0222	46.23	0.0112
17.03	0.0218	46.25	0.0122
17.05	0.021	46.27	0.0113
17.07	0.0195	46.28	0.0119
17.08	0.021	46.3	0.0117
17.1	0.0208	46.32	0.0154
17.12	0.02	46.33	0.0144
17.13	0.0199	46.35	0.0146
17.15	0.0201	46.37	0.0147
17.17	0.0196	46.38	0.015
17.18	0.0201	46.4	0.0178
17.2	0.0205	46.42	0.0189
17.22	0.0196	46.43	0.0183
17.23	0.0205	46.45	0.0186
17.25	0.0203	46.47	0.017
17.27	0.0209	46.48	0.0175
17.28	0.0199	46.5	0.0165
17.3	0.0211	46.52	0.0136
17.32	0.0194	46.53	0.0136
17.33	0.0195	46.55	0.013
17.35	0.0201	46.57	0.0152
17.37	0.0215	46.58	0.015
17.38	0.0192	46.6	0.0133
17.4	0.0197	46.62	0.0146
17.42	0.0205	46.63	0.0126
17.43	0.0205	46.65	0.0135
17.45	0.0191	46.67	0.0141
17.47	0.0184	46.68	0.0122
17.48	0.0187	46.7	0.0133
17.5	0.0206	46.72	0.0134
17.52	0.0181	46.73	0.0136
17.53	0.02	46.75	0.0139
17.55	0.0188	46.77	0.0131
17.57	0.0196	46.78	0.0129
17.58	0.0184	46.8	0.0128
17.6	0.0195	46.82	0.0132
17.62	0.0185	46.83	0.0124
17.63	0.0182	46.85	0.0127
17.65	0.0187	46.87	0.0129
17.67	0.0188	46.88	0.0135
17.68	0.0182	46.9	0.0135
17.7	0.0182	46.92	0.0119
17.72	0.0188	46.93	0.0128
17.73	0.0184	46.95	0.0128
17.75	0.0179	46.97	0.0136
17.77	0.0178	46.98	0.0133
17.78	0.0188	47.	0.0121
17.8	0.0186	47.02	0.0128
17.82	0.0185	47.03	0.0124
17.83	0.0172	47.05	0.0129
17.85	0.017	47.07	0.0124
17.87	0.0184	47.08	0.012
17.88	0.0178	47.1	0.0133
17.9	0.0162	47.12	0.0132
17.92	0.0162	47.13	0.012
17.93	0.0167	47.15	0.0123
17.95	0.0172	47.17	0.013
17.97	0.0161	47.18	0.0122
17.98	0.0176	47.2	0.0128
18.	0.0163	47.22	0.0116
18.02	0.0167	47.23	0.0127
18.03	0.0175	47.25	0.0114
18.05	0.0171	47.27	0.0112
18.07	0.0165	47.28	0.0123
18.08	0.0159	47.3	0.0114

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
18.1	0.0169	47.32	0.0127
18.12	0.0167	47.33	0.0128
18.13	0.0154	47.35	0.013
18.15	0.0157	47.37	0.0122
18.17	0.0165	47.38	0.0119
18.18	0.0152	47.4	0.0129
18.2	0.0163	47.42	0.0116
18.22	0.016	47.43	0.0126
18.23	0.0163	47.45	0.0125
18.25	0.016	47.47	0.0121
18.27	0.0169	47.48	0.0128
18.28	0.0157	47.5	0.0118
18.3	0.0158	47.52	0.0118
18.32	0.021	47.53	0.011
18.33	0.0215	47.55	0.0115
18.35	0.0201	47.57	0.0108
18.37	0.0202	47.58	0.0114
18.38	0.0199	47.6	0.0113
18.4	0.0206	47.62	0.0114
18.42	0.02	47.63	0.0112
18.43	0.0216	47.65	0.0119
18.45	0.0194	47.67	0.0103
18.47	0.021	47.68	0.0112
18.48	0.0204	47.7	0.0101
18.5	0.0198	47.72	0.0111
18.52	0.0206	47.73	0.0108
18.53	0.0213	47.75	0.0114
18.55	0.0193	47.77	0.0116
18.57	0.0204	47.78	0.0109
18.58	0.019	47.8	0.0107
18.6	0.0195	47.82	0.0111
18.62	0.0189	47.83	0.0114
18.63	0.0198	47.85	0.0112
18.65	0.0193	47.87	0.0105
18.67	0.0193	47.88	0.0111
18.68	0.0198	47.9	0.011
18.7	0.0206	47.92	0.01
18.72	0.0196	47.93	0.0105
18.73	0.0203	47.95	0.0113
18.75	0.0201	47.97	0.0096
18.77	0.0197	47.98	0.011
18.78	0.0194	48.	0.0105
18.8	0.0195	48.02	0.0111
18.82	0.0204	48.03	0.0101
18.83	0.02	48.05	0.0094
18.85	0.0195	48.07	0.0105
18.87	0.0199	48.08	0.0102
18.88	0.0199	48.1	0.009
18.9	0.0202	48.12	0.0099
18.92	0.0208	48.13	0.0104
18.93	0.0209	48.15	0.0099
18.95	0.0194	48.17	0.0106
18.97	0.0203	48.18	0.01
18.98	0.0192	48.2	0.0098
19.	0.0189	48.22	0.0102
19.02	0.018	48.23	0.009
19.03	0.0191	48.25	0.0097
19.05	0.019	48.27	0.0098
19.07	0.0201	48.28	0.009
19.08	0.0182	48.3	0.009
19.1	0.0192	48.32	0.0151
19.12	0.0196	48.33	0.0148
19.13	0.0196	48.35	0.0149
19.15	0.019	48.37	0.0154
19.17	0.0188	48.38	0.0144
19.18	0.019	48.4	0.0141

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
19.2	0.0191	48.42	0.0153
19.22	0.0188	48.43	0.015
19.23	0.0189	48.45	0.014
19.25	0.0189	48.47	0.0143
19.27	0.0186	48.48	0.0158
19.28	0.018	48.5	0.0147
19.3	0.0184	48.52	0.0145
19.32	0.0187	48.53	0.0151
19.33	0.018	48.55	0.0146
19.35	0.0171	48.57	0.015
19.37	0.0188	48.58	0.0146
19.38	0.0172	48.6	0.0148
19.4	0.0191	48.62	0.0152
19.42	0.0178	48.63	0.0157
19.43	0.0176	48.65	0.0144
19.45	0.0188	48.67	0.0136
19.47	0.0173	48.68	0.0142
19.48	0.0174	48.7	0.0151
19.5	0.0176	48.72	0.0145
19.52	0.0176	48.73	0.0155
19.53	0.0165	48.75	0.0135
19.55	0.0176	48.77	0.0146
19.57	0.0176	48.78	0.0141
19.58	0.0184	48.8	0.0139
19.6	0.0178	48.82	0.0149
19.62	0.0179	48.83	0.0147
19.63	0.0177	48.85	0.0136
19.65	0.0169	48.87	0.0138
19.67	0.0176	48.88	0.0139
19.68	0.0178	48.9	0.014
19.7	0.0174	48.92	0.0137
19.72	0.0168	48.93	0.0146
19.73	0.0171	48.95	0.0143
19.75	0.0172	48.97	0.0139
19.77	0.0172	48.98	0.0146
19.78	0.0173	49.	0.0136
19.8	0.0167	49.02	0.0147
19.82	0.017	49.03	0.0141
19.83	0.0167	49.05	0.0145
19.85	0.0176	49.07	0.0137
19.87	0.0171	49.08	0.0137
19.88	0.0172	49.1	0.0139
19.9	0.017	49.12	0.0132
19.92	0.0164	49.13	0.0133
19.93	0.0155	49.15	0.0133
19.95	0.017	49.17	0.0133
19.97	0.0161	49.18	0.0145
19.98	0.0158	49.2	0.013
20.	0.0171	49.22	0.0136
20.02	0.0166	49.23	0.0136
20.03	0.0169	49.25	0.0129
20.05	0.0157	49.27	0.0139
20.07	0.0159	49.28	0.0126
20.08	0.0166	49.3	0.0131
20.1	0.0178	49.32	0.0134
20.12	0.0168	49.33	0.0141
20.13	0.0173	49.35	0.0132
20.15	0.0173	49.37	0.0125
20.17	0.0163	49.38	0.0134
20.18	0.0171	49.4	0.0136
20.2	0.0177	49.42	0.0133
20.22	0.0166	49.43	0.0133
20.23	0.016	49.45	0.0131
20.25	0.0175	49.47	0.0137
20.27	0.0169	49.48	0.0138
20.28	0.0163	49.5	0.0136

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
20.3	0.017	49.52	0.0132
20.32	0.0193	49.53	0.014
20.33	0.0185	49.55	0.0128
20.35	0.0188	49.57	0.0139
20.37	0.0184	49.58	0.0129
20.38	0.0174	49.6	0.0124
20.4	0.0188	49.62	0.0128
20.42	0.0187	49.63	0.0121
20.43	0.0175	49.65	0.0132
20.45	0.0178	49.67	0.013
20.47	0.0175	49.68	0.0135
20.48	0.018	49.7	0.0132
20.5	0.0185	49.72	0.0133
20.52	0.0174	49.73	0.0127
20.53	0.0175	49.75	0.0135
20.55	0.0179	49.77	0.0124
20.57	0.0175	49.78	0.0133
20.58	0.0171	49.8	0.0131
20.6	0.0181	49.82	0.0137
20.62	0.0184	49.83	0.0132
20.63	0.0175	49.85	0.0134
20.65	0.0181	49.87	0.0127
20.67	0.0181	49.88	0.0133
20.68	0.0161	49.9	0.0138
20.7	0.0165	49.92	0.0125
20.72	0.0197	49.93	0.0122
20.73	0.02	49.95	0.0127
20.75	0.0171	49.97	0.0135
20.77	0.0165	49.98	0.0139
20.78	0.0172	50.	0.0137
20.8	0.0165	50.02	0.0133
20.82	0.0173	50.03	0.0134
20.83	0.0172	50.05	0.0128
20.85	0.0175	50.07	0.0125
20.87	0.0202	50.08	0.0128
20.88	0.0197	50.1	0.014
20.9	0.0176	50.12	0.014
20.92	0.0171	50.13	0.0127
20.93	0.016	50.15	0.0131
20.95	0.0163	50.17	0.0136
20.97	0.0172	50.18	0.012
20.98	0.0171	50.2	0.0121
21.	0.0166	50.22	0.013
21.02	0.0166	50.23	0.0119
21.03	0.017	50.25	0.0131
21.05	0.0179	50.27	0.0122
21.07	0.0168	50.28	0.0133
21.08	0.0174	50.3	0.0122
21.1	0.017	50.32	0.0152
21.12	0.0178	50.33	0.0156
21.13	0.0186	50.35	0.0151
21.15	0.0167	50.37	0.0153
21.17	0.0173	50.38	0.0154
21.18	0.0171	50.4	0.0154
21.2	0.0183	50.42	0.0154
21.22	0.0199	50.43	0.0165
21.23	0.0163	50.45	0.0164
21.25	0.0167	50.47	0.0157
21.27	0.0157	50.48	0.0164
21.28	0.0174	50.5	0.0153
21.3	0.0165	50.52	0.0159
21.32	0.0172	50.53	0.0157
21.33	0.0166	50.55	0.0157
21.35	0.017	50.57	0.0154
21.37	0.0172	50.58	0.0155
21.38	0.0167	50.6	0.0158

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
21.4	0.0172	50.62	0.0145
21.42	0.0168	50.63	0.0145
21.43	0.0167	50.65	0.0154
21.45	0.017	50.67	0.0162
21.47	0.0169	50.68	0.0158
21.48	0.016	50.7	0.0159
21.5	0.0167	50.72	0.015
21.52	0.0149	50.73	0.0149
21.53	0.0157	50.75	0.0146
21.55	0.0164	50.77	0.0148
21.57	0.0166	50.78	0.0138
21.58	0.0164	50.8	0.0152
21.6	0.0168	50.82	0.0154
21.62	0.0155	50.83	0.0143
21.63	0.0161	50.85	0.0149
21.65	0.0153	50.87	0.0151
21.67	0.0155	50.88	0.0158
21.68	0.0165	50.9	0.0141
21.7	0.0164	50.92	0.0137
21.72	0.0168	50.93	0.0141
21.73	0.0159	50.95	0.0151
21.75	0.0159	50.97	0.0143
21.77	0.0166	50.98	0.0156
21.78	0.0164	51.	0.0159
21.8	0.0165	51.02	0.0136
21.82	0.0154	51.03	0.0138
21.83	0.0164	51.05	0.0148
21.85	0.0159	51.07	0.0156
21.87	0.0151	51.08	0.0139
21.88	0.0162	51.1	0.0156
21.9	0.0155	51.12	0.0145
21.92	0.0157	51.13	0.0148
21.93	0.0165	51.15	0.014
21.95	0.0168	51.17	0.0142
21.97	0.0153	51.18	0.015
21.98	0.015	51.2	0.015
22.	0.0152	51.22	0.0141
22.02	0.0152	51.23	0.0145
22.03	0.0145	51.25	0.014
22.05	0.0155	51.27	0.0143
22.07	0.0145	51.28	0.0134
22.08	0.0158	51.3	0.0129
22.1	0.0152	51.32	0.0136
22.12	0.0155	51.33	0.014
22.13	0.015	51.35	0.0132
22.15	0.0149	51.37	0.0137
22.17	0.0148	51.38	0.0132
22.18	0.0148	51.4	0.013
22.2	0.0151	51.42	0.0136
22.22	0.0151	51.43	0.0128
22.23	0.015	51.45	0.0135
22.25	0.0149	51.47	0.013
22.27	0.0153	51.48	0.0131
22.28	0.0147	51.5	0.0132
22.3	0.0145	51.52	0.0133
22.32	0.0196	51.53	0.0139
22.33	0.0207	51.55	0.0139
22.35	0.0199	51.57	0.0134
22.37	0.0185	51.58	0.0138
22.38	0.0194	51.6	0.0134
22.4	0.0191	51.62	0.0136
22.42	0.0185	51.63	0.0137
22.43	0.0203	51.65	0.0128
22.45	0.0191	51.67	0.0128
22.47	0.0175	51.68	0.0354
22.48	0.0169	51.7	0.0127

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
22.5	0.0176	51.72	0.0125
22.52	0.0194	51.73	0.0123
22.53	0.0183	51.75	0.0136
22.55	0.0179	51.77	0.0134
22.57	0.0184	51.78	0.0114
22.58	0.0179	51.8	0.0124
22.6	0.0191	51.82	0.0125
22.62	0.0191	51.83	0.0125
22.63	0.0179	51.85	0.0115
22.65	0.0193	51.87	0.0123
22.67	0.0185	51.88	0.0116
22.68	0.0183	51.9	0.012
22.7	0.0183	51.92	0.0124
22.72	0.0192	51.93	0.0124
22.73	0.0178	51.95	0.012
22.75	0.0189	51.97	0.0119
22.77	0.0182	51.98	0.0116
22.78	0.0191	52.	0.0121
22.8	0.0182	52.02	0.0127
22.82	0.0178	52.03	0.0124
22.83	0.0172	52.05	0.012
22.85	0.0183	52.07	0.0124
22.87	0.0175	52.08	0.0119
22.88	0.018	52.1	0.0121
22.9	0.019	52.12	0.0137
22.92	0.0184	52.13	0.0127
22.93	0.0181	52.15	0.012
22.95	0.0184	52.17	0.0119
22.97	0.0176	52.18	0.0118
22.98	0.0186	52.2	0.0122
23.	0.0177	52.22	0.0118
23.02	0.0166	52.23	0.0116
23.03	0.0172	52.25	0.0114
23.05	0.0174	52.27	0.0109
23.07	0.0178	52.28	0.012
23.08	0.0176	52.3	0.0118
23.1	0.0166	52.32	0.0157
23.12	0.0182	52.33	0.0163
23.13	0.0176	52.35	0.0159
23.15	0.0174	52.37	0.0162
23.17	0.0174	52.38	0.0166
23.18	0.0167	52.4	0.0161
23.2	0.0175	52.42	0.0148
23.22	0.0168	52.43	0.0154
23.23	0.0181	52.45	0.0156
23.25	0.0169	52.47	0.0159
23.27	0.0171	52.48	0.0156
23.28	0.0176	52.5	0.0149
23.3	0.0175	52.52	0.0164
23.32	0.0173	52.53	0.0161
23.33	0.0175	52.55	0.0159
23.35	0.0178	52.57	0.0164
23.37	0.0175	52.58	0.0169
23.38	0.017	52.6	0.0153
23.4	0.0171	52.62	0.0152
23.42	0.0182	52.63	0.0153
23.43	0.0167	52.65	0.0162
23.45	0.0168	52.67	0.0157
23.47	0.0164	52.68	0.016
23.48	0.0165	52.7	0.0163
23.5	0.017	52.72	0.0159
23.52	0.0177	52.73	0.0155
23.53	0.0172	52.75	0.0146
23.55	0.0171	52.77	0.015
23.57	0.0175	52.78	0.0153
23.58	0.017	52.8	0.0142

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
23.6	0.0159	52.82	0.0159
23.62	0.0165	52.83	0.0153
23.63	0.017	52.85	0.0155
23.65	0.0172	52.87	0.0148
23.67	0.0161	52.88	0.0156
23.68	0.0148	52.9	0.0157
23.7	0.0152	52.92	0.0141
23.72	0.0148	52.93	0.0152
23.73	0.0158	52.95	0.015
23.75	0.0154	52.97	0.0142
23.77	0.0163	52.98	0.0142
23.78	0.016	53.	0.0138
23.8	0.0156	53.02	0.0165
23.82	0.0171	53.03	0.0154
23.83	0.016	53.05	0.0152
23.85	0.0169	53.07	0.015
23.87	0.0161	53.08	0.0144
23.88	0.0164	53.1	0.0142
23.9	0.016	53.12	0.015
23.92	0.0171	53.13	0.0146
23.93	0.016	53.15	0.0145
23.95	0.0167	53.17	0.0145
23.97	0.0167	53.18	0.0139
23.98	0.0165	53.2	0.0134
24.	0.0162	53.22	0.0146
24.02	0.0166	53.23	0.0155
24.03	0.0168	53.25	0.0152
24.05	0.0163	53.27	0.0146
24.07	0.0166	53.28	0.0146
24.08	0.0159	53.3	0.0139
24.1	0.0168	53.32	0.0142
24.12	0.0167	53.33	0.0151
24.13	0.0175	53.35	0.0145
24.15	0.0159	53.37	0.0138
24.17	0.0162	53.38	0.0142
24.18	0.0164	53.4	0.0148
24.2	0.0159	53.42	0.0136
24.22	0.0168	53.43	0.013
24.23	0.0162	53.45	0.0136
24.25	0.0155	53.47	0.0147
24.27	0.017	53.48	0.0139
24.28	0.0155	53.5	0.0148
24.3	0.0159	53.52	0.0139
24.32	0.0155	53.53	0.0137
24.33	0.0159	53.55	0.0143
24.35	0.016	53.57	0.0139
24.37	0.0163	53.58	0.0138
24.38	0.0162	53.6	0.0143
24.4	0.0166	53.62	0.0131
24.42	0.0171	53.63	0.0134
24.43	0.0154	53.65	0.0133
24.45	0.0161	53.67	0.0133
24.47	0.0163	53.68	0.0133
24.48	0.0154	53.7	0.014
24.5	0.0163	53.72	0.0135
24.52	0.0162	53.73	0.0123
24.53	0.0156	53.75	0.0135
24.55	0.0155	53.77	0.0124
24.57	0.0157	53.78	0.0129
24.58	0.0154	53.8	0.0125
24.6	0.0162	53.82	0.012
24.62	0.0155	53.83	0.013
24.63	0.0158	53.85	0.0129
24.65	0.016	53.87	0.0127
24.67	0.0161	53.88	0.0132
24.68	0.016	53.9	0.0127

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
24.7	0.0149	53.92	0.0128
24.72	0.0159	53.93	0.0122
24.73	0.0147	53.95	0.0118
24.75	0.016	53.97	0.013
24.77	0.0168	53.98	0.0127
24.78	0.0157	54.	0.0127
24.8	0.0156	54.02	0.0121
24.82	0.0153	54.03	0.0122
24.83	0.0154	54.05	0.0114
24.85	0.0156	54.07	0.0126
24.87	0.0139	54.08	0.012
24.88	0.0153	54.1	0.0117
24.9	0.016	54.12	0.0122
24.92	0.0143	54.13	0.012
24.93	0.0151	54.15	0.0109
24.95	0.0143	54.17	0.0122
24.97	0.0146	54.18	0.0111
24.98	0.0135	54.2	0.0116
25.	0.0142	54.22	0.0116
25.02	0.0135	54.23	0.012
25.03	0.0147	54.25	0.0114
25.05	0.015	54.27	0.0108
25.07	0.0147	54.28	0.0111
25.08	0.015	54.3	0.0122
25.1	0.0139	54.32	0.0151
25.12	0.0145	54.33	0.014
25.13	0.0145	54.35	0.0149
25.15	0.0146	54.37	0.0156
25.17	0.0153	54.38	0.0145
25.18	0.0161	54.4	0.0153
25.2	0.0138	54.42	0.0155
25.22	0.0149	54.43	0.0149
25.23	0.0155	54.45	0.0158
25.25	0.0157	54.47	0.015
25.27	0.0141	54.48	0.0152
25.28	0.0143	54.5	0.0152
25.3	0.0157	54.52	0.0139
25.32	0.0141	54.53	0.0148
25.33	0.0151	54.55	0.0132
25.35	0.0142	54.57	0.0135
25.37	0.0141	54.58	0.0148
25.38	0.0138	54.6	0.0148
25.4	0.0136	54.62	0.0155
25.42	0.0136	54.63	0.0163
25.43	0.0149	54.65	0.016
25.45	0.0143	54.67	0.0155
25.47	0.015	54.68	0.0149
25.48	0.0143	54.7	0.0161
25.5	0.0143	54.72	0.0161
25.52	0.015	54.73	0.0165
25.53	0.0153	54.75	0.0146
25.55	0.0146	54.77	0.0157
25.57	0.0145	54.78	0.0159
25.58	0.0145	54.8	0.016
25.6	0.0148	54.82	0.0152
25.62	0.014	54.83	0.0149
25.63	0.0148	54.85	0.0158
25.65	0.0142	54.87	0.0157
25.67	0.0162	54.88	0.0153
25.68	0.0144	54.9	0.0165
25.7	0.0149	54.92	0.0155
25.72	0.0139	54.93	0.0164
25.73	0.0142	54.95	0.0167
25.75	0.0139	54.97	0.0157
25.77	0.0138	54.98	0.0159
25.78	0.0135	55.	0.0171

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
25.8	0.0137	55.02	0.0159
25.82	0.0149	55.03	0.0157
25.83	0.0144	55.05	0.0156
25.85	0.0134	55.07	0.0166
25.87	0.013	55.08	0.0165
25.88	0.0141	55.1	0.0168
25.9	0.0131	55.12	0.0162
25.92	0.0142	55.13	0.0166
25.93	0.0123	55.15	0.0163
25.95	0.0139	55.17	0.0174
25.97	0.0138	55.18	0.0167
25.98	0.0129	55.2	0.0163
26.	0.0136	55.22	0.0172
26.02	0.0136	55.23	0.0164
26.03	0.0138	55.25	0.0158
26.05	0.0133	55.27	0.0162
26.07	0.0137	55.28	0.0174
26.08	0.0142	55.3	0.0158
26.1	0.0134	55.32	0.0175
26.12	0.0135	55.33	0.0171
26.13	0.0133	55.35	0.0163
26.15	0.0139	55.37	0.0166
26.17	0.0133	55.38	0.0167
26.18	0.0125	55.4	0.0158
26.2	0.012	55.42	0.015
26.22	0.0132	55.43	0.0165
26.23	0.0123	55.45	0.0169
26.25	0.0115	55.47	0.0174
26.27	0.012	55.48	0.0169
26.28	0.0121	55.5	0.0176
26.3	0.0125	55.52	0.017
26.32	0.0152	55.53	0.0165
26.33	0.0147	55.55	0.016
26.35	0.0148	55.57	0.0178
26.37	0.0148	55.58	0.017
26.38	0.0153	55.6	0.0171
26.4	0.015	55.62	0.0173
26.42	0.0156	55.63	0.0176
26.43	0.0154	55.65	0.0167
26.45	0.0157	55.67	0.0167
26.47	0.0165	55.68	0.0184
26.48	0.0172	55.7	0.0172
26.5	0.0157	55.72	0.018
26.52	0.0156	55.73	0.0176
26.53	0.0147	55.75	0.0167
26.55	0.0157	55.77	0.0181
26.57	0.015	55.78	0.0179
26.58	0.0162	55.8	0.0174
26.6	0.0155	55.82	0.0183
26.62	0.0149	55.83	0.0176
26.63	0.015	55.85	0.0171
26.65	0.0145	55.87	0.0179
26.67	0.015	55.88	0.0181
26.68	0.0139	55.9	0.0181
26.7	0.014	55.92	0.0182
26.72	0.0147	55.93	0.0172
26.73	0.0147	55.95	0.0187
26.75	0.0149	55.97	0.0174
26.77	0.0153	55.98	0.0176
26.78	0.0146	56.	0.018
26.8	0.0146	56.02	0.0182
26.82	0.0147	56.03	0.0177
26.83	0.0145	56.05	0.0192
26.85	0.0148	56.07	0.018
26.87	0.0137	56.08	0.0184
26.88	0.0156	56.1	0.0184

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
26.9	0.0143	56.12	0.0176
26.92	0.0146	56.13	0.0179
26.93	0.0145	56.15	0.0185
26.95	0.0153	56.17	0.0192
26.97	0.0135	56.18	0.0182
26.98	0.0161	56.2	0.0188
27.	0.0142	56.22	0.0182
27.02	0.0163	56.23	0.0188
27.03	0.0143	56.25	0.0182
27.05	0.0139	56.27	0.0189
27.07	0.0148	56.28	0.0191
27.08	0.0143	56.3	0.0178
27.1	0.0148	56.32	0.015
27.12	0.0149	56.33	0.0145
27.13	0.014	56.35	0.0142
27.15	0.0156	56.37	0.0139
27.17	0.0139	56.38	0.0141
27.18	0.0145	56.4	0.0146
27.2	0.0149	56.42	0.0139
27.22	0.0142	56.43	0.014
27.23	0.0142	56.45	0.0134
27.25	0.0146	56.47	0.0149
27.27	0.0152	56.48	0.0137
27.28	0.0146	56.5	0.0144
27.3	0.0153	56.52	0.0148
27.32	0.0155	56.53	0.0152
27.33	0.0149	56.55	0.0149
27.35	0.014	56.57	0.015
27.37	0.0137	56.58	0.0138
27.38	0.0141	56.6	0.0142
27.4	0.0145	56.62	0.0143
27.42	0.0146	56.63	0.0149
27.43	0.0142	56.65	0.0155
27.45	0.0139	56.67	0.014
27.47	0.0131	56.68	0.015
27.48	0.0137	56.7	0.0143
27.5	0.0142	56.72	0.0151
27.52	0.0148	56.73	0.0146
27.53	0.0138	56.75	0.0136
27.55	0.0148	56.77	0.0143
27.57	0.0142	56.78	0.0147
27.58	0.0151	56.8	0.0144
27.6	0.0141	56.82	0.015
27.62	0.0135	56.83	0.0154
27.63	0.0125	56.85	0.0148
27.65	0.0136	56.87	0.0143
27.67	0.0138	56.88	0.0143
27.68	0.0131	56.9	0.0152
27.7	0.0133	56.92	0.0148
27.72	0.0134	56.93	0.0158
27.73	0.0144	56.95	0.0155
27.75	0.0129	56.97	0.0155
27.77	0.0129	56.98	0.0144
27.78	0.0123	57.	0.0148
27.8	0.0131	57.02	0.0152
27.82	0.0127	57.03	0.0142
27.83	0.0118	57.05	0.0152
27.85	0.0123	57.07	0.0158
27.87	0.0124	57.08	0.0151
27.88	0.0134	57.1	0.015
27.9	0.0127	57.12	0.0145
27.92	0.013	57.13	0.0158
27.93	0.0127	57.15	0.0146
27.95	0.0129	57.17	0.0148
27.97	0.0126	57.18	0.0146
27.98	0.0123	57.2	0.0151

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
28.	0.0125	57.22	0.0151
28.02	0.0129	57.23	0.0154
28.03	0.0131	57.25	0.0145
28.05	0.0113	57.27	0.0149
28.07	0.0125	57.28	0.0142
28.08	0.0129	57.3	0.0147
28.1	0.0115	57.32	0.0152
28.12	0.012	57.33	0.0152
28.13	0.0132	57.35	0.015
28.15	0.0124	57.37	0.0145
28.17	0.0127	57.38	0.0143
28.18	0.0139	57.4	0.0146
28.2	0.012	57.42	0.0148
28.22	0.0111	57.43	0.0146
28.23	0.0119	57.45	0.0151
28.25	0.012	57.47	0.0147
28.27	0.0122	57.48	0.0146
28.28	0.012	57.5	0.0148
28.3	0.0121	57.52	0.0146
28.32	0.0161	57.53	0.0139
28.33	0.0171	57.55	0.0154
28.35	0.0178	57.57	0.0149
28.37	0.0163	57.58	0.0139
28.38	0.0157	57.6	0.0141
28.4	0.0159	57.62	0.0142
28.42	0.0153	57.63	0.0143
28.43	0.0167	57.65	0.0148
28.45	0.0164	57.67	0.0146
28.47	0.0153	57.68	0.0146
28.48	0.0169	57.7	0.0154
28.5	0.0168	57.72	0.0149
28.52	0.0166	57.73	0.0149
28.53	0.0156	57.75	0.0147
28.55	0.0148	57.77	0.0158
28.57	0.0156	57.78	0.0143
28.58	0.0155	57.8	0.0143
28.6	0.0156	57.82	0.0143
28.62	0.0159	57.83	0.0154
28.63	0.0165	57.85	0.0157
28.65	0.0151	57.87	0.0146
28.67	0.0157	57.88	0.0155
28.68	0.0162	57.9	0.0154
28.7	0.0162	57.92	0.0157
28.72	0.0151	57.93	0.0161
28.73	0.0151	57.95	0.0143
28.75	0.0163	57.97	0.0148
28.77	0.0157	57.98	0.0147
28.78	0.016	58.	0.0144
28.8	0.0157	58.02	0.0143
28.82	0.0146	58.03	0.0142
28.83	0.0158	58.05	0.0147
28.85	0.0154	58.07	0.0142
28.87	0.0167	58.08	0.0141
28.88	0.0157	58.1	0.0145
28.9	0.0158	58.12	0.0141
28.92	0.0156	58.13	0.0153
28.93	0.0147	58.15	0.0137
28.95	0.0157	58.17	0.0145
28.97	0.0149	58.18	0.0149
28.98	0.0159	58.2	0.0151
29.	0.0146	58.22	0.0143
29.02	0.0154	58.23	0.015
29.03	0.0144	58.25	0.0146
29.05	0.0147	58.27	0.0148
29.07	0.0146	58.28	0.0141
29.08	0.0142	58.3	0.0133

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
29.1	0.0158	58.32	0.0145
29.12	0.014	58.33	0.0149
29.13	0.0141	58.35	0.0159
29.15	0.0111	58.37	0.0151
29.17	0.0139	58.38	0.0154
29.18	0.0118	58.4	0.0154
29.2	0.0141	58.42	0.0144

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 3.293

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.001633	cm/sec
y0	0.5677	ft

T = K*b = 0.1493 cm²/sec

Data Set: C:\Users\ccarter\Golder Associates\19134560,Alcoa Copano APAR and SLERA - Project Files\5 Technic

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 1
Test Date: 12/19/2019
Test Well: MW-6R

AQUIFER DATA

Saturated Thickness: 3. ft
Anisotropy Ratio (Kz/Kr): 0.1

SLUG TEST WELL DATA

Test Well: MW-6R

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.8 ft
Static Water Column Height: 9.94 ft
Casing Radius: 0.167 ft
Well Radius: 0.167 ft
Well Skin Radius: 0.6875 ft
Screen Length: 5. ft
Total Well Penetration Depth: 17. ft
Corrected Casing Radius (Bouwer-Rice Method): 0.167 ft
Gravel Pack Porosity: 0.3

No. of Observations: 2557

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	0.	21.32	0.0916
0.0167	0.0802	21.33	0.0913
0.0333	0.1739	21.35	0.0912
0.05	0.3024	21.37	0.0924
0.0667	0.5652	21.38	0.0903
0.0833	0.7846	21.4	0.0914
0.1	0.7915	21.42	0.0908
0.1167	0.7793	21.43	0.0906
0.1333	0.7735	21.45	0.0903
0.15	0.7646	21.47	0.0901
0.1667	0.7631	21.48	0.09
0.1833	0.7534	21.5	0.0913
0.2	0.7498	21.52	0.0923
0.2167	0.7447	21.53	0.0918
0.2333	0.7402	21.55	0.0908
0.25	0.7364	21.57	0.0919
0.2667	0.7313	21.58	0.0903
0.2833	0.7263	21.6	0.0915
0.3	0.7234	21.62	0.0923
0.3167	0.7197	21.63	0.0917
0.3333	0.6576	21.65	0.0901
0.35	0.7105	21.67	0.0911
0.3667	0.7056	21.68	0.0905
0.3833	0.7017	21.7	0.0909
0.4	0.6961	21.72	0.0904
0.4167	0.6957	21.73	0.0911
0.4333	0.6911	21.75	0.0909
0.45	0.687	21.77	0.0913
0.4667	0.6837	21.78	0.0918
0.4833	0.6797	21.8	0.0909

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.5	0.6754	21.82	0.0902
0.5167	0.6734	21.83	0.0921
0.5333	0.6696	21.85	0.0912
0.55	0.6649	21.87	0.0907
0.5667	0.6634	21.88	0.0921
0.5833	0.6601	21.9	0.0918
0.6	0.6568	21.92	0.0916
0.6167	0.6533	21.93	0.0898
0.6333	0.6499	21.95	0.0903
0.65	0.6474	21.97	0.0917
0.6667	0.6433	21.98	0.0909
0.6833	0.6401	22.	0.0917
0.7	0.6348	22.02	0.0912
0.7167	0.6315	22.03	0.0908
0.7333	0.6279	22.05	0.0906
0.75	0.6268	22.07	0.0909
0.7667	0.6246	22.08	0.0915
0.7833	0.6208	22.1	0.0906
0.8	0.6178	22.12	0.092
0.8167	0.615	22.13	0.0917
0.8333	0.6111	22.15	0.0906
0.85	0.6087	22.17	0.0914
0.8667	0.6053	22.18	0.0911
0.8833	0.6027	22.2	0.0906
0.9	0.6006	22.22	0.0904
0.9167	0.5964	22.23	0.0922
0.9333	0.5931	22.25	0.0908
0.95	0.5907	22.27	0.0913
0.9667	0.5883	22.28	0.091
0.9833	0.586	22.3	0.0915
1.	0.5828	22.32	0.0927
1.017	0.5785	22.33	0.0905
1.033	0.5764	22.35	0.0907
1.05	0.5743	22.37	0.0917
1.067	0.5709	22.38	0.0919
1.083	0.5665	22.4	0.0916
1.1	0.5642	22.42	0.0922
1.117	0.5612	22.43	0.0911
1.133	0.5589	22.45	0.0925
1.15	0.5561	22.47	0.0909
1.167	0.5504	22.48	0.0917
1.183	0.5489	22.5	0.0912
1.2	0.5504	22.52	0.0912
1.217	0.5477	22.53	0.0908
1.233	0.5458	22.55	0.0923
1.25	0.5439	22.57	0.0911
1.267	0.541	22.58	0.0914
1.283	0.5395	22.6	0.0913
1.3	0.537	22.62	0.091
1.317	0.5336	22.63	0.0925
1.333	0.5315	22.65	0.0921
1.35	0.5289	22.67	0.0918
1.367	0.5254	22.68	0.0909
1.383	0.5239	22.7	0.0921
1.4	0.5218	22.72	0.0927
1.417	0.5188	22.73	0.0925
1.433	0.5168	22.75	0.0922
1.45	0.5141	22.77	0.0917
1.467	0.5087	22.78	0.0916
1.483	0.5061	22.8	0.0919
1.5	0.4971	22.82	0.0918
1.517	0.4945	22.83	0.0931
1.533	0.49	22.85	0.0918
1.55	0.4849	22.87	0.0909
1.567	0.4928	22.88	0.091
1.583	0.4911	22.9	0.0928

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.6	0.4889	22.92	0.0932
1.617	0.486	22.93	0.0919
1.633	0.4851	22.95	0.0919
1.65	0.4818	22.97	0.0917
1.667	0.4794	22.98	0.0918
1.683	0.4747	23.	0.0929
1.7	0.4738	23.02	0.092
1.717	0.4708	23.03	0.0921
1.733	0.4693	23.05	0.0927
1.75	0.4691	23.07	0.0928
1.767	0.4676	23.08	0.092
1.783	0.4676	23.1	0.0919
1.8	0.4653	23.12	0.0919
1.817	0.4633	23.13	0.0925
1.833	0.4618	23.15	0.0922
1.85	0.4592	23.17	0.0922
1.867	0.4579	23.18	0.0935
1.883	0.4566	23.2	0.0923
1.9	0.454	23.22	0.0919
1.917	0.4534	23.23	0.0917
1.933	0.4505	23.25	0.092
1.95	0.4489	23.27	0.0929
1.967	0.448	23.28	0.0922
1.983	0.4416	23.3	0.0927
2.	0.4406	23.32	0.0927
2.017	0.4383	23.33	0.0924
2.033	0.4347	23.35	0.0915
2.05	0.4354	23.37	0.0924
2.067	0.4324	23.38	0.0933
2.083	0.431	23.4	0.0916
2.1	0.4323	23.42	0.0917
2.117	0.4296	23.43	0.0924
2.133	0.429	23.45	0.0932
2.15	0.4267	23.47	0.0929
2.167	0.4247	23.48	0.0926
2.183	0.4226	23.5	0.088
2.2	0.4215	23.52	0.0879
2.217	0.4201	23.53	0.088
2.233	0.4178	23.55	0.0879
2.25	0.4156	23.57	0.0878
2.267	0.4149	23.58	0.088
2.283	0.4095	23.6	0.0876
2.3	0.4084	23.62	0.0882
2.317	0.4072	23.63	0.0879
2.333	0.4057	23.65	0.0873
2.35	0.4054	23.67	0.0882
2.367	0.4038	23.68	0.0873
2.383	0.4023	23.7	0.0879
2.4	0.4009	23.72	0.0882
2.417	0.3989	23.73	0.0873
2.433	0.3969	23.75	0.0873
2.45	0.3947	23.77	0.0872
2.467	0.3931	23.78	0.0879
2.483	0.3923	23.8	0.0878
2.5	0.3906	23.82	0.0875
2.517	0.3897	23.83	0.0884
2.533	0.3883	23.85	0.0876
2.55	0.3847	23.87	0.0887
2.567	0.383	23.88	0.0873
2.583	0.382	23.9	0.0882
2.6	0.3809	23.92	0.0885
2.617	0.3802	23.93	0.0874
2.633	0.378	23.95	0.0879
2.65	0.3782	23.97	0.0873
2.667	0.375	23.98	0.087
2.683	0.3742	24.	0.0878

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2.7	0.3726	24.02	0.0873
2.717	0.3709	24.03	0.0876
2.733	0.3705	24.05	0.087
2.75	0.3695	24.07	0.0885
2.767	0.367	24.08	0.0881
2.783	0.3652	24.1	0.0862
2.8	0.3652	24.12	0.0878
2.817	0.3619	24.13	0.087
2.833	0.3661	24.15	0.0877
2.85	0.3592	24.17	0.0874
2.867	0.3592	24.18	0.0871
2.883	0.3597	24.2	0.0867
2.9	0.3603	24.22	0.0874
2.917	0.3588	24.23	0.0871
2.933	0.3574	24.25	0.0875
2.95	0.3557	24.27	0.0869
2.967	0.3552	24.28	0.0879
2.983	0.3543	24.3	0.088
3.	0.3529	24.32	0.0878
3.017	0.3525	24.33	0.0874
3.033	0.3498	24.35	0.0873
3.05	0.3481	24.37	0.088
3.067	0.3479	24.38	0.0872
3.083	0.3471	24.4	0.087
3.1	0.3454	24.42	0.0867
3.117	0.3448	24.43	0.0874
3.133	0.3432	24.45	0.0878
3.15	0.3401	24.47	0.0867
3.167	0.3376	24.48	0.0867
3.183	0.3367	24.5	0.0861
3.2	0.3363	24.52	0.0874
3.217	0.3354	24.53	0.0866
3.233	0.3332	24.55	0.0876
3.25	0.3316	24.57	0.0876
3.267	0.3315	24.58	0.0876
3.283	0.3334	24.6	0.0881
3.3	0.3327	24.62	0.0874
3.317	0.3318	24.63	0.0875
3.333	0.3299	24.65	0.0879
3.35	0.3296	24.67	0.0877
3.367	0.3291	24.68	0.0884
3.383	0.3262	24.7	0.0867
3.4	0.3253	24.72	0.0867
3.417	0.3249	24.73	0.087
3.433	0.3243	24.75	0.0875
3.45	0.3236	24.77	0.0867
3.467	0.3193	24.78	0.0872
3.483	0.3172	24.8	0.088
3.5	0.3112	24.82	0.088
3.517	0.3091	24.83	0.0871
3.533	0.3111	24.85	0.0869
3.55	0.3103	24.87	0.0869
3.567	0.3089	24.88	0.0877
3.583	0.3083	24.9	0.0875
3.6	0.3083	24.92	0.0867
3.617	0.307	24.93	0.0883
3.633	0.3061	24.95	0.0869
3.65	0.3046	24.97	0.0868
3.667	0.3037	24.98	0.0861
3.683	0.303	25.	0.0869
3.7	0.3027	25.02	0.087
3.717	0.3015	25.03	0.0867
3.733	0.2984	25.05	0.0866
3.75	0.2962	25.07	0.0859
3.767	0.2968	25.08	0.086
3.783	0.295	25.1	0.0871

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
3.8	0.2928	25.12	0.0862
3.817	0.2939	25.13	0.0866
3.833	0.2948	25.15	0.086
3.85	0.2939	25.17	0.0869
3.867	0.2936	25.18	0.0878
3.883	0.2931	25.2	0.0871
3.9	0.2913	25.22	0.0871
3.917	0.2906	25.23	0.0857
3.933	0.2904	25.25	0.087
3.95	0.289	25.27	0.0864
3.967	0.2877	25.28	0.0872
3.983	0.2871	25.3	0.0871
4.	0.2872	25.32	0.0872
4.017	0.2864	25.33	0.0874
4.033	0.2821	25.35	0.0876
4.05	0.2813	25.37	0.0875
4.067	0.2802	25.38	0.0866
4.083	0.2807	25.4	0.0876
4.1	0.282	25.42	0.0865
4.117	0.2802	25.43	0.086
4.133	0.2803	25.45	0.087
4.15	0.2787	25.47	0.0867
4.167	0.2768	25.48	0.0865
4.183	0.2772	25.5	0.086
4.2	0.2768	25.52	0.0868
4.217	0.2764	25.53	0.0852
4.233	0.2753	25.55	0.0862
4.25	0.2747	25.57	0.0867
4.267	0.2735	25.58	0.0868
4.283	0.2731	25.6	0.0871
4.3	0.2724	25.62	0.0855
4.317	0.2695	25.63	0.0868
4.333	0.2673	25.65	0.0873
4.35	0.2665	25.67	0.0868
4.367	0.2676	25.68	0.0867
4.383	0.2652	25.7	0.0864
4.4	0.2698	25.72	0.0861
4.417	0.2671	25.73	0.0863
4.433	0.266	25.75	0.0849
4.45	0.2653	25.77	0.087
4.467	0.2653	25.78	0.0853
4.483	0.2648	25.8	0.0872
4.5	0.2636	25.82	0.0863
4.517	0.2625	25.83	0.0875
4.533	0.2614	25.85	0.0865
4.55	0.2614	25.87	0.0879
4.567	0.261	25.88	0.0868
4.583	0.2609	25.9	0.0871
4.6	0.26	25.92	0.0878
4.617	0.2587	25.93	0.0869
4.633	0.2578	25.95	0.0863
4.65	0.2577	25.97	0.0879
4.667	0.2564	25.98	0.0866
4.683	0.2539	26.	0.0858
4.7	0.2523	26.02	0.0861
4.717	0.2528	26.03	0.0866
4.733	0.251	26.05	0.0869
4.75	0.2504	26.07	0.0866
4.767	0.2502	26.08	0.0865
4.783	0.2526	26.1	0.0874
4.8	0.2525	26.12	0.0864
4.817	0.251	26.13	0.086
4.833	0.2508	26.15	0.0868
4.85	0.2503	26.17	0.0866
4.867	0.2497	26.18	0.0863
4.883	0.2488	26.2	0.0868

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
4.9	0.2483	26.22	0.0868
4.917	0.2486	26.23	0.0861
4.933	0.2476	26.25	0.0868
4.95	0.246	26.27	0.0865
4.967	0.2463	26.28	0.0866
4.983	0.2456	26.3	0.0864
5.	0.2445	26.32	0.0869
5.017	0.2442	26.33	0.0851
5.033	0.241	26.35	0.0866
5.05	0.2407	26.37	0.0864
5.067	0.242	26.38	0.086
5.083	0.2425	26.4	0.0869
5.1	0.241	26.42	0.0866
5.117	0.241	26.43	0.0877
5.133	0.2392	26.45	0.0873
5.15	0.2396	26.47	0.0874
5.167	0.24	26.48	0.0865
5.183	0.238	26.5	0.0863
5.2	0.2384	26.52	0.0872
5.217	0.2352	26.53	0.0861
5.233	0.2341	26.55	0.0871
5.25	0.2338	26.57	0.0866
5.267	0.2367	26.58	0.0866
5.283	0.2352	26.6	0.0865
5.3	0.2347	26.62	0.0872
5.317	0.2342	26.63	0.0876
5.333	0.2326	26.65	0.0875
5.35	0.2335	26.67	0.087
5.367	0.2312	26.68	0.0851
5.383	0.2311	26.7	0.087
5.4	0.2315	26.72	0.0859
5.417	0.23	26.73	0.0871
5.433	0.2294	26.75	0.0866
5.45	0.229	26.77	0.0867
5.467	0.2303	26.78	0.0863
5.483	0.23	26.8	0.087
5.5	0.2195	26.82	0.0867
5.517	0.2195	26.83	0.0864
5.533	0.2187	26.85	0.087
5.55	0.2167	26.87	0.0883
5.567	0.217	26.88	0.0867
5.583	0.2149	26.9	0.0869
5.6	0.2162	26.92	0.0864
5.617	0.2162	26.93	0.0864
5.633	0.2152	26.95	0.0878
5.65	0.2136	26.97	0.0866
5.667	0.214	26.98	0.0881
5.683	0.2128	27.	0.0862
5.7	0.2113	27.02	0.0865
5.717	0.2126	27.03	0.0871
5.733	0.2127	27.05	0.0867
5.75	0.2102	27.07	0.0869
5.767	0.2105	27.08	0.0874
5.783	0.2097	27.1	0.0876
5.8	0.2078	27.12	0.0866
5.817	0.2072	27.13	0.0875
5.833	0.2082	27.15	0.0869
5.85	0.2074	27.17	0.0858
5.867	0.2072	27.18	0.087
5.883	0.2063	27.2	0.0861
5.9	0.2048	27.22	0.0878
5.917	0.2053	27.23	0.0869
5.933	0.2036	27.25	0.0884
5.95	0.2037	27.27	0.0878
5.967	0.2023	27.28	0.0858
5.983	0.2027	27.3	0.0866

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
6.	0.2028	27.32	0.0875
6.017	0.2001	27.33	0.088
6.033	0.1999	27.35	0.0858
6.05	0.1998	27.37	0.0873
6.067	0.1989	27.38	0.0862
6.083	0.1989	27.4	0.0876
6.1	0.1984	27.42	0.0872
6.117	0.1982	27.43	0.0876
6.133	0.1969	27.45	0.0885
6.15	0.1972	27.47	0.0867
6.167	0.1973	27.48	0.0872
6.183	0.1961	27.5	0.083
6.2	0.1952	27.52	0.0845
6.217	0.1938	27.53	0.0847
6.233	0.1943	27.55	0.0839
6.25	0.1933	27.57	0.0843
6.267	0.1928	27.58	0.0844
6.283	0.1925	27.6	0.0845
6.3	0.1915	27.62	0.0849
6.317	0.1906	27.63	0.0836
6.333	0.1907	27.65	0.084
6.35	0.1902	27.67	0.0847
6.367	0.1895	27.68	0.0842
6.383	0.1902	27.7	0.0848
6.4	0.1884	27.72	0.0836
6.417	0.188	27.73	0.0847
6.433	0.1881	27.75	0.0846
6.45	0.1842	27.77	0.0836
6.467	0.1837	27.78	0.0852
6.483	0.1822	27.8	0.0857
6.5	0.1852	27.82	0.0852
6.517	0.1858	27.83	0.084
6.533	0.1854	27.85	0.0842
6.55	0.1844	27.87	0.0839
6.567	0.1841	27.88	0.0841
6.583	0.1831	27.9	0.0844
6.6	0.1828	27.92	0.0846
6.617	0.1829	27.93	0.0845
6.633	0.1821	27.95	0.0845
6.65	0.1816	27.97	0.0854
6.667	0.182	27.98	0.0849
6.683	0.1814	28.	0.0853
6.7	0.1809	28.02	0.0841
6.717	0.1798	28.03	0.0844
6.733	0.1798	28.05	0.0851
6.75	0.1791	28.07	0.0849
6.767	0.179	28.08	0.0846
6.783	0.1787	28.1	0.0846
6.8	0.1767	28.12	0.0839
6.817	0.1783	28.13	0.085
6.833	0.1769	28.15	0.0848
6.85	0.1765	28.17	0.0842
6.867	0.1761	28.18	0.0846
6.883	0.1756	28.2	0.0846
6.9	0.1746	28.22	0.0848
6.917	0.1749	28.23	0.0838
6.933	0.175	28.25	0.0853
6.95	0.174	28.27	0.0857
6.967	0.173	28.28	0.086
6.983	0.1746	28.3	0.0852
7.	0.1736	28.32	0.0841
7.017	0.1725	28.33	0.0847
7.033	0.1715	28.35	0.0847
7.05	0.1718	28.37	0.0855
7.067	0.1719	28.38	0.0861
7.083	0.1691	28.4	0.0842

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
7.1	0.1701	28.42	0.0855
7.117	0.1696	28.43	0.0842
7.133	0.1699	28.45	0.0857
7.15	0.1694	28.47	0.0856
7.167	0.1677	28.48	0.085
7.183	0.1688	28.5	0.0864
7.2	0.169	28.52	0.0862
7.217	0.168	28.53	0.0856
7.233	0.1662	28.55	0.086
7.25	0.1666	28.57	0.0861
7.267	0.167	28.58	0.0866
7.283	0.1659	28.6	0.0857
7.3	0.1633	28.62	0.0862
7.317	0.1627	28.63	0.0857
7.333	0.1613	28.65	0.0863
7.35	0.1642	28.67	0.0866
7.367	0.1639	28.68	0.0859
7.383	0.1625	28.7	0.0866
7.4	0.1631	28.72	0.0854
7.417	0.1622	28.73	0.0867
7.433	0.1629	28.75	0.0856
7.45	0.1624	28.77	0.0853
7.467	0.1617	28.78	0.085
7.483	0.1608	28.8	0.0863
7.5	0.1685	28.82	0.0858
7.517	0.169	28.83	0.0865
7.533	0.1693	28.85	0.0854
7.55	0.1676	28.87	0.0864
7.567	0.1685	28.88	0.086
7.583	0.1665	28.9	0.0846
7.6	0.1671	28.92	0.0856
7.617	0.167	28.93	0.0853
7.633	0.1662	28.95	0.0858
7.65	0.1664	28.97	0.0859
7.667	0.1662	28.98	0.086
7.683	0.1659	29.	0.0857
7.7	0.1664	29.02	0.0859
7.717	0.1657	29.03	0.0854
7.733	0.1658	29.05	0.0855
7.75	0.1645	29.07	0.0861
7.767	0.1645	29.08	0.0873
7.783	0.1646	29.1	0.0859
7.8	0.1641	29.12	0.0859
7.817	0.1642	29.13	0.0867
7.833	0.1639	29.15	0.087
7.85	0.1643	29.17	0.086
7.867	0.1629	29.18	0.0864
7.883	0.1624	29.2	0.0849
7.9	0.1621	29.22	0.0862
7.917	0.1623	29.23	0.0861
7.933	0.1628	29.25	0.0858
7.95	0.1626	29.27	0.085
7.967	0.1609	29.28	0.0849
7.983	0.1614	29.3	0.0856
8.	0.1601	29.32	0.0851
8.017	0.1612	29.33	0.0854
8.033	0.161	29.35	0.0858
8.05	0.1601	29.37	0.0852
8.067	0.1612	29.38	0.0863
8.083	0.1597	29.4	0.0852
8.1	0.1588	29.42	0.0861
8.117	0.1591	29.43	0.0861
8.133	0.1583	29.45	0.0849
8.15	0.159	29.47	0.086
8.167	0.1581	29.48	0.0872
8.183	0.1584	29.5	0.0805

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
8.2	0.158	29.52	0.0811
8.217	0.1576	29.53	0.0802
8.233	0.1565	29.55	0.0808
8.25	0.158	29.57	0.0806
8.267	0.1568	29.58	0.0804
8.283	0.156	29.6	0.081
8.3	0.156	29.62	0.0799
8.317	0.155	29.63	0.08
8.333	0.1553	29.65	0.0809
8.35	0.1542	29.67	0.0808
8.367	0.1524	29.68	0.0797
8.383	0.1513	29.7	0.0797
8.4	0.1513	29.72	0.0807
8.417	0.1546	29.73	0.0806
8.433	0.1546	29.75	0.0806
8.45	0.1534	29.77	0.0793
8.467	0.1533	29.78	0.0799
8.483	0.1534	29.8	0.0806
8.5	0.1531	29.82	0.081
8.517	0.153	29.83	0.0798
8.533	0.1521	29.85	0.0801
8.55	0.1526	29.87	0.081
8.567	0.1528	29.88	0.0802
8.583	0.1529	29.9	0.0802
8.6	0.1511	29.92	0.0804
8.617	0.1503	29.93	0.0801
8.633	0.1515	29.95	0.0802
8.65	0.1516	29.97	0.0802
8.667	0.1504	29.98	0.0798
8.683	0.1497	30.	0.0804
8.7	0.1507	30.02	0.0813
8.717	0.1494	30.03	0.0803
8.733	0.1497	30.05	0.081
8.75	0.1484	30.07	0.0794
8.767	0.149	30.08	0.0794
8.783	0.1495	30.1	0.08
8.8	0.1497	30.12	0.0804
8.817	0.148	30.13	0.0794
8.833	0.1477	30.15	0.0802
8.85	0.1478	30.17	0.0797
8.867	0.1469	30.18	0.0801
8.883	0.1472	30.2	0.0797
8.9	0.1473	30.22	0.0791
8.917	0.148	30.23	0.0796
8.933	0.1457	30.25	0.0788
8.95	0.1473	30.27	0.0789
8.967	0.1456	30.28	0.0794
8.983	0.1464	30.3	0.0793
9.	0.1454	30.32	0.0804
9.017	0.1455	30.33	0.0801
9.033	0.1452	30.35	0.0809
9.05	0.1455	30.37	0.0796
9.067	0.1453	30.38	0.08
9.083	0.145	30.4	0.0789
9.1	0.1448	30.42	0.0802
9.117	0.144	30.43	0.0802
9.133	0.1447	30.45	0.0795
9.15	0.1438	30.47	0.0788
9.167	0.1439	30.48	0.0787
9.183	0.1437	30.5	0.0788
9.2	0.1429	30.52	0.0805
9.217	0.143	30.53	0.0805
9.233	0.1418	30.55	0.0795
9.25	0.1423	30.57	0.0802
9.267	0.1432	30.58	0.0802
9.283	0.1425	30.6	0.0802

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
9.3	0.1393	30.62	0.08
9.317	0.1383	30.63	0.0799
9.333	0.1398	30.65	0.0803
9.35	0.14	30.67	0.0802
9.367	0.1412	30.68	0.0807
9.383	0.1426	30.7	0.0796
9.4	0.1418	30.72	0.0804
9.417	0.1412	30.73	0.0791
9.433	0.142	30.75	0.0794
9.45	0.1412	30.77	0.0795
9.467	0.1404	30.78	0.0795
9.483	0.1402	30.8	0.0796
9.5	0.1418	30.82	0.0783
9.517	0.142	30.83	0.0786
9.533	0.1419	30.85	0.0796
9.55	0.1408	30.87	0.08
9.567	0.1414	30.88	0.0793
9.583	0.1407	30.9	0.08
9.6	0.1403	30.92	0.0802
9.617	0.1406	30.93	0.079
9.633	0.1409	30.95	0.0795
9.65	0.1401	30.97	0.0787
9.667	0.1409	30.98	0.0794
9.683	0.1406	31.	0.0783
9.7	0.1398	31.02	0.0787
9.717	0.1398	31.03	0.0797
9.733	0.1391	31.05	0.0791
9.75	0.1399	31.07	0.0786
9.767	0.1391	31.08	0.0793
9.783	0.1391	31.1	0.0792
9.8	0.1389	31.12	0.0792
9.817	0.1398	31.13	0.0791
9.833	0.1385	31.15	0.0792
9.85	0.1388	31.17	0.0786
9.867	0.1387	31.18	0.0791
9.883	0.1384	31.2	0.0784
9.9	0.1386	31.22	0.0788
9.917	0.1374	31.23	0.0795
9.933	0.1382	31.25	0.0794
9.95	0.1372	31.27	0.0791
9.967	0.1374	31.28	0.079
9.983	0.1375	31.3	0.0787
10.	0.139	31.32	0.0791
10.02	0.1377	31.33	0.0793
10.03	0.1371	31.35	0.0796
10.05	0.1376	31.37	0.0785
10.07	0.1377	31.38	0.0781
10.08	0.1359	31.4	0.0791
10.1	0.1368	31.42	0.0796
10.12	0.1353	31.43	0.0792
10.13	0.1366	31.45	0.0793
10.15	0.1362	31.47	0.0791
10.17	0.136	31.48	0.0785
10.18	0.1349	31.5	0.0821
10.2	0.1363	31.52	0.0825
10.22	0.1332	31.53	0.0819
10.23	0.1366	31.55	0.0832
10.25	0.1336	31.57	0.082
10.27	0.1321	31.58	0.0826
10.28	0.1319	31.6	0.0824
10.3	0.1338	31.62	0.0816
10.32	0.1354	31.63	0.0827
10.33	0.1347	31.65	0.0831
10.35	0.1353	31.67	0.0825
10.37	0.1346	31.68	0.0817
10.38	0.1348	31.7	0.0828

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
10.4	0.1341	31.72	0.0818
10.42	0.134	31.73	0.0829
10.43	0.1334	31.75	0.083
10.45	0.1324	31.77	0.0833
10.47	0.1336	31.78	0.0828
10.48	0.1333	31.8	0.0839
10.5	0.1337	31.82	0.0832
10.52	0.1327	31.83	0.0831
10.53	0.1337	31.85	0.0834
10.55	0.1323	31.87	0.0841
10.57	0.1327	31.88	0.0827
10.58	0.1328	31.9	0.0822
10.6	0.1321	31.92	0.0822
10.62	0.1317	31.93	0.0825
10.63	0.1326	31.95	0.0831
10.65	0.132	31.97	0.0828
10.67	0.1326	31.98	0.084
10.68	0.1317	32.	0.0831
10.7	0.1323	32.02	0.0827
10.72	0.131	32.03	0.0832
10.73	0.1313	32.05	0.0832
10.75	0.1318	32.07	0.0845
10.77	0.1309	32.08	0.0831
10.78	0.131	32.1	0.0834
10.8	0.1312	32.12	0.0843
10.82	0.13	32.13	0.0829
10.83	0.1312	32.15	0.0836
10.85	0.1309	32.17	0.0836
10.87	0.1304	32.18	0.0839
10.88	0.1308	32.2	0.0839
10.9	0.1313	32.22	0.0844
10.92	0.1303	32.23	0.0834
10.93	0.1303	32.25	0.085
10.95	0.1301	32.27	0.084
10.97	0.1309	32.28	0.0837
10.98	0.1293	32.3	0.0839
11.	0.13	32.32	0.0849
11.02	0.1294	32.33	0.0838
11.03	0.129	32.35	0.0837
11.05	0.1291	32.37	0.0833
11.07	0.1292	32.38	0.0846
11.08	0.1292	32.4	0.0847
11.1	0.1287	32.42	0.0839
11.12	0.1289	32.43	0.0849
11.13	0.1291	32.45	0.0855
11.15	0.129	32.47	0.0853
11.17	0.1286	32.48	0.0842
11.18	0.1283	32.5	0.0845
11.2	0.1282	32.52	0.0843
11.22	0.1287	32.53	0.0854
11.23	0.1285	32.55	0.0852
11.25	0.1281	32.57	0.0852
11.27	0.1283	32.58	0.0844
11.28	0.1286	32.6	0.0856
11.3	0.1282	32.62	0.0844
11.32	0.1284	32.63	0.0858
11.33	0.1275	32.65	0.0847
11.35	0.1268	32.67	0.0849
11.37	0.1265	32.68	0.0848
11.38	0.1279	32.7	0.085
11.4	0.1269	32.72	0.0851
11.42	0.1275	32.73	0.084
11.43	0.126	32.75	0.0847
11.45	0.1277	32.77	0.0847
11.47	0.1263	32.78	0.0852
11.48	0.1281	32.8	0.0856

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
11.5	0.121	32.82	0.0853
11.52	0.1207	32.83	0.0847
11.53	0.1208	32.85	0.0844
11.55	0.1208	32.87	0.0857
11.57	0.1211	32.88	0.085
11.58	0.1218	32.9	0.0863
11.6	0.1206	32.92	0.0858
11.62	0.1218	32.93	0.085
11.63	0.1197	32.95	0.0867
11.65	0.1208	32.97	0.085
11.67	0.1215	32.98	0.0864
11.68	0.12	33.	0.0862
11.7	0.1203	33.02	0.0856
11.72	0.1202	33.03	0.0861
11.73	0.1212	33.05	0.0864
11.75	0.1201	33.07	0.0863
11.77	0.1199	33.08	0.0852
11.78	0.1204	33.1	0.0852
11.8	0.1203	33.12	0.0856
11.82	0.1209	33.13	0.0855
11.83	0.1195	33.15	0.086
11.85	0.1189	33.17	0.0868
11.87	0.1195	33.18	0.0858
11.88	0.1197	33.2	0.0855
11.9	0.1202	33.22	0.0862
11.92	0.1187	33.23	0.0856
11.93	0.1192	33.25	0.0853
11.95	0.1192	33.27	0.0854
11.97	0.119	33.28	0.0856
11.98	0.1191	33.3	0.0872
12.	0.1196	33.32	0.0854
12.02	0.1188	33.33	0.086
12.03	0.1189	33.35	0.086
12.05	0.118	33.37	0.0851
12.07	0.1188	33.38	0.0873
12.08	0.1185	33.4	0.0873
12.1	0.1192	33.42	0.0866
12.12	0.1187	33.43	0.0866
12.13	0.1189	33.45	0.0867
12.15	0.1177	33.47	0.0872
12.17	0.1189	33.48	0.0867
12.18	0.1177	33.5	0.0784
12.2	0.1179	33.52	0.0775
12.22	0.1183	33.53	0.0773
12.23	0.1166	33.55	0.0776
12.25	0.1177	33.57	0.0774
12.27	0.1173	33.58	0.0774
12.28	0.1184	33.6	0.0779
12.3	0.118	33.62	0.0771
12.32	0.117	33.63	0.0778
12.33	0.1185	33.65	0.0785
12.35	0.1174	33.67	0.0782
12.37	0.1185	33.68	0.0769
12.38	0.1176	33.7	0.0777
12.4	0.117	33.72	0.0785
12.42	0.1173	33.73	0.0783
12.43	0.1169	33.75	0.078
12.45	0.1174	33.77	0.0782
12.47	0.117	33.78	0.0777
12.48	0.1171	33.8	0.0665
12.5	0.1169	33.82	0.0781
12.52	0.1166	33.83	0.0746
12.53	0.1157	33.85	0.0757
12.55	0.1165	33.87	0.0746
12.57	0.1169	33.88	0.0767
12.58	0.1153	33.9	0.0777

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
12.6	0.116	33.92	0.0788
12.62	0.1173	33.93	0.0782
12.63	0.116	33.95	0.0781
12.65	0.1162	33.97	0.0785
12.67	0.1157	33.98	0.0783
12.68	0.1152	34.	0.0778
12.7	0.1159	34.02	0.077
12.72	0.1149	34.03	0.078
12.73	0.1164	34.05	0.0788
12.75	0.1156	34.07	0.0776
12.77	0.1153	34.08	0.077
12.78	0.1158	34.1	0.0777
12.8	0.1155	34.12	0.0777
12.82	0.1147	34.13	0.0788
12.83	0.1155	34.15	0.0773
12.85	0.1157	34.17	0.0772
12.87	0.1155	34.18	0.0777
12.88	0.1154	34.2	0.0783
12.9	0.1154	34.22	0.0783
12.92	0.1154	34.23	0.0777
12.93	0.115	34.25	0.0781
12.95	0.1143	34.27	0.0778
12.97	0.1151	34.28	0.0778
12.98	0.1155	34.3	0.0782
13.	0.1153	34.32	0.0782
13.02	0.1142	34.33	0.0782
13.03	0.1144	34.35	0.0771
13.05	0.1145	34.37	0.0779
13.07	0.1138	34.38	0.0777
13.08	0.1145	34.4	0.0782
13.1	0.1153	34.42	0.0776
13.12	0.1139	34.43	0.0774
13.13	0.1144	34.45	0.0769
13.15	0.1136	34.47	0.0781
13.17	0.1147	34.48	0.0778
13.18	0.113	34.5	0.079
13.2	0.1148	34.52	0.078
13.22	0.1138	34.53	0.078
13.23	0.1137	34.55	0.0785
13.25	0.1128	34.57	0.0773
13.27	0.1141	34.58	0.0783
13.28	0.1139	34.6	0.0785
13.3	0.1129	34.62	0.0776
13.32	0.1136	34.63	0.0782
13.33	0.1143	34.65	0.0784
13.35	0.1139	34.67	0.0783
13.37	0.1137	34.68	0.0781
13.38	0.1135	34.7	0.0776
13.4	0.114	34.72	0.0786
13.42	0.1132	34.73	0.0787
13.43	0.1122	34.75	0.0792
13.45	0.1125	34.77	0.0776
13.47	0.1135	34.78	0.0776
13.48	0.1137	34.8	0.0782
13.5	0.1089	34.82	0.0784
13.52	0.1086	34.83	0.0781
13.53	0.1099	34.85	0.0789
13.55	0.1089	34.87	0.0789
13.57	0.109	34.88	0.0782
13.58	0.1078	34.9	0.0786
13.6	0.1086	34.92	0.0789
13.62	0.1085	34.93	0.0789
13.63	0.1079	34.95	0.0788
13.65	0.1076	34.97	0.0785
13.67	0.1092	34.98	0.0784
13.68	0.1087	35.	0.0788

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
13.7	0.1084	35.02	0.0789
13.72	0.1086	35.03	0.0791
13.73	0.1085	35.05	0.0793
13.75	0.1087	35.07	0.0784
13.77	0.1085	35.08	0.0784
13.78	0.1092	35.1	0.0796
13.8	0.1083	35.12	0.0778
13.82	0.1085	35.13	0.0799
13.83	0.1081	35.15	0.0797
13.85	0.1079	35.17	0.0782
13.87	0.1082	35.18	0.0786
13.88	0.1072	35.2	0.0788
13.9	0.1071	35.22	0.0798
13.92	0.1074	35.23	0.0793
13.93	0.1085	35.25	0.0789
13.95	0.1081	35.27	0.079
13.97	0.1075	35.28	0.0775
13.98	0.1086	35.3	0.0782
14.	0.1089	35.32	0.08
14.02	0.1085	35.33	0.079
14.03	0.1089	35.35	0.0784
14.05	0.1084	35.37	0.0789
14.07	0.1086	35.38	0.0787
14.08	0.1086	35.4	0.0786
14.1	0.1089	35.42	0.0791
14.12	0.1072	35.43	0.0783
14.13	0.1072	35.45	0.0787
14.15	0.1066	35.47	0.0787
14.17	0.108	35.48	0.0785
14.18	0.1067	35.5	0.0762
14.2	0.1072	35.52	0.0771
14.22	0.1066	35.53	0.0769
14.23	0.1066	35.55	0.0766
14.25	0.1073	35.57	0.077
14.27	0.1068	35.58	0.0777
14.28	0.1066	35.6	0.0776
14.3	0.1066	35.62	0.0764
14.32	0.1067	35.63	0.0767
14.33	0.1067	35.65	0.0759
14.35	0.1062	35.67	0.0767
14.37	0.1066	35.68	0.0771
14.38	0.107	35.7	0.077
14.4	0.1053	35.72	0.0771
14.42	0.1061	35.73	0.0766
14.43	0.1067	35.75	0.0767
14.45	0.1061	35.77	0.0768
14.47	0.1062	35.78	0.0786
14.48	0.1068	35.8	0.0779
14.5	0.1056	35.82	0.0769
14.52	0.105	35.83	0.0775
14.53	0.1056	35.85	0.0772
14.55	0.1055	35.87	0.0772
14.57	0.106	35.88	0.0778
14.58	0.1056	35.9	0.0762
14.6	0.106	35.92	0.0766
14.62	0.1067	35.93	0.0766
14.63	0.1061	35.95	0.0775
14.65	0.107	35.97	0.0765
14.67	0.1066	35.98	0.078
14.68	0.1057	36.	0.0774
14.7	0.1057	36.02	0.0767
14.72	0.1064	36.03	0.0775
14.73	0.1045	36.05	0.0776
14.75	0.1053	36.07	0.0784
14.77	0.1048	36.08	0.0767
14.78	0.1059	36.1	0.0771

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
14.8	0.1055	36.12	0.0763
14.82	0.1057	36.13	0.0777
14.83	0.1053	36.15	0.0776
14.85	0.1062	36.17	0.0781
14.87	0.1049	36.18	0.0767
14.88	0.1059	36.2	0.0772
14.9	0.1062	36.22	0.0768
14.92	0.1047	36.23	0.0765
14.93	0.1057	36.25	0.0779
14.95	0.1074	36.27	0.0781
14.97	0.1054	36.28	0.0778
14.98	0.1051	36.3	0.0775
15.	0.1055	36.32	0.0773
15.02	0.1047	36.33	0.0775
15.03	0.1057	36.35	0.0777
15.05	0.1062	36.37	0.0771
15.07	0.1047	36.38	0.0777
15.08	0.1052	36.4	0.0782
15.1	0.1042	36.42	0.0775
15.12	0.105	36.43	0.0776
15.13	0.1045	36.45	0.0764
15.15	0.1055	36.47	0.0776
15.17	0.105	36.48	0.077
15.18	0.1052	36.5	0.0783
15.2	0.1049	36.52	0.0779
15.22	0.1041	36.53	0.0789
15.23	0.1041	36.55	0.0775
15.25	0.1045	36.57	0.0777
15.27	0.1041	36.58	0.0786
15.28	0.1038	36.6	0.0787
15.3	0.1046	36.62	0.0773
15.32	0.1032	36.63	0.0772
15.33	0.1034	36.65	0.0782
15.35	0.1045	36.67	0.0789
15.37	0.1036	36.68	0.0786
15.38	0.1037	36.7	0.0784
15.4	0.1042	36.72	0.0776
15.42	0.1042	36.73	0.0784
15.43	0.1039	36.75	0.0777
15.45	0.1035	36.77	0.0776
15.47	0.1041	36.78	0.0782
15.48	0.1038	36.8	0.0789
15.5	0.0999	36.82	0.0777
15.52	0.0999	36.83	0.0779
15.53	0.0999	36.85	0.0777
15.55	0.0992	36.87	0.0791
15.57	0.0992	36.88	0.0793
15.58	0.0993	36.9	0.0784
15.6	0.0991	36.92	0.0783
15.62	0.0987	36.93	0.0784
15.63	0.0982	36.95	0.0784
15.65	0.0987	36.97	0.0792
15.67	0.0991	36.98	0.0781
15.68	0.0984	37.	0.0783
15.7	0.0993	37.02	0.0791
15.72	0.0992	37.03	0.0778
15.73	0.0993	37.05	0.0791
15.75	0.0988	37.07	0.0791
15.77	0.0984	37.08	0.0792
15.78	0.0966	37.1	0.0791
15.8	0.096	37.12	0.0777
15.82	0.0957	37.13	0.0786
15.83	0.0964	37.15	0.0787
15.85	0.0962	37.17	0.0776
15.87	0.0989	37.18	0.078
15.88	0.0983	37.2	0.0789

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
15.9	0.0992	37.22	0.0792
15.92	0.0984	37.23	0.0791
15.93	0.0984	37.25	0.0798
15.95	0.0987	37.27	0.0798
15.97	0.099	37.28	0.0797
15.98	0.0973	37.3	0.0787
16.	0.0962	37.32	0.0785
16.02	0.0974	37.33	0.0788
16.03	0.0983	37.35	0.0793
16.05	0.0971	37.37	0.0783
16.07	0.0978	37.38	0.0797
16.08	0.0982	37.4	0.0789
16.1	0.098	37.42	0.0796
16.12	0.0982	37.43	0.0799
16.13	0.0969	37.45	0.0795
16.15	0.0978	37.47	0.0793
16.17	0.0975	37.48	0.0789
16.18	0.0979	37.5	0.0754
16.2	0.0967	37.52	0.0742
16.22	0.0972	37.53	0.0745
16.23	0.0969	37.55	0.0749
16.25	0.0973	37.57	0.0754
16.27	0.0976	37.58	0.0752
16.28	0.097	37.6	0.0755
16.3	0.0962	37.62	0.076
16.32	0.0971	37.63	0.0752
16.33	0.0968	37.65	0.076
16.35	0.0966	37.67	0.0763
16.37	0.0962	37.68	0.0761
16.38	0.0968	37.7	0.0759
16.4	0.0955	37.72	0.0749
16.42	0.0969	37.73	0.0745
16.43	0.0978	37.75	0.0761
16.45	0.0967	37.77	0.0761
16.47	0.0963	37.78	0.0754
16.48	0.0975	37.8	0.0751
16.5	0.0955	37.82	0.0755
16.52	0.0961	37.83	0.0747
16.53	0.0966	37.85	0.0755
16.55	0.0968	37.87	0.0757
16.57	0.0962	37.88	0.075
16.58	0.0956	37.9	0.0756
16.6	0.0953	37.92	0.0748
16.62	0.0953	37.93	0.0767
16.63	0.0956	37.95	0.0753
16.65	0.0946	37.97	0.0765
16.67	0.0952	37.98	0.0754
16.68	0.0947	38.	0.0754
16.7	0.0953	38.02	0.0754
16.72	0.0958	38.03	0.075
16.73	0.0943	38.05	0.0761
16.75	0.0948	38.07	0.0738
16.77	0.0944	38.08	0.0754
16.78	0.0945	38.1	0.077
16.8	0.0949	38.12	0.0791
16.82	0.0952	38.13	0.0767
16.83	0.094	38.15	0.0761
16.85	0.0942	38.17	0.0756
16.87	0.0953	38.18	0.0761
16.88	0.0931	38.2	0.0754
16.9	0.0946	38.22	0.075
16.92	0.0942	38.23	0.0749
16.93	0.0943	38.25	0.0748
16.95	0.0946	38.27	0.0756
16.97	0.0945	38.28	0.0757
16.98	0.0934	38.3	0.076

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
17.	0.094	38.32	0.0756
17.02	0.0932	38.33	0.0756
17.03	0.0945	38.35	0.0757
17.05	0.0932	38.37	0.0754
17.07	0.0945	38.38	0.0755
17.08	0.0935	38.4	0.0757
17.1	0.093	38.42	0.0758
17.12	0.0932	38.43	0.0756
17.13	0.093	38.45	0.076
17.15	0.0933	38.47	0.0757
17.17	0.0923	38.48	0.076
17.18	0.0929	38.5	0.0765
17.2	0.0928	38.52	0.0762
17.22	0.0934	38.53	0.0766
17.23	0.0939	38.55	0.0762
17.25	0.0929	38.57	0.0761
17.27	0.0932	38.58	0.0761
17.28	0.0926	38.6	0.0764
17.3	0.0918	38.62	0.0757
17.32	0.092	38.63	0.076
17.33	0.0933	38.65	0.0765
17.35	0.0913	38.67	0.077
17.37	0.0928	38.68	0.077
17.38	0.0921	38.7	0.0762
17.4	0.0922	38.72	0.0773
17.42	0.0931	38.73	0.0752
17.43	0.0925	38.75	0.077
17.45	0.092	38.77	0.0762
17.47	0.0915	38.78	0.0768
17.48	0.0922	38.8	0.0768
17.5	0.0956	38.82	0.0755
17.52	0.0941	38.83	0.076
17.53	0.096	38.85	0.0767
17.55	0.0957	38.87	0.0756
17.57	0.0957	38.88	0.0775
17.58	0.0955	38.9	0.0767
17.6	0.0957	38.92	0.0759
17.62	0.0955	38.93	0.0761
17.63	0.096	38.95	0.0765
17.65	0.0949	38.97	0.0761
17.67	0.0951	38.98	0.0759
17.68	0.0954	39.	0.0762
17.7	0.0957	39.02	0.0772
17.72	0.0953	39.03	0.0773
17.73	0.0951	39.05	0.0768
17.75	0.0952	39.07	0.0767
17.77	0.0968	39.08	0.0764
17.78	0.0957	39.1	0.077
17.8	0.095	39.12	0.0764
17.82	0.0951	39.13	0.0752
17.83	0.0959	39.15	0.0757
17.85	0.0954	39.17	0.077
17.87	0.0953	39.18	0.0771
17.88	0.0958	39.2	0.078
17.9	0.0951	39.22	0.0759
17.92	0.0953	39.23	0.0771
17.93	0.0948	39.25	0.0765
17.95	0.0942	39.27	0.0769
17.97	0.0944	39.28	0.0764
17.98	0.0959	39.3	0.0761
18.	0.0949	39.32	0.0767
18.02	0.0955	39.33	0.0768
18.03	0.0947	39.35	0.0767
18.05	0.0957	39.37	0.0777
18.07	0.0956	39.38	0.0767
18.08	0.0951	39.4	0.0756

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
18.1	0.0952	39.42	0.0765
18.12	0.0943	39.43	0.078
18.13	0.0939	39.45	0.0768
18.15	0.0946	39.47	0.077
18.17	0.0949	39.48	0.0774
18.18	0.0946	39.5	0.0752
18.2	0.0936	39.52	0.076
18.22	0.0948	39.53	0.076
18.23	0.0949	39.55	0.076
18.25	0.095	39.57	0.0757
18.27	0.0938	39.58	0.0769
18.28	0.0938	39.6	0.0767
18.3	0.0946	39.62	0.0755
18.32	0.0935	39.63	0.0768
18.33	0.0945	39.65	0.0763
18.35	0.0942	39.67	0.0761
18.37	0.0951	39.68	0.0767
18.38	0.0945	39.7	0.0754
18.4	0.0941	39.72	0.076
18.42	0.0947	39.73	0.0764
18.43	0.0946	39.75	0.0763
18.45	0.0945	39.77	0.0765
18.47	0.0943	39.78	0.0764
18.48	0.0938	39.8	0.0769
18.5	0.0942	39.82	0.0769
18.52	0.0949	39.83	0.0757
18.53	0.0944	39.85	0.0769
18.55	0.0938	39.87	0.0765
18.57	0.0931	39.88	0.076
18.58	0.0934	39.9	0.077
18.6	0.0942	39.92	0.0762
18.62	0.0939	39.93	0.0764
18.63	0.0933	39.95	0.0761
18.65	0.0943	39.97	0.0766
18.67	0.0933	39.98	0.0761
18.68	0.0942	40.	0.076
18.7	0.0948	40.02	0.076
18.72	0.094	40.03	0.077
18.73	0.0936	40.05	0.0763
18.75	0.0941	40.07	0.0756
18.77	0.093	40.08	0.077
18.78	0.0936	40.1	0.0762
18.8	0.0938	40.12	0.0773
18.82	0.0948	40.13	0.0768
18.83	0.0938	40.15	0.0767
18.85	0.0929	40.17	0.0771
18.87	0.0925	40.18	0.0769
18.88	0.0934	40.2	0.077
18.9	0.0927	40.22	0.077
18.92	0.0932	40.23	0.0775
18.93	0.0931	40.25	0.0761
18.95	0.0943	40.27	0.0771
18.97	0.0938	40.28	0.078
18.98	0.0935	40.3	0.0755
19.	0.0941	40.32	0.0773
19.02	0.0936	40.33	0.0767
19.03	0.0936	40.35	0.0766
19.05	0.0937	40.37	0.077
19.07	0.0925	40.38	0.0777
19.08	0.0932	40.4	0.0765
19.1	0.0929	40.42	0.0769
19.12	0.0938	40.43	0.0773
19.13	0.094	40.45	0.0772
19.15	0.0929	40.47	0.0776
19.17	0.0928	40.48	0.0771
19.18	0.0921	40.5	0.0768

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
19.2	0.0921	40.52	0.0771
19.22	0.0922	40.53	0.0784
19.23	0.0928	40.55	0.0773
19.25	0.0921	40.57	0.077
19.27	0.093	40.58	0.0774
19.28	0.0928	40.6	0.0771
19.3	0.0928	40.62	0.0771
19.32	0.0931	40.63	0.0765
19.33	0.092	40.65	0.0776
19.35	0.0934	40.67	0.078
19.37	0.0923	40.68	0.0771
19.38	0.0929	40.7	0.077
19.4	0.0921	40.72	0.0771
19.42	0.0924	40.73	0.0767
19.43	0.0921	40.75	0.0782
19.45	0.092	40.77	0.0769
19.47	0.0914	40.78	0.0773
19.48	0.0914	40.8	0.0775
19.5	0.0931	40.82	0.0776
19.52	0.0932	40.83	0.078
19.53	0.093	40.85	0.0778
19.55	0.0931	40.87	0.0773
19.57	0.0925	40.88	0.0765
19.58	0.0927	40.9	0.078
19.6	0.0924	40.92	0.078
19.62	0.0925	40.93	0.078
19.63	0.0934	40.95	0.0776
19.65	0.0925	40.97	0.0776
19.67	0.0927	40.98	0.0785
19.68	0.0923	41.	0.079
19.7	0.0926	41.02	0.078
19.72	0.0937	41.03	0.078
19.73	0.0918	41.05	0.0774
19.75	0.0931	41.07	0.0775
19.77	0.093	41.08	0.0786
19.78	0.0927	41.1	0.0783
19.8	0.0933	41.12	0.0791
19.82	0.0918	41.13	0.0784
19.83	0.0926	41.15	0.0787
19.85	0.0923	41.17	0.0784
19.87	0.0919	41.18	0.0779
19.88	0.0927	41.2	0.0778
19.9	0.0935	41.22	0.0767
19.92	0.0919	41.23	0.0785
19.93	0.0921	41.25	0.0778
19.95	0.0915	41.27	0.0788
19.97	0.092	41.28	0.0788
19.98	0.092	41.3	0.0781
20.	0.0921	41.32	0.0775
20.02	0.0915	41.33	0.0785
20.03	0.092	41.35	0.0788
20.05	0.0923	41.37	0.0789
20.07	0.0916	41.38	0.0786
20.08	0.0919	41.4	0.0777
20.1	0.0918	41.42	0.0781
20.12	0.0923	41.43	0.0778
20.13	0.0923	41.45	0.0777
20.15	0.0919	41.47	0.0772
20.17	0.0919	41.48	0.0781
20.18	0.0925	41.5	0.0727
20.2	0.0922	41.52	0.0726
20.22	0.0917	41.53	0.0736
20.23	0.0914	41.55	0.0732
20.25	0.0921	41.57	0.0743
20.27	0.0914	41.58	0.0731
20.28	0.0909	41.6	0.0734

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
20.3	0.0889	41.62	0.0729
20.32	0.0889	41.63	0.0728
20.33	0.0894	41.65	0.0737
20.35	0.0902	41.67	0.0727
20.37	0.0911	41.68	0.0731
20.38	0.0916	41.7	0.0727
20.4	0.092	41.72	0.0731
20.42	0.0922	41.73	0.0735
20.43	0.0925	41.75	0.0725
20.45	0.0918	41.77	0.0737
20.47	0.0914	41.78	0.0727
20.48	0.0919	41.8	0.0733
20.5	0.0912	41.82	0.073
20.52	0.092	41.83	0.0729
20.53	0.0914	41.85	0.0723
20.55	0.0916	41.87	0.0724
20.57	0.0909	41.88	0.0739
20.58	0.0917	41.9	0.0729
20.6	0.0912	41.92	0.0742
20.62	0.0918	41.93	0.0721
20.63	0.0911	41.95	0.0733
20.65	0.0916	41.97	0.0732
20.67	0.0919	41.98	0.0729
20.68	0.091	42.	0.0736
20.7	0.0916	42.02	0.0722
20.72	0.0916	42.03	0.0725
20.73	0.0904	42.05	0.0733
20.75	0.0914	42.07	0.0733
20.77	0.0911	42.08	0.0741
20.78	0.0914	42.1	0.0737
20.8	0.0908	42.12	0.0728
20.82	0.091	42.13	0.0727
20.83	0.0911	42.15	0.074
20.85	0.0917	42.17	0.0734
20.87	0.0918	42.18	0.0736
20.88	0.091	42.2	0.0733
20.9	0.0906	42.22	0.0732
20.92	0.0909	42.23	0.0747
20.93	0.091	42.25	0.0737
20.95	0.0915	42.27	0.0732
20.97	0.0913	42.28	0.0726
20.98	0.0916	42.3	0.0732
21.	0.0909	42.32	0.0733
21.02	0.093	42.33	0.0731
21.03	0.0916	42.35	0.0727
21.05	0.0912	42.37	0.0724
21.07	0.0911	42.38	0.0737
21.08	0.0905	42.4	0.0725
21.1	0.0913	42.42	0.0722
21.12	0.09	42.43	0.0731
21.13	0.0907	42.45	0.0731
21.15	0.09	42.47	0.0723
21.17	0.0905	42.48	0.0734
21.18	0.0907	42.5	0.0722
21.2	0.0915	42.52	0.073
21.22	0.0915	42.53	0.0728
21.23	0.0903	42.55	0.073
21.25	0.0908	42.57	0.0728
21.27	0.0908	42.58	0.0727
21.28	0.0912	42.6	0.0732
21.3	0.091		

SOLUTION

Slug Test
Aquifer Model: Confined

Solution Method: Bouwer-Rice
ln(Re/rw): 3.293

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.001262	cm/sec
y0	0.5981	ft

T = K*b = 0.1154 cm²/sec

Data Set: C:\Users\ccarter\Golder Associates\19134560,Alcoa Copano APAR and SLERA - Project Files\5 Technic

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 1
Test Date: 12/18/2019
Test Well: MW-6RB

AQUIFER DATA

Saturated Thickness: 7.6 ft
Anisotropy Ratio (Kz/Kr): 0.1

SLUG TEST WELL DATA

Test Well: MW-6RB

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 3.34 ft
Static Water Column Height: 40.67 ft
Casing Radius: 0.083 ft
Well Radius: 0.083 ft
Well Skin Radius: 0.667 ft
Screen Length: 10. ft
Total Well Penetration Depth: 46.3 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.083 ft
Gravel Pack Porosity: 0.3

No. of Observations: 3501

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	0.	29.18	0.0475
0.0167	0.0009	29.2	0.0465
0.0333	0.0004	29.22	0.0468
0.05	0.0021	29.23	0.0466
0.0667	1.118	29.25	0.0458
0.0833	3.348	29.27	0.0468
0.1	3.367	29.28	0.047
0.1167	3.123	29.3	0.0469
0.1333	2.502	29.32	0.0466
0.15	2.398	29.33	0.0476
0.1667	2.429	29.35	0.0474
0.1833	2.392	29.37	0.0484
0.2	2.375	29.38	0.0474
0.2167	2.351	29.4	0.0469
0.2333	2.335	29.42	0.0467
0.25	2.313	29.43	0.0468
0.2667	2.297	29.45	0.0467
0.2833	2.28	29.47	0.0473
0.3	2.26	29.48	0.0481
0.3167	2.287	29.5	0.0474
0.3333	2.209	29.52	0.0472
0.35	2.229	29.53	0.0473
0.3667	2.201	29.55	0.0472
0.3833	2.184	29.57	0.0468
0.4	2.163	29.58	0.0466
0.4167	2.14	29.6	0.0467
0.4333	2.123	29.62	0.0467
0.45	2.112	29.63	0.047
0.4667	2.095	29.65	0.0474
0.4833	2.081	29.67	0.0465

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.5	2.065	29.68	0.0458
0.5167	2.049	29.7	0.0468
0.5333	2.034	29.72	0.0471
0.55	2.022	29.73	0.0475
0.5667	2.007	29.75	0.0467
0.5833	1.994	29.77	0.0474
0.6	1.981	29.78	0.0478
0.6167	1.967	29.8	0.0472
0.6333	1.951	29.82	0.0472
0.65	1.938	29.83	0.0469
0.6667	1.929	29.85	0.0467
0.6833	1.932	29.87	0.0472
0.7	1.915	29.88	0.0467
0.7167	1.887	29.9	0.047
0.7333	1.874	29.92	0.0466
0.75	1.862	29.93	0.0461
0.7667	1.85	29.95	0.047
0.7833	1.838	29.97	0.0464
0.8	1.826	29.98	0.0457
0.8167	1.813	30.	0.0463
0.8333	1.803	30.02	0.046
0.85	1.791	30.03	0.0472
0.8667	1.78	30.05	0.0464
0.8833	1.769	30.07	0.0477
0.9	1.757	30.08	0.046
0.9167	1.746	30.1	0.0461
0.9333	1.734	30.12	0.0461
0.95	1.725	30.13	0.0449
0.9667	1.736	30.15	0.0468
0.9833	1.723	30.17	0.0463
1.	1.705	30.18	0.0453
1.017	1.682	30.2	0.0465
1.033	1.67	30.22	0.0472
1.05	1.657	30.23	0.0437
1.067	1.649	30.25	0.0433
1.083	1.639	30.27	0.0437
1.1	1.629	30.28	0.0448
1.117	1.619	30.3	0.0432
1.133	1.61	30.32	0.0434
1.15	1.6	30.33	0.0444
1.167	1.592	30.35	0.0435
1.183	1.581	30.37	0.0441
1.2	1.594	30.38	0.0444
1.217	1.572	30.4	0.0444
1.233	1.565	30.42	0.0441
1.25	1.555	30.43	0.0444
1.267	1.545	30.45	0.0435
1.283	1.52	30.47	0.0444
1.3	1.512	30.48	0.0428
1.317	1.504	30.5	0.0435
1.333	1.495	30.52	0.0441
1.35	1.486	30.53	0.0431
1.367	1.477	30.55	0.0439
1.383	1.468	30.57	0.0442
1.4	1.46	30.58	0.0435
1.417	1.451	30.6	0.0439
1.433	1.443	30.62	0.0428
1.45	1.434	30.63	0.0436
1.467	1.426	30.65	0.0437
1.483	1.416	30.67	0.0436
1.5	1.425	30.68	0.0434
1.517	1.413	30.7	0.0436
1.533	1.391	30.72	0.0431
1.55	1.384	30.73	0.0442
1.567	1.375	30.75	0.0442
1.583	1.368	30.77	0.0433

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.6	1.36	30.78	0.0433
1.617	1.351	30.8	0.0437
1.633	1.343	30.82	0.043
1.65	1.335	30.83	0.0443
1.667	1.328	30.85	0.0435
1.683	1.321	30.87	0.0437
1.7	1.312	30.88	0.0444
1.717	1.312	30.9	0.0432
1.733	1.314	30.92	0.0439
1.75	1.303	30.93	0.0435
1.767	1.295	30.95	0.0435
1.783	1.288	30.97	0.0428
1.8	1.27	30.98	0.0427
1.817	1.258	31.	0.0432
1.833	1.251	31.02	0.0435
1.85	1.246	31.03	0.0435
1.867	1.239	31.05	0.0441
1.883	1.231	31.07	0.0428
1.9	1.223	31.08	0.0425
1.917	1.216	31.1	0.0426
1.933	1.209	31.12	0.0438
1.95	1.203	31.13	0.0427
1.967	1.196	31.15	0.0431
1.983	1.19	31.17	0.0439
2.	1.183	31.18	0.043
2.017	1.193	31.2	0.0439
2.033	1.189	31.22	0.0437
2.05	1.165	31.23	0.0439
2.067	1.152	31.25	0.0425
2.083	1.148	31.27	0.0432
2.1	1.141	31.28	0.0432
2.117	1.134	31.3	0.0427
2.133	1.128	31.32	0.043
2.15	1.121	31.33	0.0434
2.167	1.115	31.35	0.0439
2.183	1.109	31.37	0.0438
2.2	1.103	31.38	0.0435
2.217	1.097	31.4	0.0428
2.233	1.115	31.42	0.0438
2.25	1.108	31.43	0.0431
2.267	1.094	31.45	0.0436
2.283	1.089	31.47	0.0436
2.3	1.073	31.48	0.0438
2.317	1.063	31.5	0.0435
2.333	1.058	31.52	0.0443
2.35	1.053	31.53	0.0435
2.367	1.047	31.55	0.0433
2.383	1.039	31.57	0.0435
2.4	1.034	31.58	0.0434
2.417	1.028	31.6	0.0434
2.433	1.024	31.62	0.0445
2.45	1.018	31.63	0.0437
2.467	1.012	31.65	0.0436
2.483	1.013	31.67	0.0448
2.5	1.016	31.68	0.0432
2.517	0.9969	31.7	0.043
2.533	0.9881	31.72	0.044
2.55	0.9824	31.73	0.0436
2.567	0.9777	31.75	0.0434
2.583	0.9723	31.77	0.0423
2.6	0.9673	31.78	0.0432
2.617	0.9617	31.8	0.044
2.633	0.9568	31.82	0.0443
2.65	0.9516	31.83	0.0441
2.667	0.9462	31.85	0.0436
2.683	0.9406	31.87	0.044

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2.7	0.9362	31.88	0.0431
2.717	0.9422	31.9	0.0443
2.733	0.9393	31.92	0.0443
2.75	0.9157	31.93	0.0438
2.767	0.9139	31.95	0.0436
2.783	0.9101	31.97	0.043
2.8	0.9056	31.98	0.0437
2.817	0.899	32.	0.0427
2.833	0.8947	32.02	0.0432
2.85	0.8902	32.03	0.0441
2.867	0.8842	32.05	0.0432
2.883	0.8799	32.07	0.0441
2.9	0.8754	32.08	0.0434
2.917	0.8698	32.1	0.0447
2.933	0.8721	32.12	0.0439
2.95	0.8742	32.13	0.0429
2.967	0.8564	32.15	0.0423
2.983	0.8513	32.17	0.0434
3.	0.8464	32.18	0.0447
3.017	0.8417	32.2	0.0425
3.033	0.8385	32.22	0.0437
3.05	0.8317	32.23	0.0421
3.067	0.8295	32.25	0.0426
3.083	0.8236	32.27	0.0413
3.1	0.8191	32.28	0.0423
3.117	0.8149	32.3	0.0414
3.133	0.8122	32.32	0.0418
3.15	0.8079	32.33	0.0419
3.167	0.8122	32.35	0.0426
3.183	0.8123	32.37	0.0423
3.2	0.8062	32.38	0.0423
3.217	0.7853	32.4	0.0418
3.233	0.7831	32.42	0.0429
3.25	0.7793	32.43	0.0416
3.267	0.7756	32.45	0.0433
3.283	0.771	32.47	0.0429
3.3	0.7685	32.48	0.0416
3.317	0.7633	32.5	0.0419
3.333	0.7601	32.52	0.0414
3.35	0.7553	32.53	0.0419
3.367	0.7526	32.55	0.0433
3.383	0.753	32.57	0.0418
3.4	0.7606	32.58	0.0423
3.417	0.7525	32.6	0.0417
3.433	0.7473	32.62	0.0426
3.45	0.7306	32.63	0.0418
3.467	0.726	32.65	0.0424
3.483	0.7199	32.67	0.0419
3.5	0.7175	32.68	0.041
3.517	0.7133	32.7	0.042
3.533	0.711	32.72	0.0416
3.55	0.7072	32.73	0.0414
3.567	0.7035	32.75	0.0415
3.583	0.7005	32.77	0.0414
3.6	0.6972	32.78	0.042
3.617	0.6989	32.8	0.0408
3.633	0.7142	32.82	0.0415
3.65	0.6965	32.83	0.0419
3.667	0.6855	32.85	0.0423
3.683	0.6752	32.87	0.0419
3.7	0.6734	32.88	0.0414
3.717	0.6715	32.9	0.0418
3.733	0.6682	32.92	0.0408
3.75	0.6642	32.93	0.0411
3.767	0.6603	32.95	0.0409
3.783	0.6586	32.97	0.0402

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
3.8	0.6545	32.98	0.0406
3.817	0.6498	33.	0.0412
3.833	0.6457	33.02	0.0409
3.85	0.6441	33.03	0.0404
3.867	0.6399	33.05	0.0399
3.883	0.6524	33.07	0.0407
3.9	0.648	33.08	0.0414
3.917	0.6447	33.1	0.0418
3.933	0.6403	33.12	0.0402
3.95	0.6358	33.13	0.0419
3.967	0.6139	33.15	0.0421
3.983	0.614	33.17	0.0418
4.	0.6115	33.18	0.0421
4.017	0.6101	33.2	0.0422
4.033	0.6058	33.22	0.0405
4.05	0.6032	33.23	0.0421
4.067	0.6001	33.25	0.042
4.083	0.5985	33.27	0.0422
4.1	0.5957	33.28	0.0416
4.117	0.5914	33.3	0.042
4.133	0.5972	33.32	0.042
4.15	0.5999	33.33	0.0421
4.167	0.5956	33.35	0.0413
4.183	0.5735	33.37	0.0425
4.2	0.5754	33.38	0.0432
4.217	0.5743	33.4	0.0428
4.233	0.5742	33.42	0.041
4.25	0.5705	33.43	0.0419
4.267	0.5695	33.45	0.0412
4.283	0.5649	33.47	0.0422
4.3	0.5621	33.48	0.0419
4.317	0.5589	33.5	0.0419
4.333	0.5571	33.52	0.0416
4.35	0.5537	33.53	0.0418
4.367	0.5598	33.55	0.0419
4.383	0.561	33.57	0.0419
4.4	0.5591	33.58	0.0411
4.417	0.5551	33.6	0.0413
4.433	0.5376	33.62	0.0413
4.45	0.5355	33.63	0.042
4.467	0.5328	33.65	0.0413
4.483	0.531	33.67	0.0407
4.5	0.5282	33.68	0.0427
4.517	0.5265	33.7	0.0407
4.533	0.5246	33.72	0.0411
4.55	0.5209	33.73	0.042
4.567	0.5195	33.75	0.0416
4.583	0.5161	33.77	0.0408
4.6	0.5207	33.78	0.0413
4.617	0.5249	33.8	0.0417
4.633	0.5202	33.82	0.0407
4.65	0.5181	33.83	0.0411
4.667	0.5161	33.85	0.0411
4.683	0.5117	33.87	0.0399
4.7	0.4919	33.88	0.0414
4.717	0.4904	33.9	0.0409
4.733	0.4887	33.92	0.0417
4.75	0.4881	33.93	0.0401
4.767	0.4873	33.95	0.0406
4.783	0.4836	33.97	0.0409
4.8	0.4805	33.98	0.0403
4.817	0.4777	34.	0.0421
4.833	0.4772	34.02	0.0406
4.85	0.4749	34.03	0.041
4.867	0.4732	34.05	0.0404
4.883	0.4852	34.07	0.0408

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
4.9	0.4808	34.08	0.0411
4.917	0.469	34.1	0.0406
4.933	0.4698	34.12	0.0406
4.95	0.4751	34.13	0.0398
4.967	0.4714	34.15	0.0397
4.983	0.4679	34.17	0.0402
5.	0.4657	34.18	0.04
5.017	0.4635	34.2	0.041
5.033	0.4588	34.22	0.0403
5.05	0.4565	34.23	0.0416
5.067	0.4533	34.25	0.0419
5.083	0.4507	34.27	0.0415
5.1	0.4476	34.28	0.0419
5.117	0.4449	34.3	0.0412
5.133	0.4416	34.32	0.0411
5.15	0.438	34.33	0.0423
5.167	0.4358	34.35	0.0409
5.183	0.4326	34.37	0.0417
5.2	0.4391	34.38	0.0415
5.217	0.4374	34.4	0.0421
5.233	0.4346	34.42	0.0411
5.25	0.4245	34.43	0.042
5.267	0.4238	34.45	0.042
5.283	0.4211	34.47	0.0415
5.3	0.4183	34.48	0.0418
5.317	0.4126	34.5	0.043
5.333	0.4129	34.52	0.0417
5.35	0.409	34.53	0.0417
5.367	0.4065	34.55	0.0417
5.383	0.4036	34.57	0.0405
5.4	0.4005	34.58	0.0417
5.417	0.3988	34.6	0.0409
5.433	0.3952	34.62	0.0411
5.45	0.3941	34.63	0.0416
5.467	0.3913	34.65	0.0415
5.483	0.3903	34.67	0.0407
5.5	0.3886	34.68	0.0419
5.517	0.3877	34.7	0.0414
5.533	0.3867	34.72	0.0412
5.55	0.3848	34.73	0.0411
5.567	0.3827	34.75	0.0408
5.583	0.3817	34.77	0.0413
5.6	0.3802	34.78	0.0411
5.617	0.3777	34.8	0.0404
5.633	0.3768	34.82	0.0415
5.65	0.375	34.83	0.0418
5.667	0.3729	34.85	0.0405
5.683	0.371	34.87	0.0403
5.7	0.369	34.88	0.0413
5.717	0.368	34.9	0.0411
5.733	0.3663	34.92	0.0415
5.75	0.3637	34.93	0.0414
5.767	0.3631	34.95	0.0418
5.783	0.3606	34.97	0.0407
5.8	0.3578	34.98	0.0414
5.817	0.356	35.	0.0415
5.833	0.3551	35.02	0.041
5.85	0.3529	35.03	0.0403
5.867	0.3515	35.05	0.0402
5.883	0.35	35.07	0.041
5.9	0.3485	35.08	0.0417
5.917	0.3465	35.1	0.0403
5.933	0.3453	35.12	0.0405
5.95	0.3431	35.13	0.0402
5.967	0.3413	35.15	0.0403
5.983	0.34	35.17	0.0403

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
6.	0.3375	35.18	0.0404
6.017	0.3362	35.2	0.0415
6.033	0.3354	35.22	0.0408
6.05	0.3325	35.23	0.0403
6.067	0.3318	35.25	0.0409
6.083	0.3307	35.27	0.0401
6.1	0.3286	35.28	0.0402
6.117	0.3274	35.3	0.0408
6.133	0.3258	35.32	0.04
6.15	0.3239	35.33	0.0414
6.167	0.3231	35.35	0.0408
6.183	0.3198	35.37	0.0406
6.2	0.3205	35.38	0.0411
6.217	0.3178	35.4	0.0402
6.233	0.3396	35.42	0.0406
6.25	0.3344	35.43	0.0406
6.267	0.312	35.45	0.0409
6.283	0.315	35.47	0.0406
6.3	0.3133	35.48	0.0408
6.317	0.3131	35.5	0.041
6.333	0.312	35.52	0.0416
6.35	0.3112	35.53	0.0418
6.367	0.3109	35.55	0.0398
6.383	0.3081	35.57	0.0405
6.4	0.3073	35.58	0.0401
6.417	0.3054	35.6	0.0411
6.433	0.3046	35.62	0.0405
6.45	0.3033	35.63	0.0406
6.467	0.302	35.65	0.0403
6.483	0.301	35.67	0.041
6.5	0.302	35.68	0.0413
6.517	0.2995	35.7	0.0408
6.533	0.2985	35.72	0.0392
6.55	0.2967	35.73	0.0406
6.567	0.2953	35.75	0.0402
6.583	0.2946	35.77	0.0404
6.6	0.2939	35.78	0.0404
6.617	0.2918	35.8	0.0406
6.633	0.2903	35.82	0.0399
6.65	0.2895	35.83	0.0398
6.667	0.2876	35.85	0.041
6.683	0.2861	35.87	0.041
6.7	0.2846	35.88	0.0408
6.717	0.2841	35.9	0.0406
6.733	0.2828	35.92	0.0396
6.75	0.2818	35.93	0.0405
6.767	0.2804	35.95	0.0401
6.783	0.2786	35.97	0.0397
6.8	0.2776	35.98	0.0402
6.817	0.276	36.	0.0405
6.833	0.2752	36.02	0.0401
6.85	0.275	36.03	0.0407
6.867	0.2727	36.05	0.0406
6.883	0.2704	36.07	0.04
6.9	0.2716	36.08	0.0407
6.917	0.2686	36.1	0.0405
6.933	0.2667	36.12	0.0403
6.95	0.2665	36.13	0.0403
6.967	0.265	36.15	0.04
6.983	0.2641	36.17	0.04
7.	0.2625	36.18	0.0402
7.017	0.262	36.2	0.0398
7.033	0.2606	36.22	0.0403
7.05	0.2592	36.23	0.041
7.067	0.258	36.25	0.0405
7.083	0.2561	36.27	0.0399

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
7.1	0.2553	36.28	0.0408
7.117	0.2549	36.3	0.041
7.133	0.2541	36.32	0.0402
7.15	0.2525	36.33	0.0403
7.167	0.2526	36.35	0.0409
7.183	0.2508	36.37	0.0404
7.2	0.2541	36.38	0.0415
7.217	0.2604	36.4	0.0405
7.233	0.2609	36.42	0.0407
7.25	0.2593	36.43	0.0401
7.267	0.2571	36.45	0.0405
7.283	0.2448	36.47	0.0403
7.3	0.2457	36.48	0.035
7.317	0.2439	36.5	0.0345
7.333	0.2453	36.52	0.0351
7.35	0.2545	36.53	0.0354
7.367	0.2522	36.55	0.0353
7.383	0.2502	36.57	0.0376
7.4	0.2337	36.58	0.0351
7.417	0.2346	36.6	0.037
7.433	0.233	36.62	0.0334
7.45	0.2315	36.63	0.0378
7.467	0.2319	36.65	0.0378
7.483	0.2299	36.67	0.0435
7.5	0.2296	36.68	0.0487
7.517	0.2281	36.7	0.0445
7.533	0.2266	36.72	0.0484
7.55	0.2271	36.73	0.0483
7.567	0.2255	36.75	0.0488
7.583	0.2261	36.77	0.0504
7.6	0.2241	36.78	0.0327
7.617	0.2238	36.8	0.0359
7.633	0.2223	36.82	0.0362
7.65	0.223	36.83	0.0367
7.667	0.2211	36.85	0.0361
7.683	0.2209	36.87	0.0348
7.7	0.2201	36.88	0.0362
7.717	0.219	36.9	0.0362
7.733	0.2186	36.92	0.0369
7.75	0.2166	36.93	0.0372
7.767	0.217	36.95	0.0364
7.783	0.2159	36.97	0.0363
7.8	0.2142	36.98	0.0369
7.817	0.2142	37.	0.0372
7.833	0.2137	37.02	0.0368
7.85	0.2117	37.03	0.0369
7.867	0.2109	37.05	0.0365
7.883	0.2102	37.07	0.0366
7.9	0.2086	37.08	0.0373
7.917	0.2088	37.1	0.0374
7.933	0.2074	37.12	0.0368
7.95	0.2073	37.13	0.0368
7.967	0.2061	37.15	0.0374
7.983	0.206	37.17	0.0378
8.	0.2036	37.18	0.0364
8.017	0.2037	37.2	0.0371
8.033	0.2025	37.22	0.037
8.05	0.2013	37.23	0.0374
8.067	0.2012	37.25	0.0379
8.083	0.1997	37.27	0.0375
8.1	0.1991	37.28	0.0375
8.117	0.1988	37.3	0.0364
8.133	0.1988	37.32	0.0362
8.15	0.1967	37.33	0.0362
8.167	0.1963	37.35	0.0369
8.183	0.1949	37.37	0.0369

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
8.2	0.2096	37.38	0.0358
8.217	0.2066	37.4	0.036
8.233	0.1999	37.42	0.0364
8.25	0.1995	37.43	0.0368
8.267	0.1974	37.45	0.0363
8.283	0.1964	37.47	0.0352
8.3	0.1955	37.48	0.0363
8.317	0.1946	37.5	0.037
8.333	0.1929	37.52	0.0558
8.35	0.1935	37.53	0.0331
8.367	0.1918	37.55	0.0389
8.383	0.1899	37.57	0.0381
8.4	0.1889	37.58	0.0389
8.417	0.1885	37.6	0.0391
8.433	0.1881	37.62	0.0386
8.45	0.1861	37.63	0.0382
8.467	0.1846	37.65	0.04
8.483	0.1826	37.67	0.0388
8.5	0.1829	37.68	0.0404
8.517	0.1823	37.7	0.0391
8.533	0.1812	37.72	0.0402
8.55	0.1804	37.73	0.0398
8.567	0.1794	37.75	0.0407
8.583	0.1785	37.77	0.0399
8.6	0.1773	37.78	0.0399
8.617	0.1765	37.8	0.0402
8.633	0.1747	37.82	0.0403
8.65	0.1734	37.83	0.0407
8.667	0.1742	37.85	0.0395
8.683	0.171	37.87	0.0392
8.7	0.1722	37.88	0.0395
8.717	0.1702	37.9	0.0395
8.733	0.1702	37.92	0.0392
8.75	0.1693	37.93	0.0397
8.767	0.1684	37.95	0.0395
8.783	0.1675	37.97	0.0391
8.8	0.1658	37.98	0.0391
8.817	0.1663	38.	0.0394
8.833	0.1655	38.02	0.0395
8.85	0.1661	38.03	0.0404
8.867	0.1651	38.05	0.04
8.883	0.165	38.07	0.0398
8.9	0.1638	38.08	0.0385
8.917	0.1634	38.1	0.0385
8.933	0.1625	38.12	0.0394
8.95	0.1623	38.13	0.0389
8.967	0.1621	38.15	0.0392
8.983	0.1617	38.17	0.0399
9.	0.1605	38.18	0.0407
9.017	0.1595	38.2	0.0394
9.033	0.1584	38.22	0.039
9.05	0.158	38.23	0.0444
9.067	0.1591	38.25	0.0431
9.083	0.158	38.27	0.0439
9.1	0.1574	38.28	0.0436
9.117	0.1564	38.3	0.044
9.133	0.1555	38.32	0.0435
9.15	0.1551	38.33	0.0446
9.167	0.166	38.35	0.0438
9.183	0.1695	38.37	0.0442
9.2	0.166	38.38	0.0439
9.217	0.1637	38.4	0.0426
9.233	0.1631	38.42	0.0438
9.25	0.1612	38.43	0.0439
9.267	0.1598	38.45	0.0439
9.283	0.161	38.47	0.0436

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
9.3	0.1589	38.48	0.0438
9.317	0.1587	38.5	0.0446
9.333	0.1569	38.52	0.0431
9.35	0.1564	38.53	0.0432
9.367	0.1552	38.55	0.0431
9.383	0.1553	38.57	0.0438
9.4	0.1544	38.58	0.0447
9.417	0.153	38.6	0.0444
9.433	0.1523	38.62	0.0441
9.45	0.1516	38.63	0.0441
9.467	0.1496	38.65	0.0445
9.483	0.1494	38.67	0.0442
9.5	0.1493	38.68	0.0449
9.517	0.1478	38.7	0.0435
9.533	0.1477	38.72	0.044
9.55	0.1462	38.73	0.0435
9.567	0.1463	38.75	0.0442
9.583	0.1452	38.77	0.0438
9.6	0.1444	38.78	0.044
9.617	0.1445	38.8	0.0441
9.633	0.143	38.82	0.0433
9.65	0.1423	38.83	0.0432
9.667	0.1421	38.85	0.0444
9.683	0.1412	38.87	0.0441
9.7	0.1414	38.88	0.0439
9.717	0.14	38.9	0.0434
9.733	0.1394	38.92	0.0434
9.75	0.1378	38.93	0.0437
9.767	0.1374	38.95	0.0433
9.783	0.1363	38.97	0.0436
9.8	0.1356	38.98	0.0437
9.817	0.1348	39.	0.0436
9.833	0.1349	39.02	0.0439
9.85	0.1337	39.03	0.0434
9.867	0.133	39.05	0.0432
9.883	0.1325	39.07	0.0422
9.9	0.1314	39.08	0.0434
9.917	0.1317	39.1	0.0437
9.933	0.1306	39.12	0.0432
9.95	0.1286	39.13	0.0428
9.967	0.1292	39.15	0.0429
9.983	0.1285	39.17	0.043
10.	0.1281	39.18	0.0437
10.02	0.1273	39.2	0.0429
10.03	0.1266	39.22	0.0437
10.05	0.1258	39.23	0.0428
10.07	0.1249	39.25	0.0428
10.08	0.1247	39.27	0.0429
10.1	0.1243	39.28	0.0429
10.12	0.1233	39.3	0.0446
10.13	0.1221	39.32	0.0428
10.15	0.1224	39.33	0.0436
10.17	0.1213	39.35	0.0432
10.18	0.1209	39.37	0.0418
10.2	0.1207	39.38	0.0422
10.22	0.1312	39.4	0.0416
10.23	0.1408	39.42	0.0423
10.25	0.1398	39.43	0.0423
10.27	0.1272	39.45	0.0422
10.28	0.1291	39.47	0.0417
10.3	0.1278	39.48	0.0421
10.32	0.1271	39.5	0.0425
10.33	0.1272	39.52	0.0416
10.35	0.1261	39.53	0.0427
10.37	0.1254	39.55	0.0423
10.38	0.1266	39.57	0.0422

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
10.4	0.1254	39.58	0.0424
10.42	0.1235	39.6	0.042
10.43	0.1245	39.62	0.0422
10.45	0.1242	39.63	0.0427
10.47	0.1222	39.65	0.0418
10.48	0.121	39.67	0.0416
10.5	0.1217	39.68	0.0425
10.52	0.1202	39.7	0.0401
10.53	0.1199	39.72	0.0407
10.55	0.1201	39.73	0.0421
10.57	0.12	39.75	0.0423
10.58	0.1188	39.77	0.0416
10.6	0.1185	39.78	0.042
10.62	0.1175	39.8	0.042
10.63	0.1177	39.82	0.0426
10.65	0.1166	39.83	0.0428
10.67	0.117	39.85	0.0417
10.68	0.1162	39.87	0.0415
10.7	0.1158	39.88	0.042
10.72	0.1149	39.9	0.0429
10.73	0.114	39.92	0.0426
10.75	0.1147	39.93	0.0418
10.77	0.1132	39.95	0.0427
10.78	0.1127	39.97	0.0428
10.8	0.1129	39.98	0.0414
10.82	0.112	40.	0.0421
10.83	0.1121	40.02	0.0414
10.85	0.1119	40.03	0.0425
10.87	0.111	40.05	0.0423
10.88	0.1111	40.07	0.043
10.9	0.1111	40.08	0.0423
10.92	0.1116	40.1	0.0426
10.93	0.1106	40.12	0.0427
10.95	0.1106	40.13	0.0439
10.97	0.1097	40.15	0.0424
10.98	0.1091	40.17	0.0417
11.	0.1094	40.18	0.0426
11.02	0.1093	40.2	0.0427
11.03	0.1099	40.22	0.043
11.05	0.1093	40.23	0.0442
11.07	0.1086	40.25	0.0442
11.08	0.1083	40.27	0.0437
11.1	0.1089	40.28	0.0443
11.12	0.1065	40.3	0.0431
11.13	0.1077	40.32	0.0438
11.15	0.1071	40.33	0.0431
11.17	0.1065	40.35	0.0434
11.18	0.1059	40.37	0.0435
11.2	0.106	40.38	0.0422
11.22	0.107	40.4	0.0428
11.23	0.1057	40.42	0.0435
11.25	0.1063	40.43	0.0439
11.27	0.1051	40.45	0.0433
11.28	0.1056	40.47	0.043
11.3	0.1044	40.48	0.0435
11.32	0.105	40.5	0.0437
11.33	0.1053	40.52	0.0438
11.35	0.1036	40.53	0.0432
11.37	0.1043	40.55	0.0429
11.38	0.1038	40.57	0.0425
11.4	0.1036	40.58	0.0425
11.42	0.1027	40.6	0.0428
11.43	0.1035	40.62	0.043
11.45	0.1018	40.63	0.0432
11.47	0.1034	40.65	0.0427
11.48	0.1032	40.67	0.0428

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
11.5	0.1032	40.68	0.0429
11.52	0.1024	40.7	0.0428
11.53	0.103	40.72	0.0431
11.55	0.1018	40.73	0.0433
11.57	0.1019	40.75	0.0428
11.58	0.1008	40.77	0.0427
11.6	0.101	40.78	0.0414
11.62	0.1006	40.8	0.0415
11.63	0.1007	40.82	0.0421
11.65	0.0986	40.83	0.041
11.67	0.0997	40.85	0.0427
11.68	0.099	40.87	0.0425
11.7	0.0998	40.88	0.042
11.72	0.0994	40.9	0.0423
11.73	0.0992	40.92	0.0419
11.75	0.0983	40.93	0.0422
11.77	0.0978	40.95	0.042
11.78	0.0979	40.97	0.0421
11.8	0.098	40.98	0.0413
11.82	0.0964	41.	0.0412
11.83	0.0974	41.02	0.0418
11.85	0.0966	41.03	0.0413
11.87	0.0961	41.05	0.0423
11.88	0.0953	41.07	0.0408
11.9	0.0968	41.08	0.0414
11.92	0.0948	41.1	0.0408
11.93	0.0944	41.12	0.0418
11.95	0.0953	41.13	0.0422
11.97	0.0941	41.15	0.041
11.98	0.0948	41.17	0.0416
12.	0.0952	41.18	0.0411
12.02	0.0953	41.2	0.0415
12.03	0.0951	41.22	0.0422
12.05	0.0947	41.23	0.0413
12.07	0.0934	41.25	0.0417
12.08	0.0949	41.27	0.0415
12.1	0.0949	41.28	0.0406
12.12	0.0935	41.3	0.041
12.13	0.093	41.32	0.042
12.15	0.0935	41.33	0.0406
12.17	0.0929	41.35	0.0409
12.18	0.0919	41.37	0.0414
12.2	0.0925	41.38	0.0414
12.22	0.0919	41.4	0.0398
12.23	0.0942	41.42	0.0404
12.25	0.0943	41.43	0.0401
12.27	0.0938	41.45	0.0407
12.28	0.0936	41.47	0.0398
12.3	0.092	41.48	0.0413
12.32	0.0913	41.5	0.0409
12.33	0.0928	41.52	0.0408
12.35	0.0911	41.53	0.0407
12.37	0.0912	41.55	0.0399
12.38	0.0913	41.57	0.0407
12.4	0.0908	41.58	0.0402
12.42	0.091	41.6	0.0397
12.43	0.091	41.62	0.0403
12.45	0.0903	41.63	0.0406
12.47	0.09	41.65	0.0405
12.48	0.0896	41.67	0.0398
12.5	0.0894	41.68	0.0401
12.52	0.0902	41.7	0.0401
12.53	0.09	41.72	0.0403
12.55	0.0883	41.73	0.0397
12.57	0.0879	41.75	0.0395
12.58	0.0874	41.77	0.0397

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
12.6	0.0889	41.78	0.0397
12.62	0.0873	41.8	0.04
12.63	0.0881	41.82	0.04
12.65	0.0881	41.83	0.0386
12.67	0.0882	41.85	0.0401
12.68	0.0869	41.87	0.0385
12.7	0.0873	41.88	0.0403
12.72	0.0863	41.9	0.0397
12.73	0.0861	41.92	0.0396
12.75	0.0864	41.93	0.0402
12.77	0.0857	41.95	0.0387
12.78	0.0858	41.97	0.0388
12.8	0.0852	41.98	0.0397
12.82	0.0846	42.	0.0392
12.83	0.084	42.02	0.0403
12.85	0.0849	42.03	0.0393
12.87	0.0847	42.05	0.0389
12.88	0.0838	42.07	0.0403
12.9	0.0846	42.08	0.0389
12.92	0.0832	42.1	0.0389
12.93	0.0832	42.12	0.0392
12.95	0.0835	42.13	0.0406
12.97	0.0832	42.15	0.0386
12.98	0.0822	42.17	0.0396
13.	0.0834	42.18	0.0397
13.02	0.0822	42.2	0.0395
13.03	0.0815	42.22	0.0391
13.05	0.0818	42.23	0.0452
13.07	0.0814	42.25	0.0446
13.08	0.0823	42.27	0.0438
13.1	0.081	42.28	0.0446
13.12	0.0816	42.3	0.0438
13.13	0.0798	42.32	0.044
13.15	0.0805	42.33	0.044
13.17	0.0803	42.35	0.0447
13.18	0.0793	42.37	0.0445
13.2	0.0791	42.38	0.0444
13.22	0.0787	42.4	0.044
13.23	0.0802	42.42	0.0442
13.25	0.0787	42.43	0.0437
13.27	0.0785	42.45	0.0448
13.28	0.0783	42.47	0.0451
13.3	0.0783	42.48	0.0439
13.32	0.0785	42.5	0.0438
13.33	0.0772	42.52	0.044
13.35	0.0772	42.53	0.0439
13.37	0.0767	42.55	0.044
13.38	0.0774	42.57	0.0443
13.4	0.0757	42.58	0.044
13.42	0.0765	42.6	0.0445
13.43	0.0767	42.62	0.0432
13.45	0.0761	42.63	0.0445
13.47	0.0764	42.65	0.0442
13.48	0.0766	42.67	0.0439
13.5	0.0757	42.68	0.0444
13.52	0.0754	42.7	0.0439
13.53	0.0751	42.72	0.0446
13.55	0.0751	42.73	0.0436
13.57	0.0753	42.75	0.0446
13.58	0.0743	42.77	0.043
13.6	0.0736	42.78	0.0441
13.62	0.074	42.8	0.0436
13.63	0.0741	42.82	0.0433
13.65	0.074	42.83	0.0433
13.67	0.0736	42.85	0.0433
13.68	0.0734	42.87	0.0432

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
13.7	0.0732	42.88	0.0436
13.72	0.0731	42.9	0.0433
13.73	0.0729	42.92	0.0429
13.75	0.0724	42.93	0.0422
13.77	0.073	42.95	0.0424
13.78	0.072	42.97	0.0431
13.8	0.0721	42.98	0.0432
13.82	0.0702	43.	0.042
13.83	0.071	43.02	0.0423
13.85	0.0715	43.03	0.0423
13.87	0.0716	43.05	0.0432
13.88	0.0711	43.07	0.0434
13.9	0.0709	43.08	0.0426
13.92	0.0697	43.1	0.0424
13.93	0.0704	43.12	0.0433
13.95	0.0693	43.13	0.0426
13.97	0.0696	43.15	0.0425
13.98	0.0691	43.17	0.0427
14.	0.0694	43.18	0.0412
14.02	0.069	43.2	0.0416
14.03	0.069	43.22	0.0433
14.05	0.0684	43.23	0.0424
14.07	0.069	43.25	0.0425
14.08	0.0691	43.27	0.0422
14.1	0.0688	43.28	0.0427
14.12	0.0691	43.3	0.0425
14.13	0.0673	43.32	0.0425
14.15	0.0666	43.33	0.0417
14.17	0.0672	43.35	0.0423
14.18	0.0674	43.37	0.0428
14.2	0.0678	43.38	0.0422
14.22	0.0671	43.4	0.0438
14.23	0.0737	43.42	0.0423
14.25	0.0731	43.43	0.0422
14.27	0.0732	43.45	0.0428
14.28	0.0743	43.47	0.0415
14.3	0.073	43.48	0.042
14.32	0.0737	43.5	0.0427
14.33	0.0736	43.52	0.0419
14.35	0.072	43.53	0.0417
14.37	0.0724	43.55	0.0418
14.38	0.0716	43.57	0.0425
14.4	0.0719	43.58	0.0418
14.42	0.0721	43.6	0.0424
14.43	0.0718	43.62	0.0424
14.45	0.0705	43.63	0.0404
14.47	0.0708	43.65	0.0418
14.48	0.0716	43.67	0.0428
14.5	0.072	43.68	0.0414
14.52	0.0696	43.7	0.0415
14.53	0.0706	43.72	0.0421
14.55	0.0697	43.73	0.0408
14.57	0.0704	43.75	0.0418
14.58	0.0691	43.77	0.0416
14.6	0.0706	43.78	0.041
14.62	0.07	43.8	0.0418
14.63	0.0704	43.82	0.0415
14.65	0.0693	43.83	0.0412
14.67	0.0692	43.85	0.0417
14.68	0.0691	43.87	0.0411
14.7	0.0693	43.88	0.0413
14.72	0.0681	43.9	0.0403
14.73	0.068	43.92	0.0418
14.75	0.068	43.93	0.0417
14.77	0.0672	43.95	0.0422
14.78	0.0681	43.97	0.0414

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
14.8	0.0671	43.98	0.0405
14.82	0.0675	44.	0.0408
14.83	0.0677	44.02	0.0417
14.85	0.0669	44.03	0.0413
14.87	0.0655	44.05	0.0422
14.88	0.0663	44.07	0.0416
14.9	0.0666	44.08	0.0407
14.92	0.0668	44.1	0.041
14.93	0.0665	44.12	0.041
14.95	0.0663	44.13	0.0413
14.97	0.0659	44.15	0.0413
14.98	0.0657	44.17	0.0416
15.	0.0654	44.18	0.0406
15.02	0.0666	44.2	0.0414
15.03	0.0654	44.22	0.0413
15.05	0.0646	44.23	0.0452
15.07	0.0647	44.25	0.0463
15.08	0.0641	44.27	0.045
15.1	0.0644	44.28	0.0456
15.12	0.0639	44.3	0.0451
15.13	0.0644	44.32	0.0442
15.15	0.0633	44.33	0.0444
15.17	0.0632	44.35	0.0463
15.18	0.064	44.37	0.0457
15.2	0.0634	44.38	0.0454
15.22	0.0633	44.4	0.0462
15.23	0.0646	44.42	0.0452
15.25	0.0639	44.43	0.0465
15.27	0.0642	44.45	0.0446
15.28	0.0636	44.47	0.0461
15.3	0.063	44.48	0.0455
15.32	0.0625	44.5	0.0448
15.33	0.0621	44.52	0.0465
15.35	0.0607	44.53	0.0456
15.37	0.0618	44.55	0.0461
15.38	0.0611	44.57	0.0467
15.4	0.0627	44.58	0.0457
15.42	0.0614	44.6	0.0461
15.43	0.0588	44.62	0.0446
15.45	0.0608	44.63	0.0449
15.47	0.0622	44.65	0.0447
15.48	0.0586	44.67	0.0454
15.5	0.0586	44.68	0.0458
15.52	0.0586	44.7	0.0459
15.53	0.0585	44.72	0.0454
15.55	0.0588	44.73	0.0445
15.57	0.059	44.75	0.0448
15.58	0.0598	44.77	0.0463
15.6	0.0586	44.78	0.0448
15.62	0.0595	44.8	0.0453
15.63	0.06	44.82	0.0446
15.65	0.0597	44.83	0.046
15.67	0.0603	44.85	0.0462
15.68	0.0591	44.87	0.045
15.7	0.0594	44.88	0.0454
15.72	0.0602	44.9	0.0454
15.73	0.0615	44.92	0.0448
15.75	0.0744	44.93	0.0445
15.77	0.0712	44.95	0.0448
15.78	0.0716	44.97	0.0464
15.8	0.0721	44.98	0.0453
15.82	0.0641	45.	0.045
15.83	0.064	45.02	0.0454
15.85	0.0633	45.03	0.0457
15.87	0.0647	45.05	0.0452
15.88	0.0632	45.07	0.045

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
15.9	0.0619	45.08	0.0456
15.92	0.0626	45.1	0.0453
15.93	0.0643	45.12	0.0456
15.95	0.0624	45.13	0.0448
15.97	0.0624	45.15	0.0452
15.98	0.0624	45.17	0.045
16.	0.066	45.18	0.0453
16.02	0.0609	45.2	0.0451
16.03	0.0632	45.22	0.0449
16.05	0.0616	45.23	0.045
16.07	0.0621	45.25	0.0443
16.08	0.0601	45.27	0.0443
16.1	0.0617	45.28	0.0446
16.12	0.0601	45.3	0.0445
16.13	0.0616	45.32	0.0448
16.15	0.0631	45.33	0.0442
16.17	0.0594	45.35	0.0438
16.18	0.0617	45.37	0.0441
16.2	0.0591	45.38	0.0451
16.22	0.0601	45.4	0.0438
16.23	0.0651	45.42	0.0439
16.25	0.065	45.43	0.0445
16.27	0.0656	45.45	0.0437
16.28	0.0642	45.47	0.0449
16.3	0.0658	45.48	0.0448
16.32	0.0657	45.5	0.0437
16.33	0.0641	45.52	0.0446
16.35	0.0639	45.53	0.0443
16.37	0.0655	45.55	0.044
16.38	0.0658	45.57	0.0442
16.4	0.0642	45.58	0.0445
16.42	0.0637	45.6	0.0442
16.43	0.0641	45.62	0.0448
16.45	0.065	45.63	0.0438
16.47	0.0641	45.65	0.0447
16.48	0.0645	45.67	0.0437
16.5	0.0639	45.68	0.0446
16.52	0.0641	45.7	0.0444
16.53	0.0644	45.72	0.0446
16.55	0.0639	45.73	0.0435
16.57	0.0641	45.75	0.0456
16.58	0.0632	45.77	0.0446
16.6	0.0635	45.78	0.0438
16.62	0.0635	45.8	0.0444
16.63	0.0626	45.82	0.0449
16.65	0.063	45.83	0.0447
16.67	0.0625	45.85	0.0447
16.68	0.0616	45.87	0.0446
16.7	0.0623	45.88	0.0451
16.72	0.0635	45.9	0.0436
16.73	0.0623	45.92	0.0441
16.75	0.0627	45.93	0.0433
16.77	0.0626	45.95	0.0433
16.78	0.0621	45.97	0.0438
16.8	0.0614	45.98	0.0442
16.82	0.0625	46.	0.0438
16.83	0.0624	46.02	0.0446
16.85	0.0615	46.03	0.0443
16.87	0.0632	46.05	0.0444
16.88	0.0613	46.07	0.0448
16.9	0.061	46.08	0.0451
16.92	0.0622	46.1	0.0442
16.93	0.0614	46.12	0.0444
16.95	0.0608	46.13	0.0439
16.97	0.0615	46.15	0.0439
16.98	0.0603	46.17	0.0435

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
17.	0.0615	46.18	0.0434
17.02	0.0595	46.2	0.0438
17.03	0.0609	46.22	0.0445
17.05	0.0611	46.23	0.0429
17.07	0.0597	46.25	0.0439
17.08	0.0605	46.27	0.0438
17.1	0.0607	46.28	0.0431
17.12	0.0602	46.3	0.043
17.13	0.0601	46.32	0.0432
17.15	0.0601	46.33	0.0425
17.17	0.0597	46.35	0.0426
17.18	0.0581	46.37	0.0429
17.2	0.0591	46.38	0.0424
17.22	0.0588	46.4	0.0414
17.23	0.0601	46.42	0.0417
17.25	0.059	46.43	0.0424
17.27	0.0589	46.45	0.0417
17.28	0.0598	46.47	0.0421
17.3	0.0591	46.48	0.0433
17.32	0.0583	46.5	0.0426
17.33	0.0578	46.52	0.0422
17.35	0.0581	46.53	0.0428
17.37	0.0598	46.55	0.0413
17.38	0.0588	46.57	0.0424
17.4	0.0577	46.58	0.0408
17.42	0.0583	46.6	0.0414
17.43	0.0581	46.62	0.0426
17.45	0.058	46.63	0.0419
17.47	0.0569	46.65	0.0418
17.48	0.0578	46.67	0.0428
17.5	0.0585	46.68	0.0421
17.52	0.0582	46.7	0.0422
17.53	0.0577	46.72	0.0421
17.55	0.0578	46.73	0.0417
17.57	0.0573	46.75	0.0423
17.58	0.0578	46.77	0.0415
17.6	0.0578	46.78	0.0425
17.62	0.0569	46.8	0.042
17.63	0.0571	46.82	0.0416
17.65	0.0575	46.83	0.0421
17.67	0.0572	46.85	0.0418
17.68	0.0572	46.87	0.0426
17.7	0.0565	46.88	0.0409
17.72	0.0572	46.9	0.0405
17.73	0.0568	46.92	0.0417
17.75	0.0564	46.93	0.0417
17.77	0.0568	46.95	0.0418
17.78	0.0565	46.97	0.0417
17.8	0.056	46.98	0.0426
17.82	0.0562	47.	0.0414
17.83	0.0559	47.02	0.0421
17.85	0.0562	47.03	0.0416
17.87	0.0566	47.05	0.0416
17.88	0.0555	47.07	0.0415
17.9	0.0564	47.08	0.0407
17.92	0.0567	47.1	0.0399
17.93	0.0556	47.12	0.0401
17.95	0.0548	47.13	0.0411
17.97	0.0556	47.15	0.0413
17.98	0.0557	47.17	0.0409
18.	0.056	47.18	0.0408
18.02	0.0558	47.2	0.0417
18.03	0.0547	47.22	0.0421
18.05	0.0554	47.23	0.044
18.07	0.0548	47.25	0.3296
18.08	0.0556	47.27	-0.0146

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
18.1	0.0559	47.28	0.0433
18.12	0.0554	47.3	0.0521
18.13	0.0562	47.32	0.0503
18.15	0.0554	47.33	0.0524
18.17	0.0548	47.35	0.0414
18.18	0.0554	47.37	0.0392
18.2	0.0551	47.38	0.0391
18.22	0.0544	47.4	0.0441
18.23	0.0532	47.42	0.0552
18.25	0.0534	47.43	0.0421
18.27	0.0535	47.45	0.0374
18.28	0.0527	47.47	0.0374
18.3	0.0524	47.48	0.0366
18.32	0.0528	47.5	0.0397
18.33	0.0518	47.52	-0.0645
18.35	0.0522	47.53	0.0394
18.37	0.0525	47.55	0.0409
18.38	0.0528	47.57	0.0407
18.4	0.0526	47.58	0.0413
18.42	0.0538	47.6	0.0415
18.43	0.0518	47.62	0.0425
18.45	0.0507	47.63	0.0427
18.47	0.0515	47.65	0.0419
18.48	0.0522	47.67	0.0415
18.5	0.0522	47.68	0.0415
18.52	0.0509	47.7	0.0415
18.53	0.0515	47.72	0.0421
18.55	0.0504	47.73	0.0415
18.57	0.0519	47.75	0.0423
18.58	0.0517	47.77	0.0414
18.6	0.0517	47.78	0.0416
18.62	0.0511	47.8	0.0404
18.63	0.0512	47.82	0.0411
18.65	0.0511	47.83	0.0419
18.67	0.0517	47.85	0.0407
18.68	0.0522	47.87	0.042
18.7	0.0513	47.88	0.0413
18.72	0.0507	47.9	0.041
18.73	0.0501	47.92	0.0424
18.75	0.051	47.93	0.0425
18.77	0.0523	47.95	0.0406
18.78	0.0505	47.97	0.0409
18.8	0.0503	47.98	0.0413
18.82	0.0519	48.	0.0418
18.83	0.0504	48.02	0.0411
18.85	0.0505	48.03	0.0426
18.87	0.05	48.05	0.0422
18.88	0.05	48.07	0.0403
18.9	0.0509	48.08	0.0406
18.92	0.0513	48.1	0.0418
18.93	0.05	48.12	0.0405
18.95	0.0508	48.13	0.0413
18.97	0.0505	48.15	0.0405
18.98	0.0494	48.17	0.0414
19.	0.0503	48.18	0.0413
19.02	0.0493	48.2	0.0407
19.03	0.0502	48.22	0.0408
19.05	0.0504	48.23	0.0447
19.07	0.0494	48.25	0.0455
19.08	0.0485	48.27	0.0456
19.1	0.0494	48.28	0.0459
19.12	0.0489	48.3	0.046
19.13	0.0491	48.32	0.0448
19.15	0.0497	48.33	0.0457
19.17	0.0475	48.35	0.0451
19.18	0.0482	48.37	0.0454

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
19.2	0.0483	48.38	0.0456
19.22	0.0492	48.4	0.0453
19.23	0.0489	48.42	0.045
19.25	0.0485	48.43	0.0445
19.27	0.0489	48.45	0.0457
19.28	0.0481	48.47	0.0464
19.3	0.0484	48.48	0.0456
19.32	0.047	48.5	0.0445
19.33	0.0477	48.52	0.0454
19.35	0.0469	48.53	0.0447
19.37	0.0481	48.55	0.045
19.38	0.0472	48.57	0.046
19.4	0.0479	48.58	0.0459
19.42	0.0479	48.6	0.0457
19.43	0.0467	48.62	0.0458
19.45	0.0475	48.63	0.0456
19.47	0.0475	48.65	0.046
19.48	0.0475	48.67	0.0451
19.5	0.0476	48.68	0.044
19.52	0.0473	48.7	0.045
19.53	0.047	48.72	0.0444
19.55	0.0478	48.73	0.0447
19.57	0.0469	48.75	0.0448
19.58	0.0473	48.77	0.0441
19.6	0.0466	48.78	0.0443
19.62	0.0474	48.8	0.0442
19.63	0.0468	48.82	0.045
19.65	0.047	48.83	0.0451
19.67	0.047	48.85	0.0456
19.68	0.047	48.87	0.046
19.7	0.0467	48.88	0.0459
19.72	0.0466	48.9	0.0455
19.73	0.0464	48.92	0.0455
19.75	0.0455	48.93	0.0452
19.77	0.0459	48.95	0.0452
19.78	0.0465	48.97	0.0457
19.8	0.0456	48.98	0.0458
19.82	0.047	49.	0.0456
19.83	0.0461	49.02	0.0448
19.85	0.0451	49.03	0.0463
19.87	0.0456	49.05	0.0461
19.88	0.046	49.07	0.0451
19.9	0.0457	49.08	0.0463
19.92	0.0458	49.1	0.0454
19.93	0.0445	49.12	0.0455
19.95	0.0457	49.13	0.0455
19.97	0.0448	49.15	0.0464
19.98	0.0462	49.17	0.0459
20.	0.0442	49.18	0.0446
20.02	0.0453	49.2	0.0463
20.03	0.0454	49.22	0.0461
20.05	0.0453	49.23	0.0459
20.07	0.045	49.25	0.0461
20.08	0.0451	49.27	0.0463
20.1	0.0452	49.28	0.046
20.12	0.0451	49.3	0.0454
20.13	0.0455	49.32	0.0457
20.15	0.0451	49.33	0.0451
20.17	0.0441	49.35	0.0456
20.18	0.0449	49.37	0.0453
20.2	0.0449	49.38	0.045
20.22	0.0443	49.4	0.0454
20.23	0.0482	49.42	0.0446
20.25	0.0492	49.43	0.044
20.27	0.0489	49.45	0.0432
20.28	0.0479	49.47	0.045

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
20.3	0.0493	49.48	0.0454
20.32	0.0477	49.5	0.0445
20.33	0.0487	49.52	0.0458
20.35	0.0494	49.53	0.0463
20.37	0.0488	49.55	0.0449
20.38	0.0481	49.57	0.0445
20.4	0.048	49.58	0.0445
20.42	0.0487	49.6	0.046
20.43	0.0484	49.62	0.0456
20.45	0.0478	49.63	0.0451
20.47	0.0485	49.65	0.0445
20.48	0.0479	49.67	0.0445
20.5	0.0485	49.68	0.0446
20.52	0.0486	49.7	0.0452
20.53	0.0482	49.72	0.0443
20.55	0.0468	49.73	0.0446
20.57	0.0489	49.75	0.044
20.58	0.0472	49.77	0.0448
20.6	0.0482	49.78	0.0448
20.62	0.0478	49.8	0.0445
20.63	0.0477	49.82	0.0445
20.65	0.0472	49.83	0.0449
20.67	0.0483	49.85	0.0453
20.68	0.0473	49.87	0.0447
20.7	0.0472	49.88	0.0446
20.72	0.047	49.9	0.0442
20.73	0.0467	49.92	0.0445
20.75	0.0473	49.93	0.044
20.77	0.0471	49.95	0.0443
20.78	0.0473	49.97	0.0441
20.8	0.0469	49.98	0.0446
20.82	0.0472	50.	0.0445
20.83	0.0469	50.02	0.0449
20.85	0.0468	50.03	0.0441
20.87	0.0471	50.05	0.0439
20.88	0.047	50.07	0.0441
20.9	0.0473	50.08	0.0443
20.92	0.0468	50.1	0.0454
20.93	0.0473	50.12	0.0433
20.95	0.0463	50.13	0.0441
20.97	0.0456	50.15	0.0455
20.98	0.0444	50.17	0.0444
21.	0.0451	50.18	0.0444
21.02	0.0446	50.2	0.0443
21.03	0.0446	50.22	0.0453
21.05	0.0447	50.23	0.0455
21.07	0.0435	50.25	0.0466
21.08	0.0448	50.27	0.0479
21.1	0.0487	50.28	0.047
21.12	0.0537	50.3	0.0475
21.13	0.0549	50.32	0.0468
21.15	0.0568	50.33	0.0457
21.17	0.0373	50.35	0.0467
21.18	0.0411	50.37	0.0474
21.2	0.0399	50.38	0.0464
21.22	0.0412	50.4	0.0469
21.23	0.0414	50.42	0.0462
21.25	0.0415	50.43	0.0469
21.27	0.0411	50.45	0.0473
21.28	0.0409	50.47	0.0464
21.3	0.0411	50.48	0.0463
21.32	0.0416	50.5	0.0466
21.33	0.0409	50.52	0.0476
21.35	0.0412	50.53	0.0463
21.37	0.0419	50.55	0.0468
21.38	0.0395	50.57	0.0476

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
21.4	0.0419	50.58	0.0462
21.42	0.0412	50.6	0.0467
21.43	0.0411	50.62	0.0469
21.45	0.0418	50.63	0.0461
21.47	0.0421	50.65	0.0467
21.48	0.0425	50.67	0.0471
21.5	0.0408	50.68	0.046
21.52	0.0409	50.7	0.0476
21.53	0.0415	50.72	0.0468
21.55	0.0423	50.73	0.0462
21.57	0.0419	50.75	0.0463
21.58	0.0413	50.77	0.0464
21.6	0.0419	50.78	0.0467
21.62	0.041	50.8	0.046
21.63	0.0422	50.82	0.0471
21.65	0.0417	50.83	0.0456
21.67	0.0421	50.85	0.0464
21.68	0.0413	50.87	0.0461
21.7	0.0413	50.88	0.0463
21.72	0.0419	50.9	0.0468
21.73	0.0415	50.92	0.0456
21.75	0.0407	50.93	0.0467
21.77	0.0426	50.95	0.0459
21.78	0.0427	50.97	0.0449
21.8	0.0434	50.98	0.0457
21.82	0.0435	51.	0.0456
21.83	0.0436	51.02	0.0452
21.85	0.0431	51.03	0.0466
21.87	0.0436	51.05	0.0455
21.88	0.0441	51.07	0.0463
21.9	0.0435	51.08	0.0454
21.92	0.0432	51.1	0.0452
21.93	0.0436	51.12	0.0456
21.95	0.0423	51.13	0.0462
21.97	0.0432	51.15	0.046
21.98	0.0432	51.17	0.0454
22.	0.0442	51.18	0.0462
22.02	0.0431	51.2	0.0464
22.03	0.0428	51.22	0.0451
22.05	0.0426	51.23	0.0459
22.07	0.0444	51.25	0.0457
22.08	0.0435	51.27	0.0458
22.1	0.0435	51.28	0.0453
22.12	0.0437	51.3	0.045
22.13	0.0426	51.32	0.0456
22.15	0.0427	51.33	0.0442
22.17	0.0427	51.35	0.0449
22.18	0.0428	51.37	0.0443
22.2	0.0429	51.38	0.0459
22.22	0.0433	51.4	0.0461
22.23	0.0447	51.42	0.045
22.25	0.0458	51.43	0.0455
22.27	0.045	51.45	0.0454
22.28	0.0441	51.47	0.0442
22.3	0.0459	51.48	0.0457
22.32	0.0445	51.5	0.045
22.33	0.044	51.52	0.0462
22.35	0.0437	51.53	0.0457
22.37	0.045	51.55	0.0446
22.38	0.0449	51.57	0.0451
22.4	0.045	51.58	0.0459
22.42	0.0453	51.6	0.0452
22.43	0.0443	51.62	0.0456
22.45	0.0444	51.63	0.0451
22.47	0.0446	51.65	0.0459
22.48	0.0447	51.67	0.0452

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
22.5	0.0443	51.68	0.0452
22.52	0.0446	51.7	0.0448
22.53	0.0446	51.72	0.0452
22.55	0.0444	51.73	0.0458
22.57	0.0449	51.75	0.0448
22.58	0.044	51.77	0.0454
22.6	0.0445	51.78	0.0444
22.62	0.0447	51.8	0.0453
22.63	0.0447	51.82	0.0456
22.65	0.0445	51.83	0.0444
22.67	0.0449	51.85	0.0452
22.68	0.0445	51.87	0.045
22.7	0.0449	51.88	0.0444
22.72	0.0442	51.9	0.0454
22.73	0.044	51.92	0.0437
22.75	0.044	51.93	0.045
22.77	0.0443	51.95	0.0448
22.78	0.0444	51.97	0.0447
22.8	0.0457	51.98	0.0435
22.82	0.0458	52.	0.0449
22.83	0.044	52.02	0.0441
22.85	0.0452	52.03	0.0443
22.87	0.0442	52.05	0.0445
22.88	0.0448	52.07	0.0452
22.9	0.0447	52.08	0.0445
22.92	0.0441	52.1	0.0451
22.93	0.0452	52.12	0.0442
22.95	0.0447	52.13	0.0444
22.97	0.0447	52.15	0.0447
22.98	0.0432	52.17	0.0442
23.	0.0439	52.18	0.0439
23.02	0.0441	52.2	0.0441
23.03	0.0448	52.22	0.0451
23.05	0.0434	52.23	0.0474
23.07	0.0433	52.25	0.0484
23.08	0.0443	52.27	0.0483
23.1	0.0446	52.28	0.0492
23.12	0.0444	52.3	0.0488
23.13	0.0446	52.32	0.048
23.15	0.0439	52.33	0.0483
23.17	0.0439	52.35	0.0486
23.18	0.0442	52.37	0.0488
23.2	0.0438	52.38	0.0488
23.22	0.0443	52.4	0.0485
23.23	0.0451	52.42	0.0481
23.25	0.0441	52.43	0.0488
23.27	0.0443	52.45	0.0492
23.28	0.044	52.47	0.0486
23.3	0.0444	52.48	0.0485
23.32	0.0442	52.5	0.049
23.33	0.0434	52.52	0.0477
23.35	0.0431	52.53	0.0489
23.37	0.0438	52.55	0.0492
23.38	0.0436	52.57	0.0487
23.4	0.0436	52.58	0.0483
23.42	0.0438	52.6	0.0487
23.43	0.0436	52.62	0.0491
23.45	0.0438	52.63	0.0479
23.47	0.0442	52.65	0.0488
23.48	0.0429	52.67	0.05
23.5	0.0448	52.68	0.0492
23.52	0.0432	52.7	0.0489
23.53	0.0431	52.72	0.0492
23.55	0.044	52.73	0.0481
23.57	0.044	52.75	0.0479
23.58	0.0424	52.77	0.0484

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
23.6	0.044	52.78	0.0479
23.62	0.0437	52.8	0.0489
23.63	0.0437	52.82	0.0479
23.65	0.0433	52.83	0.048
23.67	0.0433	52.85	0.048
23.68	0.0431	52.87	0.0483
23.7	0.043	52.88	0.0482
23.72	0.0427	52.9	0.048
23.73	0.0437	52.92	0.0476
23.75	0.0436	52.93	0.049
23.77	0.0426	52.95	0.0481
23.78	0.0418	52.97	0.0479
23.8	0.0429	52.98	0.0479
23.82	0.0421	53.	0.0476
23.83	0.0434	53.02	0.0483
23.85	0.0426	53.03	0.0477
23.87	0.0422	53.05	0.0477
23.88	0.0425	53.07	0.0483
23.9	0.0425	53.08	0.048
23.92	0.0423	53.1	0.0477
23.93	0.0412	53.12	0.0468
23.95	0.0425	53.13	0.0477
23.97	0.0415	53.15	0.0468
23.98	0.042	53.17	0.047
24.	0.0422	53.18	0.0474
24.02	0.0427	53.2	0.047
24.03	0.0417	53.22	0.0471
24.05	0.0416	53.23	0.0476
24.07	0.0413	53.25	0.0479
24.08	0.0417	53.27	0.0478
24.1	0.0424	53.28	0.0466
24.12	0.0425	53.3	0.0472
24.13	0.0415	53.32	0.0472
24.15	0.041	53.33	0.0475
24.17	0.0416	53.35	0.049
24.18	0.042	53.37	0.0477
24.2	0.041	53.38	0.048
24.22	0.041	53.4	0.0471
24.23	0.0432	53.42	0.0482
24.25	0.0445	53.43	0.0471
24.27	0.0433	53.45	0.0472
24.28	0.0441	53.47	0.0488
24.3	0.0434	53.48	0.0475
24.32	0.0424	53.5	0.0477
24.33	0.043	53.52	0.0478
24.35	0.043	53.53	0.0476
24.37	0.0437	53.55	0.0476
24.38	0.0441	53.57	0.047
24.4	0.041	53.58	0.0469
24.42	0.0433	53.6	0.0469
24.43	0.043	53.62	0.0468
24.45	0.0434	53.63	0.0476
24.47	0.0424	53.65	0.0463
24.48	0.0426	53.67	0.0467
24.5	0.0421	53.68	0.0465
24.52	0.0418	53.7	0.0467
24.53	0.0425	53.72	0.0475
24.55	0.0432	53.73	0.0482
24.57	0.0423	53.75	0.0466
24.58	0.0426	53.77	0.0482
24.6	0.0427	53.78	0.0479
24.62	0.0417	53.8	0.0478
24.63	0.0414	53.82	0.0484
24.65	0.0418	53.83	0.0473
24.67	0.0421	53.85	0.0468
24.68	0.0417	53.87	0.0476

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
24.7	0.0423	53.88	0.047
24.72	0.0431	53.9	0.0465
24.73	0.0402	53.92	0.0471
24.75	0.0424	53.93	0.0465
24.77	0.042	53.95	0.0468
24.78	0.0414	53.97	0.0468
24.8	0.0408	53.98	0.0476
24.82	0.0418	54.	0.0475
24.83	0.042	54.02	0.047
24.85	0.0419	54.03	0.0478
24.87	0.0406	54.05	0.0479
24.88	0.0417	54.07	0.0471
24.9	0.0418	54.08	0.0484
24.92	0.0418	54.1	0.0482
24.93	0.0413	54.12	0.0476
24.95	0.0408	54.13	0.0477
24.97	0.0404	54.15	0.0476
24.98	0.0412	54.17	0.0472
25.	0.0412	54.18	0.0471
25.02	0.0406	54.2	0.0474
25.03	0.0402	54.22	0.0463
25.05	0.0406	54.23	0.0481
25.07	0.0408	54.25	0.047
25.08	0.0398	54.27	0.048
25.1	0.0393	54.28	0.0469
25.12	0.0397	54.3	0.0477
25.13	0.0396	54.32	0.0471
25.15	0.0404	54.33	0.0462
25.17	0.0415	54.35	0.0475
25.18	0.0391	54.37	0.0476
25.2	0.0395	54.38	0.0483
25.22	0.0399	54.4	0.0464
25.23	0.0396	54.42	0.0464
25.25	0.0404	54.43	0.0467
25.27	0.0401	54.45	0.0466
25.28	0.0394	54.47	0.0461
25.3	0.0399	54.48	0.046
25.32	0.039	54.5	0.0457
25.33	0.0382	54.52	0.0471
25.35	0.0385	54.53	0.0464
25.37	0.0386	54.55	0.047
25.38	0.0381	54.57	0.0458
25.4	0.039	54.58	0.0467
25.42	0.0385	54.6	0.047
25.43	0.0391	54.62	0.0468
25.45	0.038	54.63	0.0469
25.47	0.0384	54.65	0.0471
25.48	0.0385	54.67	0.0458
25.5	0.0389	54.68	0.0459
25.52	0.0388	54.7	0.0476
25.53	0.0399	54.72	0.0461
25.55	0.04	54.73	0.0466
25.57	0.0382	54.75	0.047
25.58	0.0387	54.77	0.0459
25.6	0.0371	54.78	0.0462
25.62	0.0386	54.8	0.0462
25.63	0.0379	54.82	0.0456
25.65	0.039	54.83	0.0465
25.67	0.0374	54.85	0.0463
25.68	0.0381	54.87	0.0454
25.7	0.0385	54.88	0.0465
25.72	0.0378	54.9	0.0463
25.73	0.0379	54.92	0.0462
25.75	0.0373	54.93	0.0472
25.77	0.0375	54.95	0.0468
25.78	0.0374	54.97	0.0471

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
25.8	0.0371	54.98	0.0479
25.82	0.0373	55.	0.0456
25.83	0.0373	55.02	0.0461
25.85	0.0372	55.03	0.0463
25.87	0.0367	55.05	0.0453
25.88	0.0366	55.07	0.0461
25.9	0.0365	55.08	0.0467
25.92	0.0366	55.1	0.047
25.93	0.0365	55.12	0.0462
25.95	0.0361	55.13	0.0462
25.97	0.0371	55.15	0.0456
25.98	0.0356	55.17	0.0456
26.	0.0365	55.18	0.0455
26.02	0.0375	55.2	0.0453
26.03	0.0362	55.22	0.046
26.05	0.0369	55.23	0.0456
26.07	0.0368	55.25	0.046
26.08	0.0361	55.27	0.0456
26.1	0.0365	55.28	0.046
26.12	0.0361	55.3	0.0453
26.13	0.0358	55.32	0.0452
26.15	0.0358	55.33	0.0449
26.17	0.0361	55.35	0.046
26.18	0.0358	55.37	0.0458
26.2	0.0365	55.38	0.0459
26.22	0.0357	55.4	0.0458
26.23	0.0457	55.42	0.0458
26.25	0.0463	55.43	0.0455
26.27	0.045	55.45	0.0467
26.28	0.0451	55.47	0.046
26.3	0.0441	55.48	0.0461
26.32	0.0442	55.5	0.0459
26.33	0.0451	55.52	0.0456
26.35	0.0445	55.53	0.0458
26.37	0.0443	55.55	0.0454
26.38	0.0443	55.57	0.0455
26.4	0.0448	55.58	0.0457
26.42	0.0438	55.6	0.0447
26.43	0.0433	55.62	0.0452
26.45	0.0435	55.63	0.0446
26.47	0.0432	55.65	0.0453
26.48	0.044	55.67	0.0458
26.5	0.0437	55.68	0.046
26.52	0.0446	55.7	0.0452
26.53	0.0436	55.72	0.046
26.55	0.0434	55.73	0.0453
26.57	0.0428	55.75	0.0463
26.58	0.0436	55.77	0.0465
26.6	0.0435	55.78	0.0465
26.62	0.0437	55.8	0.0462
26.63	0.0432	55.82	0.0456
26.65	0.0433	55.83	0.046
26.67	0.0436	55.85	0.0465
26.68	0.0422	55.87	0.0466
26.7	0.0438	55.88	0.0454
26.72	0.0426	55.9	0.0455
26.73	0.0431	55.92	0.0458
26.75	0.0427	55.93	0.0458
26.77	0.0428	55.95	0.0462
26.78	0.0431	55.97	0.0454
26.8	0.0438	55.98	0.0455
26.82	0.0424	56.	0.0454
26.83	0.043	56.02	0.0448
26.85	0.0429	56.03	0.0452
26.87	0.0425	56.05	0.0462
26.88	0.0414	56.07	0.0458

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
26.9	0.0433	56.08	0.0455
26.92	0.0434	56.1	0.0452
26.93	0.0419	56.12	0.0457
26.95	0.0433	56.13	0.0452
26.97	0.0405	56.15	0.045
26.98	0.0418	56.17	0.0454
27.	0.0408	56.18	0.0461
27.02	0.038	56.2	0.0448
27.03	0.0383	56.22	0.0453
27.05	0.0424	56.23	0.0483
27.07	0.0427	56.25	0.0486
27.08	0.0421	56.27	0.0485
27.1	0.0413	56.28	0.0476
27.12	0.0421	56.3	0.0479
27.13	0.0433	56.32	0.0474
27.15	0.044	56.33	0.048
27.17	0.0431	56.35	0.0468
27.18	0.0437	56.37	0.0476
27.2	0.0433	56.38	0.0477
27.22	0.0425	56.4	0.0474
27.23	0.0428	56.42	0.0472
27.25	0.0432	56.43	0.0472
27.27	0.0426	56.45	0.0468
27.28	0.0427	56.47	0.0467
27.3	0.0429	56.48	0.0476
27.32	0.0423	56.5	0.0472
27.33	0.0431	56.52	0.0463
27.35	0.042	56.53	0.0469
27.37	0.0426	56.55	0.0465
27.38	0.0424	56.57	0.0469
27.4	0.0427	56.58	0.0473
27.42	0.0421	56.6	0.047
27.43	0.0419	56.62	0.0474
27.45	0.0418	56.63	0.0465
27.47	0.0416	56.65	0.0473
27.48	0.041	56.67	0.0475
27.5	0.0414	56.68	0.0478
27.52	0.0412	56.7	0.0478
27.53	0.0405	56.72	0.0469
27.55	0.0409	56.73	0.0477
27.57	0.0399	56.75	0.0467
27.58	0.041	56.77	0.0478
27.6	0.0407	56.78	0.0458
27.62	0.0395	56.8	0.0466
27.63	0.0399	56.82	0.0472
27.65	0.0389	56.83	0.0468
27.67	0.0395	56.85	0.0466
27.68	0.0393	56.87	0.0467
27.7	0.0391	56.88	0.0467
27.72	0.0377	56.9	0.0468
27.73	0.0394	56.92	0.0456
27.75	0.0383	56.93	0.0468
27.77	0.0379	56.95	0.0462
27.78	0.0377	56.97	0.0454
27.8	0.0368	56.98	0.0469
27.82	0.0376	57.	0.0467
27.83	0.0358	57.02	0.0464
27.85	0.0366	57.03	0.0461
27.87	0.0376	57.05	0.0456
27.88	0.0362	57.07	0.0469
27.9	0.0366	57.08	0.0465
27.92	0.036	57.1	0.0456
27.93	0.0364	57.12	0.0464
27.95	0.0354	57.13	0.0467
27.97	0.0351	57.15	0.045
27.98	0.0343	57.17	0.0471

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
28.	0.0353	57.18	0.0455
28.02	0.0358	57.2	0.0467
28.03	0.0341	57.22	0.0456
28.05	0.0349	57.23	0.0455
28.07	0.0347	57.25	0.0464
28.08	0.0347	57.27	0.0452
28.1	0.035	57.28	0.0467
28.12	0.0355	57.3	0.0464
28.13	0.0354	57.32	0.0456
28.15	0.0353	57.33	0.0462
28.17	0.0365	57.35	0.0464
28.18	0.036	57.37	0.0466
28.2	0.0356	57.38	0.0461
28.22	0.0367	57.4	0.0457
28.23	0.0444	57.42	0.0466
28.25	0.0454	57.43	0.0461
28.27	0.0459	57.45	0.046
28.28	0.0458	57.47	0.0454
28.3	0.046	57.48	0.0459
28.32	0.0463	57.5	0.0456
28.33	0.0457	57.52	0.0447
28.35	0.0469	57.53	0.0457
28.37	0.0468	57.55	0.0468
28.38	0.0455	57.57	0.0464
28.4	0.0466	57.58	0.0457
28.42	0.0476	57.6	0.0459
28.43	0.0459	57.62	0.0463
28.45	0.0473	57.63	0.0458
28.47	0.0475	57.65	0.0461
28.48	0.0469	57.67	0.0455
28.5	0.0463	57.68	0.0458
28.52	0.0474	57.7	0.0463
28.53	0.0467	57.72	0.0459
28.55	0.0473	57.73	0.0453
28.57	0.0475	57.75	0.0456
28.58	0.0466	57.77	0.046
28.6	0.0471	57.78	0.0448
28.62	0.0473	57.8	0.0458
28.63	0.0475	57.82	0.0453
28.65	0.047	57.83	0.045
28.67	0.0465	57.85	0.0449
28.68	0.0473	57.87	0.0449
28.7	0.0478	57.88	0.0457
28.72	0.0477	57.9	0.0445
28.73	0.0469	57.92	0.0455
28.75	0.0479	57.93	0.0456
28.77	0.0472	57.95	0.0462
28.78	0.0464	57.97	0.0439
28.8	0.0467	57.98	0.0433
28.82	0.0464	58.	0.0441
28.83	0.0467	58.02	0.0448
28.85	0.0467	58.03	0.0444
28.87	0.0469	58.05	0.044
28.88	0.0474	58.07	0.0449
28.9	0.0463	58.08	0.0443
28.92	0.0475	58.1	0.0435
28.93	0.0468	58.12	0.0442
28.95	0.0464	58.13	0.0457
28.97	0.0477	58.15	0.0449
28.98	0.0461	58.17	0.044
29.	0.0474	58.18	0.0442
29.02	0.0472	58.2	0.0442
29.03	0.047	58.22	0.0441
29.05	0.0477	58.23	0.0479
29.07	0.0479	58.25	0.0483
29.08	0.0471	58.27	0.0483

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
29.1	0.047	58.28	0.0482
29.12	0.046	58.3	0.0497
29.13	0.0472	58.32	0.0484
29.15	0.0472	58.33	0.0495
29.17	0.0472		

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 4.651

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0003557	cm/sec
y0	2.328	ft

T = K*b = 0.0824 cm²/sec

Data Set: C:\Users\ccarter\Golder Associates\19134560,Alcoa Copano APAR and SLERA - Project Files\5 Technic

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 1
Test Date: 12/18/2019
Test Well: MW-6RB

AQUIFER DATA

Saturated Thickness: 7.6 ft
Anisotropy Ratio (Kz/Kr): 0.1

SLUG TEST WELL DATA

Test Well: MW-6RB

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.65 ft
Static Water Column Height: 40.67 ft
Casing Radius: 0.083 ft
Well Radius: 0.083 ft
Well Skin Radius: 0.667 ft
Screen Length: 10. ft
Total Well Penetration Depth: 46.3 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.083 ft
Gravel Pack Porosity: 0.3

No. of Observations: 2993

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	0.	24.95	-0.0366
0.0167	0.0026	24.97	-0.0372
0.0333	0.0041	24.98	-0.0373
0.05	0.4015	25.	-0.0374
0.0667	0.3213	25.02	-0.0379
0.0833	0.8597	25.03	-0.0374
0.1	2.422	25.05	-0.0375
0.1167	2.648	25.07	-0.0385
0.1333	2.564	25.08	-0.0374
0.15	2.554	25.1	-0.0372
0.1667	2.525	25.12	-0.0378
0.1833	2.492	25.13	-0.0388
0.2	2.47	25.15	-0.0364
0.2167	2.444	25.17	-0.0381
0.2333	2.411	25.18	-0.0389
0.25	2.382	25.2	-0.0376
0.2667	2.354	25.22	-0.0385
0.2833	2.331	25.23	-0.0381
0.3	2.309	25.25	-0.0394
0.3167	2.288	25.27	-0.0374
0.3333	2.265	25.28	-0.0386
0.35	2.244	25.3	-0.0382
0.3667	2.087	25.32	-0.0385
0.3833	2.17	25.33	-0.0382
0.4	2.202	25.35	-0.0398
0.4167	2.153	25.37	-0.0375
0.4333	2.151	25.38	-0.0378
0.45	2.13	25.4	-0.0385
0.4667	2.109	25.42	-0.0378
0.4833	2.085	25.43	-0.0401

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.5	2.063	25.45	-0.0389
0.5167	2.047	25.47	-0.0401
0.5333	2.03	25.48	-0.0394
0.55	2.009	25.5	-0.0399
0.5667	1.992	25.52	-0.0396
0.5833	1.966	25.53	-0.0386
0.6	1.938	25.55	-0.0387
0.6167	1.947	25.57	-0.0393
0.6333	1.957	25.58	-0.0404
0.65	1.935	25.6	-0.04
0.6667	1.913	25.62	-0.0401
0.6833	1.916	25.63	-0.0389
0.7	1.899	25.65	-0.0405
0.7167	1.885	25.67	-0.0406
0.7333	1.873	25.68	-0.0393
0.75	1.859	25.7	-0.0395
0.7667	1.846	25.72	-0.0394
0.7833	1.834	25.73	-0.0404
0.8	1.82	25.75	-0.0401
0.8167	1.808	25.77	-0.0365
0.8333	1.796	25.78	-0.0373
0.85	1.784	25.8	-0.0365
0.8667	1.767	25.82	-0.0364
0.8833	1.74	25.83	-0.0365
0.9	1.745	25.85	-0.0354
0.9167	1.734	25.87	-0.0355
0.9333	1.72	25.88	-0.036
0.95	1.708	25.9	-0.0362
0.9667	1.697	25.92	-0.0359
0.9833	1.685	25.93	-0.0364
1.	1.674	25.95	-0.0368
1.017	1.657	25.97	-0.0358
1.033	1.641	25.98	-0.0349
1.05	1.626	26.	-0.0339
1.067	1.613	26.02	-0.0342
1.083	1.593	26.03	-0.0363
1.1	1.59	26.05	-0.0347
1.117	1.583	26.07	-0.0351
1.133	1.584	26.08	-0.0349
1.15	1.56	26.1	-0.0349
1.167	1.552	26.12	-0.0352
1.183	1.54	26.13	-0.0347
1.2	1.531	26.15	-0.0357
1.217	1.52	26.17	-0.0354
1.233	1.506	26.18	-0.0359
1.25	1.493	26.2	-0.0361
1.267	1.482	26.22	-0.0354
1.283	1.473	26.23	-0.0362
1.3	1.453	26.25	-0.0362
1.317	1.433	26.27	-0.0361
1.333	1.416	26.28	-0.0369
1.35	1.396	26.3	-0.0366
1.367	1.458	26.32	-0.0355
1.383	1.441	26.33	-0.0374
1.4	1.43	26.35	-0.036
1.417	1.408	26.37	-0.0365
1.433	1.397	26.38	-0.0356
1.45	1.389	26.4	-0.0364
1.467	1.393	26.42	-0.0355
1.483	1.384	26.43	-0.0365
1.5	1.375	26.45	-0.0363
1.517	1.365	26.47	-0.0356
1.533	1.357	26.48	-0.0361
1.55	1.348	26.5	-0.036
1.567	1.341	26.52	-0.0361
1.583	1.332	26.53	-0.036

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.6	1.321	26.55	-0.0366
1.617	1.308	26.57	-0.0368
1.633	1.298	26.58	-0.0372
1.65	1.275	26.6	-0.0372
1.667	1.278	26.62	-0.0373
1.683	1.269	26.63	-0.0369
1.7	1.262	26.65	-0.0368
1.717	1.261	26.67	-0.0373
1.733	1.249	26.68	-0.037
1.75	1.238	26.7	-0.0369
1.767	1.226	26.72	-0.0372
1.783	1.22	26.73	-0.0379
1.8	1.212	26.75	-0.0384
1.817	1.203	26.77	-0.037
1.833	1.194	26.78	-0.0368
1.85	1.184	26.8	-0.038
1.867	1.175	26.82	-0.0369
1.883	1.191	26.83	-0.0369
1.9	1.182	26.85	-0.0371
1.917	1.167	26.87	-0.0372
1.933	1.152	26.88	-0.0367
1.95	1.145	26.9	-0.0369
1.967	1.157	26.92	-0.0371
1.983	1.146	26.93	-0.0378
2.	1.138	26.95	-0.0376
2.017	1.131	26.97	-0.0373
2.033	1.121	26.98	-0.0376
2.05	1.112	27.	-0.0368
2.067	1.102	27.02	-0.0378
2.083	1.095	27.03	-0.0366
2.1	1.084	27.05	-0.0371
2.117	1.076	27.07	-0.037
2.133	1.081	27.08	-0.0365
2.15	1.062	27.1	-0.0373
2.167	1.058	27.12	-0.0362
2.183	1.051	27.13	-0.0369
2.2	1.062	27.15	-0.0374
2.217	1.053	27.17	-0.0377
2.233	1.047	27.18	-0.0374
2.25	1.037	27.2	-0.0369
2.267	1.028	27.22	-0.0378
2.283	1.019	27.23	-0.0363
2.3	1.011	27.25	-0.0374
2.317	1.003	27.27	-0.0378
2.333	0.9963	27.28	-0.0377
2.35	0.9884	27.3	-0.0368
2.367	0.9817	27.32	-0.0372
2.383	0.9762	27.33	-0.0376
2.4	0.9647	27.35	-0.0367
2.417	0.9802	27.37	-0.0365
2.433	0.9552	27.38	-0.0376
2.45	0.951	27.4	-0.0372
2.467	0.9464	27.42	-0.0366
2.483	0.9506	27.43	-0.0373
2.5	0.9436	27.45	-0.0375
2.517	0.9354	27.47	-0.0384
2.533	0.9285	27.48	-0.0365
2.55	0.9204	27.5	-0.0372
2.567	0.913	27.52	-0.0372
2.583	0.9062	27.53	-0.0375
2.6	0.9022	27.55	-0.0382
2.617	0.896	27.57	-0.0373
2.633	0.8909	27.58	-0.0367
2.65	0.8852	27.6	-0.0377
2.667	0.887	27.62	-0.0369
2.683	0.8761	27.63	-0.0374

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2.7	0.8693	27.65	-0.0372
2.717	0.8645	27.67	-0.0364
2.733	0.8756	27.68	-0.0373
2.75	0.868	27.7	-0.0375
2.767	0.8634	27.72	-0.0373
2.783	0.8563	27.73	-0.0374
2.8	0.8508	27.75	-0.0382
2.817	0.8462	27.77	-0.0383
2.833	0.8408	27.78	-0.0382
2.85	0.8361	27.8	-0.0377
2.867	0.8317	27.82	-0.0373
2.883	0.8264	27.83	-0.0374
2.9	0.8227	27.85	-0.0384
2.917	0.8135	27.87	-0.0375
2.933	0.8098	27.88	-0.0372
2.95	0.8029	27.9	-0.0377
2.967	0.7884	27.92	-0.0373
2.983	0.7829	27.93	-0.0371
3.	0.7901	27.95	-0.0377
3.017	0.7852	27.97	-0.0382
3.033	0.7782	27.98	-0.038
3.05	0.7706	28.	-0.0378
3.067	0.765	28.02	-0.0374
3.083	0.7596	28.03	-0.0381
3.1	0.7538	28.05	-0.0383
3.117	0.7487	28.07	-0.0377
3.133	0.7416	28.08	-0.0384
3.15	0.7368	28.1	-0.0361
3.167	0.7344	28.12	-0.0378
3.183	0.7297	28.13	-0.0374
3.2	0.7244	28.15	-0.0375
3.217	0.721	28.17	-0.0373
3.233	0.7172	28.18	-0.0374
3.25	0.7124	28.2	-0.0371
3.267	0.707	28.22	-0.0376
3.283	0.7071	28.23	-0.0379
3.3	0.7039	28.25	-0.0378
3.317	0.6966	28.27	-0.0368
3.333	0.6924	28.28	-0.037
3.35	0.6862	28.3	-0.0379
3.367	0.6821	28.32	-0.0378
3.383	0.6787	28.33	-0.0385
3.4	0.6759	28.35	-0.039
3.417	0.6716	28.37	-0.0381
3.433	0.6679	28.38	-0.0375
3.45	0.6633	28.4	-0.0375
3.467	0.6577	28.42	-0.0389
3.483	0.669	28.43	-0.0377
3.5	0.6576	28.45	-0.0374
3.517	0.6467	28.47	-0.0377
3.533	0.6435	28.48	-0.0397
3.55	0.6409	28.5	-0.0387
3.567	0.6467	28.52	-0.0371
3.583	0.6411	28.53	-0.0352
3.6	0.6415	28.55	-0.0357
3.617	0.638	28.57	-0.0367
3.633	0.6343	28.58	-0.0364
3.65	0.6303	28.6	-0.0368
3.667	0.6265	28.62	-0.0365
3.683	0.6222	28.63	-0.0378
3.7	0.6201	28.65	-0.0387
3.717	0.6156	28.67	-0.0389
3.733	0.6107	28.68	-0.0404
3.75	0.6078	28.7	-0.0407
3.767	0.6026	28.72	-0.0543
3.783	0.5979	28.73	-0.053

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
3.8	0.5874	28.75	-0.0523
3.817	0.5791	28.77	-0.0524
3.833	0.5745	28.78	-0.053
3.85	0.5726	28.8	-0.0369
3.867	0.5672	28.82	-0.036
3.883	0.5662	28.83	-0.0347
3.9	0.5602	28.85	-0.0352
3.917	0.5581	28.87	-0.0344
3.933	0.5555	28.88	-0.0401
3.95	0.5528	28.9	-0.0405
3.967	0.5477	28.92	-0.0406
3.983	0.5474	28.93	-0.0396
4.	0.5455	28.95	-0.0398
4.017	0.5405	28.97	-0.0407
4.033	0.5375	28.98	-0.0412
4.05	0.533	29.	-0.0414
4.067	0.5289	29.02	-0.0418
4.083	0.5256	29.03	-0.0409
4.1	0.524	29.05	-0.0416
4.117	0.5211	29.07	-0.0404
4.133	0.5173	29.08	-0.0419
4.15	0.5144	29.1	-0.0412
4.167	0.5113	29.12	-0.0412
4.183	0.5079	29.13	-0.0414
4.2	0.5115	29.15	-0.0415
4.217	0.5015	29.17	-0.0416
4.233	0.4997	29.18	-0.0409
4.25	0.4966	29.2	-0.0405
4.267	0.497	29.22	-0.0415
4.283	0.4936	29.23	-0.041
4.3	0.4881	29.25	-0.042
4.317	0.4848	29.27	-0.0401
4.333	0.481	29.28	-0.0408
4.35	0.4784	29.3	-0.0414
4.367	0.479	29.32	-0.0411
4.383	0.4734	29.33	-0.041
4.4	0.4721	29.35	-0.0415
4.417	0.4701	29.37	-0.0416
4.433	0.4659	29.38	-0.0415
4.45	0.4633	29.4	-0.0415
4.467	0.4603	29.42	-0.0401
4.483	0.4573	29.43	-0.0418
4.5	0.4574	29.45	-0.041
4.517	0.4673	29.47	-0.041
4.533	0.463	29.48	-0.0414
4.55	0.4597	29.5	-0.041
4.567	0.4472	29.52	-0.0413
4.583	0.4539	29.53	-0.0417
4.6	0.4542	29.55	-0.0413
4.617	0.4484	29.57	-0.0411
4.633	0.4339	29.58	-0.0421
4.65	0.4314	29.6	-0.041
4.667	0.4299	29.62	-0.0416
4.683	0.4279	29.63	-0.0412
4.7	0.4232	29.65	-0.0406
4.717	0.4212	29.67	-0.0409
4.733	0.4187	29.68	-0.0403
4.75	0.4164	29.7	-0.0414
4.767	0.4172	29.72	-0.0409
4.783	0.4212	29.73	-0.0416
4.8	0.4177	29.75	-0.0411
4.817	0.4124	29.77	-0.0395
4.833	0.4102	29.78	-0.0397
4.85	0.4072	29.8	-0.039
4.867	0.4034	29.82	-0.0394
4.883	0.4005	29.83	-0.0399

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
4.9	0.3982	29.85	-0.0405
4.917	0.3958	29.87	-0.0397
4.933	0.3908	29.88	-0.0394
4.95	0.388	29.9	-0.0393
4.967	0.3864	29.92	-0.0395
4.983	0.3845	29.93	-0.0405
5.	0.3827	29.95	-0.0409
5.017	0.38	29.97	-0.04
5.033	0.3769	29.98	-0.0402
5.05	0.3793	30.	-0.0394
5.067	0.3761	30.02	-0.0389
5.083	0.3739	30.03	-0.0403
5.1	0.3707	30.05	-0.0396
5.117	0.3681	30.07	-0.0392
5.133	0.3644	30.08	-0.0401
5.15	0.3617	30.1	-0.0393
5.167	0.3595	30.12	-0.0393
5.183	0.3572	30.13	-0.0398
5.2	0.3554	30.15	-0.0391
5.217	0.3552	30.17	-0.0393
5.233	0.3529	30.18	-0.0393
5.25	0.3495	30.2	-0.0393
5.267	0.3443	30.22	-0.0382
5.283	0.3467	30.23	-0.0391
5.3	0.3502	30.25	-0.0392
5.317	0.353	30.27	-0.0387
5.333	0.3513	30.28	-0.0401
5.35	0.3477	30.3	-0.039
5.367	0.3444	30.32	-0.0397
5.383	0.3415	30.33	-0.0383
5.4	0.3393	30.35	-0.0403
5.417	0.3365	30.37	-0.0401
5.433	0.3267	30.38	-0.0393
5.45	0.3269	30.4	-0.0388
5.467	0.3256	30.42	-0.0398
5.483	0.3235	30.43	-0.0396
5.5	0.3217	30.45	-0.0398
5.517	0.336	30.47	-0.0399
5.533	0.3318	30.48	-0.0391
5.55	0.3288	30.5	-0.0386
5.567	0.3282	30.52	-0.0385
5.583	0.3263	30.53	-0.0388
5.6	0.3227	30.55	-0.0391
5.617	0.3219	30.57	-0.0385
5.633	0.3201	30.58	-0.0394
5.65	0.3187	30.6	-0.0383
5.667	0.3156	30.62	-0.0393
5.683	0.3128	30.63	-0.0392
5.7	0.3119	30.65	-0.038
5.717	0.3103	30.67	-0.039
5.733	0.3084	30.68	-0.0393
5.75	0.3066	30.7	-0.0382
5.767	0.3029	30.72	-0.0382
5.783	0.3018	30.73	-0.0384
5.8	0.2998	30.75	-0.0378
5.817	0.2984	30.77	-0.0384
5.833	0.2965	30.78	-0.0384
5.85	0.2947	30.8	-0.037
5.867	0.294	30.82	-0.0381
5.883	0.2921	30.83	-0.0384
5.9	0.2903	30.85	-0.0372
5.917	0.2891	30.87	-0.0378
5.933	0.2859	30.88	-0.0382
5.95	0.284	30.9	-0.0378
5.967	0.2855	30.92	-0.0373
5.983	0.2834	30.93	-0.0371

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
6.	0.2814	30.95	-0.0383
6.017	0.2787	30.97	-0.0381
6.033	0.2762	30.98	-0.0371
6.05	0.2746	31.	-0.0381
6.067	0.2716	31.02	-0.0373
6.083	0.27	31.03	-0.0381
6.1	0.2669	31.05	-0.0378
6.117	0.265	31.07	-0.0367
6.133	0.263	31.08	-0.0382
6.15	0.2613	31.1	-0.0377
6.167	0.2599	31.12	-0.0366
6.183	0.2566	31.13	-0.0374
6.2	0.255	31.15	-0.0382
6.217	0.254	31.17	-0.038
6.233	0.2525	31.18	-0.038
6.25	0.2502	31.2	-0.0381
6.267	0.2485	31.22	-0.0383
6.283	0.2469	31.23	-0.0376
6.3	0.2448	31.25	-0.0381
6.317	0.2431	31.27	-0.0381
6.333	0.2409	31.28	-0.0379
6.35	0.2396	31.3	-0.0367
6.367	0.2377	31.32	-0.0372
6.383	0.2368	31.33	-0.0377
6.4	0.2348	31.35	-0.0366
6.417	0.232	31.37	-0.0377
6.433	0.2312	31.38	-0.0364
6.45	0.2291	31.4	-0.0376
6.467	0.2277	31.42	-0.0379
6.483	0.2317	31.43	-0.0379
6.5	0.2244	31.45	-0.0378
6.517	0.223	31.47	-0.0375
6.533	0.2217	31.48	-0.0371
6.55	0.2242	31.5	-0.0381
6.567	0.2324	31.52	-0.0372
6.583	0.2311	31.53	-0.037
6.6	0.2297	31.55	-0.0369
6.617	0.2283	31.57	-0.0372
6.633	0.2272	31.58	-0.0368
6.65	0.2258	31.6	-0.0374
6.667	0.2251	31.62	-0.0378
6.683	0.2231	31.63	-0.0379
6.7	0.2217	31.65	-0.0379
6.717	0.2205	31.67	-0.038
6.733	0.2189	31.68	-0.0368
6.75	0.2181	31.7	-0.0373
6.767	0.2175	31.72	-0.0376
6.783	0.2152	31.73	-0.0363
6.8	0.2137	31.75	-0.0377
6.817	0.2133	31.77	-0.0433
6.833	0.2114	31.78	-0.0433
6.85	0.2106	31.8	-0.0437
6.867	0.2088	31.82	-0.0429
6.883	0.2079	31.83	-0.0426
6.9	0.2072	31.85	-0.0426
6.917	0.2053	31.87	-0.0424
6.933	0.2049	31.88	-0.0419
6.95	0.2031	31.9	-0.0421
6.967	0.2023	31.92	-0.0419
6.983	0.2014	31.93	-0.0422
7.	0.2003	31.95	-0.0419
7.017	0.199	31.97	-0.0421
7.033	0.1972	31.98	-0.0413
7.05	0.1972	32.	-0.0413
7.067	0.1968	32.02	-0.0421
7.083	0.196	32.03	-0.041

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
7.1	0.194	32.05	-0.0417
7.117	0.1924	32.07	-0.0415
7.133	0.1924	32.08	-0.0411
7.15	0.1909	32.1	-0.0417
7.167	0.1895	32.12	-0.0418
7.183	0.1883	32.13	-0.041
7.2	0.1868	32.15	-0.0416
7.217	0.1855	32.17	-0.0415
7.233	0.1871	32.18	-0.0419
7.25	0.1855	32.2	-0.0422
7.267	0.1842	32.22	-0.0414
7.283	0.1837	32.23	-0.041
7.3	0.1814	32.25	-0.0413
7.317	0.1799	32.27	-0.042
7.333	0.1771	32.28	-0.0419
7.35	0.1682	32.3	-0.0412
7.367	0.1639	32.32	-0.0422
7.383	0.172	32.33	-0.0427
7.4	0.1687	32.35	-0.0416
7.417	0.1617	32.37	-0.0417
7.433	0.1603	32.38	-0.0423
7.45	0.1595	32.4	-0.0424
7.467	0.1631	32.42	-0.0425
7.483	0.1722	32.43	-0.042
7.5	0.1704	32.45	-0.0414
7.517	0.1681	32.47	-0.041
7.533	0.1675	32.48	-0.0414
7.55	0.1665	32.5	-0.0418
7.567	0.1656	32.52	-0.0414
7.583	0.1648	32.53	-0.0403
7.6	0.1635	32.55	-0.0416
7.617	0.1627	32.57	-0.0407
7.633	0.1608	32.58	-0.041
7.65	0.1613	32.6	-0.0409
7.667	0.1601	32.62	-0.0411
7.683	0.1588	32.63	-0.0411
7.7	0.1574	32.65	-0.0416
7.717	0.1567	32.67	-0.0411
7.733	0.1569	32.68	-0.0412
7.75	0.1556	32.7	-0.0408
7.767	0.1505	32.72	-0.0409
7.783	0.1505	32.73	-0.041
7.8	0.1487	32.75	-0.0408
7.817	0.1491	32.77	-0.0417
7.833	0.148	32.78	-0.0413
7.85	0.146	32.8	-0.0418
7.867	0.1469	32.82	-0.0409
7.883	0.1455	32.83	-0.0403
7.9	0.1439	32.85	-0.0413
7.917	0.1435	32.87	-0.0415
7.933	0.1431	32.88	-0.0408
7.95	0.1422	32.9	-0.0414
7.967	0.1409	32.92	-0.0405
7.983	0.1411	32.93	-0.0405
8.	0.1405	32.95	-0.0403
8.017	0.1394	32.97	-0.041
8.033	0.1381	32.98	-0.0411
8.05	0.1382	33.	-0.0417
8.067	0.1362	33.02	-0.0411
8.083	0.1348	33.03	-0.0412
8.1	0.1344	33.05	-0.0413
8.117	0.1356	33.07	-0.0408
8.133	0.1307	33.08	-0.0415
8.15	0.1312	33.1	-0.0411
8.167	0.1299	33.12	-0.0407
8.183	0.129	33.13	-0.0405

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
8.2	0.1286	33.15	-0.0405
8.217	0.1272	33.17	-0.041
8.233	0.1259	33.18	-0.04
8.25	0.1255	33.2	-0.0408
8.267	0.1225	33.22	-0.0415
8.283	0.1211	33.23	-0.0406
8.3	0.1211	33.25	-0.041
8.317	0.1194	33.27	-0.0421
8.333	0.1195	33.28	-0.0417
8.35	0.1176	33.3	-0.0417
8.367	0.1171	33.32	-0.041
8.383	0.1158	33.33	-0.0406
8.4	0.1148	33.35	-0.0404
8.417	0.1149	33.37	-0.0407
8.433	0.1124	33.38	-0.0411
8.45	0.1131	33.4	-0.0414
8.467	0.111	33.42	-0.0401
8.483	0.1035	33.43	-0.0406
8.5	0.1054	33.45	-0.0414
8.517	0.1005	33.47	-0.0405
8.533	0.1009	33.48	-0.0405
8.55	0.1157	33.5	-0.0406
8.567	0.1132	33.52	-0.0405
8.583	0.1126	33.53	-0.0397
8.6	0.1117	33.55	-0.0411
8.617	0.1115	33.57	-0.0408
8.633	0.1095	33.58	-0.0394
8.65	0.1096	33.6	-0.0396
8.667	0.109	33.62	-0.0407
8.683	0.1074	33.63	-0.0403
8.7	0.1077	33.65	-0.0393
8.717	0.1073	33.67	-0.0405
8.733	0.1061	33.68	-0.0397
8.75	0.1059	33.7	-0.0404
8.767	0.1058	33.72	-0.0395
8.783	0.1042	33.73	-0.0406
8.8	0.1039	33.75	-0.0401
8.817	0.1037	33.77	-0.0442
8.833	0.1034	33.78	-0.0445
8.85	0.1014	33.8	-0.044
8.867	0.1009	33.82	-0.0453
8.883	0.0993	33.83	-0.0437
8.9	0.0994	33.85	-0.0444
8.917	0.0996	33.87	-0.0446
8.933	0.0988	33.88	-0.0441
8.95	0.0987	33.9	-0.0451
8.967	0.0973	33.92	-0.0459
8.983	0.097	33.93	-0.0441
9.	0.096	33.95	-0.0441
9.017	0.095	33.97	-0.0444
9.033	0.0951	33.98	-0.0442
9.05	0.0938	34.	-0.0441
9.067	0.0955	34.02	-0.044
9.083	0.0935	34.03	-0.0451
9.1	0.0934	34.05	-0.0428
9.117	0.0939	34.07	-0.044
9.133	0.0931	34.08	-0.0442
9.15	0.0915	34.1	-0.0434
9.167	0.0902	34.12	-0.0432
9.183	0.0896	34.13	-0.0445
9.2	0.0889	34.15	-0.043
9.217	0.0876	34.17	-0.044
9.233	0.0875	34.18	-0.0432
9.25	0.0858	34.2	-0.0435
9.267	0.0866	34.22	-0.0437
9.283	0.0847	34.23	-0.0425

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
9.3	0.0849	34.25	-0.0427
9.317	0.083	34.27	-0.043
9.333	0.0824	34.28	-0.0424
9.35	0.0821	34.3	-0.0443
9.367	0.0804	34.32	-0.0429
9.383	0.0798	34.33	-0.0428
9.4	0.0791	34.35	-0.044
9.417	0.0786	34.37	-0.0438
9.433	0.0783	34.38	-0.0432
9.45	0.0774	34.4	-0.0438
9.467	0.0769	34.42	-0.0438
9.483	0.0759	34.43	-0.0429
9.5	0.0741	34.45	-0.0436
9.517	0.0748	34.47	-0.0432
9.533	0.0747	34.48	-0.0428
9.55	0.0728	34.5	-0.0433
9.567	0.0724	34.52	-0.0432
9.583	0.0721	34.53	-0.0436
9.6	0.0713	34.55	-0.0422
9.617	0.0703	34.57	-0.0434
9.633	0.0707	34.58	-0.0426
9.65	0.0702	34.6	-0.0423
9.667	0.0694	34.62	-0.0428
9.683	0.0685	34.63	-0.0426
9.7	0.0673	34.65	-0.0422
9.717	0.0674	34.67	-0.0418
9.733	0.0663	34.68	-0.0428
9.75	0.0648	34.7	-0.0423
9.767	0.067	34.72	-0.0415
9.783	0.0676	34.73	-0.0424
9.8	0.0671	34.75	-0.0417
9.817	0.0651	34.77	-0.0424
9.833	0.0658	34.78	-0.0431
9.85	0.0658	34.8	-0.0422
9.867	0.0651	34.82	-0.0418
9.883	0.0646	34.83	-0.0418
9.9	0.0638	34.85	-0.0417
9.917	0.0635	34.87	-0.0416
9.933	0.063	34.88	-0.0424
9.95	0.0628	34.9	-0.0408
9.967	0.0618	34.92	-0.041
9.983	0.0582	34.93	-0.0411
10.	0.0564	34.95	-0.0412
10.02	0.0691	34.97	-0.041
10.03	0.0544	34.98	-0.0406
10.05	0.0548	35.	-0.0415
10.07	0.0562	35.02	-0.0412
10.08	0.059	35.03	-0.0404
10.1	0.0575	35.05	-0.0407
10.12	0.0572	35.07	-0.0409
10.13	0.0564	35.08	-0.0407
10.15	0.0577	35.1	-0.0404
10.17	0.0556	35.12	-0.0394
10.18	0.0544	35.13	-0.0403
10.2	0.0546	35.15	-0.0408
10.22	0.0547	35.17	-0.0408
10.23	0.0602	35.18	-0.0403
10.25	0.0603	35.2	-0.0406
10.27	0.0542	35.22	-0.0398
10.28	0.0502	35.23	-0.0394
10.3	0.0506	35.25	-0.0395
10.32	0.0486	35.27	-0.0399
10.33	0.0488	35.28	-0.0401
10.35	0.0631	35.3	-0.0388
10.37	0.0614	35.32	-0.0398
10.38	0.0605	35.33	-0.0389

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
10.4	0.0603	35.35	-0.0396
10.42	0.0597	35.37	-0.039
10.43	0.0588	35.38	-0.0396
10.45	0.0594	35.4	-0.0396
10.47	0.0585	35.42	-0.0391
10.48	0.0584	35.43	-0.0394
10.5	0.0595	35.45	-0.0383
10.52	0.0573	35.47	-0.0388
10.53	0.0581	35.48	-0.0381
10.55	0.0571	35.5	-0.0375
10.57	0.0557	35.52	-0.0383
10.58	0.0563	35.53	-0.0374
10.6	0.0559	35.55	-0.0383
10.62	0.0557	35.57	-0.0376
10.63	0.0547	35.58	-0.0372
10.65	0.0547	35.6	-0.037
10.67	0.0535	35.62	-0.0374
10.68	0.0542	35.63	-0.0368
10.7	0.0524	35.65	-0.0377
10.72	0.0529	35.67	-0.0362
10.73	0.0525	35.68	-0.037
10.75	0.0526	35.7	-0.0375
10.77	0.0514	35.72	-0.0381
10.78	0.051	35.73	-0.0371
10.8	0.0504	35.75	-0.0371
10.82	0.0513	35.77	-0.0459
10.83	0.0505	35.78	-0.0447
10.85	0.0507	35.8	-0.0456
10.87	0.0497	35.82	-0.0453
10.88	0.0499	35.83	-0.0456
10.9	0.0482	35.85	-0.045
10.92	0.0496	35.87	-0.0463
10.93	0.0492	35.88	-0.0463
10.95	0.0474	35.9	-0.0454
10.97	0.0472	35.92	-0.0449
10.98	0.048	35.93	-0.0456
11.	0.0481	35.95	-0.0467
11.02	0.0471	35.97	-0.0464
11.03	0.0456	35.98	-0.0459
11.05	0.046	36.	-0.0476
11.07	0.0457	36.02	-0.0462
11.08	0.0449	36.03	-0.045
11.1	0.0458	36.05	-0.0457
11.12	0.0446	36.07	-0.0461
11.13	0.0456	36.08	-0.0464
11.15	0.0442	36.1	-0.0466
11.17	0.0438	36.12	-0.0459
11.18	0.0442	36.13	-0.0467
11.2	0.043	36.15	-0.0464
11.22	0.0427	36.17	-0.0477
11.23	0.0437	36.18	-0.0462
11.25	0.0427	36.2	-0.0454
11.27	0.043	36.22	-0.0461
11.28	0.042	36.23	-0.0447
11.3	0.0405	36.25	-0.0458
11.32	0.041	36.27	-0.0465
11.33	0.042	36.28	-0.0473
11.35	0.0409	36.3	-0.0465
11.37	0.0404	36.32	-0.0472
11.38	0.0401	36.33	-0.0457
11.4	0.0405	36.35	-0.0472
11.42	0.0395	36.37	-0.0466
11.43	0.0404	36.38	-0.0471
11.45	0.0388	36.4	-0.0467
11.47	0.0392	36.42	-0.0484
11.48	0.0385	36.43	-0.0467

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
11.5	0.039	36.45	-0.0478
11.52	0.0379	36.47	-0.0473
11.53	0.0375	36.48	-0.0464
11.55	0.0378	36.5	-0.0478
11.57	0.0371	36.52	-0.0474
11.58	0.0366	36.53	-0.0472
11.6	0.0361	36.55	-0.0468
11.62	0.0361	36.57	-0.0485
11.63	0.0365	36.58	-0.0458
11.65	0.0366	36.6	-0.048
11.67	0.0367	36.62	-0.0481
11.68	0.0352	36.63	-0.0477
11.7	0.0347	36.65	-0.0482
11.72	0.0352	36.67	-0.0474
11.73	0.0347	36.68	-0.0489
11.75	0.0352	36.7	-0.0481
11.77	0.0315	36.72	-0.0491
11.78	0.031	36.73	-0.0504
11.8	0.0319	36.75	-0.05
11.82	0.0309	36.77	-0.0502
11.83	0.0302	36.78	-0.0492
11.85	0.0301	36.8	-0.0494
11.87	0.0301	36.82	-0.0504
11.88	0.0291	36.83	-0.049
11.9	0.0293	36.85	-0.0488
11.92	0.0297	36.87	-0.0495
11.93	0.0299	36.88	-0.0499
11.95	0.0289	36.9	-0.0507
11.97	0.0287	36.92	-0.0492
11.98	0.0278	36.93	-0.0505
12.	0.0276	36.95	-0.0511
12.02	0.0278	36.97	-0.05
12.03	0.0285	36.98	-0.0502
12.05	0.0276	37.	-0.0508
12.07	0.0267	37.02	-0.0509
12.08	0.027	37.03	-0.0517
12.1	0.027	37.05	-0.0508
12.12	0.0264	37.07	-0.0507
12.13	0.0261	37.08	-0.051
12.15	0.0261	37.1	-0.0512
12.17	0.0262	37.12	-0.0521
12.18	0.0259	37.13	-0.0516
12.2	0.0262	37.15	-0.0509
12.22	0.0246	37.17	-0.0515
12.23	0.0253	37.18	-0.0504
12.25	0.0239	37.2	-0.0516
12.27	0.0246	37.22	-0.0507
12.28	0.0242	37.23	-0.0512
12.3	0.0243	37.25	-0.0512
12.32	0.0228	37.27	-0.0514
12.33	0.0231	37.28	-0.0518
12.35	0.0239	37.3	-0.0525
12.37	0.0228	37.32	-0.0517
12.38	0.0238	37.33	-0.0515
12.4	0.0225	37.35	-0.0523
12.42	0.023	37.37	-0.0532
12.43	0.0222	37.38	-0.052
12.45	0.022	37.4	-0.053
12.47	0.0221	37.42	-0.0517
12.48	0.0226	37.43	-0.0527
12.5	0.0211	37.45	-0.0529
12.52	0.0213	37.47	-0.0536
12.53	0.0215	37.48	-0.0535
12.55	0.021	37.5	-0.0525
12.57	0.0212	37.52	-0.0533
12.58	0.021	37.53	-0.0532

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
12.6	0.0208	37.55	-0.053
12.62	0.0207	37.57	-0.0541
12.63	0.0205	37.58	-0.053
12.65	0.0197	37.6	-0.0536
12.67	0.0195	37.62	-0.053
12.68	0.0196	37.63	-0.0531
12.7	0.0185	37.65	-0.0548
12.72	0.0198	37.67	-0.0541
12.73	0.0193	37.68	-0.0527
12.75	0.0184	37.7	-0.054
12.77	0.0193	37.72	-0.053
12.78	0.0189	37.73	-0.0539
12.8	0.0185	37.75	-0.0543
12.82	0.0175	37.77	-0.046
12.83	0.0182	37.78	-0.0466
12.85	0.0182	37.8	-0.0457
12.87	0.0171	37.82	-0.0462
12.88	0.0171	37.83	-0.0448
12.9	0.0166	37.85	-0.0446
12.92	0.0165	37.87	-0.046
12.93	0.0166	37.88	-0.0464
12.95	0.0168	37.9	-0.0462
12.97	0.016	37.92	-0.0461
12.98	0.0167	37.93	-0.0464
13.	0.0167	37.95	-0.046
13.02	0.0163	37.97	-0.0457
13.03	0.0156	37.98	-0.0447
13.05	0.0151	38.	-0.046
13.07	0.0146	38.02	-0.0467
13.08	0.016	38.03	-0.0454
13.1	0.0156	38.05	-0.0464
13.12	0.0147	38.07	-0.0459
13.13	0.0138	38.08	-0.0469
13.15	0.0138	38.1	-0.0472
13.17	0.0152	38.12	-0.0463
13.18	0.0142	38.13	-0.0458
13.2	0.0132	38.15	-0.0447
13.22	0.0144	38.17	-0.0457
13.23	0.0143	38.18	-0.0453
13.25	0.0139	38.2	-0.0461
13.27	0.0124	38.22	-0.0467
13.28	0.0131	38.23	-0.0458
13.3	0.0125	38.25	-0.046
13.32	0.0125	38.27	-0.0452
13.33	0.0125	38.28	-0.0455
13.35	0.0119	38.3	-0.0454
13.37	0.011	38.32	-0.0462
13.38	0.013	38.33	-0.0458
13.4	0.0128	38.35	-0.0463
13.42	0.0122	38.37	-0.0462
13.43	0.0113	38.38	-0.0449
13.45	0.0109	38.4	-0.0453
13.47	0.0117	38.42	-0.0454
13.48	0.0108	38.43	-0.0451
13.5	0.0109	38.45	-0.0457
13.52	0.011	38.47	-0.044
13.53	0.0109	38.48	-0.0448
13.55	0.0115	38.5	-0.0442
13.57	0.0104	38.52	-0.0444
13.58	0.0098	38.53	-0.0456
13.6	0.0103	38.55	-0.0451
13.62	0.0106	38.57	-0.0451
13.63	0.0095	38.58	-0.0456
13.65	0.01	38.6	-0.045
13.67	0.0093	38.62	-0.0453
13.68	0.0093	38.63	-0.0454

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
13.7	0.0087	38.65	-0.0447
13.72	0.0088	38.67	-0.0457
13.73	0.0093	38.68	-0.0468
13.75	0.0086	38.7	-0.0468
13.77	0.0082	38.72	-0.0458
13.78	0.008	38.73	-0.0448
13.8	0.0076	38.75	-0.0458
13.82	0.0078	38.77	-0.0459
13.83	0.0077	38.78	-0.0463
13.85	0.0083	38.8	-0.0457
13.87	0.0082	38.82	-0.0447
13.88	0.0073	38.83	-0.0461
13.9	0.0077	38.85	-0.0448
13.92	0.0078	38.87	-0.0447
13.93	0.007	38.88	-0.0451
13.95	0.0067	38.9	-0.0457
13.97	0.0068	38.92	-0.0467
13.98	0.0069	38.93	-0.0454
14.	0.0063	38.95	-0.0453
14.02	0.0067	38.97	-0.0456
14.03	0.0055	38.98	-0.045
14.05	0.0058	39.	-0.0454
14.07	0.0056	39.02	-0.0463
14.08	0.005	39.03	-0.0458
14.1	0.0061	39.05	-0.0452
14.12	0.0057	39.07	-0.0466
14.13	0.0066	39.08	-0.0462
14.15	0.0055	39.1	-0.0451
14.17	0.0057	39.12	-0.0461
14.18	0.0056	39.13	-0.0468
14.2	0.0051	39.15	-0.0452
14.22	0.0054	39.17	-0.0461
14.23	0.0047	39.18	-0.0457
14.25	0.0052	39.2	-0.046
14.27	0.0042	39.22	-0.0453
14.28	0.0044	39.23	-0.0464
14.3	0.0044	39.25	-0.0457
14.32	0.0036	39.27	-0.0457
14.33	0.0048	39.28	-0.0461
14.35	0.0043	39.3	-0.0459
14.37	0.0041	39.32	-0.0455
14.38	0.0044	39.33	-0.0468
14.4	0.0046	39.35	-0.0458
14.42	0.0036	39.37	-0.0455
14.43	0.0037	39.38	-0.0458
14.45	0.0032	39.4	-0.0453
14.47	0.0033	39.42	-0.0451
14.48	0.0035	39.43	-0.0459
14.5	0.0033	39.45	-0.0461
14.52	0.0033	39.47	-0.0457
14.53	0.0027	39.48	-0.0454
14.55	0.0021	39.5	-0.0451
14.57	0.0029	39.52	-0.0452
14.58	0.004	39.53	-0.0451
14.6	0.0042	39.55	-0.0456
14.62	0.0028	39.57	-0.0446
14.63	0.0034	39.58	-0.045
14.65	0.0025	39.6	-0.0455
14.67	0.0029	39.62	-0.0452
14.68	0.0024	39.63	-0.0457
14.7	0.002	39.65	-0.0452
14.72	0.0026	39.67	-0.0454
14.73	0.0018	39.68	-0.0458
14.75	0.0018	39.7	-0.0453
14.77	0.0021	39.72	-0.0452
14.78	0.0014	39.73	-0.0444

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
14.8	0.0017	39.75	-0.0446
14.82	0.0007	39.77	-0.0438
14.83	0.0016	39.78	-0.0439
14.85	0.0024	39.8	-0.0436
14.87	0.0017	39.82	-0.0443
14.88	0.001	39.83	-0.045
14.9	0.0013	39.85	-0.0447
14.92	0.0007	39.87	-0.0442
14.93	0.0013	39.88	-0.0447
14.95	0.0011	39.9	-0.0433
14.97	0.001	39.92	-0.0434
14.98	0.0011	39.93	-0.0436
15.	0.	39.95	-0.0439
15.02	-0.0003	39.97	-0.0443
15.03	-0.0001	39.98	-0.0425
15.05	0.0003	40.	-0.0423
15.07	0.0012	40.02	-0.0436
15.08	0.0001	40.03	-0.0427
15.1	0.0001	40.05	-0.0431
15.12	-0.0013	40.07	-0.0428
15.13	-0.0015	40.08	-0.0429
15.15	-0.0013	40.1	-0.0423
15.17	-0.0007	40.12	-0.0421
15.18	-0.0007	40.13	-0.0435
15.2	-0.0018	40.15	-0.0431
15.22	-0.0005	40.17	-0.0419
15.23	-0.0008	40.18	-0.043
15.25	-0.0029	40.2	-0.0425
15.27	-0.0009	40.22	-0.0431
15.28	-0.0015	40.23	-0.0435
15.3	-0.0135	40.25	-0.0428
15.32	-0.0146	40.27	-0.0432
15.33	-0.0142	40.28	-0.0428
15.35	0.0017	40.3	-0.0431
15.37	-0.0003	40.32	-0.0428
15.38	-0.0008	40.33	-0.0425
15.4	-0.0019	40.35	-0.0427
15.42	-0.0053	40.37	-0.042
15.43	-0.0054	40.38	-0.0417
15.45	-0.0047	40.4	-0.0422
15.47	-0.0056	40.42	-0.0427
15.48	-0.0046	40.43	-0.0431
15.5	-0.0055	40.45	-0.0423
15.52	-0.0058	40.47	-0.0419
15.53	-0.0054	40.48	-0.0413
15.55	-0.0057	40.5	-0.0413
15.57	-0.0066	40.52	-0.0414
15.58	-0.0049	40.53	-0.042
15.6	-0.0061	40.55	-0.0432
15.62	-0.0073	40.57	-0.0426
15.63	-0.0061	40.58	-0.0419
15.65	-0.007	40.6	-0.0413
15.67	-0.0064	40.62	-0.041
15.68	-0.0058	40.63	-0.0423
15.7	-0.006	40.65	-0.0415
15.72	-0.0066	40.67	-0.0419
15.73	-0.0069	40.68	-0.0421
15.75	-0.0062	40.7	-0.042
15.77	-0.0104	40.72	-0.0423
15.78	-0.0129	40.73	-0.0415
15.8	-0.0139	40.75	-0.041
15.82	-0.0129	40.77	-0.0414
15.83	-0.0127	40.78	-0.0416
15.85	-0.0132	40.8	-0.0424
15.87	-0.0121	40.82	-0.0416
15.88	-0.013	40.83	-0.0418

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
15.9	-0.0123	40.85	-0.0414
15.92	-0.0133	40.87	-0.0416
15.93	-0.0132	40.88	-0.0419
15.95	-0.0142	40.9	-0.0412
15.97	-0.0137	40.92	-0.0413
15.98	-0.014	40.93	-0.0423
16.	-0.0128	40.95	-0.0411
16.02	-0.0136	40.97	-0.0412
16.03	-0.0129	40.98	-0.0416
16.05	-0.0139	41.	-0.0417
16.07	-0.0133	41.02	-0.0413
16.08	-0.0135	41.03	-0.0407
16.1	-0.0133	41.05	-0.0401
16.12	-0.0136	41.07	-0.041
16.13	-0.0136	41.08	-0.0397
16.15	-0.014	41.1	-0.0395
16.17	-0.0138	41.12	-0.042
16.18	-0.0135	41.13	-0.0409
16.2	-0.0148	41.15	-0.0409
16.22	-0.0144	41.17	-0.0407
16.23	-0.0137	41.18	-0.0414
16.25	-0.0146	41.2	-0.0415
16.27	-0.014	41.22	-0.0416
16.28	-0.0142	41.23	-0.0411
16.3	-0.0138	41.25	-0.041
16.32	-0.0135	41.27	-0.0411
16.33	-0.0131	41.28	-0.0408
16.35	-0.0139	41.3	-0.0404
16.37	-0.0145	41.32	-0.0405
16.38	-0.0151	41.33	-0.0411
16.4	-0.0138	41.35	-0.041
16.42	-0.0146	41.37	-0.0408
16.43	-0.0139	41.38	-0.0407
16.45	-0.0157	41.4	-0.0411
16.47	-0.0146	41.42	-0.0397
16.48	-0.0126	41.43	-0.041
16.5	-0.0108	41.45	-0.0405
16.52	-0.0128	41.47	-0.0402
16.53	-0.0122	41.48	-0.0404
16.55	-0.0124	41.5	-0.0405
16.57	-0.0124	41.52	-0.0403
16.58	-0.0126	41.53	-0.0407
16.6	-0.0117	41.55	-0.0383
16.62	-0.0131	41.57	-0.0406
16.63	-0.0129	41.58	-0.0483
16.65	-0.0126	41.6	-0.0406
16.67	-0.0128	41.62	-0.0401
16.68	-0.0123	41.63	-0.1118
16.7	-0.0126	41.65	-0.042
16.72	-0.0131	41.67	-0.0382
16.73	-0.014	41.68	-0.0344
16.75	-0.0131	41.7	-0.0461
16.77	-0.0123	41.72	-0.0492
16.78	-0.0128	41.73	-0.0508
16.8	-0.013	41.75	-0.0516
16.82	-0.0133	41.77	-0.0446
16.83	-0.0131	41.78	-0.04
16.85	-0.0135	41.8	-0.0431
16.87	-0.0125	41.82	-0.0409
16.88	-0.0132	41.83	-0.0391
16.9	-0.0143	41.85	-0.0436
16.92	-0.0138	41.87	-0.0448
16.93	-0.0126	41.88	-0.0439
16.95	-0.0136	41.9	-0.0444
16.97	-0.0142	41.92	-0.0448
16.98	-0.0131	41.93	-0.0444

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
17.	-0.0138	41.95	-0.0459
17.02	-0.0137	41.97	-0.0461
17.03	-0.0145	41.98	-0.0451
17.05	-0.0138	42.	-0.0457
17.07	-0.014	42.02	-0.0455
17.08	-0.0144	42.03	-0.0455
17.1	-0.0135	42.05	-0.045
17.12	-0.0141	42.07	-0.0456
17.13	-0.014	42.08	-0.0444
17.15	-0.0147	42.1	-0.0448
17.17	-0.0135	42.12	-0.0463
17.18	-0.0133	42.13	-0.0455
17.2	-0.0145	42.15	-0.0447
17.22	-0.0141	42.17	-0.0459
17.23	-0.0137	42.18	-0.0447
17.25	-0.0137	42.2	-0.0452
17.27	-0.0147	42.22	-0.0454
17.28	-0.0144	42.23	-0.0458
17.3	-0.0133	42.25	-0.046
17.32	-0.0147	42.27	-0.0445
17.33	-0.0144	42.28	-0.046
17.35	-0.0136	42.3	-0.0448
17.37	-0.0145	42.32	-0.0439
17.38	-0.0143	42.33	-0.045
17.4	-0.0137	42.35	-0.0448
17.42	-0.0142	42.37	-0.0455
17.43	-0.0137	42.38	-0.0454
17.45	-0.0137	42.4	-0.045
17.47	-0.0144	42.42	-0.0459
17.48	-0.0147	42.43	-0.0457
17.5	-0.0149	42.45	-0.0455
17.52	-0.0146	42.47	-0.0453
17.53	-0.0146	42.48	-0.0446
17.55	-0.0144	42.5	-0.0454
17.57	-0.0157	42.52	-0.0464
17.58	-0.0144	42.53	-0.0453
17.6	-0.0159	42.55	-0.0459
17.62	-0.0148	42.57	-0.0453
17.63	-0.0141	42.58	-0.0449
17.65	-0.0147	42.6	-0.0451
17.67	-0.0143	42.62	-0.0448
17.68	-0.0147	42.63	-0.0455
17.7	-0.0151	42.65	-0.0457
17.72	-0.0145	42.67	-0.0449
17.73	-0.0149	42.68	-0.0454
17.75	-0.0146	42.7	-0.0451
17.77	-0.0205	42.72	-0.0445
17.78	-0.0199	42.73	-0.0451
17.8	-0.0186	42.75	-0.0447
17.82	-0.0201	42.77	-0.0454
17.83	-0.021	42.78	-0.0461
17.85	-0.0202	42.8	-0.0443
17.87	-0.0199	42.82	-0.0444
17.88	-0.0197	42.83	-0.0456
17.9	-0.0206	42.85	-0.0455
17.92	-0.0198	42.87	-0.0452
17.93	-0.0203	42.88	-0.0452
17.95	-0.0205	42.9	-0.044
17.97	-0.0203	42.92	-0.0447
17.98	-0.0203	42.93	-0.0453
18.	-0.0195	42.95	-0.0447
18.02	-0.0198	42.97	-0.0444
18.03	-0.0204	42.98	-0.0442
18.05	-0.0202	43.	-0.0446
18.07	-0.0209	43.02	-0.0444
18.08	-0.0193	43.03	-0.0445

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
18.1	-0.0199	43.05	-0.0452
18.12	-0.0203	43.07	-0.0458
18.13	-0.0197	43.08	-0.0453
18.15	-0.02	43.1	-0.0443
18.17	-0.0208	43.12	-0.0458
18.18	-0.0212	43.13	-0.046
18.2	-0.0205	43.15	-0.0447
18.22	-0.0206	43.17	-0.0449
18.23	-0.0199	43.18	-0.0444
18.25	-0.0207	43.2	-0.0448
18.27	-0.021	43.22	-0.0447
18.28	-0.0201	43.23	-0.0454
18.3	-0.0203	43.25	-0.0447
18.32	-0.0207	43.27	-0.0457
18.33	-0.0214	43.28	-0.0458
18.35	-0.0206	43.3	-0.0439
18.37	-0.022	43.32	-0.0453
18.38	-0.0203	43.33	-0.0447
18.4	-0.0209	43.35	-0.0451
18.42	-0.0208	43.37	-0.0444
18.43	-0.0203	43.38	-0.0449
18.45	-0.0213	43.4	-0.0449
18.47	-0.021	43.42	-0.0459
18.48	-0.021	43.43	-0.0446
18.5	-0.0214	43.45	-0.0452
18.52	-0.0219	43.47	-0.0451
18.53	-0.0218	43.48	-0.0453
18.55	-0.0208	43.5	-0.0447
18.57	-0.0208	43.52	-0.0444
18.58	-0.0217	43.53	-0.0449
18.6	-0.0214	43.55	-0.0452
18.62	-0.02	43.57	-0.0453
18.63	-0.0208	43.58	-0.044
18.65	-0.02	43.6	-0.0446
18.67	-0.0217	43.62	-0.0449
18.68	-0.0206	43.63	-0.0448
18.7	-0.0209	43.65	-0.0447
18.72	-0.0203	43.67	-0.044
18.73	-0.0208	43.68	-0.0452
18.75	-0.021	43.7	-0.0441
18.77	-0.0216	43.72	-0.0442
18.78	-0.0215	43.73	-0.0444
18.8	-0.021	43.75	-0.0443
18.82	-0.0214	43.77	-0.0487
18.83	-0.021	43.78	-0.0495
18.85	-0.0199	43.8	-0.0498
18.87	-0.0209	43.82	-0.0482
18.88	-0.0211	43.83	-0.0491
18.9	-0.0207	43.85	-0.0501
18.92	-0.0206	43.87	-0.0486
18.93	-0.0215	43.88	-0.049
18.95	-0.0218	43.9	-0.0479
18.97	-0.021	43.92	-0.0494
18.98	-0.0211	43.93	-0.0483
19.	-0.0211	43.95	-0.0486
19.02	-0.0224	43.97	-0.0484
19.03	-0.0211	43.98	-0.0487
19.05	-0.0213	44.	-0.0484
19.07	-0.0216	44.02	-0.0486
19.08	-0.021	44.03	-0.0482
19.1	-0.0219	44.05	-0.0499
19.12	-0.0219	44.07	-0.0488
19.13	-0.0216	44.08	-0.0487
19.15	-0.0216	44.1	-0.048
19.17	-0.0211	44.12	-0.0484
19.18	-0.0221	44.13	-0.0486

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
19.2	-0.0225	44.15	-0.0492
19.22	-0.0218	44.17	-0.0481
19.23	-0.0212	44.18	-0.0486
19.25	-0.0223	44.2	-0.048
19.27	-0.022	44.22	-0.0488
19.28	-0.0211	44.23	-0.0481
19.3	-0.0217	44.25	-0.0484
19.32	-0.0222	44.27	-0.0478
19.33	-0.0219	44.28	-0.0483
19.35	-0.0212	44.3	-0.0473
19.37	-0.0212	44.32	-0.048
19.38	-0.0219	44.33	-0.0478
19.4	-0.0217	44.35	-0.0478
19.42	-0.0225	44.37	-0.047
19.43	-0.0216	44.38	-0.0472
19.45	-0.0225	44.4	-0.0478
19.47	-0.0211	44.42	-0.0485
19.48	-0.0215	44.43	-0.0482
19.5	-0.0225	44.45	-0.048
19.52	-0.0227	44.47	-0.0471
19.53	-0.0218	44.48	-0.0476
19.55	-0.0214	44.5	-0.0462
19.57	-0.0213	44.52	-0.0479
19.58	-0.0222	44.53	-0.0469
19.6	-0.0216	44.55	-0.0475
19.62	-0.0221	44.57	-0.0459
19.63	-0.0219	44.58	-0.0469
19.65	-0.022	44.6	-0.0472
19.67	-0.0219	44.62	-0.0459
19.68	-0.022	44.63	-0.0469
19.7	-0.0211	44.65	-0.0472
19.72	-0.0216	44.67	-0.0475
19.73	-0.0223	44.68	-0.0462
19.75	-0.0226	44.7	-0.0467
19.77	-0.0255	44.72	-0.0461
19.78	-0.0253	44.73	-0.0477
19.8	-0.0254	44.75	-0.0467
19.82	-0.0264	44.77	-0.0475
19.83	-0.0258	44.78	-0.048
19.85	-0.0264	44.8	-0.0483
19.87	-0.0256	44.82	-0.0465
19.88	-0.0253	44.83	-0.0471
19.9	-0.0258	44.85	-0.0474
19.92	-0.0256	44.87	-0.0484
19.93	-0.0262	44.88	-0.0484
19.95	-0.0255	44.9	-0.0478
19.97	-0.0258	44.92	-0.0467
19.98	-0.025	44.93	-0.047
20.	-0.0251	44.95	-0.0472
20.02	-0.0258	44.97	-0.0478
20.03	-0.0256	44.98	-0.0477
20.05	-0.0249	45.	-0.0476
20.07	-0.0262	45.02	-0.0479
20.08	-0.025	45.03	-0.0473
20.1	-0.0254	45.05	-0.0478
20.12	-0.027	45.07	-0.047
20.13	-0.025	45.08	-0.0477
20.15	-0.0256	45.1	-0.0486
20.17	-0.0256	45.12	-0.0473
20.18	-0.0252	45.13	-0.0478
20.2	-0.0271	45.15	-0.0467
20.22	-0.0257	45.17	-0.0467
20.23	-0.026	45.18	-0.0473
20.25	-0.0262	45.2	-0.0474
20.27	-0.0254	45.22	-0.0473
20.28	-0.0262	45.23	-0.046

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
20.3	-0.0257	45.25	-0.0479
20.32	-0.0256	45.27	-0.0465
20.33	-0.0251	45.28	-0.047
20.35	-0.0261	45.3	-0.0461
20.37	-0.0254	45.32	-0.0462
20.38	-0.026	45.33	-0.0479
20.4	-0.0251	45.35	-0.0471
20.42	-0.0262	45.37	-0.0463
20.43	-0.0254	45.38	-0.0477
20.45	-0.0251	45.4	-0.0481
20.47	-0.0258	45.42	-0.0471
20.48	-0.0254	45.43	-0.0471
20.5	-0.0252	45.45	-0.0472
20.52	-0.0257	45.47	-0.0482
20.53	-0.0265	45.48	-0.0461
20.55	-0.0263	45.5	-0.0458
20.57	-0.0269	45.52	-0.0461
20.58	-0.0254	45.53	-0.0465
20.6	-0.0251	45.55	-0.0468
20.62	-0.028	45.57	-0.0458
20.63	-0.0271	45.58	-0.0466
20.65	-0.0283	45.6	-0.0462
20.67	-0.0275	45.62	-0.0457
20.68	-0.029	45.63	-0.0466
20.7	-0.0284	45.65	-0.0472
20.72	-0.028	45.67	-0.0473
20.73	-0.0278	45.68	-0.0479
20.75	-0.0287	45.7	-0.0468
20.77	-0.0287	45.72	-0.0459
20.78	-0.1611	45.73	-0.0474
20.8	-0.0182	45.75	-0.0476
20.82	-0.0367	45.77	-0.0504
20.83	-0.0363	45.78	-0.0502
20.85	-0.0381	45.8	-0.0512
20.87	-0.0364	45.82	-0.0509
20.88	-0.0372	45.83	-0.0512
20.9	-0.0214	45.85	-0.0505
20.92	-0.0229	45.87	-0.0523
20.93	-0.0218	45.88	-0.0507
20.95	-0.0255	45.9	-0.0516
20.97	-0.0249	45.92	-0.0501
20.98	-0.0252	45.93	-0.0514
21.	-0.0256	45.95	-0.0504
21.02	-0.0258	45.97	-0.0502
21.03	-0.0257	45.98	-0.0522
21.05	-0.0256	46.	-0.0514
21.07	-0.0261	46.02	-0.0509
21.08	-0.0252	46.03	-0.0512
21.1	-0.0261	46.05	-0.0512
21.12	-0.0264	46.07	-0.0501
21.13	-0.0256	46.08	-0.0522
21.15	-0.0264	46.1	-0.05
21.17	-0.0259	46.12	-0.0517
21.18	-0.0251	46.13	-0.0514
21.2	-0.0264	46.15	-0.0512
21.22	-0.025	46.17	-0.0513
21.23	-0.0262	46.18	-0.0515
21.25	-0.0271	46.2	-0.0519
21.27	-0.0287	46.22	-0.0507
21.28	-0.0288	46.23	-0.0518
21.3	-0.0285	46.25	-0.0514
21.32	-0.0277	46.27	-0.0523
21.33	-0.028	46.28	-0.0513
21.35	-0.0267	46.3	-0.0516
21.37	-0.0273	46.32	-0.0522
21.38	-0.0282	46.33	-0.0515

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
21.4	-0.0278	46.35	-0.0516
21.42	-0.0276	46.37	-0.0517
21.43	-0.0282	46.38	-0.0509
21.45	-0.0278	46.4	-0.0512
21.47	-0.0272	46.42	-0.0517
21.48	-0.0282	46.43	-0.0515
21.5	-0.0283	46.45	-0.0511
21.52	-0.0281	46.47	-0.0509
21.53	-0.0285	46.48	-0.0528
21.55	-0.0278	46.5	-0.0517
21.57	-0.0285	46.52	-0.0532
21.58	-0.0285	46.53	-0.0516
21.6	-0.028	46.55	-0.0501
21.62	-0.0284	46.57	-0.0521
21.63	-0.0278	46.58	-0.0517
21.65	-0.0295	46.6	-0.0517
21.67	-0.0277	46.62	-0.052
21.68	-0.0286	46.63	-0.0511
21.7	-0.028	46.65	-0.0517
21.72	-0.0282	46.67	-0.0507
21.73	-0.0291	46.68	-0.0509
21.75	-0.0283	46.7	-0.0505
21.77	-0.0336	46.72	-0.0501
21.78	-0.0334	46.73	-0.0517
21.8	-0.0327	46.75	-0.0529
21.82	-0.0331	46.77	-0.0509
21.83	-0.0336	46.78	-0.0515
21.85	-0.0336	46.8	-0.051
21.87	-0.0332	46.82	-0.0516
21.88	-0.0335	46.83	-0.0521
21.9	-0.0329	46.85	-0.0511
21.92	-0.0327	46.87	-0.0515
21.93	-0.0328	46.88	-0.0509
21.95	-0.0323	46.9	-0.052
21.97	-0.0322	46.92	-0.0517
21.98	-0.0328	46.93	-0.0524
22.	-0.0333	46.95	-0.0528
22.02	-0.0322	46.97	-0.0518
22.03	-0.0324	46.98	-0.0521
22.05	-0.0334	47.	-0.0525
22.07	-0.0333	47.02	-0.0524
22.08	-0.0328	47.03	-0.0523
22.1	-0.0338	47.05	-0.053
22.12	-0.0328	47.07	-0.0521
22.13	-0.0319	47.08	-0.0511
22.15	-0.033	47.1	-0.0517
22.17	-0.0331	47.12	-0.0518
22.18	-0.0319	47.13	-0.0513
22.2	-0.0315	47.15	-0.0517
22.22	-0.0309	47.17	-0.0512
22.23	-0.0315	47.18	-0.0517
22.25	-0.032	47.2	-0.0527
22.27	-0.0314	47.22	-0.0523
22.28	-0.0329	47.23	-0.0514
22.3	-0.032	47.25	-0.0525
22.32	-0.0312	47.27	-0.0521
22.33	-0.0326	47.28	-0.053
22.35	-0.0325	47.3	-0.0519
22.37	-0.033	47.32	-0.0529
22.38	-0.0317	47.33	-0.0539
22.4	-0.0324	47.35	-0.054
22.42	-0.0327	47.37	-0.0521
22.43	-0.0321	47.38	-0.0528
22.45	-0.0317	47.4	-0.0519
22.47	-0.0313	47.42	-0.0541
22.48	-0.0322	47.43	-0.0527

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
22.5	-0.0325	47.45	-0.0533
22.52	-0.0312	47.47	-0.053
22.53	-0.0329	47.48	-0.0533
22.55	-0.0325	47.5	-0.0542
22.57	-0.0316	47.52	-0.0536
22.58	-0.0329	47.53	-0.0527
22.6	-0.0324	47.55	-0.0527
22.62	-0.0327	47.57	-0.0538
22.63	-0.0327	47.58	-0.0533
22.65	-0.0329	47.6	-0.0531
22.67	-0.0326	47.62	-0.0525
22.68	-0.0325	47.63	-0.0539
22.7	-0.0321	47.65	-0.0533
22.72	-0.0327	47.67	-0.0523
22.73	-0.0319	47.68	-0.0532
22.75	-0.0334	47.7	-0.0529
22.77	-0.0328	47.72	-0.0529
22.78	-0.0331	47.73	-0.0534
22.8	-0.0323	47.75	-0.0541
22.82	-0.0323	47.77	-0.0494
22.83	-0.0326	47.78	-0.0503
22.85	-0.0329	47.8	-0.0501
22.87	-0.032	47.82	-0.0498
22.88	-0.033	47.83	-0.0495
22.9	-0.0321	47.85	-0.0503
22.92	-0.0329	47.87	-0.0503
22.93	-0.0327	47.88	-0.0501
22.95	-0.0322	47.9	-0.0493
22.97	-0.0323	47.92	-0.0499
22.98	-0.0324	47.93	-0.05
23.	-0.0331	47.95	-0.0488
23.02	-0.0327	47.97	-0.0505
23.03	-0.0323	47.98	-0.0503
23.05	-0.0326	48.	-0.0503
23.07	-0.0312	48.02	-0.05
23.08	-0.0315	48.03	-0.0493
23.1	-0.0323	48.05	-0.0506
23.12	-0.0323	48.07	-0.0498
23.13	-0.0323	48.08	-0.0507
23.15	-0.0318	48.1	-0.05
23.17	-0.033	48.12	-0.0496
23.18	-0.0314	48.13	-0.0499
23.2	-0.0323	48.15	-0.0499
23.22	-0.0322	48.17	-0.0498
23.23	-0.0307	48.18	-0.0502
23.25	-0.0323	48.2	-0.0497
23.27	-0.0316	48.22	-0.0507
23.28	-0.0314	48.23	-0.0494
23.3	-0.0324	48.25	-0.0497
23.32	-0.0321	48.27	-0.0505
23.33	-0.0317	48.28	-0.0498
23.35	-0.0325	48.3	-0.0507
23.37	-0.0327	48.32	-0.0492
23.38	-0.0316	48.33	-0.0462
23.4	-0.0318	48.35	-0.0476
23.42	-0.0318	48.37	-0.047
23.43	-0.0317	48.38	-0.0473
23.45	-0.0322	48.4	-0.0473
23.47	-0.0314	48.42	-0.0481
23.48	-0.0322	48.43	-0.0482
23.5	-0.0323	48.45	-0.0475
23.52	-0.0313	48.47	-0.0472
23.53	-0.032	48.48	-0.0469
23.55	-0.0319	48.5	-0.047
23.57	-0.0307	48.52	-0.0477
23.58	-0.031	48.53	-0.0475

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
23.6	-0.0318	48.55	-0.0467
23.62	-0.0327	48.57	-0.0481
23.63	-0.0317	48.58	-0.0474
23.65	-0.0312	48.6	-0.0481
23.67	-0.0314	48.62	-0.0485
23.68	-0.0314	48.63	-0.0482
23.7	-0.031	48.65	-0.0472
23.72	-0.0314	48.67	-0.0477
23.73	-0.0317	48.68	-0.0486
23.75	-0.0308	48.7	-0.0484
23.77	-0.0357	48.72	-0.0478
23.78	-0.0353	48.73	-0.0466
23.8	-0.0343	48.75	-0.0477
23.82	-0.0346	48.77	-0.048
23.83	-0.0348	48.78	-0.0486
23.85	-0.0349	48.8	-0.049
23.87	-0.0345	48.82	-0.0498
23.88	-0.0355	48.83	-0.0501
23.9	-0.035	48.85	-0.05
23.92	-0.0357	48.87	-0.0493
23.93	-0.0353	48.88	-0.0497
23.95	-0.0352	48.9	-0.0493
23.97	-0.0347	48.92	-0.0499
23.98	-0.0345	48.93	-0.0495
24.	-0.0359	48.95	-0.0498
24.02	-0.0354	48.97	-0.0488
24.03	-0.0347	48.98	-0.0493
24.05	-0.0333	49.	-0.0501
24.07	-0.0348	49.02	-0.05
24.08	-0.0347	49.03	-0.0505
24.1	-0.0341	49.05	-0.05
24.12	-0.0347	49.07	-0.0498
24.13	-0.035	49.08	-0.0501
24.15	-0.036	49.1	-0.0499
24.17	-0.0354	49.12	-0.0501
24.18	-0.0349	49.13	-0.0491
24.2	-0.0346	49.15	-0.0505
24.22	-0.0347	49.17	-0.0489
24.23	-0.0345	49.18	-0.0506
24.25	-0.0342	49.2	-0.0501
24.27	-0.0352	49.22	-0.0494
24.28	-0.0346	49.23	-0.0493
24.3	-0.0343	49.25	-0.0501
24.32	-0.0344	49.27	-0.0498
24.33	-0.0351	49.28	-0.0493
24.35	-0.0336	49.3	-0.0495
24.37	-0.0349	49.32	-0.0496
24.38	-0.035	49.33	-0.0489
24.4	-0.0352	49.35	-0.0492
24.42	-0.0357	49.37	-0.0493
24.43	-0.0354	49.38	-0.0497
24.45	-0.035	49.4	-0.0492
24.47	-0.0361	49.42	-0.0495
24.48	-0.0356	49.43	-0.0472
24.5	-0.0355	49.45	-0.0492
24.52	-0.0345	49.47	-0.049
24.53	-0.035	49.48	-0.0486
24.55	-0.0367	49.5	-0.0495
24.57	-0.0342	49.52	-0.0494
24.58	-0.0363	49.53	-0.0495
24.6	-0.036	49.55	-0.05
24.62	-0.0361	49.57	-0.0499
24.63	-0.0355	49.58	-0.0496
24.65	-0.0351	49.6	-0.0495
24.67	-0.0358	49.62	-0.0491
24.68	-0.0359	49.63	-0.0491

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
24.7	-0.0356	49.65	-0.0496
24.72	-0.0361	49.67	-0.0504
24.73	-0.0364	49.68	-0.0493
24.75	-0.0367	49.7	-0.0498
24.77	-0.037	49.72	-0.05
24.78	-0.0363	49.73	-0.0496
24.8	-0.037	49.75	-0.0498
24.82	-0.0374	49.77	-0.0481
24.83	-0.0365	49.78	-0.0471
24.85	-0.0363	49.8	-0.0484
24.87	-0.038	49.82	-0.0478
24.88	-0.0358	49.83	-0.0491
24.9	-0.0363	49.85	-0.0498
24.92	-0.036	49.87	-0.049
24.93	-0.0368		

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 4.651

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0003852	cm/sec
y0	2.332	ft

T = K*b = 0.08923 cm²/sec

Data Set: C:\Users\ccarter\Golder Associates\19134560,Alcoa Copano APAR and SLERA - Project Files\5 Technic

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 3
Test Date: 12/19/2019
Test Well: MW3-4

AQUIFER DATA

Saturated Thickness: 2.5 ft
Anisotropy Ratio (Kz/Kr): 0.1

SLUG TEST WELL DATA

Test Well: MW3-4

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.83 ft
Static Water Column Height: 8.78 ft
Casing Radius: 0.167 ft
Well Radius: 0.167 ft
Well Skin Radius: 0.6875 ft
Screen Length: 2.5 ft
Total Well Penetration Depth: 11. ft
Corrected Casing Radius (Bouwer-Rice Method): 0.167 ft
Gravel Pack Porosity: 0.3

No. of Observations: 3490

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	0.	29.08	0.0726
0.0167	0.2944	29.1	0.0706
0.0333	0.5975	29.12	0.0729
0.05	0.6797	29.13	0.0727
0.0667	0.8156	29.15	0.0703
0.0833	0.6837	29.17	0.0697
0.1	0.6694	29.18	0.0707
0.1167	0.7587	29.2	0.0709
0.1333	0.7255	29.22	0.0713
0.15	0.7594	29.23	0.0712
0.1667	0.7658	29.25	0.0708
0.1833	0.7247	29.27	0.0728
0.2	0.7538	29.28	0.0702
0.2167	0.7549	29.3	0.0705
0.2333	0.7492	29.32	0.0718
0.25	0.7455	29.33	0.0702
0.2667	0.736	29.35	0.0705
0.2833	0.8212	29.37	0.0705
0.3	0.7444	29.38	0.0708
0.3167	0.7595	29.4	0.0704
0.3333	0.7263	29.42	0.0704
0.35	0.7826	29.43	0.0701
0.3667	0.7438	29.45	0.0708
0.3833	0.7232	29.47	0.0702
0.4	0.7644	29.48	0.0703
0.4167	0.7378	29.5	0.0702
0.4333	0.7258	29.52	0.069
0.45	0.7281	29.53	0.0706
0.4667	0.7274	29.55	0.0695
0.4833	0.724	29.57	0.0703

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.5	0.724	29.58	0.0715
0.5167	0.7217	29.6	0.0679
0.5333	0.7196	29.62	0.0741
0.55	0.7177	29.63	0.0703
0.5667	0.7786	29.65	0.075
0.5833	0.711	29.67	0.0749
0.6	0.718	29.68	0.0736
0.6167	0.7142	29.7	0.0732
0.6333	0.7134	29.72	0.074
0.65	0.7119	29.73	0.074
0.6667	0.7121	29.75	0.0749
0.6833	0.705	29.77	0.0747
0.7	0.7038	29.78	0.0745
0.7167	0.7029	29.8	0.0747
0.7333	0.6979	29.82	0.073
0.75	0.697	29.83	0.0744
0.7667	0.6985	29.85	0.0744
0.7833	0.6976	29.87	0.0729
0.8	0.6952	29.88	0.075
0.8167	0.6938	29.9	0.0748
0.8333	0.6923	29.92	0.0738
0.85	0.6918	29.93	0.0752
0.8667	0.6903	29.95	0.074
0.8833	0.6879	29.97	0.075
0.9	0.6892	29.98	0.0753
0.9167	0.6901	30.	0.074
0.9333	0.6859	30.02	0.0735
0.95	0.6866	30.03	0.0763
0.9667	0.6843	30.05	0.0742
0.9833	0.6817	30.07	0.0746
1.	0.6776	30.08	0.074
1.017	0.6784	30.1	0.0745
1.033	0.6759	30.12	0.0744
1.05	0.6754	30.13	0.0738
1.067	0.6729	30.15	0.074
1.083	0.672	30.17	0.0742
1.1	0.6709	30.18	0.0753
1.117	0.6702	30.2	0.0738
1.133	0.6674	30.22	0.074
1.15	0.6664	30.23	0.0736
1.167	0.6653	30.25	0.0748
1.183	0.6633	30.27	0.0732
1.2	0.6635	30.28	0.0745
1.217	0.6606	30.3	0.0748
1.233	0.6581	30.32	0.0727
1.25	0.6607	30.33	0.0732
1.267	0.6612	30.35	0.0743
1.283	0.6596	30.37	0.0726
1.3	0.6563	30.38	0.07
1.317	0.653	30.4	0.0728
1.333	0.652	30.42	0.0699
1.35	0.6498	30.43	0.0697
1.367	0.6487	30.45	0.0707
1.383	0.6469	30.47	0.0732
1.4	0.6466	30.48	0.0723
1.417	0.6457	30.5	0.0731
1.433	0.6451	30.52	0.0718
1.45	0.6431	30.53	0.0727
1.467	0.6418	30.55	0.0724
1.483	0.6388	30.57	0.0732
1.5	0.6388	30.58	0.0725
1.517	0.6395	30.6	0.0724
1.533	0.6386	30.62	0.0732
1.55	0.6381	30.63	0.0718
1.567	0.6373	30.65	0.0725
1.583	0.631	30.67	0.0716

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.6	0.6317	30.68	0.072
1.617	0.6315	30.7	0.0719
1.633	0.6308	30.72	0.0723
1.65	0.6288	30.73	0.0716
1.667	0.6277	30.75	0.0714
1.683	0.6277	30.77	0.0733
1.7	0.6261	30.78	0.0734
1.717	0.6242	30.8	0.0721
1.733	0.6235	30.82	0.0727
1.75	0.6224	30.83	0.0718
1.767	0.6194	30.85	0.0711
1.783	0.6194	30.87	0.0714
1.8	0.6193	30.88	0.0718
1.817	0.6211	30.9	0.0706
1.833	0.62	30.92	0.0714
1.85	0.6195	30.93	0.0707
1.867	0.6126	30.95	0.0723
1.883	0.6116	30.97	0.072
1.9	0.6097	30.98	0.0716
1.917	0.6098	31.	0.0713
1.933	0.6066	31.02	0.0716
1.95	0.6059	31.03	0.071
1.967	0.6034	31.05	0.0719
1.983	0.6032	31.07	0.071
2.	0.6019	31.08	0.0701
2.017	0.5994	31.1	0.0688
2.033	0.5994	31.12	0.0695
2.05	0.598	31.13	0.0702
2.067	0.596	31.15	0.0699
2.083	0.5958	31.17	0.0695
2.1	0.5972	31.18	0.0704
2.117	0.5971	31.2	0.071
2.133	0.5943	31.22	0.0698
2.15	0.5938	31.23	0.07
2.167	0.5882	31.25	0.0701
2.183	0.5903	31.27	0.0707
2.2	0.5881	31.28	0.0708
2.217	0.585	31.3	0.07
2.233	0.5846	31.32	0.0692
2.25	0.5834	31.33	0.07
2.267	0.5826	31.35	0.0714
2.283	0.5808	31.37	0.0699
2.3	0.5806	31.38	0.07
2.317	0.5792	31.4	0.0689
2.333	0.5782	31.42	0.0704
2.35	0.5763	31.43	0.0698
2.367	0.5744	31.45	0.0693
2.383	0.5754	31.47	0.0696
2.4	0.5748	31.48	0.0689
2.417	0.5741	31.5	0.0699
2.433	0.5746	31.52	0.0698
2.45	0.5702	31.53	0.0695
2.467	0.5692	31.55	0.0694
2.483	0.5672	31.57	0.0702
2.5	0.5663	31.58	0.07
2.517	0.5649	31.6	0.0692
2.533	0.5624	31.62	0.0708
2.55	0.5619	31.63	0.0704
2.567	0.5607	31.65	0.0701
2.583	0.5598	31.67	0.0703
2.6	0.5586	31.68	0.0699
2.617	0.5592	31.7	0.0709
2.633	0.5576	31.72	0.0694
2.65	0.5598	31.73	0.0696
2.667	0.557	31.75	0.0698
2.683	0.5571	31.77	0.069

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2.7	0.5557	31.78	0.0699
2.717	0.5505	31.8	0.0703
2.733	0.5505	31.82	0.0696
2.75	0.5487	31.83	0.0705
2.767	0.5485	31.85	0.0695
2.783	0.546	31.87	0.0692
2.8	0.5457	31.88	0.069
2.817	0.5455	31.9	0.0671
2.833	0.5415	31.92	0.0687
2.85	0.5422	31.93	0.0689
2.867	0.5413	31.95	0.0688
2.883	0.541	31.97	0.0678
2.9	0.5382	31.98	0.0695
2.917	0.5374	32.	0.0684
2.933	0.5408	32.02	0.0694
2.95	0.5398	32.03	0.0697
2.967	0.5374	32.05	0.0698
2.983	0.5366	32.07	0.0694
3.	0.5302	32.08	0.0689
3.017	0.531	32.1	0.0685
3.033	0.5289	32.12	0.0685
3.05	0.5276	32.13	0.0686
3.067	0.5278	32.15	0.0693
3.083	0.5244	32.17	0.0689
3.1	0.5224	32.18	0.0687
3.117	0.5229	32.2	0.0682
3.133	0.5221	32.22	0.0688
3.15	0.5213	32.23	0.0682
3.167	0.5214	32.25	0.0677
3.183	0.5189	32.27	0.0682
3.2	0.5179	32.28	0.0682
3.217	0.5216	32.3	0.0684
3.233	0.519	32.32	0.0672
3.25	0.5189	32.33	0.0679
3.267	0.5175	32.35	0.0673
3.283	0.515	32.37	0.0666
3.3	0.5149	32.38	0.0679
3.317	0.5124	32.4	0.0685
3.333	0.5115	32.42	0.0685
3.35	0.5107	32.43	0.0682
3.367	0.5097	32.45	0.0678
3.383	0.509	32.47	0.068
3.4	0.5074	32.48	0.0681
3.417	0.5065	32.5	0.0673
3.433	0.5062	32.52	0.067
3.45	0.5043	32.53	0.066
3.467	0.5018	32.55	0.0654
3.483	0.5017	32.57	0.0679
3.5	0.5018	32.58	0.0679
3.517	0.5016	32.6	0.0671
3.533	0.5013	32.62	0.0667
3.55	0.499	32.63	0.0671
3.567	0.4977	32.65	0.0671
3.583	0.4956	32.67	0.0672
3.6	0.4943	32.68	0.0683
3.617	0.4969	32.7	0.0664
3.633	0.4969	32.72	0.0662
3.65	0.4964	32.73	0.0674
3.667	0.4948	32.75	0.0653
3.683	0.4932	32.77	0.0669
3.7	0.4931	32.78	0.0678
3.717	0.493	32.8	0.0671
3.733	0.4913	32.82	0.0655
3.75	0.4904	32.83	0.0669
3.767	0.4918	32.85	0.0658
3.783	0.4908	32.87	0.066

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
3.8	0.4889	32.88	0.0661
3.817	0.4869	32.9	0.066
3.833	0.4838	32.92	0.0642
3.85	0.4832	32.93	0.0671
3.867	0.4805	32.95	0.0657
3.883	0.4811	32.97	0.0664
3.9	0.4789	32.98	0.0659
3.917	0.4781	33.	0.0665
3.933	0.477	33.02	0.0651
3.95	0.4742	33.03	0.0664
3.967	0.4746	33.05	0.0658
3.983	0.4736	33.07	0.0653
4.	0.4722	33.08	0.066
4.017	0.4719	33.1	0.0665
4.033	0.4711	33.12	0.0654
4.05	0.4708	33.13	0.0672
4.067	0.4733	33.15	0.0667
4.083	0.4731	33.17	0.0672
4.1	0.4714	33.18	0.0664
4.117	0.4692	33.2	0.0666
4.133	0.4683	33.22	0.0677
4.15	0.4665	33.23	0.068
4.167	0.4666	33.25	0.0631
4.183	0.4656	33.27	0.0647
4.2	0.4636	33.28	0.0646
4.217	0.463	33.3	0.0648
4.233	0.4625	33.32	0.0659
4.25	0.4617	33.33	0.0653
4.267	0.4614	33.35	0.0658
4.283	0.4594	33.37	0.0665
4.3	0.4583	33.38	0.066
4.317	0.4598	33.4	0.0649
4.333	0.4583	33.42	0.0663
4.35	0.4584	33.43	0.0669
4.367	0.4572	33.45	0.0648
4.383	0.455	33.47	0.0652
4.4	0.4545	33.48	0.0648
4.417	0.4534	33.5	0.0649
4.433	0.4521	33.52	0.0648
4.45	0.4501	33.53	0.0656
4.467	0.4495	33.55	0.0652
4.483	0.4494	33.57	0.0653
4.5	0.4485	33.58	0.0657
4.517	0.4472	33.6	0.0638
4.533	0.447	33.62	0.0675
4.55	0.4467	33.63	0.0674
4.567	0.4465	33.65	0.068
4.583	0.4463	33.67	0.0681
4.6	0.4439	33.68	0.0679
4.617	0.4439	33.7	0.0682
4.633	0.4396	33.72	0.0686
4.65	0.4372	33.73	0.0693
4.667	0.436	33.75	0.0691
4.683	0.4362	33.77	0.0679
4.7	0.4352	33.78	0.0675
4.717	0.4345	33.8	0.0679
4.733	0.4339	33.82	0.0677
4.75	0.4341	33.83	0.0679
4.767	0.4308	33.85	0.0681
4.783	0.4322	33.87	0.0678
4.8	0.4302	33.88	0.0679
4.817	0.4347	33.9	0.0669
4.833	0.4328	33.92	0.0682
4.85	0.4305	33.93	0.0684
4.867	0.4303	33.95	0.068
4.883	0.4306	33.97	0.0667

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
4.9	0.4294	33.98	0.0686
4.917	0.4247	34.	0.0687
4.933	0.4246	34.02	0.0671
4.95	0.4243	34.03	0.0679
4.967	0.422	34.05	0.068
4.983	0.4222	34.07	0.0673
5.	0.4214	34.08	0.0678
5.017	0.4214	34.1	0.067
5.033	0.4206	34.12	0.0683
5.05	0.4205	34.13	0.0688
5.067	0.418	34.15	0.0671
5.083	0.4173	34.17	0.068
5.1	0.4168	34.18	0.0683
5.117	0.4171	34.2	0.0672
5.133	0.4192	34.22	0.0683
5.15	0.4188	34.23	0.0666
5.167	0.4175	34.25	0.0673
5.183	0.4152	34.27	0.0676
5.2	0.4115	34.28	0.0669
5.217	0.41	34.3	0.067
5.233	0.408	34.32	0.0674
5.25	0.4092	34.33	0.067
5.267	0.4081	34.35	0.0662
5.283	0.4077	34.37	0.0672
5.3	0.4051	34.38	0.0658
5.317	0.4055	34.4	0.0665
5.333	0.405	34.42	0.0655
5.35	0.4039	34.43	0.0665
5.367	0.4036	34.45	0.0662
5.383	0.4061	34.47	0.0671
5.4	0.4058	34.48	0.0675
5.417	0.4046	34.5	0.0658
5.433	0.4018	34.52	0.066
5.45	0.4036	34.53	0.0662
5.467	0.4025	34.55	0.0655
5.483	0.3989	34.57	0.0664
5.5	0.3975	34.58	0.0668
5.517	0.3967	34.6	0.0671
5.533	0.3958	34.62	0.0668
5.55	0.3951	34.63	0.0664
5.567	0.3941	34.65	0.065
5.583	0.3929	34.67	0.0658
5.6	0.3929	34.68	0.0667
5.617	0.3904	34.7	0.0664
5.633	0.3893	34.72	0.0659
5.65	0.3887	34.73	0.065
5.667	0.3875	34.75	0.0663
5.683	0.3872	34.77	0.0652
5.7	0.3867	34.78	0.0647
5.717	0.3859	34.8	0.0641
5.733	0.3859	34.82	0.0651
5.75	0.3836	34.83	0.0655
5.767	0.3832	34.85	0.066
5.783	0.3823	34.87	0.0659
5.8	0.3828	34.88	0.0651
5.817	0.3815	34.9	0.0649
5.833	0.3801	34.92	0.0659
5.85	0.3801	34.93	0.0658
5.867	0.3782	34.95	0.0654
5.883	0.3773	34.97	0.0669
5.9	0.3768	34.98	0.0657
5.917	0.3766	35.	0.0657
5.933	0.3762	35.02	0.0649
5.95	0.3747	35.03	0.0652
5.967	0.3752	35.05	0.0654
5.983	0.3737	35.07	0.0645

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
6.	0.3722	35.08	0.0648
6.017	0.3721	35.1	0.0653
6.033	0.3704	35.12	0.0649
6.05	0.3712	35.13	0.0651
6.067	0.3687	35.15	0.0647
6.083	0.3692	35.17	0.063
6.1	0.3689	35.18	0.0626
6.117	0.3675	35.2	0.0643
6.133	0.3657	35.22	0.0636
6.15	0.3657	35.23	0.0625
6.167	0.3643	35.25	0.0647
6.183	0.3649	35.27	0.0654
6.2	0.3635	35.28	0.0646
6.217	0.3627	35.3	0.0637
6.233	0.3631	35.32	0.0649
6.25	0.3622	35.33	0.0641
6.267	0.3604	35.35	0.064
6.283	0.3572	35.37	0.0634
6.3	0.3579	35.38	0.0646
6.317	0.3597	35.4	0.0632
6.333	0.3569	35.42	0.0639
6.35	0.3575	35.43	0.0648
6.367	0.356	35.45	0.0635
6.383	0.355	35.47	0.0646
6.4	0.3551	35.48	0.0647
6.417	0.356	35.5	0.0633
6.433	0.3566	35.52	0.0634
6.45	0.3564	35.53	0.0632
6.467	0.3576	35.55	0.0645
6.483	0.3554	35.57	0.0641
6.5	0.3539	35.58	0.0625
6.517	0.3504	35.6	0.0637
6.533	0.3496	35.62	0.0669
6.55	0.3492	35.63	0.0663
6.567	0.3485	35.65	0.0665
6.583	0.3474	35.67	0.067
6.6	0.3474	35.68	0.0664
6.617	0.3473	35.7	0.0663
6.633	0.3455	35.72	0.0665
6.65	0.3452	35.73	0.0655
6.667	0.3443	35.75	0.0668
6.683	0.3448	35.77	0.0657
6.7	0.3442	35.78	0.0657
6.717	0.3427	35.8	0.0643
6.733	0.3421	35.82	0.0644
6.75	0.3424	35.83	0.0652
6.767	0.3414	35.85	0.0655
6.783	0.3405	35.87	0.0664
6.8	0.3402	35.88	0.066
6.817	0.3393	35.9	0.0672
6.833	0.3378	35.92	0.0664
6.85	0.3379	35.93	0.0662
6.867	0.3379	35.95	0.0653
6.883	0.3377	35.97	0.0654
6.9	0.3358	35.98	0.0652
6.917	0.3345	36.	0.0652
6.933	0.3351	36.02	0.065
6.95	0.334	36.03	0.065
6.967	0.3329	36.05	0.0655
6.983	0.3323	36.07	0.0653
7.	0.3324	36.08	0.0649
7.017	0.3311	36.1	0.065
7.033	0.3317	36.12	0.0643
7.05	0.3305	36.13	0.0643
7.067	0.3293	36.15	0.0635
7.083	0.3285	36.17	0.0652

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
7.1	0.327	36.18	0.0641
7.117	0.3273	36.2	0.0646
7.133	0.326	36.22	0.0653
7.15	0.3262	36.23	0.0641
7.167	0.3252	36.25	0.0641
7.183	0.3236	36.27	0.0625
7.2	0.325	36.28	0.0638
7.217	0.3236	36.3	0.0636
7.233	0.3221	36.32	0.0639
7.25	0.3222	36.33	0.0643
7.267	0.3199	36.35	0.0634
7.283	0.3213	36.37	0.0637
7.3	0.3192	36.38	0.0632
7.317	0.3182	36.4	0.0629
7.333	0.3186	36.42	0.0646
7.35	0.3192	36.43	0.0641
7.367	0.3181	36.45	0.0634
7.383	0.3169	36.47	0.0641
7.4	0.3176	36.48	0.0645
7.417	0.3164	36.5	0.0644
7.433	0.3156	36.52	0.0639
7.45	0.3147	36.53	0.0627
7.467	0.3134	36.55	0.063
7.483	0.3131	36.57	0.0638
7.5	0.3135	36.58	0.0639
7.517	0.3118	36.6	0.0631
7.533	0.3124	36.62	0.0624
7.55	0.3145	36.63	0.0629
7.567	0.3141	36.65	0.0632
7.583	0.3126	36.67	0.0638
7.6	0.3124	36.68	0.0635
7.617	0.3124	36.7	0.0631
7.633	0.3132	36.72	0.0627
7.65	0.3108	36.73	0.063
7.667	0.3116	36.75	0.064
7.683	0.3108	36.77	0.0633
7.7	0.2846	36.78	0.0623
7.717	0.288	36.8	0.0636
7.733	0.2895	36.82	0.0632
7.75	0.2872	36.83	0.064
7.767	0.2864	36.85	0.0625
7.783	0.2863	36.87	0.0622
7.8	0.2862	36.88	0.0619
7.817	0.2863	36.9	0.0621
7.833	0.2861	36.92	0.0624
7.85	0.2864	36.93	0.0614
7.867	0.2859	36.95	0.0607
7.883	0.2863	36.97	0.0623
7.9	0.2845	36.98	0.0615
7.917	0.2835	37.	0.0613
7.933	0.284	37.02	0.0612
7.95	0.2829	37.03	0.0625
7.967	0.2828	37.05	0.0622
7.983	0.2831	37.07	0.061
8.	0.2817	37.08	0.0621
8.017	0.2816	37.1	0.0612
8.033	0.2815	37.12	0.0616
8.05	0.2805	37.13	0.0612
8.067	0.2812	37.15	0.0607
8.083	0.2798	37.17	0.0613
8.1	0.2795	37.18	0.0611
8.117	0.2798	37.2	0.0619
8.133	0.2791	37.22	0.061
8.15	0.2784	37.23	0.0599
8.167	0.2784	37.25	0.0604
8.183	0.2778	37.27	0.0611

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
8.2	0.2778	37.28	0.0608
8.217	0.2767	37.3	0.0616
8.233	0.2762	37.32	0.0601
8.25	0.277	37.33	0.0605
8.267	0.2757	37.35	0.062
8.283	0.2747	37.37	0.0614
8.3	0.2749	37.38	0.062
8.317	0.2742	37.4	0.0608
8.333	0.2733	37.42	0.0598
8.35	0.2723	37.43	0.062
8.367	0.2721	37.45	0.0609
8.383	0.2739	37.47	0.0603
8.4	0.2754	37.48	0.0616
8.417	0.2741	37.5	0.0611
8.433	0.2739	37.52	0.0604
8.45	0.2743	37.53	0.0612
8.467	0.2693	37.55	0.0598
8.483	0.27	37.57	0.061
8.5	0.2686	37.58	0.0598
8.517	0.2687	37.6	0.0613
8.533	0.2663	37.62	0.064
8.55	0.2671	37.63	0.0638
8.567	0.2679	37.65	0.0647
8.583	0.2673	37.67	0.0636
8.6	0.2667	37.68	0.0632
8.617	0.2659	37.7	0.0645
8.633	0.2657	37.72	0.0647
8.65	0.2657	37.73	0.0651
8.667	0.2651	37.75	0.0644
8.683	0.2652	37.77	0.0638
8.7	0.2644	37.78	0.0641
8.717	0.2639	37.8	0.064
8.733	0.2632	37.82	0.0645
8.75	0.2624	37.83	0.0636
8.767	0.263	37.85	0.0642
8.783	0.2618	37.87	0.0652
8.8	0.2613	37.88	0.0653
8.817	0.261	37.9	0.0651
8.833	0.2597	37.92	0.0644
8.85	0.2583	37.93	0.0637
8.867	0.2572	37.95	0.0641
8.883	0.2596	37.97	0.0648
8.9	0.2587	37.98	0.0645
8.917	0.2584	38.	0.0648
8.933	0.2574	38.02	0.0637
8.95	0.2578	38.03	0.0647
8.967	0.2564	38.05	0.0631
8.983	0.2569	38.07	0.0637
9.	0.2566	38.08	0.0639
9.017	0.257	38.1	0.0621
9.033	0.2562	38.12	0.065
9.05	0.2558	38.13	0.0634
9.067	0.2554	38.15	0.0633
9.083	0.2548	38.17	0.0643
9.1	0.2545	38.18	0.0644
9.117	0.2538	38.2	0.0642
9.133	0.2535	38.22	0.0636
9.15	0.2524	38.23	0.0646
9.167	0.2533	38.25	0.0637
9.183	0.2522	38.27	0.0636
9.2	0.2513	38.28	0.0642
9.217	0.2511	38.3	0.0633
9.233	0.251	38.32	0.063
9.25	0.2503	38.33	0.063
9.267	0.2493	38.35	0.0628
9.283	0.2502	38.37	0.0622

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
9.3	0.2495	38.38	0.0629
9.317	0.2494	38.4	0.063
9.333	0.2481	38.42	0.0626
9.35	0.2476	38.43	0.0634
9.367	0.2476	38.45	0.0615
9.383	0.2497	38.47	0.0626
9.4	0.2495	38.48	0.0624
9.417	0.2488	38.5	0.062
9.433	0.2479	38.52	0.0639
9.45	0.246	38.53	0.0613
9.467	0.2453	38.55	0.0625
9.483	0.2433	38.57	0.0609
9.5	0.2439	38.58	0.0615
9.517	0.2435	38.6	0.0622
9.533	0.2441	38.62	0.0615
9.55	0.2437	38.63	0.0622
9.567	0.2418	38.65	0.0618
9.583	0.2412	38.67	0.063
9.6	0.2398	38.68	0.0634
9.617	0.2431	38.7	0.0624
9.633	0.2423	38.72	0.0623
9.65	0.2414	38.73	0.0615
9.667	0.2416	38.75	0.0616
9.683	0.2412	38.77	0.0639
9.7	0.2388	38.78	0.0619
9.717	0.239	38.8	0.0636
9.733	0.2393	38.82	0.0627
9.75	0.2386	38.83	0.063
9.767	0.2369	38.85	0.0629
9.783	0.2365	38.87	0.0608
9.8	0.2385	38.88	0.0619
9.817	0.2377	38.9	0.0618
9.833	0.2361	38.92	0.0616
9.85	0.2378	38.93	0.0623
9.867	0.237	38.95	0.0623
9.883	0.2356	38.97	0.0612
9.9	0.2366	38.98	0.0613
9.917	0.2369	39.	0.0613
9.933	0.2358	39.02	0.0626
9.95	0.2351	39.03	0.0614
9.967	0.234	39.05	0.0623
9.983	0.2334	39.07	0.0618
10.	0.2338	39.08	0.0612
10.02	0.2332	39.1	0.0619
10.03	0.2317	39.12	0.0611
10.05	0.233	39.13	0.0613
10.07	0.2331	39.15	0.0618
10.08	0.2309	39.17	0.0634
10.1	0.2321	39.18	0.0618
10.12	0.2312	39.2	0.0611
10.13	0.2305	39.22	0.062
10.15	0.23	39.23	0.0627
10.17	0.2297	39.25	0.0621
10.18	0.2307	39.27	0.061
10.2	0.2301	39.28	0.0605
10.22	0.2288	39.3	0.0604
10.23	0.2289	39.32	0.0599
10.25	0.228	39.33	0.0592
10.27	0.2272	39.35	0.0605
10.28	0.2272	39.37	0.0602
10.3	0.2255	39.38	0.0611
10.32	0.2256	39.4	0.0612
10.33	0.2258	39.42	0.061
10.35	0.2216	39.43	0.061
10.37	0.2264	39.45	0.061
10.38	0.2247	39.47	0.061

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
10.4	0.2251	39.48	0.061
10.42	0.2285	39.5	0.0604
10.43	0.2289	39.52	0.0606
10.45	0.226	39.53	0.0609
10.47	0.2267	39.55	0.06
10.48	0.2234	39.57	0.0602
10.5	0.2228	39.58	0.0578
10.52	0.222	39.6	0.0611
10.53	0.2208	39.62	0.0651
10.55	0.2217	39.63	0.0649
10.57	0.2197	39.65	0.0642
10.58	0.2214	39.67	0.065
10.6	0.2206	39.68	0.0641
10.62	0.22	39.7	0.0651
10.63	0.2196	39.72	0.0653
10.65	0.2195	39.73	0.0659
10.67	0.2203	39.75	0.065
10.68	0.2195	39.77	0.0636
10.7	0.219	39.78	0.0655
10.72	0.2185	39.8	0.0648
10.73	0.218	39.82	0.0652
10.75	0.2156	39.83	0.065
10.77	0.2178	39.85	0.0633
10.78	0.2161	39.87	0.0641
10.8	0.217	39.88	0.0648
10.82	0.2151	39.9	0.0641
10.83	0.2147	39.92	0.0644
10.85	0.2135	39.93	0.0643
10.87	0.2159	39.95	0.0657
10.88	0.215	39.97	0.0641
10.9	0.2159	39.98	0.0639
10.92	0.2143	40.	0.0649
10.93	0.2135	40.02	0.0644
10.95	0.2123	40.03	0.0652
10.97	0.2118	40.05	0.0647
10.98	0.2119	40.07	0.0651
11.	0.213	40.08	0.0642
11.02	0.2125	40.1	0.0636
11.03	0.2114	40.12	0.0641
11.05	0.2115	40.13	0.0641
11.07	0.2113	40.15	0.0624
11.08	0.2105	40.17	0.062
11.1	0.2103	40.18	0.0646
11.12	0.2091	40.2	0.063
11.13	0.2081	40.22	0.0638
11.15	0.21	40.23	0.0646
11.17	0.2085	40.25	0.0659
11.18	0.2101	40.27	0.064
11.2	0.2075	40.28	0.0646
11.22	0.2077	40.3	0.0644
11.23	0.2078	40.32	0.0635
11.25	0.2062	40.33	0.0627
11.27	0.2064	40.35	0.063
11.28	0.2051	40.37	0.0624
11.3	0.206	40.38	0.0627
11.32	0.207	40.4	0.0625
11.33	0.2045	40.42	0.062
11.35	0.2052	40.43	0.064
11.37	0.2045	40.45	0.0628
11.38	0.2042	40.47	0.064
11.4	0.2045	40.48	0.0621
11.42	0.2036	40.5	0.0636
11.43	0.2024	40.52	0.0628
11.45	0.2023	40.53	0.0637
11.47	0.2028	40.55	0.0626
11.48	0.2022	40.57	0.0636

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
11.5	0.2027	40.58	0.0624
11.52	0.2023	40.6	0.063
11.53	0.2016	40.62	0.063
11.55	0.2011	40.63	0.0626
11.57	0.2003	40.65	0.0635
11.58	0.2006	40.67	0.0642
11.6	0.199	40.68	0.0645
11.62	0.2016	40.7	0.0643
11.63	0.2034	40.72	0.0649
11.65	0.2032	40.73	0.0657
11.67	0.2003	40.75	0.064
11.68	0.2006	40.77	0.0655
11.7	0.2005	40.78	0.0649
11.72	0.2005	40.8	0.0654
11.73	0.1999	40.82	0.0654
11.75	0.1996	40.83	0.0648
11.77	0.199	40.85	0.066
11.78	0.1993	40.87	0.0649
11.8	0.1983	40.88	0.065
11.82	0.1986	40.9	0.0664
11.83	0.1974	40.92	0.0636
11.85	0.1977	40.93	0.0649
11.87	0.197	40.95	0.0651
11.88	0.197	40.97	0.0651
11.9	0.1967	40.98	0.0637
11.92	0.1973	41.	0.0647
11.93	0.1967	41.02	0.0676
11.95	0.1958	41.03	0.0777
11.97	0.196	41.05	0.0644
11.98	0.1953	41.07	0.0647
12.	0.1957	41.08	0.0681
12.02	0.1929	41.1	0.0665
12.03	0.1933	41.12	0.0676
12.05	0.1926	41.13	0.0665
12.07	0.1939	41.15	0.0694
12.08	0.1926	41.17	0.0637
12.1	0.1931	41.18	0.0635
12.12	0.1922	41.2	0.0649
12.13	0.193	41.22	0.0672
12.15	0.1907	41.23	0.0882
12.17	0.191	41.25	0.0661
12.18	0.1917	41.27	0.0638
12.2	0.1917	41.28	0.0648
12.22	0.1911	41.3	0.0628
12.23	0.1916	41.32	0.063
12.25	0.188	41.33	0.0636
12.27	0.1901	41.35	0.0632
12.28	0.1892	41.37	0.0629
12.3	0.1902	41.38	0.0629
12.32	0.1886	41.4	0.0642
12.33	0.1895	41.42	0.0632
12.35	0.1888	41.43	0.0634
12.37	0.1891	41.45	0.0641
12.38	0.1881	41.47	0.0641
12.4	0.1876	41.48	0.0625
12.42	0.1883	41.5	0.0635
12.43	0.1871	41.52	0.0629
12.45	0.1867	41.53	0.0636
12.47	0.1865	41.55	0.0636
12.48	0.1857	41.57	0.0626
12.5	0.1872	41.58	0.0633
12.52	0.1852	41.6	0.0631
12.53	0.1849	41.62	0.0644
12.55	0.1846	41.63	0.0649
12.57	0.1834	41.65	0.0647
12.58	0.1855	41.67	0.0647

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
12.6	0.185	41.68	0.0637
12.62	0.1841	41.7	0.0643
12.63	0.1835	41.72	0.0635
12.65	0.1834	41.73	0.0651
12.67	0.1812	41.75	0.0658
12.68	0.182	41.77	0.0646
12.7	0.1835	41.78	0.0656
12.72	0.1828	41.8	0.0642
12.73	0.1831	41.82	0.0639
12.75	0.1816	41.83	0.0631
12.77	0.1799	41.85	0.065
12.78	0.1807	41.87	0.0632
12.8	0.1794	41.88	0.0646
12.82	0.1804	41.9	0.0637
12.83	0.1805	41.92	0.0648
12.85	0.1796	41.93	0.0644
12.87	0.1794	41.95	0.062
12.88	0.1769	41.97	0.0629
12.9	0.1784	41.98	0.0648
12.92	0.179	42.	0.0639
12.93	0.1785	42.02	0.0648
12.95	0.1788	42.03	0.0646
12.97	0.1791	42.05	0.0638
12.98	0.1781	42.07	0.0658
13.	0.1772	42.08	0.0641
13.02	0.1775	42.1	0.0637
13.03	0.1776	42.12	0.0645
13.05	0.1764	42.13	0.0624
13.07	0.1774	42.15	0.0643
13.08	0.1765	42.17	0.064
13.1	0.1767	42.18	0.0634
13.12	0.1756	42.2	0.0642
13.13	0.1762	42.22	0.0634
13.15	0.1752	42.23	0.0638
13.17	0.1755	42.25	0.0629
13.18	0.1755	42.27	0.0637
13.2	0.1754	42.28	0.0631
13.22	0.175	42.3	0.0639
13.23	0.1742	42.32	0.0623
13.25	0.1764	42.33	0.0642
13.27	0.1749	42.35	0.0652
13.28	0.1733	42.37	0.0633
13.3	0.1744	42.38	0.064
13.32	0.174	42.4	0.0624
13.33	0.1723	42.42	0.0631
13.35	0.1715	42.43	0.0631
13.37	0.1734	42.45	0.0624
13.38	0.1711	42.47	0.0631
13.4	0.1708	42.48	0.0637
13.42	0.1719	42.5	0.0645
13.43	0.17	42.52	0.0624
13.45	0.1715	42.53	0.0626
13.47	0.1698	42.55	0.0633
13.48	0.1686	42.57	0.0645
13.5	0.1703	42.58	0.0633
13.52	0.1695	42.6	0.0639
13.53	0.1691	42.62	0.0629
13.55	0.169	42.63	0.0635
13.57	0.1696	42.65	0.0636
13.58	0.169	42.67	0.0622
13.6	0.1684	42.68	0.0632
13.62	0.1708	42.7	0.0626
13.63	0.1697	42.72	0.0621
13.65	0.1717	42.73	0.0619
13.67	0.1694	42.75	0.0616
13.68	0.1687	42.77	0.0619

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
13.7	0.1699	42.78	0.0629
13.72	0.1677	42.8	0.0634
13.73	0.1682	42.82	0.0636
13.75	0.168	42.83	0.0639
13.77	0.1683	42.85	0.0627
13.78	0.1682	42.87	0.0626
13.8	0.168	42.88	0.0616
13.82	0.1692	42.9	0.0634
13.83	0.1689	42.92	0.0627
13.85	0.1672	42.93	0.0625
13.87	0.1686	42.95	0.0611
13.88	0.1678	42.97	0.0643
13.9	0.168	42.98	0.0635
13.92	0.1661	43.	0.062
13.93	0.1669	43.02	0.0637
13.95	0.1662	43.03	0.0638
13.97	0.1669	43.05	0.0618
13.98	0.1655	43.07	0.0626
14.	0.1652	43.08	0.0635
14.02	0.1652	43.1	0.0624
14.03	0.165	43.12	0.0632
14.05	0.1652	43.13	0.0625
14.07	0.1648	43.15	0.0628
14.08	0.1631	43.17	0.0629
14.1	0.1637	43.18	0.0627
14.12	0.1639	43.2	0.0632
14.13	0.1637	43.22	0.0632
14.15	0.1638	43.23	0.0622
14.17	0.1632	43.25	0.0619
14.18	0.1636	43.27	0.0624
14.2	0.163	43.28	0.0625
14.22	0.1633	43.3	0.0627
14.23	0.1617	43.32	0.0622
14.25	0.1615	43.33	0.0634
14.27	0.1607	43.35	0.0621
14.28	0.1618	43.37	0.0618
14.3	0.1611	43.38	0.0612
14.32	0.1615	43.4	0.0633
14.33	0.1618	43.42	0.0618
14.35	0.1616	43.43	0.0628
14.37	0.1616	43.45	0.0624
14.38	0.1608	43.47	0.0621
14.4	0.1595	43.48	0.0627
14.42	0.1605	43.5	0.0624
14.43	0.1599	43.52	0.062
14.45	0.1603	43.53	0.0618
14.47	0.1589	43.55	0.0628
14.48	0.1589	43.57	0.0616
14.5	0.1586	43.58	0.0612
14.52	0.1598	43.6	0.0631
14.53	0.159	43.62	0.065
14.55	0.1582	43.63	0.0641
14.57	0.1584	43.65	0.0646
14.58	0.1582	43.67	0.0648
14.6	0.1583	43.68	0.0649
14.62	0.1574	43.7	0.0635
14.63	0.1557	43.72	0.0655
14.65	0.1567	43.73	0.065
14.67	0.1566	43.75	0.0656
14.68	0.1559	43.77	0.0655
14.7	0.1574	43.78	0.0644
14.72	0.1561	43.8	0.0637
14.73	0.156	43.82	0.0637
14.75	0.1565	43.83	0.0647
14.77	0.1549	43.85	0.0666
14.78	0.1562	43.87	0.0652

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
14.8	0.1562	43.88	0.0652
14.82	0.1564	43.9	0.0646
14.83	0.1557	43.92	0.0635
14.85	0.1557	43.93	0.0642
14.87	0.1547	43.95	0.0656
14.88	0.154	43.97	0.0636
14.9	0.1546	43.98	0.0639
14.92	0.154	44.	0.0648
14.93	0.1528	44.02	0.0644
14.95	0.1531	44.03	0.064
14.97	0.1535	44.05	0.0641
14.98	0.1523	44.07	0.0649
15.	0.152	44.08	0.0647
15.02	0.152	44.1	0.0646
15.03	0.153	44.12	0.0649
15.05	0.1526	44.13	0.0646
15.07	0.1524	44.15	0.0641
15.08	0.1529	44.17	0.0662
15.1	0.1521	44.18	0.0646
15.12	0.1518	44.2	0.065
15.13	0.1529	44.22	0.0654
15.15	0.1482	44.23	0.0645
15.17	0.1504	44.25	0.0637
15.18	0.1491	44.27	0.0642
15.2	0.1507	44.28	0.0636
15.22	0.1506	44.3	0.0646
15.23	0.1506	44.32	0.0657
15.25	0.1505	44.33	0.0658
15.27	0.1505	44.35	0.0652
15.28	0.1499	44.37	0.0657
15.3	0.149	44.38	0.0643
15.32	0.1492	44.4	0.0638
15.33	0.1494	44.42	0.0643
15.35	0.1483	44.43	0.0646
15.37	0.1488	44.45	0.0635
15.38	0.1481	44.47	0.0638
15.4	0.148	44.48	0.0653
15.42	0.1495	44.5	0.064
15.43	0.1485	44.52	0.0644
15.45	0.1482	44.53	0.065
15.47	0.1485	44.55	0.0647
15.48	0.1472	44.57	0.0648
15.5	0.1485	44.58	0.0643
15.52	0.1478	44.6	0.0652
15.53	0.1478	44.62	0.0656
15.55	0.1469	44.63	0.0641
15.57	0.1461	44.65	0.0655
15.58	0.1461	44.67	0.065
15.6	0.1462	44.68	0.0639
15.62	0.1462	44.7	0.0643
15.63	0.1456	44.72	0.0647
15.65	0.1463	44.73	0.0629
15.67	0.1449	44.75	0.0651
15.68	0.1447	44.77	0.065
15.7	0.1448	44.78	0.0647
15.72	0.1447	44.8	0.0642
15.73	0.1447	44.82	0.0658
15.75	0.1451	44.83	0.0644
15.77	0.1441	44.85	0.0651
15.78	0.144	44.87	0.0641
15.8	0.1433	44.88	0.0648
15.82	0.1434	44.9	0.0636
15.83	0.1437	44.92	0.064
15.85	0.143	44.93	0.0644
15.87	0.1436	44.95	0.0649
15.88	0.1485	44.97	0.0647

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
15.9	0.1416	44.98	0.0638
15.92	0.1407	45.	0.0639
15.93	0.1416	45.02	0.0655
15.95	0.1423	45.03	0.0651
15.97	0.1441	45.05	0.0645
15.98	0.1456	45.07	0.0645
16.	0.1454	45.08	0.0646
16.02	0.1454	45.1	0.064
16.03	0.1407	45.12	0.0641
16.05	0.1404	45.13	0.0641
16.07	0.14	45.15	0.0643
16.08	0.1384	45.17	0.065
16.1	0.1406	45.18	0.0637
16.12	0.1394	45.2	0.0653
16.13	0.1391	45.22	0.0645
16.15	0.14	45.23	0.0644
16.17	0.1385	45.25	0.0651
16.18	0.1382	45.27	0.0643
16.2	0.1395	45.28	0.0642
16.22	0.1396	45.3	0.0655
16.23	0.1372	45.32	0.0643
16.25	0.1402	45.33	0.0646
16.27	0.1372	45.35	0.0643
16.28	0.138	45.37	0.0649
16.3	0.1383	45.38	0.0637
16.32	0.138	45.4	0.0642
16.33	0.1374	45.42	0.0649
16.35	0.1374	45.43	0.0643
16.37	0.1374	45.45	0.0647
16.38	0.1389	45.47	0.064
16.4	0.1368	45.48	0.0649
16.42	0.1379	45.5	0.0645
16.43	0.1374	45.52	0.0645
16.45	0.14	45.53	0.0644
16.47	0.1382	45.55	0.0636
16.48	0.1361	45.57	0.0641
16.5	0.1358	45.58	0.0644
16.52	0.1369	45.6	0.0638
16.53	0.135	45.62	0.0635
16.55	0.1358	45.63	0.0651
16.57	0.1359	45.65	0.0631
16.58	0.1353	45.67	0.0643
16.6	0.1351	45.68	0.0648
16.62	0.1347	45.7	0.0645
16.63	0.1344	45.72	0.0637
16.65	0.1347	45.73	0.0634
16.67	0.1336	45.75	0.0637
16.68	0.133	45.77	0.0639
16.7	0.1341	45.78	0.0644
16.72	0.1333	45.8	0.0644
16.73	0.133	45.82	0.065
16.75	0.1333	45.83	0.0633
16.77	0.134	45.85	0.0642
16.78	0.1341	45.87	0.0634
16.8	0.1326	45.88	0.0642
16.82	0.1324	45.9	0.0647
16.83	0.1312	45.92	0.0643
16.85	0.1322	45.93	0.064
16.87	0.1323	45.95	0.0641
16.88	0.1331	45.97	0.0637
16.9	0.1329	45.98	0.0648
16.92	0.132	46.	0.0642
16.93	0.1325	46.02	0.0643
16.95	0.1323	46.03	0.064
16.97	0.1321	46.05	0.0635
16.98	0.1307	46.07	0.0638

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
17.	0.1308	46.08	0.0631
17.02	0.1304	46.1	0.0647
17.03	0.1305	46.12	0.0635
17.05	0.1313	46.13	0.0648
17.07	0.13	46.15	0.0649
17.08	0.1302	46.17	0.0629
17.1	0.1293	46.18	0.0629
17.12	0.1295	46.2	0.0651
17.13	0.1289	46.22	0.0629
17.15	0.1292	46.23	0.0629
17.17	0.1287	46.25	0.0637
17.18	0.1296	46.27	0.0622
17.2	0.1281	46.28	0.0648
17.22	0.129	46.3	0.0626
17.23	0.1297	46.32	0.0636
17.25	0.1289	46.33	0.0634
17.27	0.1278	46.35	0.0646
17.28	0.1281	46.37	0.0646
17.3	0.1273	46.38	0.0653
17.32	0.1283	46.4	0.0627
17.33	0.1278	46.42	0.0634
17.35	0.1288	46.43	0.0646
17.37	0.1281	46.45	0.0645
17.38	0.1263	46.47	0.0638
17.4	0.127	46.48	0.0645
17.42	0.1273	46.5	0.0647
17.43	0.1267	46.52	0.0638
17.45	0.1269	46.53	0.0654
17.47	0.1273	46.55	0.0632
17.48	0.1265	46.57	0.0634
17.5	0.1255	46.58	0.0631
17.52	0.125	46.6	0.0623
17.53	0.1247	46.62	0.064
17.55	0.1258	46.63	0.0621
17.57	0.1258	46.65	0.0643
17.58	0.1256	46.67	0.0638
17.6	0.1251	46.68	0.0647
17.62	0.1266	46.7	0.0634
17.63	0.1273	46.72	0.0638
17.65	0.1276	46.73	0.0642
17.67	0.1278	46.75	0.0631
17.68	0.1282	46.77	0.0642
17.7	0.1269	46.78	0.063
17.72	0.1264	46.8	0.0637
17.73	0.1262	46.82	0.0641
17.75	0.1263	46.83	0.0646
17.77	0.1254	46.85	0.0643
17.78	0.1261	46.87	0.0639
17.8	0.1262	46.88	0.0646
17.82	0.1269	46.9	0.0643
17.83	0.1268	46.92	0.0635
17.85	0.1257	46.93	0.0653
17.87	0.1255	46.95	0.0635
17.88	0.1256	46.97	0.0637
17.9	0.1241	46.98	0.0641
17.92	0.1238	47.	0.0631
17.93	0.124	47.02	0.0636
17.95	0.124	47.03	0.0637
17.97	0.1246	47.05	0.0642
17.98	0.1234	47.07	0.0638
18.	0.1254	47.08	0.0634
18.02	0.1238	47.1	0.063
18.03	0.1244	47.12	0.0631
18.05	0.1242	47.13	0.0641
18.07	0.1232	47.15	0.063
18.08	0.1235	47.17	0.0637

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
18.1	0.1224	47.18	0.0634
18.12	0.123	47.2	0.0637
18.13	0.1232	47.22	0.062
18.15	0.123	47.23	0.0632
18.17	0.1231	47.25	0.0629
18.18	0.1212	47.27	0.0635
18.2	0.1219	47.28	0.0641
18.22	0.1217	47.3	0.0631
18.23	0.1213	47.32	0.0642
18.25	0.1223	47.33	0.0651
18.27	0.1224	47.35	0.064
18.28	0.1219	47.37	0.064
18.3	0.1208	47.38	0.064
18.32	0.1225	47.4	0.0632
18.33	0.1201	47.42	0.0648
18.35	0.1206	47.43	0.0648
18.37	0.121	47.45	0.063
18.38	0.1204	47.47	0.064
18.4	0.1216	47.48	0.0631
18.42	0.1208	47.5	0.0642
18.43	0.1196	47.52	0.0637
18.45	0.1211	47.53	0.0636
18.47	0.1205	47.55	0.0636
18.48	0.1203	47.57	0.0631
18.5	0.1197	47.58	0.0633
18.52	0.1187	47.6	0.0634
18.53	0.1187	47.62	0.0633
18.55	0.1193	47.63	0.0642
18.57	0.1199	47.65	0.0634
18.58	0.1191	47.67	0.0638
18.6	0.1176	47.68	0.0639
18.62	0.1188	47.7	0.0642
18.63	0.1175	47.72	0.0648
18.65	0.1187	47.73	0.0631
18.67	0.1175	47.75	0.0641
18.68	0.1171	47.77	0.0648
18.7	0.1169	47.78	0.0638
18.72	0.1179	47.8	0.0638
18.73	0.1185	47.82	0.0627
18.75	0.1174	47.83	0.0633
18.77	0.116	47.85	0.063
18.78	0.1179	47.87	0.0635
18.8	0.1176	47.88	0.063
18.82	0.118	47.9	0.0639
18.83	0.1164	47.92	0.0636
18.85	0.1166	47.93	0.0637
18.87	0.1168	47.95	0.0635
18.88	0.1164	47.97	0.0641
18.9	0.1172	47.98	0.0631
18.92	0.1163	48.	0.0633
18.93	0.1169	48.02	0.0633
18.95	0.116	48.03	0.0634
18.97	0.1159	48.05	0.0634
18.98	0.1166	48.07	0.0628
19.	0.1155	48.08	0.0639
19.02	0.1146	48.1	0.0636
19.03	0.1153	48.12	0.0626
19.05	0.1145	48.13	0.0631
19.07	0.1151	48.15	0.0631
19.08	0.1144	48.17	0.0627
19.1	0.1145	48.18	0.0629
19.12	0.115	48.2	0.0621
19.13	0.1127	48.22	0.063
19.15	0.1147	48.23	0.064
19.17	0.1142	48.25	0.0622
19.18	0.1141	48.27	0.0627

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
19.2	0.1144	48.28	0.0621
19.22	0.1139	48.3	0.0623
19.23	0.1144	48.32	0.0622
19.25	0.1137	48.33	0.0624
19.27	0.1136	48.35	0.0629
19.28	0.1132	48.37	0.0624
19.3	0.1128	48.38	0.064
19.32	0.1132	48.4	0.0631
19.33	0.1118	48.42	0.0636
19.35	0.1111	48.43	0.063
19.37	0.1111	48.45	0.0646
19.38	0.1124	48.47	0.0621
19.4	0.1119	48.48	0.063
19.42	0.1123	48.5	0.0635
19.43	0.111	48.52	0.0631
19.45	0.1127	48.53	0.0629
19.47	0.1121	48.55	0.062
19.48	0.11	48.57	0.0616
19.5	0.1089	48.58	0.0625
19.52	0.1102	48.6	0.0637
19.53	0.1118	48.62	0.062
19.55	0.111	48.63	0.0634
19.57	0.1114	48.65	0.0634
19.58	0.1099	48.67	0.0627
19.6	0.1109	48.68	0.0627
19.62	0.1122	48.7	0.0618
19.63	0.1124	48.72	0.0621
19.65	0.1117	48.73	0.0626
19.67	0.1119	48.75	0.0618
19.68	0.1122	48.77	0.062
19.7	0.1113	48.78	0.0619
19.72	0.1119	48.8	0.0612
19.73	0.1123	48.82	0.0609
19.75	0.1116	48.83	0.0631
19.77	0.1117	48.85	0.0604
19.78	0.1122	48.87	0.0627
19.8	0.112	48.88	0.0602
19.82	0.1101	48.9	0.0614
19.83	0.1096	48.92	0.0611
19.85	0.1091	48.93	0.06
19.87	0.11	48.95	0.062
19.88	0.1097	48.97	0.0621
19.9	0.1091	48.98	0.0611
19.92	0.1085	49.	0.0604
19.93	0.1087	49.02	0.0606
19.95	0.1096	49.03	0.0615
19.97	0.1084	49.05	0.062
19.98	0.1098	49.07	0.061
20.	0.11	49.08	0.0621
20.02	0.11	49.1	0.0616
20.03	0.109	49.12	0.0615
20.05	0.1087	49.13	0.0603
20.07	0.1083	49.15	0.0618
20.08	0.109	49.17	0.0622
20.1	0.1083	49.18	0.0608
20.12	0.1076	49.2	0.0611
20.13	0.1074	49.22	0.0594
20.15	0.108	49.23	0.0606
20.17	0.108	49.25	0.0625
20.18	0.1075	49.27	0.0595
20.2	0.1062	49.28	0.0608
20.22	0.1068	49.3	0.0612
20.23	0.1071	49.32	0.0612
20.25	0.108	49.33	0.0615
20.27	0.1084	49.35	0.0589
20.28	0.1085	49.37	0.0607

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
20.3	0.107	49.38	0.0604
20.32	0.1063	49.4	0.0603
20.33	0.1066	49.42	0.0594
20.35	0.1072	49.43	0.0598
20.37	0.1061	49.45	0.0606
20.38	0.107	49.47	0.0611
20.4	0.1062	49.48	0.061
20.42	0.1062	49.5	0.0581
20.43	0.107	49.52	0.06
20.45	0.1053	49.53	0.0605
20.47	0.1064	49.55	0.06
20.48	0.1055	49.57	0.0587
20.5	0.1047	49.58	0.0605
20.52	0.1038	49.6	0.0603
20.53	0.1048	49.62	0.0611
20.55	0.1045	49.63	0.0606
20.57	0.1046	49.65	0.0606
20.58	0.105	49.67	0.0613
20.6	0.104	49.68	0.0613
20.62	0.1039	49.7	0.0616
20.63	0.1044	49.72	0.061
20.65	0.1046	49.73	0.0616
20.67	0.1048	49.75	0.0621
20.68	0.1036	49.77	0.0625
20.7	0.1038	49.78	0.0628
20.72	0.1046	49.8	0.0619
20.73	0.1034	49.82	0.0612
20.75	0.1038	49.83	0.0621
20.77	0.1031	49.85	0.0611
20.78	0.1036	49.87	0.0601
20.8	0.1028	49.88	0.0615
20.82	0.103	49.9	0.0605
20.83	0.1014	49.92	0.0617
20.85	0.1031	49.93	0.0617
20.87	0.1019	49.95	0.0616
20.88	0.1014	49.97	0.0602
20.9	0.1001	49.98	0.0615
20.92	0.1024	50.	0.0604
20.93	0.1022	50.02	0.0585
20.95	0.1005	50.03	0.0609
20.97	0.1011	50.05	0.0599
20.98	0.1014	50.07	0.0611
21.	0.101	50.08	0.0603
21.02	0.1009	50.1	0.0614
21.03	0.1023	50.12	0.0596
21.05	0.1045	50.13	0.0606
21.07	0.1034	50.15	0.0599
21.08	0.1033	50.17	0.0613
21.1	0.1037	50.18	0.0614
21.12	0.1027	50.2	0.0597
21.13	0.1033	50.22	0.0592
21.15	0.0978	50.23	0.0599
21.17	0.0978	50.25	0.0592
21.18	0.1001	50.27	0.0596
21.2	0.0988	50.28	0.059
21.22	0.0985	50.3	0.0598
21.23	0.0994	50.32	0.0609
21.25	0.0983	50.33	0.0598
21.27	0.0984	50.35	0.0597
21.28	0.0977	50.37	0.0617
21.3	0.0987	50.38	0.0604
21.32	0.0991	50.4	0.0599
21.33	0.0978	50.42	0.06
21.35	0.0963	50.43	0.061
21.37	0.0973	50.45	0.0603
21.38	0.0968	50.47	0.059

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
21.4	0.0972	50.48	0.0597
21.42	0.0973	50.5	0.0599
21.43	0.0967	50.52	0.0586
21.45	0.0974	50.53	0.0598
21.47	0.0984	50.55	0.0579
21.48	0.0991	50.57	0.0592
21.5	0.0964	50.58	0.0578
21.52	0.097	50.6	0.0593
21.53	0.0961	50.62	0.0583
21.55	0.0974	50.63	0.0594
21.57	0.097	50.65	0.057
21.58	0.0963	50.67	0.0598
21.6	0.0964	50.68	0.0597
21.62	0.0989	50.7	0.0581
21.63	0.0978	50.72	0.0584
21.65	0.0981	50.73	0.0573
21.67	0.0978	50.75	0.0577
21.68	0.097	50.77	0.0592
21.7	0.0982	50.78	0.0584
21.72	0.098	50.8	0.0577
21.73	0.0975	50.82	0.0575
21.75	0.0974	50.83	0.0581
21.77	0.0976	50.85	0.0575
21.78	0.0971	50.87	0.0579
21.8	0.0967	50.88	0.0591
21.82	0.0973	50.9	0.0579
21.83	0.0965	50.92	0.0573
21.85	0.0969	50.93	0.0576
21.87	0.0954	50.95	0.0573
21.88	0.0967	50.97	0.057
21.9	0.0941	50.98	0.0579
21.92	0.0965	51.	0.0566
21.93	0.0954	51.02	0.0576
21.95	0.0954	51.03	0.0581
21.97	0.0954	51.05	0.0577
21.98	0.0951	51.07	0.0567
22.	0.0973	51.08	0.0568
22.02	0.0959	51.1	0.0563
22.03	0.0948	51.12	0.0571
22.05	0.0955	51.13	0.0572
22.07	0.0957	51.15	0.056
22.08	0.095	51.17	0.0568
22.1	0.0945	51.18	0.0566
22.12	0.0957	51.2	0.0575
22.13	0.0946	51.22	0.0564
22.15	0.0945	51.23	0.0556
22.17	0.0937	51.25	0.0566
22.18	0.0941	51.27	0.0578
22.2	0.0937	51.28	0.0573
22.22	0.0938	51.3	0.0564
22.23	0.0939	51.32	0.0558
22.25	0.0942	51.33	0.0559
22.27	0.0936	51.35	0.0557
22.28	0.0929	51.37	0.0559
22.3	0.0932	51.38	0.0572
22.32	0.0937	51.4	0.057
22.33	0.0935	51.42	0.0557
22.35	0.0944	51.43	0.0569
22.37	0.0925	51.45	0.0566
22.38	0.0939	51.47	0.0561
22.4	0.0926	51.48	0.056
22.42	0.0931	51.5	0.0558
22.43	0.093	51.52	0.0557
22.45	0.0931	51.53	0.0564
22.47	0.0924	51.55	0.0563
22.48	0.0926	51.57	0.0548

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
22.5	0.0924	51.58	0.0537
22.52	0.0926	51.6	0.0531
22.53	0.0928	51.62	0.0603
22.55	0.0927	51.63	0.0615
22.57	0.0917	51.65	0.0611
22.58	0.0908	51.67	0.0619
22.6	0.092	51.68	0.0619
22.62	0.0919	51.7	0.0615
22.63	0.0915	51.72	0.0621
22.65	0.0906	51.73	0.0607
22.67	0.0912	51.75	0.0605
22.68	0.0913	51.77	0.0613
22.7	0.0923	51.78	0.0605
22.72	0.0916	51.8	0.062
22.73	0.0912	51.82	0.0602
22.75	0.0904	51.83	0.0617
22.77	0.0905	51.85	0.0617
22.78	0.0897	51.87	0.0627
22.8	0.091	51.88	0.0616
22.82	0.0901	51.9	0.0608
22.83	0.0901	51.92	0.0614
22.85	0.0899	51.93	0.0614
22.87	0.0899	51.95	0.0619
22.88	0.0912	51.97	0.0608
22.9	0.0906	51.98	0.0618
22.92	0.0906	52.	0.0619
22.93	0.0909	52.02	0.0622
22.95	0.0896	52.03	0.063
22.97	0.0908	52.05	0.0618
22.98	0.0903	52.07	0.062
23.	0.0908	52.08	0.0606
23.02	0.0904	52.1	0.0614
23.03	0.0903	52.12	0.0621
23.05	0.0899	52.13	0.061
23.07	0.0901	52.15	0.0616
23.08	0.0899	52.17	0.0614
23.1	0.0904	52.18	0.0614
23.12	0.0902	52.2	0.0621
23.13	0.0911	52.22	0.0609
23.15	0.0903	52.23	0.0612
23.17	0.0897	52.25	0.0614
23.18	0.0891	52.27	0.0612
23.2	0.0892	52.28	0.0602
23.22	0.0884	52.3	0.0604
23.23	0.0881	52.32	0.0607
23.25	0.0892	52.33	0.0613
23.27	0.0884	52.35	0.0606
23.28	0.0889	52.37	0.0612
23.3	0.0894	52.38	0.06
23.32	0.0879	52.4	0.0608
23.33	0.0875	52.42	0.0593
23.35	0.0888	52.43	0.0597
23.37	0.0872	52.45	0.0616
23.38	0.0873	52.47	0.06
23.4	0.0885	52.48	0.0595
23.42	0.0894	52.5	0.0596
23.43	0.0888	52.52	0.0597
23.45	0.0876	52.53	0.0591
23.47	0.0877	52.55	0.06
23.48	0.0881	52.57	0.0591
23.5	0.0874	52.58	0.0592
23.52	0.0875	52.6	0.0585
23.53	0.088	52.62	0.0597
23.55	0.0867	52.63	0.0596
23.57	0.0871	52.65	0.0594
23.58	0.0869	52.67	0.0589

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
23.6	0.0873	52.68	0.0591
23.62	0.0895	52.7	0.0596
23.63	0.09	52.72	0.0599
23.65	0.0896	52.73	0.0591
23.67	0.0902	52.75	0.0595
23.68	0.0902	52.77	0.0591
23.7	0.0892	52.78	0.0598
23.72	0.0891	52.8	0.0597
23.73	0.0901	52.82	0.0585
23.75	0.0899	52.83	0.0589
23.77	0.0889	52.85	0.0591
23.78	0.0901	52.87	0.0597
23.8	0.0889	52.88	0.0577
23.82	0.0893	52.9	0.0589
23.83	0.0876	52.92	0.0603
23.85	0.0883	52.93	0.0579
23.87	0.0884	52.95	0.0582
23.88	0.0891	52.97	0.0571
23.9	0.088	52.98	0.0577
23.92	0.0878	53.	0.0576
23.93	0.0875	53.02	0.0587
23.95	0.0883	53.03	0.0576
23.97	0.0883	53.05	0.0573
23.98	0.088	53.07	0.0593
24.	0.0881	53.08	0.0576
24.02	0.0875	53.1	0.0578
24.03	0.0875	53.12	0.0586
24.05	0.0883	53.13	0.0588
24.07	0.0874	53.15	0.0572
24.08	0.087	53.17	0.0585
24.1	0.0878	53.18	0.0585
24.12	0.0862	53.2	0.0578
24.13	0.0875	53.22	0.057
24.15	0.0871	53.23	0.0581
24.17	0.0882	53.25	0.0584
24.18	0.0859	53.27	0.0559
24.2	0.0868	53.28	0.0573
24.22	0.0868	53.3	0.0557
24.23	0.0871	53.32	0.0561
24.25	0.0868	53.33	0.0566
24.27	0.0874	53.35	0.0569
24.28	0.0867	53.37	0.0565
24.3	0.0868	53.38	0.0576
24.32	0.0863	53.4	0.0564
24.33	0.0858	53.42	0.0564
24.35	0.086	53.43	0.0558
24.37	0.0867	53.45	0.0562
24.38	0.0867	53.47	0.0578
24.4	0.0855	53.48	0.057
24.42	0.0869	53.5	0.0583
24.43	0.086	53.52	0.0579
24.45	0.0853	53.53	0.0572
24.47	0.086	53.55	0.0593
24.48	0.0853	53.57	0.0557
24.5	0.0847	53.58	0.0585
24.52	0.0847	53.6	0.0565
24.53	0.0853	53.62	0.0645
24.55	0.085	53.63	0.0626
24.57	0.0855	53.65	0.0641
24.58	0.085	53.67	0.0629
24.6	0.0851	53.68	0.0628
24.62	0.0849	53.7	0.0626
24.63	0.0839	53.72	0.0642
24.65	0.083	53.73	0.0627
24.67	0.0836	53.75	0.0625
24.68	0.084	53.77	0.0626

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
24.7	0.0841	53.78	0.0604
24.72	0.0845	53.8	0.0612
24.73	0.0847	53.82	0.0631
24.75	0.0833	53.83	0.0618
24.77	0.0853	53.85	0.0622
24.78	0.0848	53.87	0.0611
24.8	0.0844	53.88	0.0629
24.82	0.084	53.9	0.0632
24.83	0.0833	53.92	0.0644
24.85	0.0838	53.93	0.0619
24.87	0.0844	53.95	0.0631
24.88	0.0837	53.97	0.0628
24.9	0.0832	53.98	0.0633
24.92	0.0841	54.	0.0627
24.93	0.0837	54.02	0.0626
24.95	0.0838	54.03	0.0644
24.97	0.0829	54.05	0.0629
24.98	0.0833	54.07	0.062
25.	0.0828	54.08	0.0633
25.02	0.0824	54.1	0.0642
25.03	0.083	54.12	0.0623
25.05	0.0817	54.13	0.0619
25.07	0.0821	54.15	0.0627
25.08	0.0826	54.17	0.0617
25.1	0.0831	54.18	0.0634
25.12	0.0823	54.2	0.0637
25.13	0.0814	54.22	0.0621
25.15	0.0826	54.23	0.0632
25.17	0.082	54.25	0.0627
25.18	0.0819	54.27	0.062
25.2	0.082	54.28	0.0642
25.22	0.0824	54.3	0.0628
25.23	0.0825	54.32	0.0624
25.25	0.0822	54.33	0.062
25.27	0.0824	54.35	0.062
25.28	0.083	54.37	0.0625
25.3	0.082	54.38	0.0632
25.32	0.0824	54.4	0.0629
25.33	0.0823	54.42	0.0622
25.35	0.0814	54.43	0.063
25.37	0.0815	54.45	0.0634
25.38	0.082	54.47	0.0633
25.4	0.0807	54.48	0.0606
25.42	0.0822	54.5	0.063
25.43	0.0815	54.52	0.0625
25.45	0.0802	54.53	0.0629
25.47	0.0807	54.55	0.0627
25.48	0.0802	54.57	0.0638
25.5	0.0806	54.58	0.064
25.52	0.0807	54.6	0.0628
25.53	0.0816	54.62	0.0634
25.55	0.0807	54.63	0.0636
25.57	0.0801	54.65	0.0624
25.58	0.0799	54.67	0.064
25.6	0.0799	54.68	0.0635
25.62	0.0823	54.7	0.0634
25.63	0.0827	54.72	0.0627
25.65	0.0833	54.73	0.063
25.67	0.0819	54.75	0.0636
25.68	0.0824	54.77	0.0623
25.7	0.0814	54.78	0.0625
25.72	0.0803	54.8	0.063
25.73	0.081	54.82	0.0638
25.75	0.0806	54.83	0.0619
25.77	0.082	54.85	0.0619
25.78	0.0805	54.87	0.0617

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
25.8	0.0801	54.88	0.062
25.82	0.0814	54.9	0.0626
25.83	0.0807	54.92	0.0629
25.85	0.0817	54.93	0.0633
25.87	0.0814	54.95	0.0621
25.88	0.0833	54.97	0.0633
25.9	0.0836	54.98	0.0622
25.92	0.0824	55.	0.0626
25.93	0.0833	55.02	0.0625
25.95	0.083	55.03	0.0621
25.97	0.0827	55.05	0.0628
25.98	0.0835	55.07	0.0613
26.	0.0825	55.08	0.0627
26.02	0.0825	55.1	0.0626
26.03	0.083	55.12	0.0626
26.05	0.0831	55.13	0.0627
26.07	0.0825	55.15	0.063
26.08	0.0802	55.17	0.0623
26.1	0.0806	55.18	0.0623
26.12	0.0801	55.2	0.0628
26.13	0.0792	55.22	0.0621
26.15	0.0789	55.23	0.063
26.17	0.0801	55.25	0.0624
26.18	0.0789	55.27	0.0616
26.2	0.0789	55.28	0.0611
26.22	0.0782	55.3	0.0633
26.23	0.0785	55.32	0.0615
26.25	0.0789	55.33	0.062
26.27	0.0786	55.35	0.0626
26.28	0.0811	55.37	0.0632
26.3	0.0813	55.38	0.0618
26.32	0.0806	55.4	0.0625
26.33	0.0817	55.42	0.0617
26.35	0.082	55.43	0.0629
26.37	0.0769	55.45	0.0627
26.38	0.0782	55.47	0.0625
26.4	0.0781	55.48	0.0623
26.42	0.0767	55.5	0.0619
26.43	0.0791	55.52	0.0622
26.45	0.0769	55.53	0.062
26.47	0.0756	55.55	0.0625
26.48	0.0775	55.57	0.063
26.5	0.0748	55.58	0.063
26.52	0.0769	55.6	0.0625
26.53	0.0765	55.62	0.0618
26.55	0.0755	55.63	0.0623
26.57	0.0762	55.65	0.0634
26.58	0.0768	55.67	0.0613
26.6	0.0762	55.68	0.0627
26.62	0.0765	55.7	0.062
26.63	0.0757	55.72	0.0623
26.65	0.0766	55.73	0.0627
26.67	0.0756	55.75	0.0623
26.68	0.0769	55.77	0.0626
26.7	0.0761	55.78	0.0625
26.72	0.0758	55.8	0.0631
26.73	0.0762	55.82	0.0634
26.75	0.0767	55.83	0.0616
26.77	0.0762	55.85	0.062
26.78	0.0762	55.87	0.0621
26.8	0.0756	55.88	0.0628
26.82	0.0756	55.9	0.0623
26.83	0.0769	55.92	0.062
26.85	0.0761	55.93	0.0617
26.87	0.0749	55.95	0.0616
26.88	0.0761	55.97	0.0617

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
26.9	0.0763	55.98	0.0619
26.92	0.0768	56.	0.0614
26.93	0.0775	56.02	0.0624
26.95	0.0769	56.03	0.0598
26.97	0.0744	56.05	0.0612
26.98	0.077	56.07	0.0603
27.	0.0757	56.08	0.062
27.02	0.0762	56.1	0.0615
27.03	0.0773	56.12	0.0619
27.05	0.0768	56.13	0.0596
27.07	0.0767	56.15	0.0606
27.08	0.0761	56.17	0.0611
27.1	0.0743	56.18	0.0615
27.12	0.0761	56.2	0.0612
27.13	0.0743	56.22	0.0607
27.15	0.0738	56.23	0.0608
27.17	0.0757	56.25	0.0616
27.18	0.0751	56.27	0.0613
27.2	0.0755	56.28	0.0608
27.22	0.0743	56.3	0.0599
27.23	0.0742	56.32	0.0618
27.25	0.0755	56.33	0.0619
27.27	0.0758	56.35	0.0611
27.28	0.0753	56.37	0.0625
27.3	0.0752	56.38	0.0612
27.32	0.0758	56.4	0.0623
27.33	0.0751	56.42	0.0606
27.35	0.075	56.43	0.0621
27.37	0.0755	56.45	0.0614
27.38	0.0755	56.47	0.0613
27.4	0.0753	56.48	0.0619
27.42	0.0749	56.5	0.063
27.43	0.0739	56.52	0.0603
27.45	0.0752	56.53	0.0613
27.47	0.0751	56.55	0.0626
27.48	0.0754	56.57	0.0615
27.5	0.0747	56.58	0.0619
27.52	0.076	56.6	0.0621
27.53	0.0744	56.62	0.0614
27.55	0.0739	56.63	0.062
27.57	0.0737	56.65	0.0616
27.58	0.075	56.67	0.0619
27.6	0.0746	56.68	0.0619
27.62	0.0796	56.7	0.062
27.63	0.079	56.72	0.0628
27.65	0.0792	56.73	0.0622
27.67	0.0796	56.75	0.0612
27.68	0.0778	56.77	0.0623
27.7	0.079	56.78	0.0628
27.72	0.0791	56.8	0.0618
27.73	0.0786	56.82	0.0622
27.75	0.0798	56.83	0.0626
27.77	0.0794	56.85	0.0613
27.78	0.0791	56.87	0.0614
27.8	0.0785	56.88	0.0616
27.82	0.0793	56.9	0.0619
27.83	0.0792	56.92	0.0606
27.85	0.0796	56.93	0.0627
27.87	0.0775	56.95	0.0604
27.88	0.0784	56.97	0.0621
27.9	0.0781	56.98	0.0614
27.92	0.0788	57.	0.0612
27.93	0.0775	57.02	0.061
27.95	0.0773	57.03	0.0619
27.97	0.0786	57.05	0.0612
27.98	0.0771	57.07	0.0626

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
28.	0.077	57.08	0.0603
28.02	0.0767	57.1	0.0617
28.03	0.0763	57.12	0.0606
28.05	0.0772	57.13	0.0614
28.07	0.0775	57.15	0.0624
28.08	0.0764	57.17	0.0612
28.1	0.0767	57.18	0.0603
28.12	0.077	57.2	0.0611
28.13	0.0772	57.22	0.0613
28.15	0.0771	57.23	0.0615
28.17	0.0773	57.25	0.061
28.18	0.0758	57.27	0.0607
28.2	0.0756	57.28	0.0599
28.22	0.077	57.3	0.0606
28.23	0.0764	57.32	0.0611
28.25	0.0753	57.33	0.061
28.27	0.0757	57.35	0.0596
28.28	0.0762	57.37	0.0605
28.3	0.0752	57.38	0.0603
28.32	0.0758	57.4	0.062
28.33	0.0747	57.42	0.0612
28.35	0.0767	57.43	0.0602
28.37	0.0753	57.45	0.0597
28.38	0.0758	57.47	0.061
28.4	0.0758	57.48	0.0606
28.42	0.0756	57.5	0.0595
28.43	0.0761	57.52	0.0612
28.45	0.0757	57.53	0.0604
28.47	0.0751	57.55	0.0611
28.48	0.0751	57.57	0.0603
28.5	0.0749	57.58	0.0607
28.52	0.0748	57.6	0.0604
28.53	0.074	57.62	0.0609
28.55	0.0751	57.63	0.0615
28.57	0.0748	57.65	0.0611
28.58	0.0739	57.67	0.0626
28.6	0.0743	57.68	0.0618
28.62	0.0737	57.7	0.0623
28.63	0.074	57.72	0.0619
28.65	0.0742	57.73	0.0632
28.67	0.0739	57.75	0.0622
28.68	0.0739	57.77	0.0626
28.7	0.0726	57.78	0.062
28.72	0.0744	57.8	0.0624
28.73	0.0734	57.82	0.0624
28.75	0.0743	57.83	0.0614
28.77	0.0738	57.85	0.062
28.78	0.0744	57.87	0.0628
28.8	0.0727	57.88	0.0623
28.82	0.0723	57.9	0.0623
28.83	0.0731	57.92	0.0619
28.85	0.0724	57.93	0.0613
28.87	0.072	57.95	0.0618
28.88	0.0721	57.97	0.0613
28.9	0.0715	57.98	0.0616
28.92	0.0735	58.	0.0635
28.93	0.0722	58.02	0.061
28.95	0.0726	58.03	0.0626
28.97	0.0724	58.05	0.0627
28.98	0.0725	58.07	0.0604
29.	0.0721	58.08	0.0608
29.02	0.0726	58.1	0.0612
29.03	0.0724	58.12	0.0609
29.05	0.0729	58.13	0.0622
29.07	0.0717	58.15	0.0615

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.757

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0007099	cm/sec
y0	0.5882	ft

T = K*b = 0.05409 cm²/sec

Data Set: C:\Users\ccarter\Golder Associates\19134560,Alcoa Copano APAR and SLERA - Project Files\5 Technic

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 3
Test Date: 12/19/2019
Test Well: MW3-4

AQUIFER DATA

Saturated Thickness: 2.5 ft
Anisotropy Ratio (Kz/Kr): 0.1

SLUG TEST WELL DATA

Test Well: MW3-4

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.8 ft
Static Water Column Height: 8.78 ft
Casing Radius: 0.167 ft
Well Radius: 0.167 ft
Well Skin Radius: 0.6875 ft
Screen Length: 2.5 ft
Total Well Penetration Depth: 11. ft
Corrected Casing Radius (Bouwer-Rice Method): 0.167 ft
Gravel Pack Porosity: 0.3

No. of Observations: 2998

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	0.	24.98	0.0975
0.0167	0.1697	25.	0.0974
0.0333	0.1049	25.02	0.0976
0.05	0.6505	25.03	0.0979
0.0667	0.7893	25.05	0.0998
0.0833	0.7727	25.07	0.0972
0.1	0.7756	25.08	0.0978
0.1167	0.7702	25.1	0.0987
0.1333	0.7685	25.12	0.0983
0.15	0.7692	25.13	0.0983
0.1667	0.767	25.15	0.0976
0.1833	0.762	25.17	0.097
0.2	0.7635	25.18	0.0979
0.2167	0.7593	25.2	0.0976
0.2333	0.7576	25.22	0.0976
0.25	0.7237	25.23	0.0976
0.2667	0.7492	25.25	0.0972
0.2833	0.748	25.27	0.0977
0.3	0.7474	25.28	0.0976
0.3167	0.7468	25.3	0.0975
0.3333	0.7466	25.32	0.0987
0.35	0.7432	25.33	0.0994
0.3667	0.7416	25.35	0.0969
0.3833	0.7408	25.37	0.0984
0.4	0.7376	25.38	0.0991
0.4167	0.7369	25.4	0.0974
0.4333	0.734	25.42	0.0923
0.45	0.7333	25.43	0.0919
0.4667	0.7314	25.45	0.0932
0.4833	0.7217	25.47	0.0926

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.5	0.7253	25.48	0.093
0.5167	0.7236	25.5	0.0923
0.5333	0.7216	25.52	0.0933
0.55	0.7167	25.53	0.0923
0.5667	0.7141	25.55	0.0921
0.5833	0.7169	25.57	0.0921
0.6	0.7147	25.58	0.0925
0.6167	0.7134	25.6	0.0916
0.6333	0.712	25.62	0.0922
0.65	0.7096	25.63	0.0928
0.6667	0.7086	25.65	0.093
0.6833	0.708	25.67	0.0929
0.7	0.7058	25.68	0.0919
0.7167	0.7051	25.7	0.0927
0.7333	0.7002	25.72	0.0926
0.75	0.6998	25.73	0.0921
0.7667	0.6977	25.75	0.0923
0.7833	0.6911	25.77	0.0931
0.8	0.6908	25.78	0.0923
0.8167	0.6877	25.8	0.0936
0.8333	0.6915	25.82	0.094
0.85	0.6906	25.83	0.093
0.8667	0.6871	25.85	0.0924
0.8833	0.6852	25.87	0.0928
0.9	0.686	25.88	0.0932
0.9167	0.6835	25.9	0.0924
0.9333	0.6823	25.92	0.0919
0.95	0.6792	25.93	0.0929
0.9667	0.6781	25.95	0.0935
0.9833	0.676	25.97	0.0926
1.	0.6752	25.98	0.0922
1.017	0.6679	26.	0.0936
1.033	0.6683	26.02	0.0927
1.05	0.6697	26.03	0.0931
1.067	0.6675	26.05	0.0935
1.083	0.6662	26.07	0.0923
1.1	0.6654	26.08	0.0921
1.117	0.663	26.1	0.0933
1.133	0.661	26.12	0.0929
1.15	0.6583	26.13	0.0928
1.167	0.6581	26.15	0.0934
1.183	0.6569	26.17	0.0935
1.2	0.6549	26.18	0.0929
1.217	0.6538	26.2	0.0936
1.233	0.6513	26.22	0.0934
1.25	0.6494	26.23	0.0929
1.267	0.6461	26.25	0.0922
1.283	0.6457	26.27	0.0932
1.3	0.641	26.28	0.0926
1.317	0.6415	26.3	0.0928
1.333	0.642	26.32	0.0928
1.35	0.6405	26.33	0.0934
1.367	0.6393	26.35	0.0928
1.383	0.6369	26.37	0.0924
1.4	0.636	26.38	0.0926
1.417	0.6332	26.4	0.0932
1.433	0.631	26.42	0.0942
1.45	0.6301	26.43	0.0936
1.467	0.6278	26.45	0.0937
1.483	0.6271	26.47	0.0922
1.5	0.6257	26.48	0.0935
1.517	0.6218	26.5	0.0931
1.533	0.6201	26.52	0.092
1.55	0.6189	26.53	0.0923
1.567	0.6185	26.55	0.0922
1.583	0.6174	26.57	0.0929

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.6	0.6164	26.58	0.092
1.617	0.6141	26.6	0.0937
1.633	0.6128	26.62	0.0921
1.65	0.6114	26.63	0.0925
1.667	0.6093	26.65	0.0933
1.683	0.6072	26.67	0.0929
1.7	0.6061	26.68	0.0932
1.717	0.605	26.7	0.0934
1.733	0.603	26.72	0.0939
1.75	0.6018	26.73	0.0922
1.767	0.6014	26.75	0.0932
1.783	0.5983	26.77	0.0929
1.8	0.5982	26.78	0.0923
1.817	0.5968	26.8	0.0931
1.833	0.5942	26.82	0.093
1.85	0.5942	26.83	0.0928
1.867	0.5935	26.85	0.0944
1.883	0.5913	26.87	0.0929
1.9	0.5905	26.88	0.0927
1.917	0.5886	26.9	0.0928
1.933	0.5858	26.92	0.0937
1.95	0.5853	26.93	0.0939
1.967	0.5842	26.95	0.0929
1.983	0.5819	26.97	0.0934
2.	0.5824	26.98	0.0932
2.017	0.58	27.	0.0933
2.033	0.5782	27.02	0.0934
2.05	0.5778	27.03	0.0935
2.067	0.5765	27.05	0.0946
2.083	0.5756	27.07	0.0936
2.1	0.5723	27.08	0.0934
2.117	0.5717	27.1	0.0944
2.133	0.5709	27.12	0.0936
2.15	0.5704	27.13	0.0945
2.167	0.5678	27.15	0.0931
2.183	0.5684	27.17	0.0937
2.2	0.567	27.18	0.093
2.217	0.5637	27.2	0.0941
2.233	0.563	27.22	0.0927
2.25	0.5622	27.23	0.093
2.267	0.5609	27.25	0.0934
2.283	0.5604	27.27	0.0927
2.3	0.5577	27.28	0.0934
2.317	0.556	27.3	0.0939
2.333	0.5545	27.32	0.0952
2.35	0.5538	27.33	0.0941
2.367	0.5536	27.35	0.0942
2.383	0.551	27.37	0.0948
2.4	0.5517	27.38	0.0935
2.417	0.5486	27.4	0.0924
2.433	0.5476	27.42	0.088
2.45	0.5469	27.43	0.0883
2.467	0.5452	27.45	0.0851
2.483	0.544	27.47	0.0867
2.5	0.5423	27.48	0.0873
2.517	0.5415	27.5	0.0869
2.533	0.5399	27.52	0.0875
2.55	0.538	27.53	0.0884
2.567	0.5374	27.55	0.0874
2.583	0.5388	27.57	0.0868
2.6	0.536	27.58	0.0874
2.617	0.5345	27.6	0.0866
2.633	0.5341	27.62	0.0865
2.65	0.5315	27.63	0.0868
2.667	0.5319	27.65	0.0863
2.683	0.531	27.67	0.0874

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2.7	0.5286	27.68	0.086
2.717	0.5272	27.7	0.086
2.733	0.5264	27.72	0.0855
2.75	0.5245	27.73	0.0861
2.767	0.5245	27.75	0.0858
2.783	0.5233	27.77	0.0854
2.8	0.5217	27.78	0.0878
2.817	0.5182	27.8	0.0867
2.833	0.5199	27.82	0.086
2.85	0.5188	27.83	0.0867
2.867	0.5175	27.85	0.0877
2.883	0.516	27.87	0.0867
2.9	0.5143	27.88	0.0871
2.917	0.5161	27.9	0.0884
2.933	0.5136	27.92	0.0868
2.95	0.5134	27.93	0.0872
2.967	0.5103	27.95	0.0873
2.983	0.5089	27.97	0.0862
3.	0.5085	27.98	0.0857
3.017	0.5084	28.	0.0871
3.033	0.5067	28.02	0.0867
3.05	0.5061	28.03	0.0874
3.067	0.5061	28.05	0.0862
3.083	0.5046	28.07	0.0866
3.1	0.5027	28.08	0.0854
3.117	0.5005	28.1	0.0874
3.133	0.5001	28.12	0.0855
3.15	0.5002	28.13	0.0865
3.167	0.498	28.15	0.0862
3.183	0.4971	28.17	0.0864
3.2	0.4968	28.18	0.0877
3.217	0.4945	28.2	0.0871
3.233	0.4934	28.22	0.0863
3.25	0.493	28.23	0.0864
3.267	0.4913	28.25	0.0858
3.283	0.4893	28.27	0.0867
3.3	0.4904	28.28	0.0862
3.317	0.4876	28.3	0.0859
3.333	0.4876	28.32	0.0873
3.35	0.4851	28.33	0.0864
3.367	0.4859	28.35	0.0863
3.383	0.4842	28.37	0.0865
3.4	0.4826	28.38	0.086
3.417	0.4833	28.4	0.0875
3.433	0.482	28.42	0.0877
3.45	0.4826	28.43	0.0865
3.467	0.4837	28.45	0.0872
3.483	0.4838	28.47	0.087
3.5	0.4813	28.48	0.0865
3.517	0.481	28.5	0.0849
3.533	0.4794	28.52	0.0874
3.55	0.479	28.53	0.0882
3.567	0.4778	28.55	0.0864
3.583	0.4769	28.57	0.0853
3.6	0.4753	28.58	0.0863
3.617	0.4752	28.6	0.0863
3.633	0.4723	28.62	0.0861
3.65	0.4688	28.63	0.0853
3.667	0.4688	28.65	0.0863
3.683	0.4698	28.67	0.0877
3.7	0.4684	28.68	0.0857
3.717	0.4688	28.7	0.0863
3.733	0.467	28.72	0.0861
3.75	0.4651	28.73	0.0854
3.767	0.4641	28.75	0.0859
3.783	0.4643	28.77	0.0857

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
3.8	0.4636	28.78	0.0842
3.817	0.4615	28.8	0.0855
3.833	0.4602	28.82	0.0843
3.85	0.4596	28.83	0.086
3.867	0.4591	28.85	0.0858
3.883	0.4574	28.87	0.0859
3.9	0.455	28.88	0.0872
3.917	0.4551	28.9	0.0857
3.933	0.4528	28.92	0.0853
3.95	0.4532	28.93	0.0853
3.967	0.4528	28.95	0.0858
3.983	0.4505	28.97	0.085
4.	0.4501	28.98	0.0853
4.017	0.4486	29.	0.0841
4.033	0.4497	29.02	0.0861
4.05	0.4466	29.03	0.086
4.067	0.4471	29.05	0.085
4.083	0.4458	29.07	0.0842
4.1	0.4437	29.08	0.0852
4.117	0.444	29.1	0.0847
4.133	0.4432	29.12	0.0846
4.15	0.441	29.13	0.0844
4.167	0.4409	29.15	0.0843
4.183	0.4405	29.17	0.0857
4.2	0.4411	29.18	0.0847
4.217	0.4392	29.2	0.0858
4.233	0.4402	29.22	0.0853
4.25	0.4394	29.23	0.0857
4.267	0.4372	29.25	0.0858
4.283	0.4356	29.27	0.0849
4.3	0.4358	29.28	0.0842
4.317	0.4343	29.3	0.0849
4.333	0.4351	29.32	0.0855
4.35	0.4334	29.33	0.0858
4.367	0.4311	29.35	0.0858
4.383	0.4299	29.37	0.0847
4.4	0.4308	29.38	0.0855
4.417	0.4293	29.4	0.0848
4.433	0.4282	29.42	0.0828
4.45	0.4306	29.43	0.0847
4.467	0.4256	29.45	0.0843
4.483	0.4255	29.47	0.0836
4.5	0.4241	29.48	0.0836
4.517	0.4242	29.5	0.0835
4.533	0.4261	29.52	0.0827
4.55	0.4247	29.53	0.084
4.567	0.4236	29.55	0.0832
4.583	0.4251	29.57	0.0835
4.6	0.4235	29.58	0.0837
4.617	0.4216	29.6	0.0838
4.633	0.4224	29.62	0.0838
4.65	0.4205	29.63	0.0839
4.667	0.4195	29.65	0.0832
4.683	0.419	29.67	0.0829
4.7	0.4188	29.68	0.0842
4.717	0.4175	29.7	0.0845
4.733	0.4179	29.72	0.0845
4.75	0.4154	29.73	0.0839
4.767	0.4128	29.75	0.0838
4.783	0.4133	29.77	0.0831
4.8	0.4114	29.78	0.0836
4.817	0.41	29.8	0.0836
4.833	0.4103	29.82	0.0829
4.85	0.4077	29.83	0.0845
4.867	0.4076	29.85	0.0841
4.883	0.4069	29.87	0.0835

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
4.9	0.408	29.88	0.0849
4.917	0.4067	29.9	0.0843
4.933	0.406	29.92	0.0832
4.95	0.4055	29.93	0.0848
4.967	0.4044	29.95	0.0842
4.983	0.4035	29.97	0.083
5.	0.4031	29.98	0.0839
5.017	0.4025	30.	0.0837
5.033	0.4015	30.02	0.084
5.05	0.4005	30.03	0.085
5.067	0.404	30.05	0.0843
5.083	0.4022	30.07	0.0847
5.1	0.3991	30.08	0.0841
5.117	0.3986	30.1	0.0826
5.133	0.3981	30.12	0.0835
5.15	0.3965	30.13	0.0844
5.167	0.3958	30.15	0.084
5.183	0.3947	30.17	0.0844
5.2	0.3961	30.18	0.0844
5.217	0.3958	30.2	0.0844
5.233	0.3947	30.22	0.0852
5.25	0.3933	30.23	0.0839
5.267	0.3934	30.25	0.0849
5.283	0.3935	30.27	0.0838
5.3	0.3924	30.28	0.0833
5.317	0.3931	30.3	0.0844
5.333	0.3903	30.32	0.084
5.35	0.3909	30.33	0.0828
5.367	0.391	30.35	0.0837
5.383	0.3902	30.37	0.0842
5.4	0.3883	30.38	0.0851
5.417	0.3872	30.4	0.0832
5.433	0.3852	30.42	0.0839
5.45	0.3848	30.43	0.0845
5.467	0.3834	30.45	0.0833
5.483	0.3835	30.47	0.0838
5.5	0.381	30.48	0.0843
5.517	0.3813	30.5	0.0844
5.533	0.3812	30.52	0.0845
5.55	0.3799	30.53	0.0836
5.567	0.3799	30.55	0.084
5.583	0.379	30.57	0.0836
5.6	0.3791	30.58	0.0844
5.617	0.3784	30.6	0.0836
5.633	0.3772	30.62	0.0843
5.65	0.3766	30.63	0.0845
5.667	0.3765	30.65	0.0846
5.683	0.3745	30.67	0.0841
5.7	0.3737	30.68	0.0852
5.717	0.3738	30.7	0.0839
5.733	0.3735	30.72	0.084
5.75	0.3712	30.73	0.085
5.767	0.372	30.75	0.0845
5.783	0.3709	30.77	0.0849
5.8	0.371	30.78	0.0843
5.817	0.3705	30.8	0.0848
5.833	0.3692	30.82	0.0838
5.85	0.3681	30.83	0.0848
5.867	0.3682	30.85	0.0844
5.883	0.3676	30.87	0.0841
5.9	0.3659	30.88	0.0837
5.917	0.3654	30.9	0.0842
5.933	0.3655	30.92	0.0848
5.95	0.3649	30.93	0.0859
5.967	0.366	30.95	0.0859
5.983	0.3636	30.97	0.0851

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
6.	0.3622	30.98	0.085
6.017	0.3622	31.	0.0846
6.033	0.3627	31.02	0.085
6.05	0.3609	31.03	0.0852
6.067	0.3594	31.05	0.0844
6.083	0.3595	31.07	0.0864
6.1	0.3581	31.08	0.0859
6.117	0.3581	31.1	0.0851
6.133	0.3578	31.12	0.0848
6.15	0.3585	31.13	0.0857
6.167	0.357	31.15	0.0858
6.183	0.3581	31.17	0.0864
6.2	0.3571	31.18	0.086
6.217	0.3576	31.2	0.0844
6.233	0.3573	31.22	0.0853
6.25	0.3557	31.23	0.0847
6.267	0.3543	31.25	0.0848
6.283	0.3549	31.27	0.0853
6.3	0.3543	31.28	0.0849
6.317	0.3539	31.3	0.0852
6.333	0.3536	31.32	0.0846
6.35	0.3519	31.33	0.0861
6.367	0.3504	31.35	0.0858
6.383	0.3515	31.37	0.085
6.4	0.3519	31.38	0.0864
6.417	0.35	31.4	0.0842
6.433	0.3503	31.42	0.0771
6.45	0.3496	31.43	0.0779
6.467	0.3487	31.45	0.0776
6.483	0.3479	31.47	0.0775
6.5	0.347	31.48	0.0776
6.517	0.3476	31.5	0.0778
6.533	0.3464	31.52	0.0771
6.55	0.346	31.53	0.0777
6.567	0.3453	31.55	0.0775
6.583	0.3455	31.57	0.0766
6.6	0.3434	31.58	0.0757
6.617	0.3435	31.6	0.0756
6.633	0.343	31.62	0.0763
6.65	0.3419	31.63	0.077
6.667	0.3422	31.65	0.0772
6.683	0.3414	31.67	0.0756
6.7	0.3408	31.68	0.0775
6.717	0.3399	31.7	0.0761
6.733	0.339	31.72	0.0758
6.75	0.3381	31.73	0.0779
6.767	0.3377	31.75	0.0775
6.783	0.3375	31.77	0.0758
6.8	0.3367	31.78	0.0785
6.817	0.3374	31.8	0.0775
6.833	0.336	31.82	0.0769
6.85	0.3351	31.83	0.0763
6.867	0.3347	31.85	0.0753
6.883	0.3333	31.87	0.0773
6.9	0.3335	31.88	0.0771
6.917	0.3325	31.9	0.0784
6.933	0.3337	31.92	0.0771
6.95	0.3325	31.93	0.0754
6.967	0.3311	31.95	0.0772
6.983	0.3308	31.97	0.0768
7.	0.33	31.98	0.0775
7.017	0.3298	32.	0.0768
7.033	0.3291	32.02	0.0766
7.05	0.3312	32.03	0.0755
7.067	0.3276	32.05	0.0758
7.083	0.3272	32.07	0.0757

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
7.1	0.3262	32.08	0.0758
7.117	0.3253	32.1	0.0757
7.133	0.326	32.12	0.0766
7.15	0.3273	32.13	0.0756
7.167	0.3274	32.15	0.0759
7.183	0.3268	32.17	0.0751
7.2	0.3247	32.18	0.0763
7.217	0.3247	32.2	0.0764
7.233	0.3243	32.22	0.0758
7.25	0.3244	32.23	0.0756
7.267	0.324	32.25	0.0761
7.283	0.323	32.27	0.0762
7.3	0.3227	32.28	0.0749
7.317	0.3217	32.3	0.0745
7.333	0.3225	32.32	0.0749
7.35	0.3221	32.33	0.0756
7.367	0.3215	32.35	0.0766
7.383	0.3204	32.37	0.0761
7.4	0.3201	32.38	0.0754
7.417	0.3137	32.4	0.0758
7.433	0.3133	32.42	0.0755
7.45	0.3123	32.43	0.0757
7.467	0.3115	32.45	0.0767
7.483	0.3117	32.47	0.0745
7.5	0.3114	32.48	0.0753
7.517	0.3119	32.5	0.0754
7.533	0.3102	32.52	0.0754
7.55	0.3105	32.53	0.0752
7.567	0.3105	32.55	0.0761
7.583	0.3085	32.57	0.0758
7.6	0.3083	32.58	0.0749
7.617	0.3076	32.6	0.0757
7.633	0.3078	32.62	0.0753
7.65	0.3058	32.63	0.0754
7.667	0.3061	32.65	0.0759
7.683	0.3055	32.67	0.076
7.7	0.3053	32.68	0.0752
7.717	0.3046	32.7	0.0751
7.733	0.3039	32.72	0.0762
7.75	0.3034	32.73	0.0759
7.767	0.3028	32.75	0.0757
7.783	0.3025	32.77	0.0747
7.8	0.3012	32.78	0.0753
7.817	0.3012	32.8	0.0755
7.833	0.3005	32.82	0.0752
7.85	0.3002	32.83	0.0745
7.867	0.3005	32.85	0.0751
7.883	0.2992	32.87	0.0746
7.9	0.2992	32.88	0.0746
7.917	0.2982	32.9	0.075
7.933	0.2986	32.92	0.0745
7.95	0.2975	32.93	0.0753
7.967	0.2987	32.95	0.0744
7.983	0.2972	32.97	0.0751
8.	0.2963	32.98	0.0766
8.017	0.2959	33.	0.0759
8.033	0.2939	33.02	0.0747
8.05	0.2939	33.03	0.0773
8.067	0.2958	33.05	0.0755
8.083	0.2952	33.07	0.076
8.1	0.2942	33.08	0.0753
8.117	0.2931	33.1	0.0752
8.133	0.2936	33.12	0.0746
8.15	0.2928	33.13	0.0747
8.167	0.2935	33.15	0.0759
8.183	0.2923	33.17	0.0747

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
8.2	0.2923	33.18	0.0752
8.217	0.2912	33.2	0.0747
8.233	0.2912	33.22	0.0739
8.25	0.2905	33.23	0.0751
8.267	0.2895	33.25	0.0753
8.283	0.2893	33.27	0.0738
8.3	0.2869	33.28	0.0761
8.317	0.2896	33.3	0.0749
8.333	0.2882	33.32	0.0751
8.35	0.2907	33.33	0.0754
8.367	0.2895	33.35	0.0736
8.383	0.2894	33.37	0.0742
8.4	0.2884	33.38	0.0753
8.417	0.2881	33.4	0.0746
8.433	0.2876	33.42	0.0763
8.45	0.288	33.43	0.0761
8.467	0.2874	33.45	0.0757
8.483	0.2876	33.47	0.0765
8.5	0.2875	33.48	0.0765
8.517	0.286	33.5	0.076
8.533	0.2847	33.52	0.0757
8.55	0.2853	33.53	0.0744
8.567	0.286	33.55	0.0769
8.583	0.2851	33.57	0.0756
8.6	0.2846	33.58	0.0764
8.617	0.285	33.6	0.076
8.633	0.284	33.62	0.0768
8.65	0.2838	33.63	0.0753
8.667	0.2822	33.65	0.0766
8.683	0.2831	33.67	0.0766
8.7	0.2819	33.68	0.0753
8.717	0.2819	33.7	0.0757
8.733	0.2808	33.72	0.0751
8.75	0.2816	33.73	0.0757
8.767	0.28	33.75	0.0764
8.783	0.2794	33.77	0.0754
8.8	0.2795	33.78	0.0761
8.817	0.2794	33.8	0.0765
8.833	0.2789	33.82	0.0764
8.85	0.2774	33.83	0.0763
8.867	0.2779	33.85	0.0758
8.883	0.278	33.87	0.0754
8.9	0.2757	33.88	0.0759
8.917	0.2776	33.9	0.0752
8.933	0.2785	33.92	0.0758
8.95	0.2767	33.93	0.0761
8.967	0.2758	33.95	0.0751
8.983	0.2755	33.97	0.0766
9.	0.276	33.98	0.0754
9.017	0.2754	34.	0.0769
9.033	0.2741	34.02	0.0768
9.05	0.2737	34.03	0.0756
9.067	0.274	34.05	0.0762
9.083	0.2733	34.07	0.0761
9.1	0.2726	34.08	0.075
9.117	0.2714	34.1	0.0745
9.133	0.2727	34.12	0.0762
9.15	0.2719	34.13	0.0769
9.167	0.2713	34.15	0.076
9.183	0.2711	34.17	0.075
9.2	0.2706	34.18	0.076
9.217	0.2697	34.2	0.0759
9.233	0.2701	34.22	0.0755
9.25	0.2693	34.23	0.0755
9.267	0.269	34.25	0.0752
9.283	0.2687	34.27	0.0757

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
9.3	0.2682	34.28	0.0748
9.317	0.2675	34.3	0.0757
9.333	0.268	34.32	0.0751
9.35	0.2667	34.33	0.0755
9.367	0.267	34.35	0.0758
9.383	0.2659	34.37	0.0746
9.4	0.2654	34.38	0.0766
9.417	0.2629	34.4	0.077
9.433	0.2603	34.42	0.0747
9.45	0.2577	34.43	0.0758
9.467	0.2595	34.45	0.0742
9.483	0.257	34.47	0.0761
9.5	0.2569	34.48	0.0759
9.517	0.2572	34.5	0.0755
9.533	0.2557	34.52	0.076
9.55	0.256	34.53	0.0752
9.567	0.2543	34.55	0.0754
9.583	0.2538	34.57	0.0758
9.6	0.2558	34.58	0.0757
9.617	0.2534	34.6	0.0757
9.633	0.2533	34.62	0.0764
9.65	0.2556	34.63	0.0762
9.667	0.2546	34.65	0.0758
9.683	0.2542	34.67	0.0764
9.7	0.2519	34.68	0.076
9.717	0.2528	34.7	0.0759
9.733	0.2537	34.72	0.0759
9.75	0.2538	34.73	0.0758
9.767	0.2535	34.75	0.0764
9.783	0.2536	34.77	0.0757
9.8	0.253	34.78	0.0755
9.817	0.2529	34.8	0.0758
9.833	0.2509	34.82	0.0759
9.85	0.2525	34.83	0.0767
9.867	0.2508	34.85	0.0756
9.883	0.2508	34.87	0.0756
9.9	0.2509	34.88	0.0758
9.917	0.2495	34.9	0.0762
9.933	0.2514	34.92	0.0771
9.95	0.2497	34.93	0.0768
9.967	0.2484	34.95	0.0764
9.983	0.2496	34.97	0.0769
10.	0.2462	34.98	0.0756
10.02	0.2496	35.	0.0749
10.03	0.2463	35.02	0.0769
10.05	0.2442	35.03	0.0761
10.07	0.2436	35.05	0.0758
10.08	0.244	35.07	0.0769
10.1	0.2429	35.08	0.0765
10.12	0.2431	35.1	0.0757
10.13	0.2469	35.12	0.0762
10.15	0.2471	35.13	0.0763
10.17	0.2462	35.15	0.0753
10.18	0.2467	35.17	0.0756
10.2	0.2459	35.18	0.0774
10.22	0.2449	35.2	0.0759
10.23	0.2445	35.22	0.0773
10.25	0.2442	35.23	0.0767
10.27	0.2441	35.25	0.0758
10.28	0.2438	35.27	0.0775
10.3	0.2422	35.28	0.0781
10.32	0.2441	35.3	0.0765
10.33	0.2427	35.32	0.076
10.35	0.2411	35.33	0.0766
10.37	0.2417	35.35	0.0759
10.38	0.2414	35.37	0.0762

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
10.4	0.2412	35.38	0.0757
10.42	0.2408	35.4	0.0757
10.43	0.2399	35.42	0.0735
10.45	0.2385	35.43	0.0739
10.47	0.2394	35.45	0.0757
10.48	0.2394	35.47	0.075
10.5	0.2384	35.48	0.0748
10.52	0.2393	35.5	0.0736
10.53	0.2382	35.52	0.0736
10.55	0.2383	35.53	0.074
10.57	0.2367	35.55	0.0733
10.58	0.2366	35.57	0.0745
10.6	0.2373	35.58	0.0736
10.62	0.2371	35.6	0.0729
10.63	0.2357	35.62	0.0736
10.65	0.2357	35.63	0.0736
10.67	0.2363	35.65	0.0739
10.68	0.2349	35.67	0.0733
10.7	0.2365	35.68	0.0755
10.72	0.2352	35.7	0.0741
10.73	0.2348	35.72	0.074
10.75	0.235	35.73	0.0746
10.77	0.2335	35.75	0.0738
10.78	0.2338	35.77	0.0719
10.8	0.233	35.78	0.0724
10.82	0.2334	35.8	0.0716
10.83	0.2331	35.82	0.0721
10.85	0.2329	35.83	0.0752
10.87	0.2333	35.85	0.073
10.88	0.2317	35.87	0.0731
10.9	0.2307	35.88	0.0732
10.92	0.2303	35.9	0.0756
10.93	0.23	35.92	0.0739
10.95	0.2306	35.93	0.0729
10.97	0.229	35.95	0.0727
10.98	0.2282	35.97	0.0728
11.	0.2287	35.98	0.0725
11.02	0.2271	36.	0.0706
11.03	0.2275	36.02	0.073
11.05	0.2277	36.03	0.0722
11.07	0.2277	36.05	0.0714
11.08	0.2274	36.07	0.0717
11.1	0.228	36.08	0.0729
11.12	0.2265	36.1	0.0718
11.13	0.2255	36.12	0.0726
11.15	0.2261	36.13	0.073
11.17	0.2254	36.15	0.0712
11.18	0.2247	36.17	0.0709
11.2	0.2266	36.18	0.0732
11.22	0.2257	36.2	0.0729
11.23	0.2243	36.22	0.0718
11.25	0.2247	36.23	0.0719
11.27	0.2238	36.25	0.0717
11.28	0.2243	36.27	0.0719
11.3	0.2229	36.28	0.0724
11.32	0.2219	36.3	0.0714
11.33	0.2211	36.32	0.0721
11.35	0.2213	36.33	0.073
11.37	0.2217	36.35	0.0714
11.38	0.2202	36.37	0.0722
11.4	0.2208	36.38	0.0727
11.42	0.2195	36.4	0.0718
11.43	0.22	36.42	0.0715
11.45	0.2204	36.43	0.0722
11.47	0.2202	36.45	0.0713
11.48	0.2192	36.47	0.0717

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
11.5	0.2182	36.48	0.0711
11.52	0.2183	36.5	0.0719
11.53	0.2193	36.52	0.0725
11.55	0.2181	36.53	0.0718
11.57	0.2175	36.55	0.0721
11.58	0.2159	36.57	0.0724
11.6	0.2164	36.58	0.0706
11.62	0.2162	36.6	0.0716
11.63	0.2169	36.62	0.0726
11.65	0.2164	36.63	0.0709
11.67	0.2149	36.65	0.0716
11.68	0.2156	36.67	0.0718
11.7	0.2153	36.68	0.0719
11.72	0.215	36.7	0.0719
11.73	0.2148	36.72	0.0721
11.75	0.2136	36.73	0.0708
11.77	0.2141	36.75	0.0716
11.78	0.2138	36.77	0.0715
11.8	0.2131	36.78	0.0716
11.82	0.2128	36.8	0.0716
11.83	0.2136	36.82	0.0731
11.85	0.2114	36.83	0.0714
11.87	0.2116	36.85	0.0719
11.88	0.2107	36.87	0.0719
11.9	0.2114	36.88	0.0733
11.92	0.2096	36.9	0.0723
11.93	0.2109	36.92	0.0711
11.95	0.211	36.93	0.0714
11.97	0.2098	36.95	0.0726
11.98	0.2101	36.97	0.0711
12.	0.2103	36.98	0.0714
12.02	0.2094	37.	0.0724
12.03	0.2084	37.02	0.0723
12.05	0.2084	37.03	0.0721
12.07	0.2076	37.05	0.0722
12.08	0.2067	37.07	0.0703
12.1	0.2072	37.08	0.0717
12.12	0.2066	37.1	0.072
12.13	0.2076	37.12	0.0721
12.15	0.2065	37.13	0.0707
12.17	0.2074	37.15	0.071
12.18	0.2066	37.17	0.0712
12.2	0.2067	37.18	0.0712
12.22	0.2058	37.2	0.0713
12.23	0.2058	37.22	0.0706
12.25	0.2047	37.23	0.0728
12.27	0.2045	37.25	0.0709
12.28	0.2042	37.27	0.0715
12.3	0.2038	37.28	0.0713
12.32	0.2039	37.3	0.0707
12.33	0.204	37.32	0.0714
12.35	0.2039	37.33	0.0716
12.37	0.2026	37.35	0.0707
12.38	0.2015	37.37	0.0713
12.4	0.2023	37.38	0.0715
12.42	0.2025	37.4	0.0715
12.43	0.2012	37.42	0.0737
12.45	0.2014	37.43	0.0752
12.47	0.2019	37.45	0.0732
12.48	0.2012	37.47	0.0728
12.5	0.2011	37.48	0.0734
12.52	0.2004	37.5	0.0733
12.53	0.2001	37.52	0.0741
12.55	0.1998	37.53	0.0734
12.57	0.2002	37.55	0.0746
12.58	0.2001	37.57	0.0726

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
12.6	0.1987	37.58	0.0733
12.62	0.1998	37.6	0.0734
12.63	0.1992	37.62	0.0739
12.65	0.199	37.63	0.0741
12.67	0.1989	37.65	0.0739
12.68	0.1979	37.67	0.0724
12.7	0.1993	37.68	0.0723
12.72	0.1978	37.7	0.0744
12.73	0.1978	37.72	0.0726
12.75	0.1961	37.73	0.0728
12.77	0.1971	37.75	0.0739
12.78	0.1968	37.77	0.0734
12.8	0.1963	37.78	0.0735
12.82	0.1954	37.8	0.0734
12.83	0.1957	37.82	0.0724
12.85	0.1952	37.83	0.0724
12.87	0.1941	37.85	0.0733
12.88	0.194	37.87	0.0735
12.9	0.1934	37.88	0.0735
12.92	0.1936	37.9	0.0735
12.93	0.1929	37.92	0.0749
12.95	0.1924	37.93	0.0731
12.97	0.1915	37.95	0.073
12.98	0.1916	37.97	0.0726
13.	0.1932	37.98	0.0734
13.02	0.1924	38.	0.0737
13.03	0.1915	38.02	0.0734
13.05	0.1914	38.03	0.0731
13.07	0.1915	38.05	0.0729
13.08	0.1914	38.07	0.0731
13.1	0.191	38.08	0.0737
13.12	0.1906	38.1	0.0737
13.13	0.1907	38.12	0.0736
13.15	0.1898	38.13	0.0734
13.17	0.1902	38.15	0.0731
13.18	0.1885	38.17	0.0737
13.2	0.1883	38.18	0.0732
13.22	0.1892	38.2	0.0731
13.23	0.1886	38.22	0.0734
13.25	0.1873	38.23	0.0729
13.27	0.1895	38.25	0.0728
13.28	0.1886	38.27	0.0733
13.3	0.1887	38.28	0.0737
13.32	0.1871	38.3	0.0732
13.33	0.1866	38.32	0.0731
13.35	0.1863	38.33	0.0739
13.37	0.1875	38.35	0.0738
13.38	0.1846	38.37	0.074
13.4	0.1868	38.38	0.0734
13.42	0.1847	38.4	0.073
13.43	0.184	38.42	0.0729
13.45	0.1836	38.43	0.0738
13.47	0.1838	38.45	0.0731
13.48	0.1833	38.47	0.0736
13.5	0.183	38.48	0.0736
13.52	0.1833	38.5	0.0731
13.53	0.1823	38.52	0.0738
13.55	0.1827	38.53	0.0731
13.57	0.1819	38.55	0.0736
13.58	0.1822	38.57	0.0729
13.6	0.1822	38.58	0.0721
13.62	0.1808	38.6	0.0735
13.63	0.1806	38.62	0.0738
13.65	0.1808	38.63	0.0731
13.67	0.1796	38.65	0.074
13.68	0.1803	38.67	0.0722

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
13.7	0.1799	38.68	0.0728
13.72	0.179	38.7	0.0733
13.73	0.1793	38.72	0.0739
13.75	0.178	38.73	0.0725
13.77	0.1794	38.75	0.0727
13.78	0.1806	38.77	0.0728
13.8	0.1796	38.78	0.0735
13.82	0.1787	38.8	0.0733
13.83	0.1776	38.82	0.0723
13.85	0.1767	38.83	0.0732
13.87	0.1772	38.85	0.0732
13.88	0.1765	38.87	0.0737
13.9	0.177	38.88	0.0728
13.92	0.1751	38.9	0.0732
13.93	0.1761	38.92	0.0744
13.95	0.1758	38.93	0.0739
13.97	0.1761	38.95	0.073
13.98	0.176	38.97	0.0731
14.	0.1756	38.98	0.0724
14.02	0.1749	39.	0.0726
14.03	0.1747	39.02	0.0729
14.05	0.1749	39.03	0.0741
14.07	0.1744	39.05	0.0735
14.08	0.1736	39.07	0.0731
14.1	0.173	39.08	0.0728
14.12	0.1731	39.1	0.0737
14.13	0.1735	39.12	0.0732
14.15	0.1729	39.13	0.0742
14.17	0.1723	39.15	0.0743
14.18	0.1725	39.17	0.0732
14.2	0.1715	39.18	0.0745
14.22	0.1707	39.2	0.0736
14.23	0.172	39.22	0.0736
14.25	0.172	39.23	0.0737
14.27	0.1709	39.25	0.0749
14.28	0.1702	39.27	0.0741
14.3	0.1701	39.28	0.0744
14.32	0.1698	39.3	0.0754
14.33	0.1691	39.32	0.0747
14.35	0.1698	39.33	0.0737
14.37	0.1697	39.35	0.0742
14.38	0.1695	39.37	0.074
14.4	0.1699	39.38	0.074
14.42	0.1678	39.4	0.0745
14.43	0.1687	39.42	0.0724
14.45	0.1681	39.43	0.0722
14.47	0.1676	39.45	0.0725
14.48	0.1675	39.47	0.0726
14.5	0.1683	39.48	0.0723
14.52	0.1658	39.5	0.0732
14.53	0.1669	39.52	0.0733
14.55	0.1675	39.53	0.0725
14.57	0.1671	39.55	0.0736
14.58	0.1657	39.57	0.0728
14.6	0.1668	39.58	0.0732
14.62	0.1653	39.6	0.0721
14.63	0.1659	39.62	0.0722
14.65	0.1661	39.63	0.073
14.67	0.1657	39.65	0.0722
14.68	0.1658	39.67	0.0729
14.7	0.1655	39.68	0.0729
14.72	0.1658	39.7	0.0735
14.73	0.1644	39.72	0.0727
14.75	0.1645	39.73	0.0722
14.77	0.1648	39.75	0.073
14.78	0.1648	39.77	0.0743

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
14.8	0.1637	39.78	0.0727
14.82	0.1639	39.8	0.0723
14.83	0.1644	39.82	0.0737
14.85	0.1629	39.83	0.0743
14.87	0.1628	39.85	0.0738
14.88	0.1626	39.87	0.073
14.9	0.161	39.88	0.0733
14.92	0.1626	39.9	0.0727
14.93	0.1619	39.92	0.0732
14.95	0.1628	39.93	0.0736
14.97	0.162	39.95	0.0742
14.98	0.1612	39.97	0.0735
15.	0.1615	39.98	0.0737
15.02	0.1604	40.	0.0734
15.03	0.1618	40.02	0.0752
15.05	0.1608	40.03	0.0732
15.07	0.1592	40.05	0.074
15.08	0.1617	40.07	0.0729
15.1	0.1599	40.08	0.0743
15.12	0.1606	40.1	0.0743
15.13	0.1595	40.12	0.0744
15.15	0.1593	40.13	0.073
15.17	0.1578	40.15	0.0746
15.18	0.1587	40.17	0.0736
15.2	0.1587	40.18	0.0747
15.22	0.1583	40.2	0.0746
15.23	0.1582	40.22	0.074
15.25	0.1575	40.23	0.0749
15.27	0.1519	40.25	0.0738
15.28	0.1621	40.27	0.074
15.3	0.1551	40.28	0.0753
15.32	0.1613	40.3	0.0756
15.33	0.1612	40.32	0.0765
15.35	0.1597	40.33	0.076
15.37	0.1608	40.35	0.0752
15.38	0.1596	40.37	0.0745
15.4	0.1594	40.38	0.0747
15.42	0.1612	40.4	0.0743
15.43	0.1618	40.42	0.0751
15.45	0.1617	40.43	0.0759
15.47	0.1574	40.45	0.0737
15.48	0.1577	40.47	0.0741
15.5	0.1579	40.48	0.0748
15.52	0.1564	40.5	0.075
15.53	0.1559	40.52	0.0743
15.55	0.1613	40.53	0.0755
15.57	0.1596	40.55	0.0743
15.58	0.1601	40.57	0.0454
15.6	0.1604	40.58	0.0755
15.62	0.1601	40.6	0.0725
15.63	0.159	40.62	0.0726
15.65	0.1594	40.63	0.0729
15.67	0.1577	40.65	0.0759
15.68	0.1602	40.67	0.0754
15.7	0.1604	40.68	0.0761
15.72	0.1581	40.7	0.0759
15.73	0.1586	40.72	0.075
15.75	0.1583	40.73	0.076
15.77	0.1579	40.75	0.0762
15.78	0.1584	40.77	0.0747
15.8	0.1579	40.78	0.076
15.82	0.1579	40.8	0.0756
15.83	0.1576	40.82	0.0743
15.85	0.1589	40.83	0.0745
15.87	0.1577	40.85	0.0753
15.88	0.158	40.87	0.0758

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
15.9	0.157	40.88	0.0759
15.92	0.1569	40.9	0.0748
15.93	0.1563	40.92	0.0753
15.95	0.1564	40.93	0.0746
15.97	0.1568	40.95	0.0747
15.98	0.1559	40.97	0.0752
16.	0.1551	40.98	0.0755
16.02	0.1552	41.	0.0736
16.03	0.1559	41.02	0.0753
16.05	0.1558	41.03	0.0745
16.07	0.154	41.05	0.0757
16.08	0.1538	41.07	0.0751
16.1	0.1545	41.08	0.0748
16.12	0.1539	41.1	0.0752
16.13	0.1535	41.12	0.0755
16.15	0.1538	41.13	0.0753
16.17	0.1549	41.15	0.0741
16.18	0.1536	41.17	0.0751
16.2	0.1534	41.18	0.0752
16.22	0.152	41.2	0.0752
16.23	0.1524	41.22	0.0748
16.25	0.1526	41.23	0.0749
16.27	0.152	41.25	0.0755
16.28	0.1525	41.27	0.0762
16.3	0.1531	41.28	0.0763
16.32	0.1534	41.3	0.075
16.33	0.1507	41.32	0.075
16.35	0.1513	41.33	0.0757
16.37	0.1519	41.35	0.075
16.38	0.1524	41.37	0.0764
16.4	0.1518	41.38	0.0771
16.42	0.1496	41.4	0.0768
16.43	0.1515	41.42	0.0706
16.45	0.1499	41.43	0.0701
16.47	0.1499	41.45	0.0696
16.48	0.1497	41.47	0.07
16.5	0.1505	41.48	0.0696
16.52	0.149	41.5	0.0695
16.53	0.1502	41.52	0.0705
16.55	0.1496	41.53	0.069
16.57	0.1495	41.55	0.0709
16.58	0.1491	41.57	0.0707
16.6	0.1481	41.58	0.0702
16.62	0.1493	41.6	0.0704
16.63	0.1474	41.62	0.0697
16.65	0.1486	41.63	0.0707
16.67	0.1489	41.65	0.0709
16.68	0.1483	41.67	0.0708
16.7	0.1475	41.68	0.0708
16.72	0.1482	41.7	0.0698
16.73	0.1471	41.72	0.0705
16.75	0.148	41.73	0.0708
16.77	0.1476	41.75	0.0711
16.78	0.1469	41.77	0.0707
16.8	0.146	41.78	0.0699
16.82	0.1465	41.8	0.0698
16.83	0.146	41.82	0.0704
16.85	0.1458	41.83	0.0705
16.87	0.1457	41.85	0.0716
16.88	0.1461	41.87	0.0706
16.9	0.1458	41.88	0.072
16.92	0.1449	41.9	0.0711
16.93	0.1451	41.92	0.0707
16.95	0.1456	41.93	0.0715
16.97	0.1445	41.95	0.0712
16.98	0.1446	41.97	0.0709

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
17.	0.1448	41.98	0.071
17.02	0.1444	42.	0.0704
17.03	0.1442	42.02	0.0708
17.05	0.1442	42.03	0.0715
17.07	0.1439	42.05	0.0716
17.08	0.1451	42.07	0.0728
17.1	0.1432	42.08	0.0714
17.12	0.1465	42.1	0.0722
17.13	0.1441	42.12	0.0706
17.15	0.143	42.13	0.071
17.17	0.1436	42.15	0.0715
17.18	0.1426	42.17	0.071
17.2	0.1432	42.18	0.0722
17.22	0.143	42.2	0.0702
17.23	0.1429	42.22	0.0718
17.25	0.1435	42.23	0.0712
17.27	0.1424	42.25	0.0722
17.28	0.1432	42.27	0.0713
17.3	0.1411	42.28	0.0712
17.32	0.1425	42.3	0.0704
17.33	0.1426	42.32	0.0712
17.35	0.1427	42.33	0.0719
17.37	0.1421	42.35	0.0716
17.38	0.1416	42.37	0.0719
17.4	0.1415	42.38	0.0714
17.42	0.1369	42.4	0.0715
17.43	0.1366	42.42	0.0714
17.45	0.1363	42.43	0.0715
17.47	0.136	42.45	0.0718
17.48	0.1367	42.47	0.0717
17.5	0.136	42.48	0.0715
17.52	0.1361	42.5	0.0712
17.53	0.1357	42.52	0.0716
17.55	0.1359	42.53	0.07
17.57	0.1361	42.55	0.0701
17.58	0.1367	42.57	0.0704
17.6	0.1343	42.58	0.0714
17.62	0.1354	42.6	0.0714
17.63	0.1362	42.62	0.0743
17.65	0.1355	42.63	0.0735
17.67	0.1356	42.65	0.0724
17.68	0.134	42.67	0.0713
17.7	0.1345	42.68	0.0726
17.72	0.135	42.7	0.0709
17.73	0.1344	42.72	0.0711
17.75	0.1345	42.73	0.0706
17.77	0.135	42.75	0.0721
17.78	0.1338	42.77	0.0705
17.8	0.1335	42.78	0.071
17.82	0.1327	42.8	0.0721
17.83	0.1344	42.82	0.0714
17.85	0.1344	42.83	0.0711
17.87	0.1337	42.85	0.0708
17.88	0.1335	42.87	0.071
17.9	0.133	42.88	0.072
17.92	0.1333	42.9	0.0714
17.93	0.1318	42.92	0.0709
17.95	0.1329	42.93	0.0712
17.97	0.1335	42.95	0.0719
17.98	0.1336	42.97	0.0711
18.	0.1314	42.98	0.0723
18.02	0.1321	43.	0.0708
18.03	0.1324	43.02	0.0715
18.05	0.1329	43.03	0.0724
18.07	0.133	43.05	0.0725
18.08	0.1325	43.07	0.0721

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
18.1	0.1325	43.08	0.0715
18.12	0.1313	43.1	0.0713
18.13	0.1311	43.12	0.0722
18.15	0.1316	43.13	0.0724
18.17	0.1315	43.15	0.0714
18.18	0.1315	43.17	0.0722
18.2	0.1308	43.18	0.0712
18.22	0.1304	43.2	0.0718
18.23	0.1309	43.22	0.0726
18.25	0.1306	43.23	0.072
18.27	0.131	43.25	0.072
18.28	0.1315	43.27	0.0714
18.3	0.1306	43.28	0.0727
18.32	0.1308	43.3	0.0715
18.33	0.1314	43.32	0.0719
18.35	0.1306	43.33	0.0723
18.37	0.1311	43.35	0.0732
18.38	0.1305	43.37	0.0752
18.4	0.1303	43.38	0.0729
18.42	0.1303	43.4	0.0729
18.43	0.1293	43.42	0.0723
18.45	0.1304	43.43	0.0717
18.47	0.1296	43.45	0.07
18.48	0.1294	43.47	0.071
18.5	0.1286	43.48	0.0708
18.52	0.1297	43.5	0.0716
18.53	0.1295	43.52	0.0718
18.55	0.1296	43.53	0.071
18.57	0.1292	43.55	0.0719
18.58	0.1285	43.57	0.0723
18.6	0.1283	43.58	0.0711
18.62	0.1284	43.6	0.0711
18.63	0.1293	43.62	0.0715
18.65	0.1282	43.63	0.0712
18.67	0.1277	43.65	0.0714
18.68	0.1281	43.67	0.0719
18.7	0.1278	43.68	0.0712
18.72	0.1288	43.7	0.0718
18.73	0.1278	43.72	0.0714
18.75	0.1284	43.73	0.0726
18.77	0.1289	43.75	0.073
18.78	0.1265	43.77	0.0703
18.8	0.1281	43.78	0.0725
18.82	0.1274	43.8	0.0713
18.83	0.1271	43.82	0.0719
18.85	0.1267	43.83	0.0729
18.87	0.1264	43.85	0.0718
18.88	0.1278	43.87	0.0728
18.9	0.1267	43.88	0.0714
18.92	0.1267	43.9	0.071
18.93	0.1268	43.92	0.0728
18.95	0.1261	43.93	0.0718
18.97	0.1267	43.95	0.0715
18.98	0.1267	43.97	0.0732
19.	0.1262	43.98	0.0715
19.02	0.1258	44.	0.0719
19.03	0.127	44.02	0.0714
19.05	0.1261	44.03	0.0717
19.07	0.1264	44.05	0.0716
19.08	0.1255	44.07	0.0737
19.1	0.1249	44.08	0.0713
19.12	0.126	44.1	0.0721
19.13	0.1256	44.12	0.0709
19.15	0.1259	44.13	0.0708
19.17	0.1247	44.15	0.0713
19.18	0.1253	44.17	0.0717

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
19.2	0.125	44.18	0.0709
19.22	0.1253	44.2	0.0722
19.23	0.1256	44.22	0.0713
19.25	0.1252	44.23	0.0716
19.27	0.125	44.25	0.0725
19.28	0.126	44.27	0.0738
19.3	0.1251	44.28	0.072
19.32	0.1245	44.3	0.0718
19.33	0.1235	44.32	0.0728
19.35	0.1243	44.33	0.0729
19.37	0.1234	44.35	0.0726
19.38	0.124	44.37	0.0714
19.4	0.1246	44.38	0.0717
19.42	0.1216	44.4	0.073
19.43	0.1208	44.42	0.0725
19.45	0.1214	44.43	0.0716
19.47	0.1207	44.45	0.0721
19.48	0.12	44.47	0.0737
19.5	0.1194	44.48	0.0724
19.52	0.12	44.5	0.0723
19.53	0.1199	44.52	0.0732
19.55	0.1196	44.53	0.0725
19.57	0.1205	44.55	0.0727
19.58	0.1202	44.57	0.073
19.6	0.1195	44.58	0.0728
19.62	0.1201	44.6	0.072
19.63	0.1191	44.62	0.0736
19.65	0.1193	44.63	0.0724
19.67	0.1201	44.65	0.0725
19.68	0.12	44.67	0.0731
19.7	0.1194	44.68	0.0723
19.72	0.1194	44.7	0.0723
19.73	0.1193	44.72	0.0731
19.75	0.1179	44.73	0.0716
19.77	0.1187	44.75	0.0733
19.78	0.1183	44.77	0.0728
19.8	0.1191	44.78	0.0741
19.82	0.1198	44.8	0.0729
19.83	0.1184	44.82	0.0725
19.85	0.1182	44.83	0.0725
19.87	0.1184	44.85	0.0726
19.88	0.1187	44.87	0.0728
19.9	0.118	44.88	0.0726
19.92	0.1183	44.9	0.0736
19.93	0.1185	44.92	0.0733
19.95	0.1189	44.93	0.073
19.97	0.1177	44.95	0.0732
19.98	0.118	44.97	0.0732
20.	0.1177	44.98	0.0736
20.02	0.1176	45.	0.0735
20.03	0.1181	45.02	0.0728
20.05	0.1168	45.03	0.0735
20.07	0.1176	45.05	0.0729
20.08	0.1174	45.07	0.0731
20.1	0.1181	45.08	0.074
20.12	0.1186	45.1	0.0736
20.13	0.1186	45.12	0.0738
20.15	0.1172	45.13	0.0726
20.17	0.1175	45.15	0.0732
20.18	0.1174	45.17	0.0732
20.2	0.1176	45.18	0.0739
20.22	0.1177	45.2	0.0723
20.23	0.1179	45.22	0.0731
20.25	0.1174	45.23	0.0734
20.27	0.1164	45.25	0.0742
20.28	0.118	45.27	0.0736

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
20.3	0.1172	45.28	0.0738
20.32	0.1173	45.3	0.0739
20.33	0.1166	45.32	0.0726
20.35	0.1173	45.33	0.0739
20.37	0.1165	45.35	0.0745
20.38	0.1174	45.37	0.0736
20.4	0.117	45.38	0.0744
20.42	0.1167	45.4	0.0741
20.43	0.117	45.42	0.0697
20.45	0.116	45.43	0.0696
20.47	0.1173	45.45	0.0695
20.48	0.1165	45.47	0.0698
20.5	0.1168	45.48	0.0696
20.52	0.1155	45.5	0.0681
20.53	0.1161	45.52	0.0686
20.55	0.1164	45.53	0.0684
20.57	0.1169	45.55	0.0693
20.58	0.1156	45.57	0.0689
20.6	0.1151	45.58	0.0693
20.62	0.116	45.6	0.0685
20.63	0.1152	45.62	0.069
20.65	0.1147	45.63	0.0694
20.67	0.116	45.65	0.0697
20.68	0.1161	45.67	0.0697
20.7	0.1161	45.68	0.0699
20.72	0.117	45.7	0.0697
20.73	0.115	45.72	0.0695
20.75	0.1148	45.73	0.0693
20.77	0.1156	45.75	0.0711
20.78	0.1149	45.77	0.0704
20.8	0.114	45.78	0.0689
20.82	0.1144	45.8	0.0698
20.83	0.114	45.82	0.0703
20.85	0.1166	45.83	0.0703
20.87	0.109	45.85	0.0696
20.88	0.113	45.87	0.0706
20.9	0.1124	45.88	0.0693
20.92	0.1112	45.9	0.0693
20.93	0.111	45.92	0.0691
20.95	0.1121	45.93	0.0701
20.97	0.115	45.95	0.0701
20.98	0.1143	45.97	0.0698
21.	0.1143	45.98	0.0698
21.02	0.1151	46.	0.0697
21.03	0.1141	46.02	0.0692
21.05	0.1136	46.03	0.0699
21.07	0.1137	46.05	0.0699
21.08	0.1139	46.07	0.0701
21.1	0.1135	46.08	0.0692
21.12	0.1129	46.1	0.0701
21.13	0.1139	46.12	0.0702
21.15	0.1136	46.13	0.0708
21.17	0.1127	46.15	0.07
21.18	0.1124	46.17	0.07
21.2	0.1124	46.18	0.0704
21.22	0.1123	46.2	0.07
21.23	0.1124	46.22	0.0704
21.25	0.113	46.23	0.0698
21.27	0.1142	46.25	0.0692
21.28	0.1129	46.27	0.0701
21.3	0.1119	46.28	0.07
21.32	0.112	46.3	0.0692
21.33	0.1122	46.32	0.0703
21.35	0.1112	46.33	0.0699
21.37	0.1127	46.35	0.0698
21.38	0.1129	46.37	0.0704

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
21.4	0.1114	46.38	0.0698
21.42	0.1072	46.4	0.0695
21.43	0.1076	46.42	0.0702
21.45	0.1073	46.43	0.0693
21.47	0.1068	46.45	0.0701
21.48	0.1085	46.47	0.0697
21.5	0.1066	46.48	0.0708
21.52	0.1066	46.5	0.0701
21.53	0.1064	46.52	0.0706
21.55	0.106	46.53	0.0707
21.57	0.107	46.55	0.0716
21.58	0.1065	46.57	0.0704
21.6	0.1071	46.58	0.0709
21.62	0.1069	46.6	0.0702
21.63	0.1072	46.62	0.0702
21.65	0.1068	46.63	0.0697
21.67	0.107	46.65	0.0709
21.68	0.1065	46.67	0.0706
21.7	0.1076	46.68	0.0708
21.72	0.1069	46.7	0.0716
21.73	0.1064	46.72	0.0702
21.75	0.1076	46.73	0.0711
21.77	0.1063	46.75	0.071
21.78	0.1072	46.77	0.0713
21.8	0.1068	46.78	0.0703
21.82	0.1056	46.8	0.0707
21.83	0.1062	46.82	0.0709
21.85	0.1058	46.83	0.0723
21.87	0.1066	46.85	0.0711
21.88	0.1064	46.87	0.072
21.9	0.1066	46.88	0.0714
21.92	0.106	46.9	0.0704
21.93	0.1055	46.92	0.0718
21.95	0.1062	46.93	0.0716
21.97	0.1057	46.95	0.0707
21.98	0.1062	46.97	0.0708
22.	0.1061	46.98	0.0719
22.02	0.106	47.	0.0715
22.03	0.1066	47.02	0.0707
22.05	0.105	47.03	0.0722
22.07	0.1066	47.05	0.0707
22.08	0.1063	47.07	0.0712
22.1	0.1056	47.08	0.0712
22.12	0.1059	47.1	0.0712
22.13	0.1067	47.12	0.0714
22.15	0.1056	47.13	0.0722
22.17	0.1059	47.15	0.0709
22.18	0.105	47.17	0.0707
22.2	0.1069	47.18	0.0716
22.22	0.1066	47.2	0.0708
22.23	0.1067	47.22	0.0714
22.25	0.1053	47.23	0.0734
22.27	0.1048	47.25	0.0731
22.28	0.1057	47.27	0.0714
22.3	0.1071	47.28	0.0722
22.32	0.104	47.3	0.073
22.33	0.1063	47.32	0.072
22.35	0.1051	47.33	0.0727
22.37	0.1056	47.35	0.0724
22.38	0.105	47.37	0.071
22.4	0.1045	47.38	0.0726
22.42	0.1055	47.4	0.0733
22.43	0.1051	47.42	0.0682
22.45	0.1047	47.43	0.0664
22.47	0.1053	47.45	0.0685
22.48	0.1046	47.47	0.0678

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
22.5	0.1049	47.48	0.067
22.52	0.1055	47.5	0.0673
22.53	0.105	47.52	0.0675
22.55	0.105	47.53	0.067
22.57	0.1042	47.55	0.0681
22.58	0.104	47.57	0.067
22.6	0.1047	47.58	0.067
22.62	0.1049	47.6	0.0667
22.63	0.1049	47.62	0.0683
22.65	0.1049	47.63	0.0672
22.67	0.105	47.65	0.0671
22.68	0.1047	47.67	0.067
22.7	0.1049	47.68	0.0673
22.72	0.1044	47.7	0.0668
22.73	0.1041	47.72	0.066
22.75	0.1043	47.73	0.0677
22.77	0.1045	47.75	0.0676
22.78	0.1043	47.77	0.067
22.8	0.1048	47.78	0.0663
22.82	0.1046	47.8	0.0667
22.83	0.1043	47.82	0.0678
22.85	0.1044	47.83	0.0684
22.87	0.1044	47.85	0.0682
22.88	0.1045	47.87	0.0673
22.9	0.1042	47.88	0.0664
22.92	0.1046	47.9	0.0672
22.93	0.1045	47.92	0.0661
22.95	0.1042	47.93	0.0671
22.97	0.1042	47.95	0.0666
22.98	0.1048	47.97	0.0677
23.	0.1049	47.98	0.0669
23.02	0.1037	48.	0.0674
23.03	0.1046	48.02	0.0675
23.05	0.1042	48.03	0.0683
23.07	0.1034	48.05	0.0677
23.08	0.1032	48.07	0.0667
23.1	0.104	48.08	0.0678
23.12	0.1041	48.1	0.0675
23.13	0.1039	48.12	0.0672
23.15	0.1036	48.13	0.0672
23.17	0.1031	48.15	0.0674
23.18	0.1037	48.17	0.0675
23.2	0.1039	48.18	0.0678
23.22	0.1036	48.2	0.0671
23.23	0.1037	48.22	0.0679
23.25	0.1037	48.23	0.0676
23.27	0.1032	48.25	0.0669
23.28	0.1023	48.27	0.0662
23.3	0.1032	48.28	0.0674
23.32	0.1033	48.3	0.0667
23.33	0.1032	48.32	0.0679
23.35	0.1043	48.33	0.0676
23.37	0.1038	48.35	0.0665
23.38	0.1036	48.37	0.0664
23.4	0.1028	48.38	0.0682
23.42	0.1004	48.4	0.0671
23.43	0.0992	48.42	0.0687
23.45	0.0992	48.43	0.0668
23.47	0.0986	48.45	0.0672
23.48	0.0993	48.47	0.0673
23.5	0.0982	48.48	0.0675
23.52	0.1	48.5	0.0676
23.53	0.0993	48.52	0.0672
23.55	0.1001	48.53	0.067
23.57	0.099	48.55	0.0686
23.58	0.099	48.57	0.0666

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
23.6	0.0986	48.58	0.067
23.62	0.0984	48.6	0.0683
23.63	0.0986	48.62	0.0678
23.65	0.0986	48.63	0.0675
23.67	0.0989	48.65	0.0692
23.68	0.0978	48.67	0.0685
23.7	0.098	48.68	0.0682
23.72	0.0971	48.7	0.0698
23.73	0.0981	48.72	0.0673
23.75	0.098	48.73	0.0683
23.77	0.0981	48.75	0.0679
23.78	0.0981	48.77	0.0692
23.8	0.0979	48.78	0.0677
23.82	0.0978	48.8	0.0675
23.83	0.0984	48.82	0.0673
23.85	0.0984	48.83	0.0681
23.87	0.0972	48.85	0.0668
23.88	0.0981	48.87	0.0671
23.9	0.099	48.88	0.0672
23.92	0.0982	48.9	0.0681
23.93	0.0971	48.92	0.0677
23.95	0.0977	48.93	0.069
23.97	0.0985	48.95	0.0674
23.98	0.0982	48.97	0.0691
24.	0.0985	48.98	0.0671
24.02	0.0975	49.	0.0685
24.03	0.0984	49.02	0.0684
24.05	0.0976	49.03	0.0674
24.07	0.0976	49.05	0.0688
24.08	0.0992	49.07	0.0682
24.1	0.0986	49.08	0.0685
24.12	0.0971	49.1	0.0688
24.13	0.0984	49.12	0.0678
24.15	0.0972	49.13	0.0669
24.17	0.0984	49.15	0.0676
24.18	0.0972	49.17	0.0678
24.2	0.0983	49.18	0.0685
24.22	0.0967	49.2	0.0684
24.23	0.0975	49.22	0.0677
24.25	0.0986	49.23	0.0677
24.27	0.0979	49.25	0.0669
24.28	0.0977	49.27	0.0667
24.3	0.0976	49.28	0.0669
24.32	0.0983	49.3	0.067
24.33	0.0984	49.32	0.0669
24.35	0.0973	49.33	0.0684
24.37	0.0978	49.35	0.0677
24.38	0.0976	49.37	0.0686
24.4	0.0978	49.38	0.0691
24.42	0.0964	49.4	0.0687
24.43	0.098	49.42	0.0679
24.45	0.0974	49.43	0.0686
24.47	0.0981	49.45	0.0685
24.48	0.0983	49.47	0.0684
24.5	0.0974	49.48	0.0683
24.52	0.0984	49.5	0.0693
24.53	0.097	49.52	0.0711
24.55	0.0967	49.53	0.0688
24.57	0.0952	49.55	0.069
24.58	0.0966	49.57	0.0671
24.6	0.0978	49.58	0.0687
24.62	0.0974	49.6	0.0691
24.63	0.098	49.62	0.0682
24.65	0.0976	49.63	0.0707
24.67	0.0972	49.65	0.0696
24.68	0.0975	49.67	0.0684

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
24.7	0.0977	49.68	0.0686
24.72	0.0977	49.7	0.0698
24.73	0.0971	49.72	0.069
24.75	0.0972	49.73	0.068
24.77	0.0977	49.75	0.0682
24.78	0.0978	49.77	0.0678
24.8	0.0974	49.78	0.0689
24.82	0.0976	49.8	0.0688
24.83	0.0985	49.82	0.0679
24.85	0.0984	49.83	0.0694
24.87	0.0976	49.85	0.0691
24.88	0.0977	49.87	0.0701
24.9	0.0977	49.88	0.0701
24.92	0.0978	49.9	0.0701
24.93	0.0981	49.92	0.0704
24.95	0.0973	49.93	0.0694
24.97	0.0973	49.95	0.0684

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.757

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0006957	cm/sec
y0	0.61	ft

T = K*b = 0.05301 cm²/sec

Data Set: C:\Users\ccarter\Golder Associates\19134560,Alcoa Copano APAR and SLERA - Project Files\5 Technic

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 3
Test Date: 12/19/2019
Test Well: MW3-4B

AQUIFER DATA

Saturated Thickness: 12.2 ft
Anisotropy Ratio (Kz/Kr): 0.1

SLUG TEST WELL DATA

Test Well: MW3-4B

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 3.48 ft
Static Water Column Height: 38.98 ft
Casing Radius: 0.083 ft
Well Radius: 0.083 ft
Well Skin Radius: 0.667 ft
Screen Length: 15. ft
Total Well Penetration Depth: 42.5 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.083 ft
Gravel Pack Porosity: 0.3

No. of Observations: 3491

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	0.	29.1	0.0392
0.0167	0.0005	29.12	0.041
0.0333	0.0015	29.13	0.0381
0.05	0.0039	29.15	0.0393
0.0667	0.0055	29.17	0.0391
0.0833	2.603	29.18	0.0382
0.1	3.611	29.2	0.0391
0.1167	3.483	29.22	0.0388
0.1333	3.383	29.23	0.0388
0.15	2.961	29.25	0.0402
0.1667	2.007	29.27	0.0402
0.1833	2.313	29.28	0.0384
0.2	2.3	29.3	0.0384
0.2167	2.255	29.32	0.0383
0.2333	2.231	29.33	0.0385
0.25	2.271	29.35	0.0377
0.2667	2.115	29.37	0.0375
0.2833	2.183	29.38	0.0382
0.3	2.112	29.4	0.0378
0.3167	2.108	29.42	0.0385
0.3333	2.091	29.43	0.0388
0.35	2.078	29.45	0.0396
0.3667	2.055	29.47	0.0374
0.3833	2.04	29.48	0.038
0.4	2.005	29.5	0.0386
0.4167	1.994	29.52	0.0381
0.4333	1.976	29.53	0.0381
0.45	1.96	29.55	0.0377
0.4667	1.945	29.57	0.0379
0.4833	1.932	29.58	0.0377

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.5	1.918	29.6	0.0386
0.5167	1.903	29.62	0.0415
0.5333	1.889	29.63	0.0418
0.55	1.874	29.65	0.0419
0.5667	1.863	29.67	0.0417
0.5833	1.849	29.68	0.0408
0.6	1.836	29.7	0.0425
0.6167	1.823	29.72	0.0409
0.6333	1.834	29.73	0.0416
0.65	1.81	29.75	0.0413
0.6667	1.799	29.77	0.0418
0.6833	1.786	29.78	0.0415
0.7	1.758	29.8	0.0398
0.7167	1.753	29.82	0.0418
0.7333	1.739	29.83	0.0413
0.75	1.73	29.85	0.0416
0.7667	1.718	29.87	0.0407
0.7833	1.707	29.88	0.0403
0.8	1.698	29.9	0.0407
0.8167	1.686	29.92	0.0417
0.8333	1.676	29.93	0.0406
0.85	1.665	29.95	0.0406
0.8667	1.656	29.97	0.0423
0.8833	1.646	29.98	0.041
0.9	1.697	30.	0.0414
0.9167	1.624	30.02	0.0418
0.9333	1.62	30.03	0.0401
0.95	1.606	30.05	0.0406
0.9667	1.596	30.07	0.0404
0.9833	1.587	30.08	0.0404
1.	1.578	30.1	0.0405
1.017	1.569	30.12	0.0408
1.033	1.561	30.13	0.0411
1.05	1.551	30.15	0.0417
1.067	1.541	30.17	0.0402
1.083	1.534	30.18	0.0413
1.1	1.524	30.2	0.0408
1.117	1.516	30.22	0.0392
1.133	1.515	30.23	0.0402
1.15	1.511	30.25	0.0414
1.167	1.503	30.27	0.0407
1.183	1.495	30.28	0.0398
1.2	1.468	30.3	0.0407
1.217	1.465	30.32	0.0407
1.233	1.456	30.33	0.0397
1.25	1.448	30.35	0.0415
1.267	1.441	30.37	0.0398
1.283	1.433	30.38	0.0411
1.3	1.424	30.4	0.0411
1.317	1.418	30.42	0.0403
1.333	1.409	30.43	0.0407
1.35	1.401	30.45	0.0424
1.367	1.393	30.47	0.0426
1.383	1.387	30.48	0.0405
1.4	1.38	30.5	0.04
1.417	1.372	30.52	0.0406
1.433	1.381	30.53	0.042
1.45	1.367	30.55	0.042
1.467	1.348	30.57	0.04
1.483	1.341	30.58	0.0405
1.5	1.334	30.6	0.04
1.517	1.328	30.62	0.0402
1.533	1.321	30.63	0.0412
1.55	1.314	30.65	0.0406
1.567	1.307	30.67	0.0419
1.583	1.299	30.68	0.0402

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.6	1.292	30.7	0.0404
1.617	1.286	30.72	0.0393
1.633	1.28	30.73	0.0399
1.65	1.291	30.75	0.0403
1.667	1.278	30.77	0.0407
1.683	1.273	30.78	0.0408
1.7	1.251	30.8	0.0397
1.717	1.248	30.82	0.0398
1.733	1.239	30.83	0.0391
1.75	1.233	30.85	0.0394
1.767	1.227	30.87	0.0405
1.783	1.222	30.88	0.0404
1.8	1.214	30.9	0.0404
1.817	1.209	30.92	0.0417
1.833	1.202	30.93	0.0401
1.85	1.196	30.95	0.0406
1.867	1.189	30.97	0.0422
1.883	1.184	30.98	0.0416
1.9	1.178	31.	0.0414
1.917	1.194	31.02	0.0397
1.933	1.175	31.03	0.0409
1.95	1.172	31.05	0.0406
1.967	1.166	31.07	0.041
1.983	1.144	31.08	0.0404
2.	1.142	31.1	0.0403
2.017	1.137	31.12	0.0411
2.033	1.129	31.13	0.0401
2.05	1.124	31.15	0.042
2.067	1.119	31.17	0.04
2.083	1.113	31.18	0.0404
2.1	1.107	31.2	0.0403
2.117	1.101	31.22	0.0406
2.133	1.097	31.23	0.0402
2.15	1.092	31.25	0.0408
2.167	1.086	31.27	0.0417
2.183	1.081	31.28	0.0414
2.2	1.075	31.3	0.0391
2.217	1.069	31.32	0.039
2.233	1.08	31.33	0.0393
2.25	1.07	31.35	0.0398
2.267	1.066	31.37	0.0395
2.283	1.046	31.38	0.0408
2.3	1.043	31.4	0.0405
2.317	1.053	31.42	0.0402
2.333	1.046	31.43	0.0401
2.35	1.041	31.45	0.0409
2.367	1.02	31.47	0.0399
2.383	1.016	31.48	0.0418
2.4	1.013	31.5	0.0403
2.417	1.007	31.52	0.0402
2.433	1.002	31.53	0.0399
2.45	0.9979	31.55	0.041
2.467	0.9917	31.57	0.0403
2.483	0.989	31.58	0.0401
2.5	0.9837	31.6	0.0406
2.517	0.979	31.62	0.0415
2.533	0.9744	31.63	0.0408
2.55	0.9697	31.65	0.0406
2.567	0.9639	31.67	0.0414
2.583	0.9606	31.68	0.0421
2.6	0.9712	31.7	0.041
2.617	0.9643	31.72	0.0408
2.633	0.9482	31.73	0.0417
2.65	0.9416	31.75	0.0413
2.667	0.9365	31.77	0.0422
2.683	0.9322	31.78	0.0411

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2.7	0.9278	31.8	0.0418
2.717	0.9236	31.82	0.0419
2.733	0.918	31.83	0.0412
2.75	0.9148	31.85	0.0414
2.767	0.911	31.87	0.0409
2.783	0.9061	31.88	0.041
2.8	0.9014	31.9	0.0417
2.817	0.8977	31.92	0.0421
2.833	0.8938	31.93	0.0413
2.85	0.8888	31.95	0.0415
2.867	0.8999	31.97	0.0412
2.883	0.8939	31.98	0.0435
2.9	0.8887	32.	0.0415
2.917	0.8839	32.02	0.0411
2.933	0.8645	32.03	0.041
2.95	0.8624	32.05	0.0418
2.967	0.8601	32.07	0.0423
2.983	0.856	32.08	0.042
3.	0.853	32.1	0.0427
3.017	0.8481	32.12	0.0423
3.033	0.8448	32.13	0.0419
3.05	0.8401	32.15	0.042
3.067	0.8365	32.17	0.042
3.083	0.8309	32.18	0.0414
3.1	0.8285	32.2	0.0418
3.117	0.8244	32.22	0.0402
3.133	0.8217	32.23	0.0418
3.15	0.8167	32.25	0.0402
3.167	0.8217	32.27	0.042
3.183	0.8225	32.28	0.0418
3.2	0.8124	32.3	0.0413
3.217	0.8005	32.32	0.0425
3.233	0.7976	32.33	0.0419
3.25	0.7952	32.35	0.0424
3.267	0.7914	32.37	0.0427
3.283	0.7869	32.38	0.0424
3.3	0.7847	32.4	0.0411
3.317	0.7791	32.42	0.0426
3.333	0.7763	32.43	0.043
3.35	0.7731	32.45	0.0415
3.367	0.7698	32.47	0.0428
3.383	0.7658	32.48	0.0425
3.4	0.7633	32.5	0.0421
3.417	0.7701	32.52	0.0425
3.433	0.7662	32.53	0.0423
3.45	0.767	32.55	0.0431
3.467	0.7577	32.57	0.0435
3.483	0.7437	32.58	0.0413
3.5	0.7419	32.6	0.0418
3.517	0.737	32.62	0.0425
3.533	0.7353	32.63	0.0418
3.55	0.7313	32.65	0.041
3.567	0.7284	32.67	0.0413
3.583	0.7255	32.68	0.0425
3.6	0.7218	32.7	0.041
3.617	0.7225	32.72	0.0424
3.633	0.7197	32.73	0.0428
3.65	0.717	32.75	0.0419
3.667	0.7125	32.77	0.0419
3.683	0.709	32.78	0.0424
3.7	0.7049	32.8	0.0425
3.717	0.7027	32.82	0.0434
3.733	0.6993	32.83	0.0416
3.75	0.7137	32.85	0.0427
3.767	0.7058	32.87	0.0423
3.783	0.704	32.88	0.042

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
3.8	0.7012	32.9	0.043
3.817	0.6807	32.92	0.0419
3.833	0.6807	32.93	0.0414
3.85	0.6776	32.95	0.0422
3.867	0.6752	32.97	0.0425
3.883	0.6721	32.98	0.0421
3.9	0.6688	33.	0.0424
3.917	0.6669	33.02	0.0423
3.933	0.6633	33.03	0.0422
3.95	0.6602	33.05	0.0427
3.967	0.6572	33.07	0.0422
3.983	0.6539	33.08	0.0436
4.	0.6517	33.1	0.0417
4.017	0.6489	33.12	0.0415
4.033	0.6459	33.13	0.043
4.05	0.643	33.15	0.044
4.067	0.6538	33.17	0.043
4.083	0.6508	33.18	0.0426
4.1	0.6485	33.2	0.0429
4.117	0.6444	33.22	0.0418
4.133	0.6271	33.23	0.0422
4.15	0.6249	33.25	0.0416
4.167	0.623	33.27	0.0424
4.183	0.6221	33.28	0.0433
4.2	0.6186	33.3	0.0422
4.217	0.6154	33.32	0.0427
4.233	0.6135	33.33	0.0434
4.25	0.6109	33.35	0.0427
4.267	0.6082	33.37	0.0421
4.283	0.6058	33.38	0.0417
4.3	0.603	33.4	0.0418
4.317	0.6011	33.42	0.0424
4.333	0.5972	33.43	0.0429
4.35	0.5945	33.45	0.0432
4.367	0.5922	33.47	0.0429
4.383	0.5904	33.48	0.0426
4.4	0.6043	33.5	0.0408
4.417	0.5984	33.52	0.0422
4.433	0.5915	33.53	0.0429
4.45	0.5789	33.55	0.0418
4.467	0.5757	33.57	0.0432
4.483	0.5739	33.58	0.0415
4.5	0.571	33.6	0.0428
4.517	0.5689	33.62	0.0406
4.533	0.5681	33.63	0.04
4.55	0.5649	33.65	0.0408
4.567	0.5624	33.67	0.0411
4.583	0.5607	33.68	0.041
4.6	0.5582	33.7	0.0422
4.617	0.5566	33.72	0.0404
4.633	0.5573	33.73	0.0422
4.65	0.5653	33.75	0.0401
4.667	0.5509	33.77	0.0418
4.683	0.5422	33.78	0.0406
4.7	0.5404	33.8	0.0426
4.717	0.5394	33.82	0.041
4.733	0.5374	33.83	0.0405
4.75	0.5361	33.85	0.0406
4.767	0.5341	33.87	0.0405
4.783	0.5324	33.88	0.0408
4.8	0.5299	33.9	0.0414
4.817	0.5279	33.92	0.0406
4.833	0.5268	33.93	0.0412
4.85	0.5251	33.95	0.0422
4.867	0.5371	33.97	0.0413
4.883	0.5316	33.98	0.0404

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
4.9	0.5149	34.	0.0399
4.917	0.5147	34.02	0.0413
4.933	0.5113	34.03	0.0419
4.95	0.5102	34.05	0.0404
4.967	0.5092	34.07	0.0402
4.983	0.5078	34.08	0.0417
5.	0.5054	34.1	0.0398
5.017	0.5019	34.12	0.0401
5.033	0.4998	34.13	0.0408
5.05	0.4987	34.15	0.0411
5.067	0.5104	34.17	0.0398
5.083	0.5052	34.18	0.0412
5.1	0.505	34.2	0.0404
5.117	0.5046	34.22	0.0407
5.133	0.4859	34.23	0.0411
5.15	0.4855	34.25	0.04
5.167	0.4837	34.27	0.0398
5.183	0.4805	34.28	0.0413
5.2	0.479	34.3	0.0397
5.217	0.4775	34.32	0.04
5.233	0.476	34.33	0.0404
5.25	0.4731	34.35	0.0408
5.267	0.4725	34.37	0.0406
5.283	0.4686	34.38	0.0402
5.3	0.4685	34.4	0.0403
5.317	0.4659	34.42	0.0415
5.333	0.4639	34.43	0.0416
5.35	0.4625	34.45	0.0396
5.367	0.4597	34.47	0.0399
5.383	0.4576	34.48	0.0397
5.4	0.4562	34.5	0.041
5.417	0.4541	34.52	0.0398
5.433	0.4528	34.53	0.0405
5.45	0.4498	34.55	0.041
5.467	0.4486	34.57	0.0408
5.483	0.4461	34.58	0.0409
5.5	0.4443	34.6	0.0407
5.517	0.4441	34.62	0.0403
5.533	0.4419	34.63	0.0403
5.55	0.439	34.65	0.0397
5.567	0.4375	34.67	0.0399
5.583	0.4361	34.68	0.0388
5.6	0.4344	34.7	0.0404
5.617	0.4359	34.72	0.0389
5.633	0.4332	34.73	0.0383
5.65	0.4316	34.75	0.0402
5.667	0.4304	34.77	0.0387
5.683	0.4287	34.78	0.0409
5.7	0.4263	34.8	0.0401
5.717	0.4252	34.82	0.0406
5.733	0.4239	34.83	0.0378
5.75	0.421	34.85	0.0397
5.767	0.4195	34.87	0.0393
5.783	0.4181	34.88	0.0401
5.8	0.4167	34.9	0.0401
5.817	0.4149	34.92	0.04
5.833	0.4114	34.93	0.0396
5.85	0.4113	34.95	0.0401
5.867	0.4106	34.97	0.0403
5.883	0.4082	34.98	0.0395
5.9	0.4072	35.	0.0395
5.917	0.4054	35.02	0.0384
5.933	0.4042	35.03	0.0407
5.95	0.4018	35.05	0.0389
5.967	0.4005	35.07	0.041
5.983	0.3989	35.08	0.0393

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
6.	0.3971	35.1	0.0396
6.017	0.3959	35.12	0.0396
6.033	0.3934	35.13	0.0383
6.05	0.3915	35.15	0.0391
6.067	0.3902	35.17	0.039
6.083	0.3885	35.18	0.0381
6.1	0.3871	35.2	0.0381
6.117	0.3866	35.22	0.0386
6.133	0.3844	35.23	0.0397
6.15	0.3967	35.25	0.0389
6.167	0.3923	35.27	0.0386
6.183	0.3931	35.28	0.0397
6.2	0.3726	35.3	0.0398
6.217	0.3759	35.32	0.0391
6.233	0.3736	35.33	0.0378
6.25	0.373	35.35	0.0375
6.267	0.3717	35.37	0.0382
6.283	0.3693	35.38	0.0388
6.3	0.3685	35.4	0.0386
6.317	0.3668	35.42	0.0389
6.333	0.3664	35.43	0.0388
6.35	0.364	35.45	0.0401
6.367	0.363	35.47	0.038
6.383	0.3614	35.48	0.0394
6.4	0.3597	35.5	0.0379
6.417	0.3591	35.52	0.0377
6.433	0.357	35.53	0.0388
6.45	0.3554	35.55	0.038
6.467	0.3557	35.57	0.0371
6.483	0.3535	35.58	0.0386
6.5	0.3525	35.6	0.0396
6.517	0.3504	35.62	0.0399
6.533	0.3481	35.63	0.0401
6.55	0.3478	35.65	0.0394
6.567	0.3467	35.67	0.0403
6.583	0.3449	35.68	0.0407
6.6	0.3441	35.7	0.04
6.617	0.342	35.72	0.04
6.633	0.3409	35.73	0.0396
6.65	0.3399	35.75	0.0388
6.667	0.3379	35.77	0.0391
6.683	0.3368	35.78	0.0394
6.7	0.3358	35.8	0.0388
6.717	0.3334	35.82	0.0393
6.733	0.3328	35.83	0.0393
6.75	0.3327	35.85	0.0386
6.767	0.3309	35.87	0.0391
6.783	0.3284	35.88	0.0387
6.8	0.3285	35.9	0.0391
6.817	0.327	35.92	0.0384
6.833	0.3262	35.93	0.0385
6.85	0.3245	35.95	0.0394
6.867	0.3228	35.97	0.0387
6.883	0.322	35.98	0.0392
6.9	0.3193	36.	0.0392
6.917	0.3197	36.02	0.0379
6.933	0.3174	36.03	0.0407
6.95	0.3165	36.05	0.0384
6.967	0.3157	36.07	0.0383
6.983	0.3149	36.08	0.0396
7.	0.3129	36.1	0.038
7.017	0.3111	36.12	0.0386
7.033	0.3106	36.13	0.0399
7.05	0.3093	36.15	0.039
7.067	0.3075	36.17	0.0382
7.083	0.3073	36.18	0.038

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
7.1	0.3057	36.2	0.0387
7.117	0.3075	36.22	0.0388
7.133	0.3187	36.23	0.0377
7.15	0.3161	36.25	0.0377
7.167	0.3131	36.27	0.0391
7.183	0.2987	36.28	0.0387
7.2	0.2969	36.3	0.0381
7.217	0.2975	36.32	0.0376
7.233	0.2952	36.33	0.0381
7.25	0.2943	36.35	0.0381
7.267	0.2923	36.37	0.0371
7.283	0.2928	36.38	0.0372
7.3	0.2905	36.4	0.0375
7.317	0.2902	36.42	0.0376
7.333	0.2897	36.43	0.0378
7.35	0.2889	36.45	0.0377
7.367	0.2875	36.47	0.039
7.383	0.2849	36.48	0.0374
7.4	0.2844	36.5	0.0371
7.417	0.2837	36.52	0.0372
7.433	0.2824	36.53	0.0368
7.45	0.2815	36.55	0.0374
7.467	0.2808	36.57	0.0371
7.483	0.2803	36.58	0.0363
7.5	0.279	36.6	0.0369
7.517	0.277	36.62	0.0387
7.533	0.2768	36.63	0.0374
7.55	0.2762	36.65	0.0357
7.567	0.2749	36.67	0.0372
7.583	0.2736	36.68	0.0371
7.6	0.2733	36.7	0.0372
7.617	0.2748	36.72	0.037
7.633	0.2757	36.73	0.0365
7.65	0.2745	36.75	0.0368
7.667	0.2731	36.77	0.0375
7.683	0.2712	36.78	0.0372
7.7	0.2722	36.8	0.0359
7.717	0.2698	36.82	0.0368
7.733	0.268	36.83	0.0351
7.75	0.2682	36.85	0.036
7.767	0.2661	36.87	0.036
7.783	0.2651	36.88	0.0359
7.8	0.264	36.9	0.0361
7.817	0.2639	36.92	0.0361
7.833	0.2627	36.93	0.0362
7.85	0.2618	36.95	0.035
7.867	0.2607	36.97	0.0367
7.883	0.2609	36.98	0.0359
7.9	0.2594	37.	0.0357
7.917	0.2576	37.02	0.0363
7.933	0.2573	37.03	0.0351
7.95	0.256	37.05	0.035
7.967	0.256	37.07	0.0361
7.983	0.2543	37.08	0.0356
8.	0.2531	37.1	0.036
8.017	0.2519	37.12	0.0345
8.033	0.2526	37.13	0.0353
8.05	0.2517	37.15	0.0346
8.067	0.2497	37.17	0.0354
8.083	0.2476	37.18	0.0343
8.1	0.248	37.2	0.0357
8.117	0.2469	37.22	0.0355
8.133	0.2611	37.23	0.035
8.15	0.2601	37.25	0.0338
8.167	0.2584	37.27	0.0347
8.183	0.2387	37.28	0.0348

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
8.2	0.2409	37.3	0.0346
8.217	0.2412	37.32	0.0358
8.233	0.24	37.33	0.0347
8.25	0.239	37.35	0.0341
8.267	0.2379	37.37	0.0333
8.283	0.2371	37.38	0.034
8.3	0.2365	37.4	0.0349
8.317	0.2355	37.42	0.0351
8.333	0.2335	37.43	0.0351
8.35	0.2332	37.45	0.0349
8.367	0.234	37.47	0.0343
8.383	0.2329	37.48	0.0336
8.4	0.2323	37.5	0.0339
8.417	0.2314	37.52	0.0344
8.433	0.2313	37.53	0.0343
8.45	0.2289	37.55	0.0333
8.467	0.2291	37.57	0.0338
8.483	0.2285	37.58	0.034
8.5	0.2276	37.6	0.0338
8.517	0.2269	37.62	0.0404
8.533	0.2265	37.63	0.038
8.55	0.2243	37.65	0.0391
8.567	0.2244	37.67	0.0386
8.583	0.2235	37.68	0.0407
8.6	0.2227	37.7	0.0391
8.617	0.2221	37.72	0.0398
8.633	0.2207	37.73	0.0388
8.65	0.2197	37.75	0.0384
8.667	0.2191	37.77	0.0386
8.683	0.2185	37.78	0.0388
8.7	0.2186	37.8	0.0389
8.717	0.2167	37.82	0.0386
8.733	0.2155	37.83	0.0377
8.75	0.215	37.85	0.0382
8.767	0.2153	37.87	0.039
8.783	0.2133	37.88	0.0382
8.8	0.2138	37.9	0.0388
8.817	0.2126	37.92	0.0391
8.833	0.2126	37.93	0.0386
8.85	0.2118	37.95	0.0393
8.867	0.2096	37.97	0.0384
8.883	0.2104	37.98	0.0385
8.9	0.2089	38.	0.0393
8.917	0.208	38.02	0.0393
8.933	0.2068	38.03	0.0387
8.95	0.207	38.05	0.0381
8.967	0.2058	38.07	0.0388
8.983	0.2067	38.08	0.0387
9.	0.2051	38.1	0.0382
9.017	0.2049	38.12	0.0382
9.033	0.204	38.13	0.0388
9.05	0.2032	38.15	0.0388
9.067	0.2012	38.17	0.0396
9.083	0.2009	38.18	0.0389
9.1	0.2015	38.2	0.0386
9.117	0.1988	38.22	0.0381
9.133	0.1991	38.23	0.0385
9.15	0.1987	38.25	0.0388
9.167	0.1987	38.27	0.0381
9.183	0.1973	38.28	0.038
9.2	0.197	38.3	0.038
9.217	0.1963	38.32	0.0378
9.233	0.1938	38.33	0.0374
9.25	0.2117	38.35	0.0373
9.267	0.2251	38.37	0.0381
9.283	0.2563	38.38	0.0387

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
9.3	0.2872	38.4	0.0382
9.317	0.1891	38.42	0.0375
9.333	0.1861	38.43	0.0381
9.35	0.1871	38.45	0.037
9.367	0.2024	38.47	0.0365
9.383	0.2013	38.48	0.0386
9.4	0.2005	38.5	0.0369
9.417	0.1988	38.52	0.0369
9.433	0.199	38.53	0.0379
9.45	0.1976	38.55	0.036
9.467	0.1798	38.57	0.0363
9.483	0.1823	38.58	0.038
9.5	0.1808	38.6	0.0378
9.517	0.1816	38.62	0.0372
9.533	0.1798	38.63	0.0367
9.55	0.1814	38.65	0.0363
9.567	0.1806	38.67	0.0378
9.583	0.1794	38.68	0.0363
9.6	0.1792	38.7	0.0373
9.617	0.1847	38.72	0.0377
9.633	0.1809	38.73	0.0371
9.65	0.1823	38.75	0.0367
9.667	0.1812	38.77	0.0381
9.683	0.1822	38.78	0.0365
9.7	0.1797	38.8	0.0366
9.717	0.1791	38.82	0.0361
9.733	0.1792	38.83	0.0368
9.75	0.1787	38.85	0.0364
9.767	0.1777	38.87	0.0367
9.783	0.1773	38.88	0.0356
9.8	0.1764	38.9	0.0366
9.817	0.1768	38.92	0.0364
9.833	0.1774	38.93	0.0367
9.85	0.1774	38.95	0.0349
9.867	0.1749	38.97	0.0364
9.883	0.1749	38.98	0.037
9.9	0.1731	39.	0.0357
9.917	0.1729	39.02	0.0372
9.933	0.1728	39.03	0.0371
9.95	0.1725	39.05	0.036
9.967	0.1711	39.07	0.036
9.983	0.1706	39.08	0.0362
10.	0.171	39.1	0.0359
10.02	0.1696	39.12	0.0371
10.03	0.1698	39.13	0.0361
10.05	0.1674	39.15	0.0349
10.07	0.1688	39.17	0.036
10.08	0.1681	39.18	0.0362
10.1	0.1674	39.2	0.0358
10.12	0.1682	39.22	0.0356
10.13	0.1677	39.23	0.0363
10.15	0.1794	39.25	0.0358
10.17	0.1782	39.27	0.0355
10.18	0.1655	39.28	0.0349
10.2	0.165	39.3	0.036
10.22	0.1639	39.32	0.0358
10.23	0.1621	39.33	0.036
10.25	0.1613	39.35	0.0356
10.27	0.1615	39.37	0.035
10.28	0.1617	39.38	0.0348
10.3	0.1603	39.4	0.035
10.32	0.1609	39.42	0.0361
10.33	0.1585	39.43	0.0349
10.35	0.1592	39.45	0.035
10.37	0.1583	39.47	0.0352
10.38	0.1577	39.48	0.0354

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
10.4	0.1582	39.5	0.036
10.42	0.1568	39.52	0.0351
10.43	0.1576	39.53	0.0355
10.45	0.156	39.55	0.0345
10.47	0.1565	39.57	0.0355
10.48	0.1555	39.58	0.0362
10.5	0.1554	39.6	0.0348
10.52	0.1547	39.62	0.039
10.53	0.1535	39.63	0.0382
10.55	0.1531	39.65	0.0386
10.57	0.1536	39.67	0.0375
10.58	0.1517	39.68	0.0378
10.6	0.1517	39.7	0.0385
10.62	0.1515	39.72	0.0378
10.63	0.1521	39.73	0.0381
10.65	0.1514	39.75	0.0377
10.67	0.1495	39.77	0.0377
10.68	0.1504	39.78	0.0383
10.7	0.1494	39.8	0.0376
10.72	0.1485	39.82	0.0376
10.73	0.1482	39.83	0.038
10.75	0.1476	39.85	0.0382
10.77	0.1471	39.87	0.0382
10.78	0.1438	39.88	0.0376
10.8	0.1473	39.9	0.0371
10.82	0.3405	39.92	0.038
10.83	0.1042	39.93	0.0386
10.85	0.1443	39.95	0.0391
10.87	0.1459	39.97	0.0388
10.88	0.145	39.98	0.0382
10.9	0.1442	40.	0.0395
10.92	0.1439	40.02	0.0384
10.93	0.1435	40.03	0.038
10.95	0.1434	40.05	0.0387
10.97	0.1426	40.07	0.0384
10.98	0.142	40.08	0.0383
11.	0.1423	40.1	0.0373
11.02	0.1411	40.12	0.0368
11.03	0.1406	40.13	0.0381
11.05	0.1403	40.15	0.0364
11.07	0.1392	40.17	0.0385
11.08	0.1397	40.18	0.0387
11.1	0.1391	40.2	0.0382
11.12	0.1374	40.22	0.0382
11.13	0.1388	40.23	0.0373
11.15	0.1376	40.25	0.0379
11.17	0.1367	40.27	0.038
11.18	0.1356	40.28	0.0381
11.2	0.1356	40.3	0.0373
11.22	0.1362	40.32	0.038
11.23	0.1354	40.33	0.0378
11.25	0.1368	40.35	0.0377
11.27	0.1341	40.37	0.0377
11.28	0.1351	40.38	0.0383
11.3	0.1351	40.4	0.0372
11.32	0.1326	40.42	0.0373
11.33	0.1315	40.43	0.0377
11.35	0.1326	40.45	0.0377
11.37	0.1335	40.47	0.0375
11.38	0.1329	40.48	0.0376
11.4	0.1315	40.5	0.038
11.42	0.1308	40.52	0.0378
11.43	0.1309	40.53	0.0378
11.45	0.1305	40.55	0.0383
11.47	0.1302	40.57	0.0368
11.48	0.1293	40.58	0.0385

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
11.5	0.1296	40.6	0.0381
11.52	0.1287	40.62	0.0383
11.53	0.1293	40.63	0.0378
11.55	0.1279	40.65	0.0368
11.57	0.1274	40.67	0.0369
11.58	0.129	40.68	0.0379
11.6	0.1267	40.7	0.0373
11.62	0.1292	40.72	0.0381
11.63	0.1281	40.73	0.0372
11.65	0.1273	40.75	0.0375
11.67	0.1264	40.77	0.0381
11.68	0.1273	40.78	0.0378
11.7	0.1273	40.8	0.0383
11.72	0.1264	40.82	0.0366
11.73	0.1265	40.83	0.0372
11.75	0.1259	40.85	0.0375
11.77	0.1253	40.87	0.0375
11.78	0.1255	40.88	0.0365
11.8	0.1253	40.9	0.0376
11.82	0.1258	40.92	0.038
11.83	0.1222	40.93	0.0377
11.85	0.123	40.95	0.0371
11.87	0.1232	40.97	0.0374
11.88	0.1226	40.98	0.0377
11.9	0.1242	41.	0.0383
11.92	0.1218	41.02	0.038
11.93	0.1213	41.03	0.0376
11.95	0.1216	41.05	0.0381
11.97	0.1208	41.07	0.0375
11.98	0.1207	41.08	0.0381
12.	0.1192	41.1	0.037
12.02	0.1177	41.12	0.0379
12.03	0.1201	41.13	0.0383
12.05	0.1191	41.15	0.0377
12.07	0.1183	41.17	0.0372
12.08	0.1188	41.18	0.0367
12.1	0.1182	41.2	0.0371
12.12	0.1177	41.22	0.037
12.13	0.1174	41.23	0.0369
12.15	0.118	41.25	0.0382
12.17	0.1172	41.27	0.0361
12.18	0.1166	41.28	0.0374
12.2	0.1168	41.3	0.0368
12.22	0.1168	41.32	0.0378
12.23	0.116	41.33	0.0374
12.25	0.1154	41.35	0.0388
12.27	0.1152	41.37	0.0381
12.28	0.1153	41.38	0.0375
12.3	0.1148	41.4	0.0369
12.32	0.1148	41.42	0.0378
12.33	0.1152	41.43	0.0376
12.35	0.1121	41.45	0.038
12.37	0.1133	41.47	0.0376
12.38	0.113	41.48	0.0367
12.4	0.1126	41.5	0.0379
12.42	0.1115	41.52	0.0372
12.43	0.1119	41.53	0.0357
12.45	0.1105	41.55	0.0374
12.47	0.112	41.57	0.0377
12.48	0.1105	41.58	0.0369
12.5	0.11	41.6	0.0369
12.52	0.1109	41.62	0.0361
12.53	0.1093	41.63	0.0369
12.55	0.1089	41.65	0.0373
12.57	0.1104	41.67	0.0368
12.58	0.1096	41.68	0.0379

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
12.6	0.1091	41.7	0.0376
12.62	0.1086	41.72	0.0386
12.63	0.108	41.73	0.037
12.65	0.1082	41.75	0.0373
12.67	0.1082	41.77	0.037
12.68	0.1072	41.78	0.0372
12.7	0.1074	41.8	0.0375
12.72	0.1066	41.82	0.0376
12.73	0.1065	41.83	0.0366
12.75	0.107	41.85	0.0367
12.77	0.106	41.87	0.0375
12.78	0.1055	41.88	0.0368
12.8	0.1056	41.9	0.037
12.82	0.1056	41.92	0.0359
12.83	0.1048	41.93	0.0378
12.85	0.1048	41.95	0.0361
12.87	0.1047	41.97	0.0373
12.88	0.1037	41.98	0.0378
12.9	0.1042	42.	0.0374
12.92	0.1037	42.02	0.0368
12.93	0.1036	42.03	0.0364
12.95	0.1033	42.05	0.0372
12.97	0.1027	42.07	0.0366
12.98	0.1039	42.08	0.0369
13.	0.1023	42.1	0.0375
13.02	0.1022	42.12	0.0369
13.03	0.1025	42.13	0.0364
13.05	0.1012	42.15	0.0369
13.07	0.1006	42.17	0.0369
13.08	0.1008	42.18	0.0364
13.1	0.1004	42.2	0.0369
13.12	0.1006	42.22	0.0369
13.13	0.1003	42.23	0.0368
13.15	0.1007	42.25	0.0359
13.17	0.0995	42.27	0.036
13.18	0.0995	42.28	0.0361
13.2	0.0993	42.3	0.0358
13.22	0.0978	42.32	0.0371
13.23	0.0979	42.33	0.0358
13.25	0.0988	42.35	0.0363
13.27	0.0967	42.37	0.0366
13.28	0.0972	42.38	0.0357
13.3	0.0973	42.4	0.0368
13.32	0.0979	42.42	0.0356
13.33	0.0975	42.43	0.0363
13.35	0.0955	42.45	0.0362
13.37	0.0965	42.47	0.0362
13.38	0.096	42.48	0.0358
13.4	0.097	42.5	0.0365
13.42	0.0962	42.52	0.0353
13.43	0.0958	42.53	0.0349
13.45	0.0958	42.55	0.035
13.47	0.0947	42.57	0.0353
13.48	0.0955	42.58	0.0358
13.5	0.0939	42.6	0.0351
13.52	0.0947	42.62	0.0367
13.53	0.0945	42.63	0.0354
13.55	0.0941	42.65	0.0354
13.57	0.0934	42.67	0.0356
13.58	0.0936	42.68	0.0353
13.6	0.0931	42.7	0.0358
13.62	0.0953	42.72	0.0362
13.63	0.0951	42.73	0.0355
13.65	0.0959	42.75	0.0348
13.67	0.0938	42.77	0.0362
13.68	0.0946	42.78	0.0353

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
13.7	0.0949	42.8	0.036
13.72	0.0945	42.82	0.0359
13.73	0.0948	42.83	0.0343
13.75	0.0929	42.85	0.0355
13.77	0.0945	42.87	0.036
13.78	0.0935	42.88	0.0357
13.8	0.0929	42.9	0.0365
13.82	0.0931	42.92	0.0345
13.83	0.093	42.93	0.0357
13.85	0.0924	42.95	0.0357
13.87	0.093	42.97	0.0352
13.88	0.0918	42.98	0.0362
13.9	0.0924	43.	0.0346
13.92	0.0908	43.02	0.0354
13.93	0.0907	43.03	0.0354
13.95	0.0914	43.05	0.0344
13.97	0.0917	43.07	0.0354
13.98	0.0895	43.08	0.0356
14.	0.0901	43.1	0.0358
14.02	0.0902	43.12	0.0359
14.03	0.0901	43.13	0.0342
14.05	0.0911	43.15	0.0349
14.07	0.0902	43.17	0.0349
14.08	0.0893	43.18	0.0336
14.1	0.0885	43.2	0.0339
14.12	0.0892	43.22	0.0357
14.13	0.0893	43.23	0.0353
14.15	0.089	43.25	0.0354
14.17	0.0895	43.27	0.0358
14.18	0.0886	43.28	0.0346
14.2	0.0877	43.3	0.0351
14.22	0.0884	43.32	0.0359
14.23	0.0874	43.33	0.0353
14.25	0.0868	43.35	0.0346
14.27	0.088	43.37	0.0341
14.28	0.0875	43.38	0.0349
14.3	0.0868	43.4	0.0345
14.32	0.0872	43.42	0.0339
14.33	0.0872	43.43	0.035
14.35	0.0859	43.45	0.0348
14.37	0.0874	43.47	0.0356
14.38	0.0859	43.48	0.0347
14.4	0.0869	43.5	0.0354
14.42	0.0859	43.52	0.0348
14.43	0.087	43.53	0.0344
14.45	0.0857	43.55	0.035
14.47	0.085	43.57	0.0354
14.48	0.0857	43.58	0.0346
14.5	0.0857	43.6	0.0347
14.52	0.0859	43.62	0.0378
14.53	0.0845	43.63	0.0372
14.55	0.0841	43.65	0.0367
14.57	0.0851	43.67	0.0363
14.58	0.0849	43.68	0.0381
14.6	0.0846	43.7	0.0372
14.62	0.0846	43.72	0.0372
14.63	0.0839	43.73	0.037
14.65	0.0836	43.75	0.0371
14.67	0.0824	43.77	0.0373
14.68	0.0835	43.78	0.0378
14.7	0.0834	43.8	0.0373
14.72	0.0824	43.82	0.0366
14.73	0.0828	43.83	0.0365
14.75	0.0829	43.85	0.0367
14.77	0.0825	43.87	0.037
14.78	0.0829	43.88	0.0363

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
14.8	0.083	43.9	0.0378
14.82	0.0811	43.92	0.0364
14.83	0.0814	43.93	0.0367
14.85	0.0816	43.95	0.0374
14.87	0.0817	43.97	0.0373
14.88	0.0814	43.98	0.0371
14.9	0.0826	44.	0.0377
14.92	0.0812	44.02	0.0367
14.93	0.0815	44.03	0.0361
14.95	0.0618	44.05	0.037
14.97	0.0804	44.07	0.0373
14.98	0.0811	44.08	0.0377
15.	0.0815	44.1	0.0367
15.02	0.0804	44.12	0.0378
15.03	0.0913	44.13	0.0381
15.05	0.0613	44.15	0.0375
15.07	0.0967	44.17	0.0378
15.08	0.0922	44.18	0.0375
15.1	0.0899	44.2	0.0383
15.12	0.0895	44.22	0.0375
15.13	0.0903	44.23	0.0364
15.15	0.0916	44.25	0.0366
15.17	0.0916	44.27	0.0374
15.18	0.0897	44.28	0.0364
15.2	0.0897	44.3	0.0373
15.22	0.09	44.32	0.0367
15.23	0.0896	44.33	0.0367
15.25	0.0883	44.35	0.0369
15.27	0.0887	44.37	0.0367
15.28	0.0893	44.38	0.0368
15.3	0.0878	44.4	0.0378
15.32	0.0873	44.42	0.0369
15.33	0.0876	44.43	0.0372
15.35	0.0868	44.45	0.0381
15.37	0.0874	44.47	0.0378
15.38	0.0864	44.48	0.0368
15.4	0.0866	44.5	0.0365
15.42	0.0862	44.52	0.0371
15.43	0.0853	44.53	0.0372
15.45	0.0852	44.55	0.0377
15.47	0.0846	44.57	0.0369
15.48	0.0864	44.58	0.0369
15.5	0.0847	44.6	0.0363
15.52	0.0855	44.62	0.0366
15.53	0.0847	44.63	0.0365
15.55	0.0852	44.65	0.0368
15.57	0.0843	44.67	0.0374
15.58	0.0669	44.68	0.0372
15.6	0.0715	44.7	0.0362
15.62	0.0707	44.72	0.0363
15.63	0.0714	44.73	0.0368
15.65	0.0716	44.75	0.0364
15.67	0.0714	44.77	0.037
15.68	0.0717	44.78	0.0349
15.7	0.0709	44.8	0.036
15.72	0.0705	44.82	0.0367
15.73	0.0704	44.83	0.0378
15.75	0.071	44.85	0.0362
15.77	0.0706	44.87	0.0367
15.78	0.0705	44.88	0.0367
15.8	0.07	44.9	0.0364
15.82	0.0709	44.92	0.0364
15.83	0.0701	44.93	0.0374
15.85	0.0701	44.95	0.0375
15.87	0.0704	44.97	0.0367
15.88	0.0698	44.98	0.0371

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
15.9	0.0701	45.	0.037
15.92	0.0703	45.02	0.0356
15.93	0.0699	45.03	0.037
15.95	0.0698	45.05	0.0371
15.97	0.0691	45.07	0.0371
15.98	0.0695	45.08	0.0367
16.	0.0698	45.1	0.037
16.02	0.0689	45.12	0.0369
16.03	0.0685	45.13	0.0364
16.05	0.0687	45.15	0.0357
16.07	0.0695	45.17	0.0368
16.08	0.0689	45.18	0.0363
16.1	0.0686	45.2	0.0368
16.12	0.0685	45.22	0.0365
16.13	0.0687	45.23	0.0358
16.15	0.0677	45.25	0.0365
16.17	0.067	45.27	0.0362
16.18	0.0678	45.28	0.0361
16.2	0.0676	45.3	0.037
16.22	0.0677	45.32	0.0364
16.23	0.0675	45.33	0.0379
16.25	0.0681	45.35	0.0375
16.27	0.0682	45.37	0.0363
16.28	0.0668	45.38	0.0361
16.3	0.0669	45.4	0.0367
16.32	0.0681	45.42	0.0369
16.33	0.0682	45.43	0.036
16.35	0.0672	45.45	0.0367
16.37	0.0681	45.47	0.0364
16.38	0.0668	45.48	0.0367
16.4	0.0664	45.5	0.0375
16.42	0.0675	45.52	0.0361
16.43	0.0677	45.53	0.0368
16.45	0.0674	45.55	0.0362
16.47	0.0673	45.57	0.0369
16.48	0.0674	45.58	0.036
16.5	0.0667	45.6	0.0371
16.52	0.0659	45.62	0.0348
16.53	0.0657	45.63	0.0357
16.55	0.0677	45.65	0.0356
16.57	0.0657	45.67	0.0348
16.58	0.0651	45.68	0.0345
16.6	0.0663	45.7	0.0344
16.62	0.0663	45.72	0.0342
16.63	0.0664	45.73	0.0342
16.65	0.0654	45.75	0.0347
16.67	0.0662	45.77	0.0351
16.68	0.0657	45.78	0.0341
16.7	0.0659	45.8	0.034
16.72	0.0652	45.82	0.0345
16.73	0.066	45.83	0.0336
16.75	0.0655	45.85	0.0343
16.77	0.0652	45.87	0.0334
16.78	0.0642	45.88	0.0324
16.8	0.0655	45.9	0.0355
16.82	0.0653	45.92	0.0337
16.83	0.0655	45.93	0.0349
16.85	0.0635	45.95	0.0333
16.87	0.0648	45.97	0.0338
16.88	0.065	45.98	0.0352
16.9	0.0651	46.	0.0347
16.92	0.0641	46.02	0.0326
16.93	0.063	46.03	0.0342
16.95	0.0634	46.05	0.0339
16.97	0.0645	46.07	0.0338
16.98	0.0644	46.08	0.0343

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
17.	0.0632	46.1	0.0342
17.02	0.0644	46.12	0.0348
17.03	0.0634	46.13	0.0337
17.05	0.065	46.15	0.0342
17.07	0.064	46.17	0.0344
17.08	0.0628	46.18	0.0339
17.1	0.0635	46.2	0.0348
17.12	0.0634	46.22	0.0337
17.13	0.0637	46.23	0.0336
17.15	0.063	46.25	0.0341
17.17	0.0633	46.27	0.034
17.18	0.0627	46.28	0.0335
17.2	0.0626	46.3	0.0331
17.22	0.063	46.32	0.0334
17.23	0.0621	46.33	0.0329
17.25	0.0615	46.35	0.0331
17.27	0.063	46.37	0.0332
17.28	0.0631	46.38	0.0333
17.3	0.0621	46.4	0.0332
17.32	0.0619	46.42	0.0341
17.33	0.0615	46.43	0.0331
17.35	0.0613	46.45	0.0352
17.37	0.0609	46.47	0.0366
17.38	0.0608	46.48	0.0325
17.4	0.0614	46.5	0.0378
17.42	0.0615	46.52	0.1231
17.43	0.0614	46.53	0.0052
17.45	0.0606	46.55	0.0336
17.47	0.0612	46.57	0.0402
17.48	0.0605	46.58	0.046
17.5	0.0615	46.6	0.0444
17.52	0.0622	46.62	0.0436
17.53	0.06	46.63	0.0441
17.55	0.0615	46.65	0.0444
17.57	0.0604	46.67	0.0339
17.58	0.0601	46.68	0.0329
17.6	0.0604	46.7	0.0351
17.62	0.0612	46.72	0.042
17.63	0.0608	46.73	0.0303
17.65	0.0611	46.75	0.0298
17.67	0.0601	46.77	0.03
17.68	0.0606	46.78	0.0313
17.7	0.0606	46.8	0.0308
17.72	0.0609	46.82	0.0304
17.73	0.0599	46.83	0.0307
17.75	0.0607	46.85	0.0306
17.77	0.0612	46.87	0.0304
17.78	0.0602	46.88	0.0304
17.8	0.0598	46.9	0.0312
17.82	0.0586	46.92	0.031
17.83	0.0595	46.93	0.032
17.85	0.06	46.95	0.0314
17.87	0.0593	46.97	0.0312
17.88	0.0586	46.98	0.0302
17.9	0.0594	47.	0.0304
17.92	0.0598	47.02	0.0317
17.93	0.059	47.03	0.031
17.95	0.0594	47.05	0.0315
17.97	0.0578	47.07	0.032
17.98	0.0584	47.08	0.0309
18.	0.0585	47.1	0.0323
18.02	0.0581	47.12	0.031
18.03	0.0589	47.13	0.0316
18.05	0.0584	47.15	0.0323
18.07	0.0584	47.17	0.0323
18.08	0.0586	47.18	0.0305

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
18.1	0.0579	47.2	0.0312
18.12	0.0584	47.22	0.0314
18.13	0.0579	47.23	0.0304
18.15	0.0587	47.25	0.0311
18.17	0.0584	47.27	0.0301
18.18	0.058	47.28	0.0311
18.2	0.0582	47.3	0.0307
18.22	0.0581	47.32	0.0304
18.23	0.0561	47.33	0.0304
18.25	0.0575	47.35	0.0301
18.27	0.0581	47.37	0.031
18.28	0.0577	47.38	0.0306
18.3	0.0569	47.4	0.0296
18.32	0.0579	47.42	0.0292
18.33	0.0573	47.43	0.0296
18.35	0.0568	47.45	0.0296
18.37	0.058	47.47	0.0303
18.38	0.0568	47.48	0.0303
18.4	0.057	47.5	0.0311
18.42	0.0571	47.52	0.0302
18.43	0.0566	47.53	0.0297
18.45	0.0557	47.55	0.029
18.47	0.057	47.57	0.0299
18.48	0.0564	47.58	0.0307
18.5	0.0565	47.6	0.0303
18.52	0.057	47.62	0.035
18.53	0.0568	47.63	0.0351
18.55	0.0561	47.65	0.0354
18.57	0.0569	47.67	0.0343
18.58	0.0558	47.68	0.0345
18.6	0.0567	47.7	0.0342
18.62	0.0558	47.72	0.0344
18.63	0.056	47.73	0.0344
18.65	0.0557	47.75	0.0345
18.67	0.0559	47.77	0.0344
18.68	0.0555	47.78	0.0349
18.7	0.0555	47.8	0.035
18.72	0.0553	47.82	0.0346
18.73	0.0551	47.83	0.0347
18.75	0.0558	47.85	0.0343
18.77	0.0564	47.87	0.034
18.78	0.0558	47.88	0.0337
18.8	0.0542	47.9	0.0338
18.82	0.0544	47.92	0.0343
18.83	0.0543	47.93	0.0338
18.85	0.0546	47.95	0.0337
18.87	0.0551	47.97	0.0349
18.88	0.0555	47.98	0.0346
18.9	0.0548	48.	0.0353
18.92	0.0541	48.02	0.0349
18.93	0.0543	48.03	0.0334
18.95	0.0549	48.05	0.0338
18.97	0.0546	48.07	0.0339
18.98	0.0546	48.08	0.0347
19.	0.0541	48.1	0.0347
19.02	0.0535	48.12	0.033
19.03	0.0542	48.13	0.0346
19.05	0.0537	48.15	0.0341
19.07	0.0537	48.17	0.0341
19.08	0.0541	48.18	0.0342
19.1	0.0534	48.2	0.0344
19.12	0.0527	48.22	0.0343
19.13	0.0534	48.23	0.0342
19.15	0.0521	48.25	0.0337
19.17	0.0521	48.27	0.0344
19.18	0.0537	48.28	0.0347

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
19.2	0.052	48.3	0.0339
19.22	0.0525	48.32	0.034
19.23	0.0522	48.33	0.0349
19.25	0.0523	48.35	0.0334
19.27	0.0517	48.37	0.0341
19.28	0.0524	48.38	0.033
19.3	0.0522	48.4	0.034
19.32	0.0528	48.42	0.0344
19.33	0.0527	48.43	0.0352
19.35	0.0524	48.45	0.0346
19.37	0.0513	48.47	0.0347
19.38	0.0521	48.48	0.0335
19.4	0.0528	48.5	0.0332
19.42	0.0506	48.52	0.0343
19.43	0.0513	48.53	0.0336
19.45	0.0518	48.55	0.0337
19.47	0.0512	48.57	0.0335
19.48	0.052	48.58	0.0335
19.5	0.0518	48.6	0.0335
19.52	0.0507	48.62	0.0335
19.53	0.051	48.63	0.0346
19.55	0.0509	48.65	0.0335
19.57	0.0512	48.67	0.0341
19.58	0.0503	48.68	0.0332
19.6	0.0499	48.7	0.0329
19.62	0.0519	48.72	0.0345
19.63	0.0513	48.73	0.0341
19.65	0.0505	48.75	0.0335
19.67	0.0502	48.77	0.0327
19.68	0.051	48.78	0.0335
19.7	0.0502	48.8	0.0337
19.72	0.0504	48.82	0.0334
19.73	0.0518	48.83	0.0334
19.75	0.0506	48.85	0.0334
19.77	0.0512	48.87	0.034
19.78	0.0517	48.88	0.0339
19.8	0.0517	48.9	0.0343
19.82	0.0514	48.92	0.0327
19.83	0.0515	48.93	0.0342
19.85	0.0522	48.95	0.0314
19.87	0.0516	48.97	0.0337
19.88	0.0524	48.98	0.0326
19.9	0.0514	49.	0.0329
19.92	0.0517	49.02	0.0331
19.93	0.0516	49.03	0.0333
19.95	0.0512	49.05	0.0341
19.97	0.0502	49.07	0.0321
19.98	0.0513	49.08	0.0337
20.	0.0505	49.1	0.0338
20.02	0.0501	49.12	0.0327
20.03	0.0503	49.13	0.0335
20.05	0.0505	49.15	0.0341
20.07	0.0491	49.17	0.0328
20.08	0.0494	49.18	0.0323
20.1	0.0498	49.2	0.0325
20.12	0.0497	49.22	0.0336
20.13	0.049	49.23	0.0322
20.15	0.0484	49.25	0.0325
20.17	0.0493	49.27	0.0339
20.18	0.0489	49.28	0.0317
20.2	0.0493	49.3	0.0335
20.22	0.0497	49.32	0.0331
20.23	0.0498	49.33	0.0332
20.25	0.05	49.35	0.0329
20.27	0.0487	49.37	0.0322
20.28	0.0489	49.38	0.0326

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
20.3	0.0485	49.4	0.0326
20.32	0.0492	49.42	0.0333
20.33	0.0496	49.43	0.0315
20.35	0.0494	49.45	0.0317
20.37	0.0485	49.47	0.0325
20.38	0.0482	49.48	0.0317
20.4	0.0487	49.5	0.0316
20.42	0.0481	49.52	0.033
20.43	0.0678	49.53	0.0321
20.45	0.0591	49.55	0.033
20.47	0.0611	49.57	0.0326
20.48	0.0592	49.58	0.0307
20.5	0.0609	49.6	0.0328
20.52	0.0615	49.62	0.0345
20.53	0.0591	49.63	0.0361
20.55	0.0473	49.65	0.0349
20.57	0.0463	49.67	0.0356
20.58	0.0457	49.68	0.0362
20.6	0.0472	49.7	0.0354
20.62	0.0476	49.72	0.0349
20.63	0.0466	49.73	0.0342
20.65	0.047	49.75	0.0348
20.67	0.0464	49.77	0.0353
20.68	0.047	49.78	0.0349
20.7	0.0466	49.8	0.0352
20.72	0.0447	49.82	0.035
20.73	0.045	49.83	0.0351
20.75	0.0454	49.85	0.036
20.77	0.0466	49.87	0.0351
20.78	0.0458	49.88	0.0349
20.8	0.0445	49.9	0.034
20.82	0.0462	49.92	0.0346
20.83	0.0457	49.93	0.0348
20.85	0.0462	49.95	0.0347
20.87	0.0451	49.97	0.0338
20.88	0.0408	49.98	0.0342
20.9	0.0345	50.	0.0343
20.92	0.0459	50.02	0.0348
20.93	0.0453	50.03	0.0345
20.95	0.0461	50.05	0.035
20.97	0.0444	50.07	0.0339
20.98	0.0443	50.08	0.035
21.	0.0447	50.1	0.035
21.02	0.0448	50.12	0.0348
21.03	0.044	50.13	0.0346
21.05	0.0448	50.15	0.0345
21.07	0.0443	50.17	0.0346
21.08	0.0441	50.18	0.0332
21.1	0.044	50.2	0.0349
21.12	0.0435	50.22	0.0344
21.13	0.0438	50.23	0.0331
21.15	0.0435	50.25	0.0335
21.17	0.0447	50.27	0.0344
21.18	0.0427	50.28	0.0338
21.2	0.0433	50.3	0.0337
21.22	0.0439	50.32	0.0344
21.23	0.0428	50.33	0.034
21.25	0.0433	50.35	0.0337
21.27	0.0429	50.37	0.0335
21.28	0.0437	50.38	0.0334
21.3	0.0423	50.4	0.0341
21.32	0.0428	50.42	0.0329
21.33	0.0434	50.43	0.0335
21.35	0.0436	50.45	0.0348
21.37	0.0431	50.47	0.0337
21.38	0.0419	50.48	0.0346

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
21.4	0.0429	50.5	0.0335
21.42	0.043	50.52	0.0333
21.43	0.042	50.53	0.0334
21.45	0.0424	50.55	0.0351
21.47	0.043	50.57	0.0344
21.48	0.0431	50.58	0.034
21.5	0.0419	50.6	0.0334
21.52	0.0413	50.62	0.0335
21.53	0.0421	50.63	0.0329
21.55	0.0419	50.65	0.0332
21.57	0.0418	50.67	0.0328
21.58	0.0422	50.68	0.0331
21.6	0.0422	50.7	0.0337
21.62	0.049	50.72	0.0337
21.63	0.0501	50.73	0.0335
21.65	0.0499	50.75	0.0327
21.67	0.046	50.77	0.0322
21.68	0.0478	50.78	0.0331
21.7	0.0485	50.8	0.033
21.72	0.0475	50.82	0.0325
21.73	0.0486	50.83	0.0325
21.75	0.0484	50.85	0.0314
21.77	0.0475	50.87	0.0321
21.78	0.0477	50.88	0.0324
21.8	0.047	50.9	0.0325
21.82	0.0468	50.92	0.0314
21.83	0.0477	50.93	0.0335
21.85	0.0462	50.95	0.0329
21.87	0.0478	50.97	0.0328
21.88	0.0478	50.98	0.0324
21.9	0.0477	51.	0.0323
21.92	0.046	51.02	0.0318
21.93	0.0473	51.03	0.033
21.95	0.0464	51.05	0.0325
21.97	0.0473	51.07	0.0322
21.98	0.0482	51.08	0.033
22.	0.047	51.1	0.0323
22.02	0.047	51.12	0.0316
22.03	0.0465	51.13	0.0326
22.05	0.0457	51.15	0.0322
22.07	0.0462	51.17	0.0326
22.08	0.0463	51.18	0.0327
22.1	0.047	51.2	0.032
22.12	0.0466	51.22	0.0332
22.13	0.0479	51.23	0.0327
22.15	0.0466	51.25	0.0326
22.17	0.0459	51.27	0.0329
22.18	0.0465	51.28	0.0315
22.2	0.0461	51.3	0.0333
22.22	0.0456	51.32	0.0326
22.23	0.0466	51.33	0.0316
22.25	0.0458	51.35	0.0338
22.27	0.0464	51.37	0.0327
22.28	0.0454	51.38	0.0329
22.3	0.0463	51.4	0.0319
22.32	0.0455	51.42	0.0326
22.33	0.0458	51.43	0.0324
22.35	0.0443	51.45	0.0318
22.37	0.0458	51.47	0.0333
22.38	0.0461	51.48	0.0329
22.4	0.0444	51.5	0.0321
22.42	0.0445	51.52	0.0326
22.43	0.0453	51.53	0.0327
22.45	0.0444	51.55	0.0334
22.47	0.0437	51.57	0.0328
22.48	0.0455	51.58	0.0322

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
22.5	0.0448	51.6	0.0325
22.52	0.0432	51.62	0.0358
22.53	0.0438	51.63	0.0369
22.55	0.044	51.65	0.0359
22.57	0.0453	51.67	0.0366
22.58	0.0444	51.68	0.0364
22.6	0.0436	51.7	0.0351
22.62	0.0445	51.72	0.0354
22.63	0.0436	51.73	0.0362
22.65	0.0453	51.75	0.0363
22.67	0.044	51.77	0.0365
22.68	0.0436	51.78	0.0356
22.7	0.0443	51.8	0.0358
22.72	0.0434	51.82	0.0365
22.73	0.0439	51.83	0.0361
22.75	0.0441	51.85	0.0363
22.77	0.0445	51.87	0.0366
22.78	0.0445	51.88	0.0356
22.8	0.0438	51.9	0.0359
22.82	0.0433	51.92	0.0369
22.83	0.0428	51.93	0.0355
22.85	0.0421	51.95	0.036
22.87	0.0432	51.97	0.036
22.88	0.0438	51.98	0.0349
22.9	0.043	52.	0.0365
22.92	0.0443	52.02	0.0353
22.93	0.0428	52.03	0.0352
22.95	0.0429	52.05	0.0362
22.97	0.0433	52.07	0.0359
22.98	0.0434	52.08	0.0357
23.	0.043	52.1	0.0358
23.02	0.043	52.12	0.0358
23.03	0.0424	52.13	0.0359
23.05	0.0426	52.15	0.0353
23.07	0.0422	52.17	0.0353
23.08	0.0429	52.18	0.0354
23.1	0.0429	52.2	0.0352
23.12	0.042	52.22	0.035
23.13	0.0413	52.23	0.0359
23.15	0.0429	52.25	0.0357
23.17	0.0423	52.27	0.0364
23.18	0.0422	52.28	0.0354
23.2	0.0423	52.3	0.0349
23.22	0.0432	52.32	0.0356
23.23	0.0422	52.33	0.0355
23.25	0.0416	52.35	0.0355
23.27	0.0413	52.37	0.0349
23.28	0.0424	52.38	0.0349
23.3	0.0418	52.4	0.0354
23.32	0.0416	52.42	0.0359
23.33	0.0414	52.43	0.0347
23.35	0.0415	52.45	0.035
23.37	0.0412	52.47	0.0357
23.38	0.0414	52.48	0.0343
23.4	0.0408	52.5	0.0344
23.42	0.0393	52.52	0.0338
23.43	0.04	52.53	0.0346
23.45	0.041	52.55	0.0358
23.47	0.0413	52.57	0.0346
23.48	0.0409	52.58	0.0352
23.5	0.0407	52.6	0.0343
23.52	0.0393	52.62	0.0356
23.53	0.0402	52.63	0.0353
23.55	0.0405	52.65	0.0362
23.57	0.0398	52.67	0.0359
23.58	0.0405	52.68	0.0349

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
23.6	0.04	52.7	0.035
23.62	0.0467	52.72	0.0354
23.63	0.0461	52.73	0.0346
23.65	0.046	52.75	0.0345
23.67	0.0457	52.77	0.0348
23.68	0.0465	52.78	0.0345
23.7	0.0463	52.8	0.0339
23.72	0.0459	52.82	0.0333
23.73	0.0441	52.83	0.034
23.75	0.0445	52.85	0.0344
23.77	0.0457	52.87	0.0339
23.78	0.0463	52.88	0.0344
23.8	0.0458	52.9	0.0351
23.82	0.046	52.92	0.0349
23.83	0.0453	52.93	0.0343
23.85	0.0448	52.95	0.034
23.87	0.0469	52.97	0.0337
23.88	0.046	52.98	0.0343
23.9	0.0462	53.	0.034
23.92	0.0458	53.02	0.0335
23.93	0.0454	53.03	0.0335
23.95	0.0455	53.05	0.0342
23.97	0.0461	53.07	0.0344
23.98	0.0473	53.08	0.0349
24.	0.0452	53.1	0.0342
24.02	0.0459	53.12	0.0335
24.03	0.0457	53.13	0.0329
24.05	0.0455	53.15	0.034
24.07	0.0457	53.17	0.0343
24.08	0.0447	53.18	0.0337
24.1	0.0449	53.2	0.0337
24.12	0.0454	53.22	0.0326
24.13	0.0463	53.23	0.034
24.15	0.0457	53.25	0.0335
24.17	0.0453	53.27	0.0338
24.18	0.045	53.28	0.0342
24.2	0.045	53.3	0.033
24.22	0.0453	53.32	0.0341
24.23	0.0448	53.33	0.0333
24.25	0.0458	53.35	0.0323
24.27	0.0463	53.37	0.0343
24.28	0.0457	53.38	0.0327
24.3	0.0448	53.4	0.0325
24.32	0.0451	53.42	0.0334
24.33	0.045	53.43	0.0337
24.35	0.0461	53.45	0.0327
24.37	0.0458	53.47	0.0333
24.38	0.0439	53.48	0.033
24.4	0.0451	53.5	0.0334
24.42	0.045	53.52	0.0328
24.43	0.0451	53.53	0.0328
24.45	0.044	53.55	0.0322
24.47	0.0452	53.57	0.0323
24.48	0.0456	53.58	0.0319
24.5	0.0443	53.6	0.0322
24.52	0.0449	53.62	0.0364
24.53	0.0455	53.63	0.0364
24.55	0.0454	53.65	0.0375
24.57	0.0452	53.67	0.0365
24.58	0.0456	53.68	0.0368
24.6	0.0443	53.7	0.0359
24.62	0.0445	53.72	0.0354
24.63	0.0448	53.73	0.0375
24.65	0.0458	53.75	0.0362
24.67	0.0446	53.77	0.0363
24.68	0.0451	53.78	0.0362

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
24.7	0.0448	53.8	0.0358
24.72	0.0449	53.82	0.0357
24.73	0.0442	53.83	0.0353
24.75	0.0454	53.85	0.0351
24.77	0.0448	53.87	0.0357
24.78	0.0447	53.88	0.0359
24.8	0.0447	53.9	0.0363
24.82	0.0447	53.92	0.036
24.83	0.0446	53.93	0.0362
24.85	0.0452	53.95	0.0362
24.87	0.0447	53.97	0.0365
24.88	0.0455	53.98	0.0375
24.9	0.045	54.	0.0356
24.92	0.0448	54.02	0.036
24.93	0.0441	54.03	0.036
24.95	0.0445	54.05	0.0377
24.97	0.0446	54.07	0.0369
24.98	0.0445	54.08	0.035
25.	0.0456	54.1	0.0368
25.02	0.0439	54.12	0.0357
25.03	0.044	54.13	0.0352
25.05	0.0438	54.15	0.0356
25.07	0.044	54.17	0.0372
25.08	0.0439	54.18	0.0353
25.1	0.044	54.2	0.0359
25.12	0.0439	54.22	0.0359
25.13	0.0429	54.23	0.036
25.15	0.0435	54.25	0.036
25.17	0.0442	54.27	0.0354
25.18	0.0438	54.28	0.0357
25.2	0.044	54.3	0.0363
25.22	0.0429	54.32	0.0344
25.23	0.0437	54.33	0.0351
25.25	0.0428	54.35	0.0351
25.27	0.0436	54.37	0.0354
25.28	0.0421	54.38	0.0348
25.3	0.043	54.4	0.0361
25.32	0.0434	54.42	0.0352
25.33	0.0436	54.43	0.0351
25.35	0.0444	54.45	0.0352
25.37	0.0434	54.47	0.0349
25.38	0.0436	54.48	0.0352
25.4	0.0425	54.5	0.0346
25.42	0.0435	54.52	0.0344
25.43	0.0435	54.53	0.0357
25.45	0.0432	54.55	0.0345
25.47	0.044	54.57	0.0341
25.48	0.0434	54.58	0.0335
25.5	0.044	54.6	0.0337
25.52	0.0445	54.62	0.0345
25.53	0.0431	54.63	0.0352
25.55	0.0436	54.65	0.0343
25.57	0.0432	54.67	0.0335
25.58	0.0437	54.68	0.0345
25.6	0.0438	54.7	0.0342
25.62	0.0433	54.72	0.0341
25.63	0.0432	54.73	0.0337
25.65	0.0424	54.75	0.0343
25.67	0.0434	54.77	0.0345
25.68	0.0433	54.78	0.0342
25.7	0.0434	54.8	0.0332
25.72	0.0425	54.82	0.034
25.73	0.044	54.83	0.0335
25.75	0.0434	54.85	0.0337
25.77	0.0429	54.87	0.0341
25.78	0.0438	54.88	0.0337

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
25.8	0.0428	54.9	0.0342
25.82	0.043	54.92	0.0346
25.83	0.0436	54.93	0.0329
25.85	0.043	54.95	0.0332
25.87	0.0437	54.97	0.0341
25.88	0.0428	54.98	0.0329
25.9	0.0423	55.	0.034
25.92	0.0428	55.02	0.0331
25.93	0.0425	55.03	0.0338
25.95	0.0427	55.05	0.0336
25.97	0.0431	55.07	0.0345
25.98	0.0426	55.08	0.0324
26.	0.043	55.1	0.0329
26.02	0.0426	55.12	0.0329
26.03	0.0425	55.13	0.0327
26.05	0.0435	55.15	0.0331
26.07	0.0439	55.17	0.0334
26.08	0.0428	55.18	0.0339
26.1	0.0438	55.2	0.032
26.12	0.0427	55.22	0.0323
26.13	0.0425	55.23	0.0329
26.15	0.043	55.25	0.0322
26.17	0.0436	55.27	0.0322
26.18	0.0435	55.28	0.0332
26.2	0.0424	55.3	0.0332
26.22	0.042	55.32	0.0341
26.23	0.0423	55.33	0.0326
26.25	0.0432	55.35	0.0316
26.27	0.0429	55.37	0.0322
26.28	0.043	55.38	0.0327
26.3	0.0432	55.4	0.0339
26.32	0.0426	55.42	0.0326
26.33	0.0424	55.43	0.0324
26.35	0.0412	55.45	0.0323
26.37	0.0437	55.47	0.0327
26.38	0.0425	55.48	0.0326
26.4	0.0429	55.5	0.0319
26.42	0.0431	55.52	0.033
26.43	0.0425	55.53	0.0325
26.45	0.042	55.55	0.0326
26.47	0.0427	55.57	0.0318
26.48	0.0421	55.58	0.0323
26.5	0.0424	55.6	0.0315
26.52	0.0427	55.62	0.0365
26.53	0.0426	55.63	0.0383
26.55	0.0419	55.65	0.0366
26.57	0.0432	55.67	0.037
26.58	0.0421	55.68	0.0356
26.6	0.0425	55.7	0.0359
26.62	0.0417	55.72	0.0359
26.63	0.0414	55.73	0.0365
26.65	0.0413	55.75	0.0348
26.67	0.0426	55.77	0.0379
26.68	0.0427	55.78	0.0354
26.7	0.0422	55.8	0.0372
26.72	0.0419	55.82	0.037
26.73	0.0427	55.83	0.0363
26.75	0.0424	55.85	0.0365
26.77	0.0431	55.87	0.0357
26.78	0.0416	55.88	0.0357
26.8	0.0421	55.9	0.0362
26.82	0.0408	55.92	0.0372
26.83	0.0405	55.93	0.036
26.85	0.0419	55.95	0.0359
26.87	0.0422	55.97	0.0359
26.88	0.0432	55.98	0.0345

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
26.9	0.0421	56.	0.021
26.92	0.0421	56.02	0.0415
26.93	0.0425	56.03	0.0352
26.95	0.0424	56.05	0.0364
26.97	0.0426	56.07	0.0367
26.98	0.0418	56.08	0.0346
27.	0.0421	56.1	0.0319
27.02	0.0414	56.12	0.0506
27.03	0.0423	56.13	0.0468
27.05	0.0423	56.15	0.0455
27.07	0.0412	56.17	0.0272
27.08	0.0414	56.18	0.0302
27.1	0.0403	56.2	0.0342
27.12	0.0419	56.22	0.0031
27.13	0.042	56.23	0.0341
27.15	0.0423	56.25	0.0321
27.17	0.042	56.27	0.032
27.18	0.0419	56.28	0.0316
27.2	0.0426	56.3	0.0324
27.22	0.043	56.32	0.0322
27.23	0.0429	56.33	0.0322
27.25	0.0411	56.35	0.032
27.27	0.0417	56.37	0.0321
27.28	0.0431	56.38	0.0328
27.3	0.041	56.4	0.0328
27.32	0.0414	56.42	0.032
27.33	0.0405	56.43	0.0324
27.35	0.0399	56.45	0.0316
27.37	0.041	56.47	0.0321
27.38	0.0414	56.48	0.0306
27.4	0.0413	56.5	0.0313
27.42	0.042	56.52	0.0315
27.43	0.0413	56.53	0.0311
27.45	0.0413	56.55	0.0315
27.47	0.041	56.57	0.0315
27.48	0.0424	56.58	0.0316
27.5	0.0406	56.6	0.0315
27.52	0.0409	56.62	0.0317
27.53	0.0398	56.63	0.0313
27.55	0.0411	56.65	0.0321
27.57	0.0411	56.67	0.0313
27.58	0.0412	56.68	0.0312
27.6	0.0415	56.7	0.0316
27.62	0.0419	56.72	0.0312
27.63	0.0414	56.73	0.0312
27.65	0.042	56.75	0.0312
27.67	0.0424	56.77	0.0307
27.68	0.0428	56.78	0.0316
27.7	0.0416	56.8	0.0311
27.72	0.0415	56.82	0.0308
27.73	0.0402	56.83	0.0313
27.75	0.0419	56.85	0.0309
27.77	0.0425	56.87	0.0303
27.78	0.0417	56.88	0.0314
27.8	0.0416	56.9	0.031
27.82	0.0414	56.92	0.0324
27.83	0.0419	56.93	0.0307
27.85	0.0405	56.95	0.0305
27.87	0.0416	56.97	0.0308
27.88	0.0419	56.98	0.0309
27.9	0.0422	57.	0.0302
27.92	0.0412	57.02	0.0307
27.93	0.0417	57.03	0.0305
27.95	0.0413	57.05	0.0312
27.97	0.0419	57.07	0.0308
27.98	0.0414	57.08	0.0301

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
28.	0.0411	57.1	0.0302
28.02	0.0413	57.12	0.0304
28.03	0.0409	57.13	0.0316
28.05	0.0417	57.15	0.031
28.07	0.0422	57.17	0.0303
28.08	0.0421	57.18	0.0305
28.1	0.0409	57.2	0.03
28.12	0.0422	57.22	0.0296
28.13	0.0412	57.23	0.0303
28.15	0.0416	57.25	0.0303
28.17	0.0421	57.27	0.03
28.18	0.0417	57.28	0.03
28.2	0.0399	57.3	0.0293
28.22	0.0409	57.32	0.0293
28.23	0.0406	57.33	0.0304
28.25	0.0415	57.35	0.0297
28.27	0.0413	57.37	0.0293
28.28	0.0414	57.38	0.029
28.3	0.0426	57.4	0.0295
28.32	0.0411	57.42	0.0296
28.33	0.0407	57.43	0.0293
28.35	0.0412	57.45	0.0292
28.37	0.0415	57.47	0.0289
28.38	0.0398	57.48	0.0299
28.4	0.039	57.5	0.0291
28.42	0.0405	57.52	0.0299
28.43	0.0401	57.53	0.0301
28.45	0.04	57.55	0.029
28.47	0.0414	57.57	0.0294
28.48	0.0408	57.58	0.0298
28.5	0.0406	57.6	0.0304
28.52	0.0396	57.62	0.0357
28.53	0.0389	57.63	0.0363
28.55	0.0391	57.65	0.0354
28.57	0.0402	57.67	0.0358
28.58	0.0403	57.68	0.0368
28.6	0.0407	57.7	0.0356
28.62	0.0403	57.72	0.0359
28.63	0.0412	57.73	0.035
28.65	0.0394	57.75	0.035
28.67	0.0397	57.77	0.0365
28.68	0.0397	57.78	0.0364
28.7	0.0396	57.8	0.0359
28.72	0.0401	57.82	0.036
28.73	0.0387	57.83	0.0361
28.75	0.0389	57.85	0.0354
28.77	0.0398	57.87	0.0359
28.78	0.0395	57.88	0.036
28.8	0.039	57.9	0.0353
28.82	0.0397	57.92	0.0353
28.83	0.0386	57.93	0.0361
28.85	0.0394	57.95	0.0347
28.87	0.0401	57.97	0.036
28.88	0.0404	57.98	0.035
28.9	0.0401	58.	0.0362
28.92	0.0395	58.02	0.0358
28.93	0.04	58.03	0.0365
28.95	0.0392	58.05	0.0356
28.97	0.0379	58.07	0.0357
28.98	0.0387	58.08	0.0351
29.	0.0394	58.1	0.0367
29.02	0.0397	58.12	0.0352
29.03	0.0393	58.13	0.0353
29.05	0.0383	58.15	0.0354
29.07	0.0377	58.17	0.035
29.08	0.0386		

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 4.712

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.000201	cm/sec
y0	2.109	ft

T = K*b = 0.07473 cm²/sec

Data Set: C:\Users\ccarter\Golder Associates\19134560,Alcoa Copano APAR and SLERA - Project Files\5 Technic

PROJECT INFORMATION

Company: Golder
Client: Copano
Project: 19134560
Location: Copano Bed 3
Test Date: 12/19/2019
Test Well: MW3-4B

AQUIFER DATA

Saturated Thickness: 12.2 ft
Anisotropy Ratio (Kz/Kr): 0.1

SLUG TEST WELL DATA

Test Well: MW3-4B

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 3.11 ft
Static Water Column Height: 38.98 ft
Casing Radius: 0.083 ft
Well Radius: 0.083 ft
Well Skin Radius: 0.667 ft
Screen Length: 15. ft
Total Well Penetration Depth: 42.5 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.083 ft
Gravel Pack Porosity: 0.3

No. of Observations: 1870

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	0.	15.58	0.3412
0.0167	0.5757	15.6	0.3373
0.0333	0.6789	15.62	0.3354
0.05	2.412	15.63	0.3356
0.0667	2.939	15.65	0.3361
0.0833	3.18	15.67	0.3349
0.1	3.11	15.68	0.3361
0.1167	3.053	15.7	0.3107
0.1333	3.01	15.72	0.3306
0.15	2.978	15.73	0.3221
0.1667	2.944	15.75	0.3224
0.1833	2.921	15.77	0.3227
0.2	2.899	15.78	0.3403
0.2167	2.876	15.8	0.3366
0.2333	2.856	15.82	0.3374
0.25	2.839	15.83	0.337
0.2667	2.822	15.85	0.336
0.2833	2.805	15.87	0.3364
0.3	2.789	15.88	0.3363
0.3167	2.774	15.9	0.336
0.3333	2.759	15.92	0.3353
0.35	2.744	15.93	0.3353
0.3667	2.731	15.95	0.3356
0.3833	2.65	15.97	0.3352
0.4	2.696	15.98	0.335
0.4167	2.664	16.	0.335
0.4333	2.67	16.02	0.3346
0.45	2.659	16.03	0.3342
0.4667	2.646	16.05	0.335
0.4833	2.632	16.07	0.3354

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.5	2.62	16.08	0.3346
0.5167	2.607	16.1	0.3341
0.5333	2.595	16.12	0.3344
0.55	2.582	16.13	0.3342
0.5667	2.571	16.15	0.3347
0.5833	2.559	16.17	0.334
0.6	2.547	16.18	0.3334
0.6167	2.536	16.2	0.3323
0.6333	2.511	16.22	0.3326
0.65	2.498	16.23	0.3341
0.6667	2.495	16.25	0.3327
0.6833	2.491	16.27	0.3328
0.7	2.478	16.28	0.333
0.7167	2.466	16.3	0.3329
0.7333	2.458	16.32	0.3316
0.75	2.445	16.33	0.3334
0.7667	2.435	16.35	0.331
0.7833	2.425	16.37	0.3334
0.8	2.414	16.38	0.3324
0.8167	2.402	16.4	0.3319
0.8333	2.386	16.42	0.332
0.85	2.367	16.43	0.3325
0.8667	2.357	16.45	0.331
0.8833	2.348	16.47	0.3301
0.9	2.339	16.48	0.3315
0.9167	2.326	16.5	0.331
0.9333	2.318	16.52	0.3311
0.95	2.307	16.53	0.3304
0.9667	2.297	16.55	0.3311
0.9833	2.284	16.57	0.3308
1.	2.27	16.58	0.3291
1.017	2.259	16.6	0.3312
1.033	2.251	16.62	0.3313
1.05	2.231	16.63	0.3298
1.067	2.212	16.65	0.3306
1.083	2.194	16.67	0.3308
1.1	2.233	16.68	0.3303
1.117	2.213	16.7	0.3299
1.133	2.202	16.72	0.3306
1.15	2.209	16.73	0.3297
1.167	2.193	16.75	0.33
1.183	2.181	16.77	0.3295
1.2	2.169	16.78	0.329
1.217	2.156	16.8	0.3291
1.233	2.15	16.82	0.3278
1.25	2.139	16.83	0.3275
1.267	2.13	16.85	0.3289
1.283	2.119	16.87	0.3285
1.3	2.108	16.88	0.3288
1.317	2.096	16.9	0.3277
1.333	2.114	16.92	0.3291
1.35	2.093	16.93	0.3293
1.367	2.078	16.95	0.3277
1.383	2.082	16.97	0.3283
1.4	2.07	16.98	0.3273
1.417	2.058	17.	0.3291
1.433	2.047	17.02	0.3288
1.45	2.037	17.03	0.3289
1.467	2.028	17.05	0.3279
1.483	2.019	17.07	0.3283
1.5	2.011	17.08	0.3278
1.517	2.006	17.1	0.3273
1.533	1.995	17.12	0.3276
1.55	1.987	17.13	0.328
1.567	1.992	17.15	0.3261
1.583	1.985	17.17	0.3267

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.6	1.969	17.18	0.3268
1.617	1.961	17.2	0.3261
1.633	1.952	17.22	0.3272
1.65	1.943	17.23	0.3269
1.667	1.936	17.25	0.3281
1.683	1.929	17.27	0.326
1.7	1.92	17.28	0.3257
1.717	1.908	17.3	0.3258
1.733	1.888	17.32	0.3276
1.75	1.901	17.33	0.3263
1.767	1.891	17.35	0.3257
1.783	1.882	17.37	0.3267
1.8	1.875	17.38	0.3262
1.817	1.863	17.4	0.3259
1.833	1.853	17.42	0.3263
1.85	1.842	17.43	0.3258
1.867	1.833	17.45	0.3261
1.883	1.823	17.47	0.326
1.9	1.814	17.48	0.3256
1.917	1.808	17.5	0.3251
1.933	1.799	17.52	0.3257
1.95	1.793	17.53	0.3256
1.967	1.786	17.55	0.3265
1.983	1.781	17.57	0.325
2.	1.773	17.58	0.3256
2.017	1.765	17.6	0.3209
2.033	1.758	17.62	0.3195
2.05	1.751	17.63	0.3196
2.067	1.742	17.65	0.3198
2.083	1.732	17.67	0.3195
2.1	1.724	17.68	0.3194
2.117	1.714	17.7	0.3196
2.133	1.707	17.72	0.3193
2.15	1.72	17.73	0.3191
2.167	1.703	17.75	0.3192
2.183	1.697	17.77	0.32
2.2	1.7	17.78	0.3194
2.217	1.696	17.8	0.3184
2.233	1.686	17.82	0.3191
2.25	1.678	17.83	0.3197
2.267	1.667	17.85	0.3188
2.283	1.661	17.87	0.3186
2.3	1.651	17.88	0.3198
2.317	1.645	17.9	0.3197
2.333	1.632	17.92	0.3186
2.35	1.632	17.93	0.3174
2.367	1.625	17.95	0.3188
2.383	1.62	17.97	0.3199
2.4	1.614	17.98	0.3186
2.417	1.621	18.	0.319
2.433	1.609	18.02	0.3184
2.45	1.6	18.03	0.318
2.467	1.592	18.05	0.3196
2.483	1.584	18.07	0.3182
2.5	1.577	18.08	0.3171
2.517	1.569	18.1	0.3181
2.533	1.558	18.12	0.3184
2.55	1.558	18.13	0.3183
2.567	1.552	18.15	0.319
2.583	1.563	18.17	0.3184
2.6	1.554	18.18	0.3184
2.617	1.549	18.2	0.3183
2.633	1.542	18.22	0.317
2.65	1.535	18.23	0.3178
2.667	1.53	18.25	0.3184
2.683	1.525	18.27	0.3167

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2.7	1.519	18.28	0.3162
2.717	1.512	18.3	0.3169
2.733	1.506	18.32	0.316
2.75	1.503	18.33	0.3167
2.767	1.482	18.35	0.3155
2.783	1.474	18.37	0.3157
2.8	1.491	18.38	0.3158
2.817	1.479	18.4	0.3163
2.833	1.474	18.42	0.3158
2.85	1.468	18.43	0.3156
2.867	1.461	18.45	0.3167
2.883	1.458	18.47	0.3155
2.9	1.45	18.48	0.3159
2.917	1.446	18.5	0.3156
2.933	1.44	18.52	0.3158
2.95	1.434	18.53	0.3159
2.967	1.431	18.55	0.3165
2.983	1.418	18.57	0.3162
3.	1.409	18.58	0.3159
3.017	1.4	18.6	0.3165
3.033	1.396	18.62	0.3157
3.05	1.389	18.63	0.3155
3.067	1.399	18.65	0.3155
3.083	1.395	18.67	0.316
3.1	1.389	18.68	0.3151
3.117	1.385	18.7	0.3149
3.133	1.378	18.72	0.3157
3.15	1.371	18.73	0.3155
3.167	1.363	18.75	0.3159
3.183	1.356	18.77	0.3156
3.2	1.349	18.78	0.3154
3.217	1.344	18.8	0.3144
3.233	1.337	18.82	0.3155
3.25	1.327	18.83	0.3139
3.267	1.326	18.85	0.3157
3.283	1.319	18.87	0.3158
3.3	1.318	18.88	0.3144
3.317	1.314	18.9	0.3145
3.333	1.32	18.92	0.3153
3.35	1.312	18.93	0.3162
3.367	1.306	18.95	0.3148
3.383	1.299	18.97	0.3142
3.4	1.292	18.98	0.3136
3.417	1.286	19.	0.3152
3.433	1.281	19.02	0.3155
3.45	1.274	19.03	0.3143
3.467	1.268	19.05	0.3135
3.483	1.262	19.07	0.3147
3.5	1.259	19.08	0.313
3.517	1.255	19.1	0.3135
3.533	1.25	19.12	0.3143
3.55	1.248	19.13	0.3128
3.567	1.242	19.15	0.3135
3.583	1.236	19.17	0.3135
3.6	1.252	19.18	0.3146
3.617	1.246	19.2	0.3131
3.633	1.24	19.22	0.3138
3.65	1.235	19.23	0.3145
3.667	1.229	19.25	0.3133
3.683	1.221	19.27	0.3135
3.7	1.215	19.28	0.3121
3.717	1.21	19.3	0.3136
3.733	1.204	19.32	0.3136
3.75	1.2	19.33	0.313
3.767	1.192	19.35	0.3143
3.783	1.188	19.37	0.3128

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
3.8	1.183	19.38	0.3134
3.817	1.178	19.4	0.313
3.833	1.175	19.42	0.3135
3.85	1.173	19.43	0.3137
3.867	1.169	19.45	0.3125
3.883	1.164	19.47	0.3127
3.9	1.159	19.48	0.3126
3.917	1.153	19.5	0.3128
3.933	1.151	19.52	0.3118
3.95	1.147	19.53	0.3119
3.967	1.144	19.55	0.312
3.983	1.14	19.57	0.3118
4.	1.134	19.58	0.3128
4.017	1.131	19.6	0.3133
4.033	1.127	19.62	0.3143
4.05	1.124	19.63	0.3129
4.067	1.121	19.65	0.3117
4.083	1.122	19.67	0.3127
4.1	1.121	19.68	0.3123
4.117	1.115	19.7	0.3121
4.133	1.11	19.72	0.3122
4.15	1.105	19.73	0.3132
4.167	1.1	19.75	0.3118
4.183	1.095	19.77	0.3127
4.2	1.091	19.78	0.312
4.217	1.085	19.8	0.3121
4.233	1.084	19.82	0.3122
4.25	1.079	19.83	0.3115
4.267	1.076	19.85	0.3128
4.283	1.073	19.87	0.3114
4.3	1.068	19.88	0.3126
4.317	1.065	19.9	0.3127
4.333	1.081	19.92	0.3123
4.35	1.074	19.93	0.3133
4.367	1.07	19.95	0.312
4.383	1.066	19.97	0.3118
4.4	1.062	19.98	0.3127
4.417	1.057	20.	0.3114
4.433	1.053	20.02	0.311
4.45	1.048	20.03	0.3127
4.467	1.042	20.05	0.3115
4.483	1.031	20.07	0.3123
4.5	1.026	20.08	0.3122
4.517	1.024	20.1	0.3117
4.533	1.036	20.12	0.312
4.55	1.032	20.13	0.3118
4.567	1.027	20.15	0.3122
4.583	1.025	20.17	0.312
4.6	1.02	20.18	0.3116
4.617	1.017	20.2	0.3123
4.633	1.015	20.22	0.3121
4.65	1.01	20.23	0.3115
4.667	1.008	20.25	0.3117
4.683	1.005	20.27	0.3109
4.7	1.002	20.28	0.312
4.717	0.9904	20.3	0.3108
4.733	0.9821	20.32	0.3127
4.75	0.9789	20.33	0.312
4.767	0.9749	20.35	0.3121
4.783	0.9842	20.37	0.3114
4.8	0.9811	20.38	0.3114
4.817	0.978	20.4	0.3116
4.833	0.9731	20.42	0.3116
4.85	0.9682	20.43	0.3128
4.867	0.9646	20.45	0.3122
4.883	0.9613	20.47	0.312

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
4.9	0.957	20.48	0.3115
4.917	0.9516	20.5	0.3113
4.933	0.9491	20.52	0.3117
4.95	0.9418	20.53	0.3122
4.967	0.941	20.55	0.3121
4.983	0.9354	20.57	0.3123
5.	0.9408	20.58	0.3117
5.017	0.9381	20.6	0.3119
5.033	0.9348	20.62	0.3123
5.05	0.9307	20.63	0.3114
5.067	0.9254	20.65	0.3108
5.083	0.9225	20.67	0.2989
5.1	0.9173	20.68	0.2991
5.117	0.9158	20.7	0.2975
5.133	0.9115	20.72	0.298
5.15	0.9096	20.73	0.3117
5.167	0.908	20.75	0.3124
5.183	0.9022	20.77	0.3124
5.2	0.9096	20.78	0.313
5.217	0.9139	20.8	0.3115
5.233	0.9123	20.82	0.3081
5.25	0.908	20.83	0.3112
5.267	0.9042	20.85	0.312
5.283	0.9034	20.87	0.3106
5.3	0.901	20.88	0.3116
5.317	0.8952	20.9	0.3102
5.333	0.8932	20.92	0.3111
5.35	0.8905	20.93	0.3106
5.367	0.8874	20.95	0.311
5.383	0.8861	20.97	0.311
5.4	0.8811	20.98	0.3102
5.417	0.8807	21.	0.3124
5.433	0.8773	21.02	0.3116
5.45	0.8738	21.03	0.3109
5.467	0.8716	21.05	0.3103
5.483	0.8685	21.07	0.3107
5.5	0.8659	21.08	0.3115
5.517	0.8638	21.1	0.3113
5.533	0.8629	21.12	0.3111
5.55	0.8596	21.13	0.3103
5.567	0.8572	21.15	0.3105
5.583	0.8549	21.17	0.3106
5.6	0.8486	21.18	0.3114
5.617	0.8466	21.2	0.3114
5.633	0.843	21.22	0.3103
5.65	0.841	21.23	0.3102
5.667	0.8393	21.25	0.3103
5.683	0.8365	21.27	0.3098
5.7	0.8342	21.28	0.3094
5.717	0.8334	21.3	0.3109
5.733	0.8293	21.32	0.3097
5.75	0.8294	21.33	0.31
5.767	0.8255	21.35	0.3106
5.783	0.8224	21.37	0.3098
5.8	0.8212	21.38	0.3093
5.817	0.8177	21.4	0.3095
5.833	0.8165	21.42	0.3097
5.85	0.8128	21.43	0.3101
5.867	0.8121	21.45	0.309
5.883	0.809	21.47	0.3104
5.9	0.8054	21.48	0.3099
5.917	0.8052	21.5	0.311
5.933	0.802	21.52	0.3099
5.95	0.7995	21.53	0.3111
5.967	0.7985	21.55	0.3097
5.983	0.7962	21.57	0.3111

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
6.	0.7931	21.58	0.31
6.017	0.7907	21.6	0.307
6.033	0.7877	21.62	0.3072
6.05	0.7854	21.63	0.3079
6.067	0.7826	21.65	0.308
6.083	0.7813	21.67	0.3098
6.1	0.7796	21.68	0.3082
6.117	0.7771	21.7	0.3076
6.133	0.7758	21.72	0.3069
6.15	0.7728	21.73	0.3071
6.167	0.7696	21.75	0.3074
6.183	0.7683	21.77	0.308
6.2	0.7672	21.78	0.3073
6.217	0.7638	21.8	0.3075
6.233	0.7645	21.82	0.3071
6.25	0.7596	21.83	0.307
6.267	0.7593	21.85	0.3075
6.283	0.7571	21.87	0.3066
6.3	0.7558	21.88	0.3065
6.317	0.7535	21.9	0.3063
6.333	0.7509	21.92	0.3073
6.35	0.7478	21.93	0.3074
6.367	0.7455	21.95	0.307
6.383	0.7438	21.97	0.3092
6.4	0.7437	21.98	0.307
6.417	0.7411	22.	0.3074
6.433	0.7393	22.02	0.3074
6.45	0.7372	22.03	0.3067
6.467	0.7346	22.05	0.3072
6.483	0.7326	22.07	0.3074
6.5	0.7308	22.08	0.3082
6.517	0.7288	22.1	0.3073
6.533	0.7269	22.12	0.3077
6.55	0.7264	22.13	0.3077
6.567	0.7242	22.15	0.3068
6.583	0.7218	22.17	0.3077
6.6	0.7207	22.18	0.3074
6.617	0.7174	22.2	0.3074
6.633	0.7166	22.22	0.3076
6.65	0.7146	22.23	0.3071
6.667	0.7131	22.25	0.3074
6.683	0.7115	22.27	0.3069
6.7	0.7063	22.28	0.3064
6.717	0.6899	22.3	0.3069
6.733	0.6917	22.32	0.3073
6.75	0.6901	22.33	0.3063
6.767	0.691	22.35	0.3067
6.783	0.7012	22.37	0.3067
6.8	0.6993	22.38	0.3071
6.817	0.6981	22.4	0.307
6.833	0.6952	22.42	0.3068
6.85	0.6931	22.43	0.3063
6.867	0.6911	22.45	0.3072
6.883	0.6903	22.47	0.307
6.9	0.6871	22.48	0.3063
6.917	0.6866	22.5	0.307
6.933	0.685	22.52	0.3081
6.95	0.684	22.53	0.3072
6.967	0.6816	22.55	0.3073
6.983	0.6817	22.57	0.3069
7.	0.6777	22.58	0.3066
7.017	0.6752	22.6	0.307
7.033	0.6745	22.62	0.3058
7.05	0.6736	22.63	0.3074
7.067	0.6714	22.65	0.3058
7.083	0.6692	22.67	0.3069

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
7.1	0.668	22.68	0.3065
7.117	0.6665	22.7	0.3069
7.133	0.6642	22.72	0.307
7.15	0.6644	22.73	0.3071
7.167	0.6615	22.75	0.3054
7.183	0.6604	22.77	0.307
7.2	0.6509	22.78	0.3065
7.217	0.644	22.8	0.3066
7.233	0.6444	22.82	0.3068
7.25	0.6407	22.83	0.3071
7.267	0.6389	22.85	0.3074
7.283	0.6413	22.87	0.3064
7.3	0.6511	22.88	0.3049
7.317	0.6501	22.9	0.3071
7.333	0.6473	22.92	0.3064
7.35	0.6462	22.93	0.3071
7.367	0.6445	22.95	0.3079
7.383	0.6433	22.97	0.3072
7.4	0.6425	22.98	0.3065
7.417	0.6403	23.	0.3072
7.433	0.6388	23.02	0.3078
7.45	0.637	23.03	0.3065
7.467	0.6363	23.05	0.3068
7.483	0.6342	23.07	0.3064
7.5	0.6335	23.08	0.3067
7.517	0.6316	23.1	0.3069
7.533	0.6293	23.12	0.3068
7.55	0.6283	23.13	0.3068
7.567	0.6267	23.15	0.3098
7.583	0.6257	23.17	0.3059
7.6	0.6269	23.18	0.3071
7.617	0.6248	23.2	0.307
7.633	0.6235	23.22	0.3071
7.65	0.622	23.23	0.3071
7.667	0.6204	23.25	0.3072
7.683	0.6187	23.27	0.307
7.7	0.6183	23.28	0.3071
7.717	0.6179	23.3	0.3072
7.733	0.6164	23.32	0.3076
7.75	0.6134	23.33	0.3073
7.767	0.6143	23.35	0.3076
7.783	0.6121	23.37	0.3076
7.8	0.6115	23.38	0.3068
7.817	0.6096	23.4	0.3061
7.833	0.6083	23.42	0.3089
7.85	0.607	23.43	0.309
7.867	0.6055	23.45	0.3073
7.883	0.6046	23.47	0.3071
7.9	0.6035	23.48	0.3071
7.917	0.603	23.5	0.3059
7.933	0.6007	23.52	0.3079
7.95	0.5986	23.53	0.3072
7.967	0.598	23.55	0.3054
7.983	0.597	23.57	0.3064
8.	0.5955	23.58	0.3079
8.017	0.595	23.6	0.3015
8.033	0.5935	23.62	0.3017
8.05	0.5916	23.63	0.3022
8.067	0.5897	23.65	0.3017
8.083	0.5893	23.67	0.3019
8.1	0.5881	23.68	0.3019
8.117	0.587	23.7	0.3011
8.133	0.5858	23.72	0.3015
8.15	0.585	23.73	0.3008
8.167	0.584	23.75	0.3008
8.183	0.5673	23.77	0.3009

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
8.2	0.5596	23.78	0.3002
8.217	0.5533	23.8	0.3016
8.233	0.4825	23.82	0.3014
8.25	0.5886	23.83	0.3008
8.267	0.5824	23.85	0.3005
8.283	0.5789	23.87	0.3003
8.3	0.564	23.88	0.3007
8.317	0.562	23.9	0.3015
8.333	0.5616	23.92	0.3006
8.35	0.5781	23.93	0.3016
8.367	0.5733	23.95	0.3011
8.383	0.5728	23.97	0.303
8.4	0.5721	23.98	0.3023
8.417	0.5697	24.	0.3021
8.433	0.5688	24.02	0.3018
8.45	0.567	24.03	0.3012
8.467	0.5663	24.05	0.3016
8.483	0.5647	24.07	0.3013
8.5	0.5637	24.08	0.3002
8.517	0.5632	24.1	0.2999
8.533	0.5607	24.12	0.2998
8.55	0.5615	24.13	0.2998
8.567	0.5593	24.15	0.3007
8.583	0.5581	24.17	0.3002
8.6	0.556	24.18	0.3003
8.617	0.5559	24.2	0.3005
8.633	0.5538	24.22	0.3007
8.65	0.5541	24.23	0.2993
8.667	0.5525	24.25	0.3019
8.683	0.5505	24.27	0.2997
8.7	0.5495	24.28	0.3004
8.717	0.5492	24.3	0.3009
8.733	0.5487	24.32	0.3004
8.75	0.5473	24.33	0.2997
8.767	0.5462	24.35	0.3009
8.783	0.5441	24.37	0.3
8.8	0.5449	24.38	0.2997
8.817	0.5426	24.4	0.3005
8.833	0.5422	24.42	0.2996
8.85	0.5415	24.43	0.3008
8.867	0.5405	24.45	0.3012
8.883	0.5394	24.47	0.3012
8.9	0.5391	24.48	0.3009
8.917	0.5372	24.5	0.3018
8.933	0.5365	24.52	0.301
8.95	0.5357	24.53	0.3011
8.967	0.535	24.55	0.301
8.983	0.5343	24.57	0.3007
9.	0.5328	24.58	0.3005
9.017	0.5331	24.6	0.3012
9.033	0.5317	24.62	0.3001
9.05	0.5303	24.63	0.3011
9.067	0.53	24.65	0.3011
9.083	0.5275	24.67	0.3012
9.1	0.5278	24.68	0.301
9.117	0.5264	24.7	0.2995
9.133	0.5253	24.72	0.3001
9.15	0.5144	24.73	0.2999
9.167	0.5092	24.75	0.3007
9.183	0.509	24.77	0.3008
9.2	0.5109	24.78	0.3
9.217	0.509	24.8	0.3008
9.233	0.5231	24.82	0.2995
9.25	0.5218	24.83	0.2997
9.267	0.5198	24.85	0.299
9.283	0.5188	24.87	0.3002

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
9.3	0.518	24.88	0.3006
9.317	0.5176	24.9	0.3004
9.333	0.5166	24.92	0.2999
9.35	0.5151	24.93	0.3009
9.367	0.5146	24.95	0.2995
9.383	0.5131	24.97	0.2995
9.4	0.5134	24.98	0.3009
9.417	0.5118	25.	0.3
9.433	0.5112	25.02	0.3011
9.45	0.511	25.03	0.3005
9.467	0.5099	25.05	0.3001
9.483	0.5085	25.07	0.3011
9.5	0.5079	25.08	0.3019
9.517	0.5079	25.1	0.2999
9.533	0.5071	25.12	0.3004
9.55	0.506	25.13	0.3007
9.567	0.5058	25.15	0.3005
9.583	0.5048	25.17	0.3011
9.6	0.5017	25.18	0.3007
9.617	0.5007	25.2	0.3003
9.633	0.4989	25.22	0.2997
9.65	0.5002	25.23	0.3012
9.667	0.499	25.25	0.2991
9.683	0.4977	25.27	0.2993
9.7	0.4964	25.28	0.3018
9.717	0.4967	25.3	0.3005
9.733	0.4944	25.32	0.3002
9.75	0.495	25.33	0.2998
9.767	0.4937	25.35	0.3
9.783	0.493	25.37	0.3002
9.8	0.4933	25.38	0.3009
9.817	0.4923	25.4	0.3006
9.833	0.4927	25.42	0.2997
9.85	0.4917	25.43	0.3008
9.867	0.4911	25.45	0.3018
9.883	0.4905	25.47	0.3009
9.9	0.4899	25.48	0.3004
9.917	0.4891	25.5	0.3
9.933	0.4887	25.52	0.2999
9.95	0.4876	25.53	0.3007
9.967	0.4878	25.55	0.2994
9.983	0.4865	25.57	0.3005
10.	0.4845	25.58	0.3005
10.02	0.4845	25.6	0.3006
10.03	0.4833	25.62	0.3009
10.05	0.4836	25.63	0.301
10.07	0.4826	25.65	0.2993
10.08	0.4828	25.67	0.3
10.1	0.4809	25.68	0.3
10.12	0.4798	25.7	0.3
10.13	0.4796	25.72	0.2996
10.15	0.4793	25.73	0.3006
10.17	0.4774	25.75	0.3019
10.18	0.4643	25.77	0.3003
10.2	0.4627	25.78	0.2994
10.22	0.4586	25.8	0.3003
10.23	0.476	25.82	0.2995
10.25	0.4764	25.83	0.3001
10.27	0.4745	25.85	0.301
10.28	0.4743	25.87	0.3007
10.3	0.4741	25.88	0.3001
10.32	0.4743	25.9	0.3018
10.33	0.4727	25.92	0.3015
10.35	0.4723	25.93	0.3015
10.37	0.4714	25.95	0.3013
10.38	0.4715	25.97	0.3024

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
10.4	0.4716	25.98	0.3011
10.42	0.4698	26.	0.3007
10.43	0.4703	26.02	0.3006
10.45	0.468	26.03	0.3004
10.47	0.4677	26.05	0.3017
10.48	0.4679	26.07	0.3011
10.5	0.4674	26.08	0.302
10.52	0.4666	26.1	0.3007
10.53	0.4655	26.12	0.3026
10.55	0.4644	26.13	0.3012
10.57	0.464	26.15	0.3026
10.58	0.4646	26.17	0.3027
10.6	0.4648	26.18	0.3008
10.62	0.4622	26.2	0.3025
10.63	0.4599	26.22	0.3015
10.65	0.4588	26.23	0.3013
10.67	0.4592	26.25	0.3024
10.68	0.4572	26.27	0.3014
10.7	0.456	26.28	0.3023
10.72	0.4538	26.3	0.3011
10.73	0.454	26.32	0.3022
10.75	0.4523	26.33	0.3016
10.77	0.4513	26.35	0.303
10.78	0.4503	26.37	0.3019
10.8	0.448	26.38	0.3021
10.82	0.4477	26.4	0.3016
10.83	0.4459	26.42	0.302
10.85	0.4456	26.43	0.3011
10.87	0.4441	26.45	0.3016
10.88	0.4432	26.47	0.303
10.9	0.4419	26.48	0.303
10.92	0.4402	26.5	0.302
10.93	0.4413	26.52	0.3011
10.95	0.4398	26.53	0.3035
10.97	0.438	26.55	0.3022
10.98	0.4369	26.57	0.3013
11.	0.4353	26.58	0.3019
11.02	0.4347	26.6	0.3025
11.03	0.4346	26.62	0.3031
11.05	0.4338	26.63	0.303
11.07	0.4324	26.65	0.3034
11.08	0.4311	26.67	0.3019
11.1	0.4323	26.68	0.303
11.12	0.4311	26.7	0.3023
11.13	0.4291	26.72	0.3019
11.15	0.4288	26.73	0.3022
11.17	0.4292	26.75	0.3025
11.18	0.4271	26.77	0.3031
11.2	0.4269	26.78	0.3046
11.22	0.4259	26.8	0.3043
11.23	0.4274	26.82	0.3034
11.25	0.4248	26.83	0.3039
11.27	0.4228	26.85	0.3025
11.28	0.4218	26.87	0.3029
11.3	0.422	26.88	0.3036
11.32	0.4202	26.9	0.3022
11.33	0.419	26.92	0.3036
11.35	0.4183	26.93	0.3033
11.37	0.419	26.95	0.3035
11.38	0.4176	26.97	0.3027
11.4	0.417	26.98	0.3032
11.42	0.4171	27.	0.3029
11.43	0.4158	27.02	0.304
11.45	0.4154	27.03	0.3016
11.47	0.414	27.05	0.3038
11.48	0.4139	27.07	0.3032

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
11.5	0.4126	27.08	0.3033
11.52	0.4118	27.1	0.3028
11.53	0.4119	27.12	0.3037
11.55	0.4117	27.13	0.3037
11.57	0.4113	27.15	0.3057
11.58	0.4098	27.17	0.3041
11.6	0.4037	27.18	0.305
11.62	0.4029	27.2	0.3037
11.63	0.4023	27.22	0.3039
11.65	0.4018	27.23	0.3048
11.67	0.4	27.25	0.3039
11.68	0.3997	27.27	0.3027
11.7	0.4004	27.28	0.3036
11.72	0.3987	27.3	0.3037
11.73	0.3994	27.32	0.3038
11.75	0.3979	27.33	0.3047
11.77	0.3998	27.35	0.3044
11.78	0.3979	27.37	0.3036
11.8	0.3969	27.38	0.3041
11.82	0.3977	27.4	0.3046
11.83	0.3955	27.42	0.3046
11.85	0.3976	27.43	0.3039
11.87	0.3965	27.45	0.3044
11.88	0.3966	27.47	0.3047
11.9	0.3963	27.48	0.3036
11.92	0.396	27.5	0.3033
11.93	0.3941	27.52	0.3041
11.95	0.3933	27.53	0.3037
11.97	0.3933	27.55	0.3049
11.98	0.3935	27.57	0.3047
12.	0.3942	27.58	0.3055
12.02	0.3918	27.6	0.2969
12.03	0.3922	27.62	0.2972
12.05	0.3914	27.63	0.2962
12.07	0.3917	27.65	0.2962
12.08	0.3913	27.67	0.2969
12.1	0.3914	27.68	0.2985
12.12	0.39	27.7	0.2985
12.13	0.3907	27.72	0.2972
12.15	0.3894	27.73	0.298
12.17	0.3893	27.75	0.2975
12.18	0.3895	27.77	0.2981
12.2	0.3895	27.78	0.2983
12.22	0.3886	27.8	0.2981
12.23	0.387	27.82	0.2977
12.25	0.388	27.83	0.2969
12.27	0.3869	27.85	0.2978
12.28	0.3857	27.87	0.2984
12.3	0.3857	27.88	0.2964
12.32	0.3855	27.9	0.2975
12.33	0.3861	27.92	0.299
12.35	0.3853	27.93	0.2973
12.37	0.3848	27.95	0.2973
12.38	0.3862	27.97	0.2974
12.4	0.3851	27.98	0.2982
12.42	0.385	28.	0.2973
12.43	0.3842	28.02	0.2987
12.45	0.3827	28.03	0.2975
12.47	0.3833	28.05	0.2992
12.48	0.383	28.07	0.2975
12.5	0.3825	28.08	0.2983
12.52	0.3827	28.1	0.2979
12.53	0.3818	28.12	0.2986
12.55	0.3807	28.13	0.298
12.57	0.3804	28.15	0.2984
12.58	0.3802	28.17	0.2979

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
12.6	0.3806	28.18	0.2985
12.62	0.3796	28.2	0.2977
12.63	0.3793	28.22	0.2978
12.65	0.3792	28.23	0.2968
12.67	0.3786	28.25	0.2969
12.68	0.378	28.27	0.2969
12.7	0.3768	28.28	0.2979
12.72	0.3774	28.3	0.2974
12.73	0.3772	28.32	0.2975
12.75	0.3774	28.33	0.297
12.77	0.3765	28.35	0.2978
12.78	0.3764	28.37	0.2985
12.8	0.3755	28.38	0.2983
12.82	0.3755	28.4	0.297
12.83	0.3756	28.42	0.2977
12.85	0.3746	28.43	0.2979
12.87	0.3752	28.45	0.2992
12.88	0.3739	28.47	0.2987
12.9	0.3741	28.48	0.2961
12.92	0.3734	28.5	0.2975
12.93	0.3727	28.52	0.2965
12.95	0.374	28.53	0.2965
12.97	0.3733	28.55	0.2974
12.98	0.3727	28.57	0.2974
13.	0.3736	28.58	0.2991
13.02	0.3715	28.6	0.297
13.03	0.3723	28.62	0.2982
13.05	0.3709	28.63	0.2984
13.07	0.3724	28.65	0.2961
13.08	0.3704	28.67	0.2967
13.1	0.3706	28.68	0.2965
13.12	0.3694	28.7	0.2972
13.13	0.3699	28.72	0.2969
13.15	0.3708	28.73	0.2975
13.17	0.3695	28.75	0.2974
13.18	0.369	28.77	0.2963
13.2	0.3689	28.78	0.2975
13.22	0.3686	28.8	0.2966
13.23	0.3695	28.82	0.2976
13.25	0.3677	28.83	0.3005
13.27	0.3679	28.85	0.297
13.28	0.3673	28.87	0.2981
13.3	0.3678	28.88	0.2965
13.32	0.3666	28.9	0.2974
13.33	0.3665	28.92	0.2958
13.35	0.3673	28.93	0.2989
13.37	0.3663	28.95	0.2988
13.38	0.3657	28.97	0.2976
13.4	0.3654	28.98	0.2974
13.42	0.3647	29.	0.2969
13.43	0.3653	29.02	0.297
13.45	0.3656	29.03	0.2978
13.47	0.3655	29.05	0.2975
13.48	0.3647	29.07	0.297
13.5	0.3635	29.08	0.2974
13.52	0.3638	29.1	0.2972
13.53	0.3636	29.12	0.2977
13.55	0.3634	29.13	0.2956
13.57	0.3625	29.15	0.2967
13.58	0.3631	29.17	0.298
13.6	0.3612	29.18	0.2974
13.62	0.3611	29.2	0.2975
13.63	0.3627	29.22	0.2973
13.65	0.3608	29.23	0.2973
13.67	0.3612	29.25	0.2975
13.68	0.3623	29.27	0.2973

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
13.7	0.3618	29.28	0.2963
13.72	0.3604	29.3	0.2968
13.73	0.3608	29.32	0.297
13.75	0.3609	29.33	0.2968
13.77	0.3602	29.35	0.2978
13.78	0.359	29.37	0.297
13.8	0.3593	29.38	0.2968
13.82	0.3588	29.4	0.2973
13.83	0.3578	29.42	0.2979
13.85	0.3581	29.43	0.2974
13.87	0.3582	29.45	0.2979
13.88	0.3579	29.47	0.2977
13.9	0.358	29.48	0.2976
13.92	0.3576	29.5	0.2975
13.93	0.3573	29.52	0.2973
13.95	0.3566	29.53	0.2976
13.97	0.3568	29.55	0.297
13.98	0.357	29.57	0.2978
14.	0.3562	29.58	0.2972
14.02	0.3557	29.6	0.2963
14.03	0.3564	29.62	0.2969
14.05	0.356	29.63	0.2969
14.07	0.3563	29.65	0.2966
14.08	0.3545	29.67	0.2958
14.1	0.3557	29.68	0.2971
14.12	0.3561	29.7	0.2965
14.13	0.3545	29.72	0.2969
14.15	0.3548	29.73	0.2972
14.17	0.3545	29.75	0.2959
14.18	0.3535	29.77	0.2971
14.2	0.354	29.78	0.2967
14.22	0.353	29.8	0.2964
14.23	0.3537	29.82	0.2963
14.25	0.3523	29.83	0.2964
14.27	0.3535	29.85	0.297
14.28	0.3528	29.87	0.2973
14.3	0.3529	29.88	0.2968
14.32	0.352	29.9	0.2974
14.33	0.3527	29.92	0.2976
14.35	0.3528	29.93	0.298
14.37	0.3519	29.95	0.2978
14.38	0.3516	29.97	0.2968
14.4	0.3517	29.98	0.2982
14.42	0.3509	30.	0.2974
14.43	0.352	30.02	0.2972
14.45	0.3515	30.03	0.2981
14.47	0.3508	30.05	0.2976
14.48	0.35	30.07	0.2976
14.5	0.3507	30.08	0.2981
14.52	0.351	30.1	0.2976
14.53	0.3501	30.12	0.2976
14.55	0.3496	30.13	0.298
14.57	0.3502	30.15	0.2981
14.58	0.3496	30.17	0.2978
14.6	0.3499	30.18	0.2983
14.62	0.35	30.2	0.2977
14.63	0.3489	30.22	0.2988
14.65	0.349	30.23	0.2979
14.67	0.3485	30.25	0.2974
14.68	0.3485	30.27	0.2984
14.7	0.3477	30.28	0.2982
14.72	0.3486	30.3	0.2978
14.73	0.3485	30.32	0.2987
14.75	0.3488	30.33	0.2983
14.77	0.3481	30.35	0.2978
14.78	0.3483	30.37	0.2976

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
14.8	0.3476	30.38	0.2983
14.82	0.3471	30.4	0.2974
14.83	0.3482	30.42	0.2995
14.85	0.3466	30.43	0.299
14.87	0.3472	30.45	0.2988
14.88	0.347	30.47	0.2972
14.9	0.347	30.48	0.2979
14.92	0.3459	30.5	0.299
14.93	0.3448	30.52	0.2989
14.95	0.3461	30.53	0.2985
14.97	0.3472	30.55	0.2986
14.98	0.3453	30.57	0.2988
15.	0.3464	30.58	0.2983
15.02	0.3459	30.6	0.2992
15.03	0.3459	30.62	0.2985
15.05	0.3458	30.63	0.3
15.07	0.3466	30.65	0.2988
15.08	0.3452	30.67	0.2991
15.1	0.3453	30.68	0.2989
15.12	0.3448	30.7	0.2992
15.13	0.3438	30.72	0.2994
15.15	0.3451	30.73	0.2989
15.17	0.3445	30.75	0.2993
15.18	0.3445	30.77	0.2999
15.2	0.3437	30.78	0.2988
15.22	0.3448	30.8	0.2989
15.23	0.3445	30.82	0.2997
15.25	0.3439	30.83	0.2997
15.27	0.3437	30.85	0.3003
15.28	0.3437	30.87	0.299
15.3	0.344	30.88	0.2988
15.32	0.3437	30.9	0.2997
15.33	0.3432	30.92	0.2994
15.35	0.3431	30.93	0.2996
15.37	0.3431	30.95	0.2987
15.38	0.3431	30.97	0.2992
15.4	0.343	30.98	0.3003
15.42	0.3424	31.	0.3005
15.43	0.3416	31.02	0.2991
15.45	0.3431	31.03	0.3016
15.47	0.3432	31.05	0.2999
15.48	0.3426	31.07	0.2999
15.5	0.3418	31.08	0.3002
15.52	0.3416	31.1	0.2996
15.53	0.342	31.12	0.2998
15.55	0.3431	31.13	0.3002
15.57	0.3408	31.15	0.3006

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 4.712

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0001174	cm/sec
y0	2.288	ft

$T = K*b = 0.04365$ cm²/sec

Appendix 10

Laboratory Data Packages and Data Usability Summary

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Detailed validation results for each data package are included with this DUS. Non-detected results (ND) are reported as less than the value of the sample detection limit (SDL) as defined by the TRRP rule. Analytes detected between the SDL and the method quantitation limit (MQL) were qualified with a “J-flag” to denote that the reported values were considered to be estimated.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 1906231

Samples: 11 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW4-3 (MW-303) analysis. Table 2 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30% except for Aluminum and Ammonium-N. This is flagged appropriately in Table 2.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW4-3B	1906231-01
MW4-3	1906231-02
MW4-4	1906231-03
MW3-6	1906231-04
MW3-5	1906231-05
MW-303	1906231-06
MW4-1	1906231-07
MW4-2A	1906231-08
MW4-2	1906231-09
MW-6R	1906231-10
MW6RB	1906231-11

Table 2. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-2/MW202	1906206-05/1906206-09	Dissolved Aluminum	0.0133	0.0138	3.69	A
MW3-2/MW202	1906206-05/1906206-09	Dissolved Antimony	<0.000800	<0.000800	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Dissolved Arsenic	<0.00200	<0.00200	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Dissolved Chromium	<0.00200	<0.00200	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Dissolved Lead	<0.000300	<0.000300	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Dissolved Nickel	<0.00300	<0.00300	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Dissolved Thalium	<0.000500	<0.000500	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Dissolved Vanadium	0.00199	0.00183	8.38	A
MW3-2/MW202	1906206-05/1906206-09	Aluminum	0.0254	0.0395	43.45	J

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LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-2/MW202	1906206-05/1906206-09	Antimony	<0.000800	<0.000800	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Arsenic	<0.00200	<0.00200	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Calcium	1270	1290	1.56	A
MW3-2/MW202	1906206-05/1906206-09	Chromium	<0.00200	<0.00200	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Lead	<0.000300	<0.000300	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Magnesium	1530	1550	1.30	A
MW3-2/MW202	1906206-05/1906206-09	Nickel	<0.00300	<0.00300	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Potassium	65.1	63.9	1.86	A
MW3-2/MW202	1906206-05/1906206-09	Sodium	10600	10500	0.95	A
MW3-2/MW202	1906206-05/1906206-09	Thallium	0.00051	<0.000500	2.57	A
MW3-2/MW202	1906206-05/1906206-09	Vanadium	0.00183	0.00189	3.23	A
MW3-2/MW202	1906206-05/1906206-09	Dissolved Mercury	<0.0000800	<0.0000800	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Mercury	<0.0000800	<0.0000800	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Uranium	0.114	0.111	2.67	A
MW3-2/MW202	1906206-05/1906206-09	Dissolved Uranium	0.109	0.109	0.00	A
MW3-2/MW202	1906206-05/1906206-09	Chloride	22600	22000	2.69	A
MW3-2/MW202	1906206-05/1906206-09	Flouride	7.85	9.07	14.42	A
MW3-2/MW202	1906206-05/1906206-09	Nitrate-N	<1.00	<1.00	0.00	U

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LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-2/MW202	1906206-05/1906206-09	Sulfate	4030	4130	2.45	A
MW3-2/MW202	1906206-05/1906206-09	Bicarbonate	225	222	1.34	A
MW3-2/MW202	1906206-05/1906206-09	Carbonate	<10.0	<10.0	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Hydroxide	<10.0	<10.0	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Total Alkalinity	225	222	1.34	A
MW3-2/MW202	1906206-05/1906206-09	Ammonia-N	0.523	<0.100	135.79	J
MW3-2/MW202	1906206-05/1906206-09	Total Dissolved Solids	38300	40000	4.34	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J - RPD outside specifications
U -Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 1906186

Samples: 10 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW-11 (MW-101) analysis. Table 2 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30% except for Dissolved Aluminum and Ammonia-N. This is flagged appropriately in Table 2.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
DB-5	1906186-01
MW-7B	1906186-02
MW-7	1906186-03
MW-11B	1906186-04
MW-11	1906186-05
MW-101	1906186-06
MW-8	1906186-07
MW-3B	1906186-08
MW-3R	1906186-09
MW-1	1906186-10

Table 2. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW-11/MW101	1906186-05/1906186-06	Dissolved Aluminum	0.0624	0.0446	33.27	J
MW-11/MW101	1906186-05/1906186-06	Dissolved Antimony	<0.000800	<0.000800	0.00	U
MW-11/MW101	1906186-05/1906186-06	Dissolved Arsenic	0.00275	0.00265	3.70	A
MW-11/MW101	1906186-05/1906186-06	Dissolved Chromium	<0.00200	<0.00200	0.00	U
MW-11/MW101	1906186-05/1906186-06	Dissolved Lead	<0.000300	<0.000300	0.00	U
MW-11/MW101	1906186-05/1906186-06	Dissolved Nickel	0.0162	0.016	1.24	A
MW-11/MW101	1906186-05/1906186-06	Dissolved Thalium	<0.0005000	<0.000500	0.00	U
MW-11/MW101	1906186-05/1906186-06	Dissolved Vanadium	0.025	0.0238	4.92	A
MW-11/MW101	1906186-05/1906186-06	Aluminum	0.0227	0.0218	4.04	A

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW-11/MW101	1906186-05/1906186-06	Antimony	<0.000800	<0.000800	0.00	U
MW-11/MW101	1906186-05/1906186-06	Arsenic	0.00263	0.00258	1.92	A
MW-11/MW101	1906186-05/1906186-06	Calcium	348	334	4.11	A
MW-11/MW101	1906186-05/1906186-06	Chromium	<0.00200	<0.00200	0.00	U
MW-11/MW101	1906186-05/1906186-06	Lead	<0.000300	<0.000300	0.00	U
MW-11/MW101	1906186-05/1906186-06	Magnesium	578	576	0.35	A
MW-11/MW101	1906186-05/1906186-06	Nickel	0.0165	0.0165	0.00	A
MW-11/MW101	1906186-05/1906186-06	Potassium	18.4	18.5	0.54	A
MW-11/MW101	1906186-05/1906186-06	Sodium	5150	5030	2.36	A
MW-11/MW101	1906186-05/1906186-06	Thallium	<0.000500	<0.000500	0.00	U
MW-11/MW101	1906186-05/1906186-06	Vanadium	0.0268	0.0271	1.11	A
MW-11/MW101	1906186-05/1906186-06	Dissolved Mercury	<0.0000800	<0.0000800	0.00	U
MW-11/MW101	1906186-05/1906186-06	Mercury	<0.0000800	<0.0000800	0.00	U
MW-11/MW101	1906186-05/1906186-06	Uranium	0.0958	0.0928	3.18	A
MW-11/MW101	1906186-05/1906186-06	Dissolved Uranium	0.0969	0.0971	0.21	A
MW-11/MW101	1906186-05/1906186-06	Chloride	7650	8220	7.18	A
MW-11/MW101	1906186-05/1906186-06	Flouride	<0.200	<0.200	0.00	U
MW-11/MW101	1906186-05/1906186-06	Nitrate-N	<0.200	<0.200	0.00	U

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW-11/MW101	1906186-05/1906186-06	Sulfate	1620	1620	0.00	A
MW-11/MW101	1906186-05/1906186-06	Bicarbonate	974	989	1.53	A
MW-11/MW101	1906186-05/1906186-06	Carbonate	<10.0	<10.0	0.00	U
MW-11/MW101	1906186-05/1906186-06	Hydroxide	<10.0	<10.0	0.00	U
MW-11/MW101	1906186-05/1906186-06	Total Alkalinity	974	989	1.53	A
MW-11/MW101	1906186-05/1906186-06	Ammonia-N	0.65	<0.100	146.67	J
MW-11/MW101	1906186-05/1906186-06	Total Dissolved Solids	17400	17400	0.00	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J-RPD outside specifications
U-Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 1906277

Samples: 5 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

No field duplicate samples were collected during this sampling event.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 1906206

Samples: 16 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B), except for Nitrate - N. This is flagged accordingly in Table 2.

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW3-2 (MW-202) analysis. Table 3 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30% except for Aluminum and Flouride. This is flagged appropriately in Table 3.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW-10	1906206-01
MW-5	1906206-02
MW-5B	1906206-03
MW3-1	1906206-04
MW-3-2	1906206-05
MW3-3	1906206-06
MW3-4	1906206-07
MW3-4B	1906206-08
MW-202	1906206-09
MW-9	1906206-10
MW-4	1906206-11
MW3-7B	1906206-12
MW3-7	1906206-13
MW4-7B	1906206-14
MW4-7A	1906206-15
MW4-7	1906206-16

Table 2. Qualified Analytical Data

Batch ID	Field ID	Analyte	Qualifier	Reason for Qualification
1906206	MW-10	Nitrate-N	UJL	Analyzed outside of hold time
	MW-5	Nitrate-N	UJL	Analyzed outside of hold time
	MW-5B	Nitrate-N	UJL	Analyzed outside of hold time
	MW3-1	Nitrate-N	UJL	Analyzed outside of hold time
	MW3-2	Nitrate-N	UJL	Analyzed outside of hold time
	MW3-3	Nitrate-N	UJL	Analyzed outside of hold time
UJL – Outside specifications for holding times. (Non-Detect Results)				

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 3. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-2/MW202	1906206-05/1906206-09	Dissolved Aluminum	0.145	0.143	1.39	A
MW3-2/MW202	1906206-05/1906206-09	Dissolved Antimony	0.0008	0.0008	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Dissolved Arsenic	0.002	0.002	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Dissolved Chromium	0.002	0.002	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Dissolved Lead	0.00038	0.000348	8.00	U
MW3-2/MW202	1906206-05/1906206-09	Dissolved Nickel	0.003	0.003	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Dissolved Thalium	0.0005	0.0005	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Dissolved Vanadium	0.00272	0.00283	3.96	A
MW3-2/MW202	1906206-05/1906206-09	Aluminum	0.0305	0.0462	40.94	J
MW3-2/MW202	1906206-05/1906206-09	Antimony	<0.000800	<0.000800	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Arsenic	<0.00200	<0.00200	0.00	A
MW3-2/MW202	1906206-05/1906206-09	Calcium	871	876	0.57	A
MW3-2/MW202	1906206-05/1906206-09	Chromium	<0.00200	<0.00200	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Lead	<0.000300	<0.000300	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Magnesium	1320	1340	1.50	A
MW3-2/MW202	1906206-05/1906206-09	Nickel	<0.00300	<0.00300	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Potassium	50.1	49.8	0.60	A
MW3-2/MW202	1906206-05/1906206-09	Sodium	9350	9750	4.19	A
MW3-2/MW202	1906206-05/1906206-09	Thallium	<0.000500	<0.000500	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Vanadium	0.0025	0.00259	3.54	A
MW3-2/MW202	1906206-05/1906206-09	Dissolved Mercury	<0.0000800	<0.0000800	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Mercury	<0.0000800	<0.0000800	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Uranium	0.132	0.133	0.75	A

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LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-2/MW202	1906206-05/1906206-09	Dissolved Uranium	0.133	0.138	3.69	A
MW3-2/MW202	1906206-05/1906206-09	Chloride	16800	17600	4.65	A
MW3-2/MW202	1906206-05/1906206-09	Flouride	1.23	8.25	148.10	J
MW3-2/MW202	1906206-05/1906206-09	Nitrate-N	<1.00	<1.00	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Sulfate	3980	4180	4.90	A
MW3-2/MW202	1906206-05/1906206-09	Bicarbonate	254	247	2.79	A
MW3-2/MW202	1906206-05/1906206-09	Carbonate	<10.0	<10.0	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Hydroxide	<10.0	<10.0	0.00	U
MW3-2/MW202	1906206-05/1906206-09	Total Alkalinity	254	247	2.79	A
MW3-2/MW202	1906206-05/1906206-09	Ammonia-N	<0.100	<0.100	0.00	C
MW3-2/MW202	1906206-05/1906206-09	Total Dissolved Solids	35300	34800	1.43	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J - RPD outside specifications
C - Samples analyzed outside of hold time
U -Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 1907312

Samples: 1 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

No field duplicate samples were collected during this sampling event.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 1909176

Samples: 16 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW-5 (MW-303) analysis. Table 2 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30%.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW4	1909176-01
MW-5B	1909176-02
MW-5	1909176-03
MW-303	1909176-04
MW-8	1909176-05
MW-9	1909176-06
MW-6RB	1909176-07
MW-10	1909176-08
DB-5	1909176-09
MW-3RB	1909176-10
MW-3R	1909176-11
MW-1	1909176-12
MW-7B	1909176-13
MW-7	1909176-14
MW-11B	1909176-15
MW-11	1909176-16

Table 2. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-5/ MW303	1909176-03/ 1909176-04	Dissolved Aluminum	0.0102	0.0113	10.23	A
MW3-5/ MW303	1909176-03/ 1909176-04	Dissolved Antimony	<0.000800	<0.000800	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Dissolved Arsenic	<0.00300	0.0029	3.39	A
MW3-5/ MW303	1909176-03/ 1909176-04	Dissolved Chromium	<0.00200	<0.00200	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Dissolved Lead	<0.000300	<0.000300	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Dissolved Nickel	0.0163	0.0162	0.62	A

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-5/ MW303	1909176-03/ 1909176-04	Dissolved Thallium	<0.000500	<0.000500	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Dissolved Vanadium	0.00974	0.00977	0.31	A
MW3-5/ MW303	1909176-03/ 1909176-04	Aluminum	<0.0100	0.0102	1.98	A
MW3-5/ MW303	1909176-03/ 1909176-04	Antimony	<0.000800	<0.000800	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Arsenic	0.00262	0.00253	3.50	A
MW3-5/ MW303	1909176-03/ 1909176-04	Calcium	951	943	0.84	A
MW3-5/ MW303	1909176-03/ 1909176-04	Chromium	<0.00200	<0.00200	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Lead	0.00048	0.000463	2.77	A
MW3-5/ MW303	1909176-03/ 1909176-04	Magnesium	1140	1120	1.77	A
MW3-5/ MW303	1909176-03/ 1909176-04	Nickel	0.0155	0.0154	0.65	A
MW3-5/ MW303	1909176-03/ 1909176-04	Potassium	53.1	50.3	5.42	A
MW3-5/ MW303	1909176-03/ 1909176-04	Sodium	6860	6730	1.91	A
MW3-5/ MW303	1909176-03/ 1909176-04	Thallium	<0.000500	<0.000500	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Vanadium	0.00972	0.00965	0.72	A
MW3-5/ MW303	1909176-03/ 1909176-04	Dissolved Mercury	<0.0000800	<0.0000800	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Mercury	<0.0000800	<0.0000800	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Uranium	0.104	0.104	0.00	A
MW3-5/ MW303	1909176-03/ 1909176-04	Dissolved Uranium	0.104	0.105	0.96	A

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-5/ MW303	1909176-03/ 1909176-04	Chloride	14500	15200	4.71	A
MW3-5/ MW303	1909176-03/ 1909176-04	Fluoride	<1.00	<1.00	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Nitrate-N	<1.00	<1.00	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Sulfate	3610	3630	0.55	A
MW3-5/ MW303	1909176-03/ 1909176-04	Bicarbonate	525	524	0.19	A
MW3-5/ MW303	1909176-03/ 1909176-04	Carbonate	<10.0	<10.0	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Hydroxide	<10.0	<10.0	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Total Alkalinity	525	524	0.19	A
MW3-5/ MW303	1909176-03/ 1909176-04	Ammonia-N	<0.100	<0.100	0.00	U
MW3-5/ MW303	1909176-03/ 1909176-04	Total Dissolved Solids	29100	27500	5.65	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J-RPD outside specifications
U-Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 1909161

Samples: 13 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW3-4 (MW-202) analysis. Table 2 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30%.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW4-3	1909161-01
MW4-3B	1909161-02
MW3-6	1909161-03
MW3-5	1909161-04
MW3-4	1909161-05
MW-202	1909161-06
MW3-4B	1909162-07
MW4-1	1909161-08
MW4-7	1909161-09
MW4-4	1909161-10
MW3-2	1909161-11
MW3-3	1909161-12
MW3-6R	1909161-13

Table 2. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-4/ MW202	1909161-05/ 1909161-06	Dissolved Aluminum	<0.0100	<0.0100	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Dissolved Antimony	<0.000800	<0.000800	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Dissolved Arsenic	<0.00200	<0.00200	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Dissolved Chromium	<0.00200	<0.00200	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Dissolved Lead	<0.000300	<0.000300	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Dissolved Nickel	<0.00300	<0.00300	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Dissolved Thallium	<0.000500	<0.000500	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Dissolved Vanadium	0.00142	0.00151	6.14	A

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-4/ MW202	1909161-05/ 1909161-06	Aluminum	0.0148	0.0158	6.54	A
MW3-4/ MW202	1909161-05/ 1909161-06	Antimony	<0.000800	<0.000800	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Arsenic	<0.00200	<0.00200	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Calcium	1240	1230	0.81	A
MW3-4/ MW202	1909161-05/ 1909161-06	Chromium	<0.00200	<0.00200	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Lead	0.00063	0.000544	14.97	A
MW3-4/ MW202	1909161-05/ 1909161-06	Magnesium	1970	1950	1.02	A
MW3-4/ MW202	1909161-05/ 1909161-06	Nickel	0.00309	<0.00300	2.96	A
MW3-4/ MW202	1909161-05/ 1909161-06	Potassium	129	129	0.00	A
MW3-4/ MW202	1909161-05/ 1909161-06	Sodium	14400	14200	1.40	A
MW3-4/ MW202	1909161-05/ 1909161-06	Thallium	<0.000500	<0.000500	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Vanadium	0.0014	0.00117	17.90	A
MW3-4/ MW202	1909161-05/ 1909161-06	Dissolved Mercury	<0.0000800	<0.0000800	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Mercury	<0.0000800	<0.0000800	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Uranium	0.129	0.129	0.00	A
MW3-4/ MW202	1909161-05/ 1909161-06	Dissolved Uranium	0.135	0.136	0.74	A
MW3-4/ MW202	1909161-05/ 1909161-06	Chloride	29000	26900	7.51	A
MW3-4/ MW202	1909161-05/ 1909161-06	Fluoride	<1.00	<1.00	0.00	U

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-4/ MW202	1909161-05/ 1909161-06	Nitrate-N	<1.00	<1.00	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Sulfate	4910	4920	0.20	A
MW3-4/ MW202	1909161-05/ 1909161-06	Bicarbonate	228	228	0.00	A
MW3-4/ MW202	1909161-05/ 1909161-06	Carbonate	<10.0	<10.0	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Hydroxide	<10.0	<10.0	0.00	U
MW3-4/ MW202	1909161-05/ 1909161-06	Total Alkalinity	228	228	0.00	A
MW3-4/ MW202	1909161-05/ 1909161-06	Ammonia-N	0.131	0.123	6.30	A
MW3-4/ MW202	1909161-05/ 1909161-06	Total Dissolved Solids	53000	52900	0.19	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J-RPD outside specifications
U-Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 1909142

Samples: 8 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW3-1 (MW-101) analysis. Table 2 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30% except for Fluoride. This is flagged appropriately in Table 2.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW4-7A	1909142-01
MW4-7B	1909142-02
MW4-2	1909142-03
MW4-2A	1909142-04
MW3-7B	1909142-05
MW3-7	1909142-06
MW3-1	1909142-07
MW-101	1909142-08

Table 2. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-1/MW101	1909142-07/ 1909142-08	Dissolved Aluminum	<0.0100	<0.0100	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Dissolved Antimony	<0.000800	<0.000800	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Dissolved Arsenic	<0.00200	<0.00200	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Dissolved Chromium	<0.00200	<0.00200	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Dissolved Lead	<0.000300	<0.000300	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Dissolved Nickel	0.00584	0.0065	10.70	A
MW3-1/MW101	1909142-07/ 1909142-08	Dissolved Thallium	0.00054	0.000525	2.45	A
MW3-1/MW101	1909142-07/ 1909142-08	Dissolved Vanadium	0.00164	0.00167	1.81	A
MW3-1/MW101	1909142-07/ 1909142-08	Aluminum	0.0124	0.0115	7.53	A
MW3-1/MW101	1909142-07/ 1909142-08	Antimony	<0.000800	<0.000800	0.00	U

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-1/MW101	1909142-07/ 1909142-08	Arsenic	<0.00200	<0.00200	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Calcium	1020	1080	5.71	A
MW3-1/MW101	1909142-07/ 1909142-08	Chromium	<0.00200	<0.00200	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Lead	<0.000300	<0.000300	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Magnesium	1280	1280	0.00	A
MW3-1/MW101	1909142-07/ 1909142-08	Nickel	0.00627	0.00615	1.93	A
MW3-1/MW101	1909142-07/ 1909142-08	Potassium	40.9	41.9	2.42	A
MW3-1/MW101	1909142-07/ 1909142-08	Sodium	9790	9810	0.20	A
MW3-1/MW101	1909142-07/ 1909142-08	Thallium	<0.000500	0.000517	3.34	A
MW3-1/MW101	1909142-07/ 1909142-08	Vanadium	0.00115	0.00122	5.91	A
MW3-1/MW101	1909142-07/ 1909142-08	Dissolved Mercury	<0.0000800	<0.0000800	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Mercury	<0.0000800	<0.0000800	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Uranium	0.115	0.116	0.87	A
MW3-1/MW101	1909142-07/ 1909142-08	Dissolved Uranium	0.114	0.112	1.77	A
MW3-1/MW101	1909142-07/ 1909142-08	Chloride	19900	20000	0.50	A
MW3-1/MW101	1909142-07/ 1909142-08	Fluoride	3.97	1.53	88.73	J
MW3-1/MW101	1909142-07/ 1909142-08	Nitrate-N	<1.00	<1.00	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Sulfate	4620	4660	0.86	A

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LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-1/MW101	1909142-07/ 1909142-08	Bicarbonate	223	226	1.34	A
MW3-1/MW101	1909142-07/ 1909142-08	Carbonate	<10.0	<10.0	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Hydroxide	<10.0	<10.0	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Total Alkalinity	223	226	1.34	A
MW3-1/MW101	1909142-07/ 1909142-08	Ammonia-N	<0.100	<0.100	0.00	U
MW3-1/MW101	1909142-07/ 1909142-08	Total Dissolved Solids	43300	36600	16.77	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J-RPD outside specifications
U-Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 1912058

Samples: 5 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed but sample receipt temperatures were not within the acceptance criteria of 4±2°C. This is appropriately flagged in Table 2. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW3-7 (MW-103) analysis. Table 3 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30%, except for Dissolved Aluminum.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW3-7	1912058-01
MW3-7B	1912058-02
MW-103	1912058-03
MW3-5	1912058-04
MW3-6	1912058-05

Table 2. Qualified Analytical Data

Batch ID	Field ID	Analyte	Qualifier	Reason for Qualification
90037	MW3-7	Nitrate-N	UJL	Sample arrived outside of control temperature. (Non-Detect Results)
		Sulfate	JL	Sample arrived outside of control temperature. (Detected Results)
		Alkalinity	JL	Sample arrived outside of control temperature. (Detected Results)
		Ammonia	UJL	Sample arrived outside of control temperature. (Non-Detect Results)
		TDS	JL	Sample arrived outside of control temperature. (Detected Results)
	MW3-7B	Nitrate-N	UJL	Sample arrived outside of control temperature. (Non-Detect Results)
		Sulfate	JL	Sample arrived outside of control temperature. (Detected Results)
		Alkalinity	JL	Sample arrived outside of control temperature. (Detected Results)
		Ammonia	UJL	Sample arrived outside of control temperature. (Non-Detect Results)
		TDS	JL	Sample arrived outside of control temperature. (Detected Results)

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Batch ID	Field ID	Analyte	Qualifier	Reason for Qualification
	MW-103	Nitrate-N	UJL	Sample arrived outside of control temperature. (Non-Detect Results)
		Sulfate	JL	Sample arrived outside of control temperature. (Detected Results)
		Alkalinity	JL	Sample arrived outside of control temperature. (Detected Results)
		Ammonia	UJL	Sample arrived outside of control temperature. (Non-Detect Results)
		TDS	JL	Sample arrived outside of control temperature. (Detected Results)
	MW3-5	Nitrate-N	UJL	Sample arrived outside of control temperature. (Non-Detect Results)
		Sulfate	JL	Sample arrived outside of control temperature. (Detected Results)
		Alkalinity	JL	Sample arrived outside of control temperature. (Detected Results)
		Ammonia	UJL	Sample arrived outside of control temperature. (Non-Detect Results)
		TDS	JL	Sample arrived outside of control temperature. (Detected Results)
	MW3-6	Nitrate-N	UJL	Sample arrived outside of control temperature. (Non-Detect Results)
		Sulfate	JL	Sample arrived outside of control temperature. (Detected Results)
		Alkalinity	JL	Sample arrived outside of control temperature. (Detected Results)
		Ammonia	UJL	Sample arrived outside of control temperature. (Non-Detect Results)
		TDS	JL	Sample arrived outside of control temperature. (Detected Results)
JL and UJL – Affected samples with Detected Results				

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 3. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-7/ MW-103	19012058-01/ 1912058-03	Dissolved Aluminum	0.0106	0.0147	32.41	J
MW3-7/ MW-103	19012058-01/ 1912058-03	Dissolved Antimony	<0.000800	<0.000800	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Dissolved Arsenic	<0.00200	<0.00200	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Dissolved Chromium	<0.00200	<0.00200	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Dissolved Lead	<0.000300	<0.000300	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Dissolved Nickel	<0.00300	<0.00300	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Dissolved Thallium	<0.000500	<0.000500	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Dissolved Vanadium	0.00293	0.00293	0.00	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Aluminum	0.015	0.014	6.90	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Antimony	<0.000800	<0.000800	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Arsenic	<0.00200	<0.00200	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Calcium	1120	1130	0.89	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Chromium	<0.00200	<0.00200	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Lead	<0.000300	<0.000300	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Magnesium	1520	1530	0.66	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Nickel	<0.00300	<0.00300	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Potassium	49.7	51.5	3.56	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Sodium	11800	12100	2.51	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Thallium	<0.000500	<0.000500	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Vanadium	0.00294	0.00305	3.67	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Dissolved Mercury	<0.0000800	<0.0000800	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Mercury	<0.0000800	<0.0000800	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Uranium	0.127	0.126	0.79	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Dissolved Uranium	0.119	0.121	1.67	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Chloride	21500	20900	2.83	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Fluoride	<1.00	<1.00	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Nitrate-N	<1.00	<1.00	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Sulfate	4880	4720	3.33	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Bicarbonate	233	235	0.85	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Carbonate	<10.0	<10.0	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Hydroxide	<10.0	<10.0	0.00	U
MW3-7/ MW-103	19012058-01/ 1912058-03	Total Alkalinity	233	235	0.85	A
MW3-7/ MW-103	19012058-01/ 1912058-03	Ammonia-N	<0.100	<0.100	0.00	U

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LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-7/ MW-103	19012058-01/ 1912058-03	Total Dissolved Solids	46600	48600	4.20	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J-RPD outside specifications
U-Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 1912030

Samples: 13 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW4-4 (MW-102) analysis. Table 2 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30%, except for Lead.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW4-2	1912030-01
MW4-3B	1912030-02
MW4-3	1912030-03
MW4-4	1912030-04
MW-102	1912030-05
MW4-7	1912030-06
MW4-7A	1912030-07
MW4-7B	1912030-08
MW3-1	1912030-09
MW3-2	1912030-10
MW3-3	1912030-11
MW3-4	1912030-12
MW3-4B	1912030-13

Table 2. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW4-4/ MW-102	19012030-04/ 1912030-05	Dissolved Aluminum	0.01	0.01	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Dissolved Antimony	0.0008	0.0008	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Dissolved Arsenic	0.002	0.002	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Dissolved Chromium	0.002	0.002	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Dissolved Lead	0.0003	0.0003	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Dissolved Nickel	0.003	0.003	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Dissolved Thallium	0.0005	0.0005	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Dissolved Vanadium	0.00272	0.00266	2.23	A

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Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW4-4/ MW-102	19012030-04/ 1912030-05	Aluminum	0.0122	0.0145	17.23	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Antimony	0.0008	0.0008	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Arsenic	0.002	0.002	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Calcium	1130	1120	0.89	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Chromium	0.002	0.002	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Lead	0.0003	0.00105	111.11	J
MW4-4/ MW-102	19012030-04/ 1912030-05	Magnesium	1210	1180	2.51	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Nickel	0.003	0.003	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Potassium	49	48.1	1.85	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Sodium	8750	8590	1.85	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Thallium	0.0005	0.0005	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Vanadium	0.00175	0.00167	4.68	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Dissolved Mercury	0.00008	0.00008	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Mercury	0.00008	0.00008	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Uranium	0.091	0.0908	0.22	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Dissolved Uranium	0.0993	0.101	1.70	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Chloride	17100	17100	0.00	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Fluoride	1	1	0.00	U

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Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW4-4/ MW-102	19012030-04/ 1912030-05	Nitrate-N	3.11	3.27	5.02	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Sulfate	4550	4550	0.00	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Bicarbonate	182	178	2.22	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Carbonate	10	10	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Hydroxide	10	10	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Total Alkalinity	182	178	2.22	A
MW4-4/ MW-102	19012030-04/ 1912030-05	Ammonia-N	0.1	0.1	0.00	U
MW4-4/ MW-102	19012030-04/ 1912030-05	Total Dissolved Solids	34900	35400	1.42	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J-RPD outside specifications
U-Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 1912022

Samples: 19 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW4-2A (MW-101) analysis. Table 2 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30%, except for Dissolved Aluminum, Nitrate-N, Bicarbonate, and Total Alkalinity.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW-6R	1912022-01
MW-6RB	1912022-02
MW-9	1912022-03
MW-8	1912022-04
MW-5	1912022-05
MW-5B	1912022-06
MW-4	1912022-07
DB-5	1912022-08
MW4-2A	1912022-09
MW-101	1912022-10
MW-10	1912022-11
MW-11	1912022-12
MW-11B	1912022-13
MW-7	1912022-14
MW-7B	1912022-15
MW-1	1912022-16
MW-3R	1912022-17
MW-3RB	1912022-18
MW4-1	1912022-19

Table 2. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW4-2A/ MW-101	19012022-09/ 1912022-10	Dissolved Aluminum	0.0135	0.107	155.19	J
MW4-2A/ MW-101	19012022-09/ 1912022-10	Dissolved Antimony	<0.000800	<0.000800	0.00	U
MW4-2A/ MW-101	19012022-09/ 1912022-10	Dissolved Arsenic	0.00247	0.00256	3.58	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Dissolved Chromium	0.00307	0.00353	13.94	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Dissolved Lead	<0.000300	<0.000300	0.00	U

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Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW4-2A/ MW-101	19012022-09/ 1912022-10	Dissolved Nickel	0.0109	0.012	9.61	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Dissolved Thallium	<0.000500	<0.000500	0.00	U
MW4-2A/ MW-101	19012022-09/ 1912022-10	Dissolved Vanadium	0.00874	0.00886	1.36	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Aluminum	0.0465	0.0476	2.34	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Antimony	<0.000800	<0.000800	0.00	U
MW4-2A/ MW-101	19012022-09/ 1912022-10	Arsenic	0.00205	0.00211	2.88	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Calcium	1190	1180	0.84	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Chromium	0.0116	0.0114	1.74	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Lead	<0.000300	<0.000300	0.00	U
MW4-2A/ MW-101	19012022-09/ 1912022-10	Magnesium	1240	1230	0.81	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Nickel	0.0143	0.0143	0.00	U
MW4-2A/ MW-101	19012022-09/ 1912022-10	Potassium	57.3	57.1	0.35	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Sodium	8820	8560	2.99	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Thallium	<0.000500	<0.000500	0.00	U
MW4-2A/ MW-101	19012022-09/ 1912022-10	Vanadium	0.00801	0.00792	1.13	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Dissolved Mercury	<0.0000800	<0.0000800	0.00	U
MW4-2A/ MW-101	19012022-09/ 1912022-10	Mercury	<0.0000800	<0.0000800	0.00	U
MW4-2A/ MW-101	19012022-09/ 1912022-10	Uranium	0.0901	0.0887	1.57	A

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Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW4-2A/ MW-101	19012022-09/ 1912022-10	Dissolved Uranium	0.0978	0.0984	0.61	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Chloride	16500	16500	0.00	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Fluoride	<1.00	1.29	25.33	U
MW4-2A/ MW-101	19012022-09/ 1912022-10	Nitrate-N	8.51	<1.00	157.94	J
MW4-2A/ MW-101	19012022-09/ 1912022-10	Sulfate	4480	4330	3.41	A
MW4-2A/ MW-101	19012022-09/ 1912022-10	Bicarbonate	14.5	289	180.89	J
MW4-2A/ MW-101	19012022-09/ 1912022-10	Carbonate	<10.0	<10.0	0.00	U
MW4-2A/ MW-101	19012022-09/ 1912022-10	Hydroxide	<10.0	<10.0	0.00	U
MW4-2A/ MW-101	19012022-09/ 1912022-10	Total Alkalinity	20	289	174.11	J
MW4-2A/ MW-101	19012022-09/ 1912022-10	Ammonia-N	<0.100	<0.100	0.00	U
MW4-2A/ MW-101	19012022-09/ 1912022-10	Total Dissolved Solids	35300	34600	2.00	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J-RPD outside specifications
U-Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 2002097

Samples: 6 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW3-4 (MW-204) analysis. Table 2 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30%, except for Aluminum, Lead, Ammonia-N. This is appropriately flagged in Table 2.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

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LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW3-1	2002097-01
MW3-2	2002097-02
MW3-3	2002097-03
MW3-4B	2002097-04
MW3-4	2002097-05
MW-204	2002097-06

Table 2. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-4/MW-204	2002097-05/2002097-06	Dissolved Aluminum	0.0122	0.0142	15.15	A
MW3-4/MW-204	2002097-05/2002097-06	Dissolved Antimony	0.000800	0.000800	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Dissolved Arsenic	0.00200	0.00200	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Dissolved Chromium	0.00200	0.00200	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Dissolved Lead	0.000300	0.000300	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Dissolved Nickel	0.00557	0.00566	1.60	A
MW3-4/MW-204	2002097-05/2002097-06	Dissolved Thallium	0.000500	0.000500	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Dissolved Vanadium	0.00186	0.00181	2.72	A
MW3-4/MW-204	2002097-05/2002097-06	Aluminum	0.0944	0.0695	30.38	J
MW3-4/MW-204	2002097-05/2002097-06	Antimony	0.000800	0.000800	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Arsenic	0.00200	0.00200	0.00	U

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Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-4/MW-204	2002097-05/2002097-06	Calcium	1340	1330	0.75	A
MW3-4/MW-204	2002097-05/2002097-06	Chromium	0.00282	0.00226	22.05	A
MW3-4/MW-204	2002097-05/2002097-06	Lead	0.00056	0.000372	40.86	J
MW3-4/MW-204	2002097-05/2002097-06	Magnesium	1940	1940	0.00	A
MW3-4/MW-204	2002097-05/2002097-06	Nickel	0.00527	0.00524	0.57	A
MW3-4/MW-204	2002097-05/2002097-06	Potassium	125	123	1.61	A
MW3-4/MW-204	2002097-05/2002097-06	Sodium	14900	14800	0.67	A
MW3-4/MW-204	2002097-05/2002097-06	Thallium	0.000500	0.000500	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Vanadium	0.00231	0.00214	7.64	A
MW3-4/MW-204	2002097-05/2002097-06	Dissolved Mercury	0.0000800	0.0000800	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Mercury	0.0000800	0.0000800	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Uranium	0.158	0.157	0.63	A
MW3-4/MW-204	2002097-05/2002097-06	Dissolved Uranium	0.161	0.155	3.80	A
MW3-4/MW-204	2002097-05/2002097-06	Chloride	29700	29900	0.67	A
MW3-4/MW-204	2002097-05/2002097-06	Fluoride	1.00	1.00	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Nitrate-N	1.00	1.00	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Sulfate	4590	4610	0.43	A
MW3-4/MW-204	2002097-05/2002097-06	Bicarbonate	217	211	2.80	A

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-4/MW-204	2002097-05/2002097-06	Carbonate	10.0	10.0	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Hydroxide	10.0	10.0	0.00	U
MW3-4/MW-204	2002097-05/2002097-06	Total Alkalinity	217	211	2.80	A
MW3-4/MW-204	2002097-05/2002097-06	Ammonia-N	0.18	0.119	40.80	J
MW3-4/MW-204	2002097-05/2002097-06	Total Dissolved Solids	59500	58300	2.04	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J-RPD outside specifications
U-Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 2002114

Samples: 5 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW3-7B (MW-205) analysis. Table 2 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30%, except for Dissolved Nickel, Dissolved Vanadium, and Aluminum. This is appropriately flagged in Table 2.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW3-5	2002114-01
MW3-6	2002114-02
MW3-7	2002114-03
MW3-7B	2002114-04
MW-205	2002114-05

Table 2. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-7B/MW-205	2002114-04/2002114-05	Dissolved Aluminum	<0.0100	0.0105	4.88	A
MW3-7B/MW-205	2002114-04/2002114-05	Dissolved Antimony	<0.000800	<0.000800	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Dissolved Arsenic	0.00526	0.00518	1.53	A
MW3-7B/MW-205	2002114-04/2002114-05	Dissolved Chromium	0.00200	0.00268	29.06	A
MW3-7B/MW-205	2002114-04/2002114-05	Dissolved Lead	<0.000300	<0.000300	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Dissolved Nickel	<0.003	0.00482	46.55	J
MW3-7B/MW-205	2002114-04/2002114-05	Dissolved Thallium	<0.000500	<0.000500	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Dissolved Vanadium	0.00062	0.00131	71.93	J
MW3-7B/MW-205	2002114-04/2002114-05	Aluminum	0.0121	0.0167	31.94	J

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-7B/MW-205	2002114-04/2002114-05	Antimony	<0.000800	<0.000800	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Arsenic	0.00547	0.00561	2.53	A
MW3-7B/MW-205	2002114-04/2002114-05	Calcium	1100	1120	1.80	A
MW3-7B/MW-205	2002114-04/2002114-05	Chromium	<0.00200	<0.00200	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Lead	<0.000300	<0.000300	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Magnesium	1480	1490	0.67	A
MW3-7B/MW-205	2002114-04/2002114-05	Nickel	<0.00300	<0.00300	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Potassium	61.8	63.7	3.03	A
MW3-7B/MW-205	2002114-04/2002114-05	Sodium	10700	11200	4.57	A
MW3-7B/MW-205	2002114-04/2002114-05	Thallium	<0.000500	<0.000500	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Vanadium	0.000530	<0.000500	6.01	A
MW3-7B/MW-205	2002114-04/2002114-05	Dissolved Mercury	<0.0000800	<0.0000800	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Mercury	<0.0000800	<0.0000800	0.00	U

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW3-7B/MW-205	2002114-04/2002114-05	Uranium	0.0773	0.0754	2.49	A
MW3-7B/MW-205	2002114-04/2002114-05	Dissolved Uranium	0.0725	0.0724	0.14	A
MW3-7B/MW-205	2002114-04/2002114-05	Chloride	20300	21000	3.39	A
MW3-7B/MW-205	2002114-04/2002114-05	Fluoride	<1.00	<1.00	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Nitrate-N	<1.00	<1.00	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Sulfate	3740	3890	3.93	A
MW3-7B/MW-205	2002114-04/2002114-05	Bicarbonate	202	183	9.87	A
MW3-7B/MW-205	2002114-04/2002114-05	Carbonate	<10.0	<10.0	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Hydroxide	<10.0	<10.0	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Total Alkalinity	202	183	9.87	A
MW3-7B/MW-205	2002114-04/2002114-05	Ammonia-N	<0.100	<0.100	0.00	U
MW3-7B/MW-205	2002114-04/2002114-05	Total Dissolved Solids	43700	43400	0.69	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J-RPD outside specifications
U-Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 2002045

Samples: 12 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW-11B (MW-201) analysis. Table 2 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30%.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW-6R	2002045-01
MW-6RB	2002045-02
MW-10	2002045-03
MW-11	2002045-04
MW-11B	2002045-05
MW-201	2002045-06
MW-7	2002045-07
MW-9	2002045-08
MW-8	2002045-09
MW-5	2002045-10
MW-5B	2002045-11
MW-4	2002045-12

Table 2. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW-11B/MW201	2002045-05/2002045-06	Dissolved Aluminum	0.0118	<0.0100	16.51	A
MW-11B/MW201	2002045-05/2002045-06	Dissolved Antimony	<0.000800	<0.000800	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Dissolved Arsenic	0.00235	<0.00200	16.09	A
MW-11B/MW201	2002045-05/2002045-06	Dissolved Chromium	<0.00200	<0.00200	0.00	A
MW-11B/MW201	2002045-05/2002045-06	Dissolved Lead	<0.000300	<0.000300	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Dissolved Nickel	0.00423	0.00372	12.83	A
MW-11B/MW201	2002045-05/2002045-06	Dissolved Thalium	<0.000500	<0.000500	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Dissolved Vanadium	0.00417	0.00438	4.91	A

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LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW-11B/MW201	2002045-05/2002045-06	Aluminum	0.0151	0.0149	1.33	A
MW-11B/MW201	2002045-05/2002045-06	Antimony	<0.000800	<0.000800	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Arsenic	<0.00200	<0.00200	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Calcium	557	555	0.36	A
MW-11B/MW201	2002045-05/2002045-06	Chromium	<0.00200	<0.00200	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Lead	<0.000300	<0.000300	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Magnesium	857	835	2.60	A
MW-11B/MW201	2002045-05/2002045-06	Nickel	0.00362	0.0035	3.37	A
MW-11B/MW201	2002045-05/2002045-06	Potassium	40.5	39.8	1.74	A
MW-11B/MW201	2002045-05/2002045-06	Sodium	5460	5580	2.17	A
MW-11B/MW201	2002045-05/2002045-06	Thallium	<0.000500	<0.000500	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Vanadium	0.00498	0.00431	14.42	A
MW-11B/MW201	2002045-05/2002045-06	Dissolved Mercury	<0.0000800	<0.0000800	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Mercury	<0.0000800	<0.0000800	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Uranium	0.088	0.0833	5.49	A
MW-11B/MW201	2002045-05/2002045-06	Dissolved Uranium	0.09	0.0849	5.83	A
MW-11B/MW201	2002045-05/2002045-06	Chloride	11200	11300	0.89	A
MW-11B/MW201	2002045-05/2002045-06	Flouride	<1.00	<1.00	0.00	U

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LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW-11B/MW201	2002045-05/2002045-06	Nitrate-N	<1.00	<1.00	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Sulfate	2440	2320	5.04	A
MW-11B/MW201	2002045-05/2002045-06	Bicarbonate	327	325	0.61	A
MW-11B/MW201	2002045-05/2002045-06	Carbonate	<10.0	<10.0	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Hydroxide	<10.0	<10.0	0.00	U
MW-11B/MW201	2002045-05/2002045-06	Total Alkalinity	327	325	0.61	A
MW-11B/MW201	2002045-05/2002045-06	Ammonia-N	0.118	<0.100	16.51	A
MW-11B/MW201	2002045-05/2002045-06	Total Dissolved Solids	19900	20500	2.97	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J-RPD outside specifications
U-Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 2002082

Samples: 5 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW4-7B (MW-203) analysis. Table 2 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30%, except for Aluminum. This is appropriately flagged in Table 2.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW4-4	2002082-01
MW4-7	2002082-02
MW4-7B	2002082-03
MW4-7A	2002082-04
MW-203	2002082-05

Table 2. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW4-7B/MW-203	2002082-03/2002082-05	Dissolved Aluminum	<0.0100	<0.0100	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Dissolved Antimony	<0.000800	<0.000800	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Dissolved Arsenic	<0.00200	<0.00200	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Dissolved Chromium	<0.00200	<0.00200	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Dissolved Lead	<0.000300	<0.000300	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Dissolved Nickel	0.00378	0.00348	8.26	A
MW4-7B/MW-203	2002082-03/2002082-05	Dissolved Thallium	<0.000500	<0.000500	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Dissolved Vanadium	0.00425	0.00398	6.56	A
MW4-7B/MW-203	2002082-03/2002082-05	Aluminum	0.0729	0.039	60.59	J

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW4-7B/MW-203	2002082-03/2002082-05	Antimony	<0.000800	<0.000800	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Arsenic	<0.00200	<0.00200	0.00	A
MW4-7B/MW-203	2002082-03/2002082-05	Calcium	1280	1240	3.17	A
MW4-7B/MW-203	2002082-03/2002082-05	Chromium	<0.00200	<0.00200	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Lead	<0.000300	<0.000300	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Magnesium	1810	1800	0.55	A
MW4-7B/MW-203	2002082-03/2002082-05	Nickel	0.00371	0.00351	5.54	A
MW4-7B/MW-203	2002082-03/2002082-05	Potassium	101	102	0.99	A
MW4-7B/MW-203	2002082-03/2002082-05	Sodium	12200	12100	0.82	A
MW4-7B/MW-203	2002082-03/2002082-05	Thallium	<0.0005	<0.0005	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Vanadium	0.00408	0.00397	2.73	A
MW4-7B/MW-203	2002082-03/2002082-05	Dissolved Mercury	<0.0000800	<0.0000800	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Mercury	<0.0000800	<0.0000800	0.00	U

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LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW4-7B/MW-203	2002082-03/2002082-05	Uranium	0.0614	0.0586	4.67	A
MW4-7B/MW-203	2002082-03/2002082-05	Dissolved Uranium	0.0594	0.0581	2.21	A
MW4-7B/MW-203	2002082-03/2002082-05	Chloride	24200	24500	1.23	A
MW4-7B/MW-203	2002082-03/2002082-05	Fluoride	<1.00	<1.00	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Nitrate-N	<1.00	<1.00	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Sulfate	3850	3940	2.31	A
MW4-7B/MW-203	2002082-03/2002082-05	Bicarbonate	254	253	0.39	A
MW4-7B/MW-203	2002082-03/2002082-05	Carbonate	<10.0	<10.0	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Hydroxide	<10.0	<10.0	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Total Alkalinity	254	253	0.39	A
MW4-7B/MW-203	2002082-03/2002082-05	Ammonia-N	<0.100	<0.100	0.00	U
MW4-7B/MW-203	2002082-03/2002082-05	Total Dissolved Solids	45900	46300	0.87	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J-RPD outside specifications
U-Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 2002060

Samples: 11 Groundwater

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition. The COC was properly completed and sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table 2-40(A) and 2-40(B).

Calibrations

According to the LRCs, initial calibration data met all standards for all analysis.

Blanks

The laboratory method blank was non-detect for the analyses requested.

Laboratory Control Samples

The LCS recovery met the project measurement quality objectives for the analyses requested.

Matrix Spike/Matrix Spike Duplicates

MS/MSDs met project objectives for the analyses requested.

Field Precision

One field duplicate sample was collected during this sampling event from MW-3R (MW-202) analysis. Table 2 summarizes groundwater duplicate precision for detected results.

Field duplicate precision met the project measurement quality objective for RPDs of <30%, except for Aluminum, Mercury, and Nitrate-N. This is appropriately flagged in Table 2.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW4-1	2002060-01
MW4-2A	2002060-02
MW4-2	2002060-03
MW4-3B	2002060-04
MW4-3	2002060-05
MW-7B	2002060-06
MW-1	2002060-07
DB-5	2002060-08
MW-3R	2002060-09
MW-202	2002060-10
MW-3RB	2002060-11

Table 2. Field Precision

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW-3R/MW-202	2002060-09/2002060-10	Dissolved Aluminum	0.0165	0.0133	21.48	A
MW-3R/MW-202	2002060-09/2002060-10	Dissolved Antimony	<0.000800	<0.000800	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Dissolved Arsenic	0.00341	0.00335	1.78	A
MW-3R/MW-202	2002060-09/2002060-10	Dissolved Chromium	<0.00200	<0.00200	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Dissolved Lead	<0.000300	<0.000300	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Dissolved Nickel	<0.00300	<0.00300	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Dissolved Thallium	<0.000500	<0.000500	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Dissolved Vanadium	0.0165	0.0164	0.61	A
MW-3R/MW-202	2002060-09/2002060-10	Aluminum	0.151	0.020	153.22	J

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW-3R/MW-202	2002060-09/2002060-10	Antimony	<0.000800	<0.000800	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Arsenic	0.0035	0.00354	1.14	A
MW-3R/MW-202	2002060-09/2002060-10	Calcium	1110	1110	0.00	A
MW-3R/MW-202	2002060-09/2002060-10	Chromium	<0.00200	<0.00200	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Lead	<0.000300	<0.000300	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Magnesium	1530	1530	0.00	A
MW-3R/MW-202	2002060-09/2002060-10	Nickel	0.00302	<0.00300	0.66	A
MW-3R/MW-202	2002060-09/2002060-10	Potassium	77.7	78	0.39	A
MW-3R/MW-202	2002060-09/2002060-10	Sodium	12800	12800	0.00	A
MW-3R/MW-202	2002060-09/2002060-10	Thallium	<0.000500	<0.000500	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Vanadium	0.0164	0.0166	1.21	A
MW-3R/MW-202	2002060-09/2002060-10	Dissolved Mercury	<0.0000800	<0.0000800	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Mercury	<0.0000800	0.000188	80.60	J
MW-3R/MW-202	2002060-09/2002060-10	Uranium	0.102	0.104	1.94	A
MW-3R/MW-202	2002060-09/2002060-10	Dissolved Uranium	0.108	0.108	0.00	A
MW-3R/MW-202	2002060-09/2002060-10	Chloride	23200	23500	1.28	A
MW-3R/MW-202	2002060-09/2002060-10	Fluoride	<1.00	<1.00	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Nitrate-N	<1.00	<1.00	0.00	U

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field ID	Lab ID	Analyte	Sample Result	Duplicate Result	RPD[1]	Qualified
MW-3R/MW-202	2002060-09/2002060-10	Sulfate	5660	5730	1.23	A
MW-3R/MW-202	2002060-09/2002060-10	Bicarbonate	217	226	4.06	A
MW-3R/MW-202	2002060-09/2002060-10	Carbonate	<10.0	<10.0	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Hydroxide	<10.0	<10.0	0.00	U
MW-3R/MW-202	2002060-09/2002060-10	Total Alkalinity	217	226	4.06	A
MW-3R/MW-202	2002060-09/2002060-10	Ammonia-N	1.11	0.555	66.67	J
MW-3R/MW-202	2002060-09/2002060-10	Total Dissolved Solids	48600	48700	0.21	A

[1]RPD = ((SR-DR)*200)/(SR+DR)
A - Acceptable Data
J-RPD outside specifications
U-Not detected at the quantitation limits stated in the analytical report

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 2005136

Samples: 8 Surface Water, 8 Sediment

Preservation and Holding Times

Samples were evaluated for agreement with the C-O-C. Samples were received in appropriate containers in good condition. The C-O-C was properly completed. Sample receipt temperatures were within the acceptance criteria of ≤ 6° C. Samples were preserved properly. All holding times were met.

Calibrations

According to the LRCs, all initial and continuing calibration results were acceptable.

Blanks

Method blanks were reviewed. Sample results within five times of the blank concentrations were qualified with ”U” as similar to the blank. Analytes detected in the method blanks are presented in Table 3. Data are qualified as shown in Table 2.

Laboratory Control Samples (LCS)

All LCS or LCS/LCS duplicate recoveries and relative percent differences (RPDs) were acceptable.

Matrix Spike/Matrix Spike Duplicates (MS/MSD)

All MS/MSD samples were on batch (non-project) samples and were not evaluated.

Serial Dilutions/Post Digestion Spikes

All serial dilution and post digestion spikes samples were on batch (non-project) samples and were not evaluated.

Field Precision

Two field duplicate sample pairs were collected on the surface water samples and two field duplicate pairs were collected on the sediment samples. Field duplicate precision is evaluated using 30 RPD or two times the MQL as the criteria for surface water samples. Field duplicate precision is evaluated using 50 RPD or three times the MQL as the criteria for sediment samples. Data for field duplicate analyses are evaluated only if both samples in the duplicate pair have a concentration greater than the MQL. Field duplicate precision outside the TRRP-13 criteria are listed in Table 4. Data are qualified as shown in Tables 2 and 4.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in surface water and sediment at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification	Metals	Uranium	Mercury	Radium	Comment
Surface Water						
SW-1	2005136-01	X	X	X	X	
SW-2	2005136-03	X	X	X	X	
SW-3	2005136-05	X	X	X	X	
SW-4	2005136-07	X	X	X	X	
SW-5	2005136-09	X	X	X	X	
SW-6	2005136-11	X	X	X	X	
SW-Dup-1	2005136-13	X	X	X	X	FD of SW-3
SW-Dup-2	2005136-15	X	X	X	X	FD of SW-6
Sediment						
SD-1	2005136-02	X	X	X	X	
SD-2	2005136-04	X	X	X	X	
SD-3	2005136-06	X	X	X	X	
SD-4	2005136-08	X	X	X	X	
SD-5	2005136-10	X	X	X	X	
SD-6	2005136-12	X	X	X	X	
SD-Dup-1	2005136-14	X	X	X	X	FD of SD-3
SD-Dup-2	2005136-16	X	X	X	X	FD of-SD-6

Note: Surface waters analyzed for both total and dissolved metals, mercury, and uranium.
FD – Field duplicate

Table 2. Qualified Analytical Data

Field Identification	Analyte	Qualifier	Reason for Qualification
SD-1	Bismuth-214 (Ra-226)	U	Similar to MB concentration
SD-2	Bismuth-214 (Ra-226)	U	Similar to MB concentration
SD-3	Bismuth-214 (Ra-226)	U	Similar to MB concentration
SD-3	Bismuth-214 (Ra-226)	J	FD outside of AC
SD-4	Bismuth-214 (Ra-226)	U	Similar to MB concentration
SD-5	Bismuth-214 (Ra-226)	U	Similar to MB concentration
SD-6	Bismuth-214 (Ra-226)	U	Similar to MB concentration
SD-Dup-1	Bismuth-214 (Ra-226)	U	Similar to MB concentration
SD-Dup-1	Bismuth-214 (Ra-226)	J	FD outside of AC
SD-Dup-2	Bismuth-214 (Ra-226)	U	Similar to MB concentration
SW-1	Radium-228	U	Similar to MB concentration
SW-2	Radium-228	U	Similar to MB concentration
SW-3	Aluminum (Total)	J	FD outside of AC
SW-3	Bismuth-214 (Ra-226)	J	FD outside of AC
SW-3	Combined Radium	J	FD outside of AC
SW-3	Radium-226	J	FD outside of AC
SW-3	Radium-228	U	Similar to MB concentration
SW-3	Radium-228	J	FD outside of AC
SW-4	Radium-228	U	Similar to MB concentration

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Field Identification	Analyte	Qualifier	Reason for Qualification
SW-5	Radium-228	U	Similar to MB concentration
SW-Dup-1	Aluminum (Total)	J	FD outside of AC
SW-Dup-1	Bismuth-214 (Ra-226)	J	FD outside of AC
SW-Dup-1	Combined Radium	J	FD outside of AC
SW-Dup-1	Radium-226	J	FD outside of AC
SW-Dup-1	Radium-228	U	Similar to MB concentration
SW-Dup-1	Radium-228	J	FD outside of AC
SW-Dup-2	Radium-228	U	Similar to MB concentration

AC – Acceptance criteria
FD – Field duplicate
J - Estimated
MB – Method blank
U – Similar to blank concentration

Table 3. Blank Detections

Identification	Analyte	Concentration	Qualified Concentration
Surface Water			
(MB) R3536266-1	Radium-228	0.711 pCi/l	3.56 pCi/l
Sediment			
(MB) R3540630-4	Actinium-228 (Ra-228)	0.0369 pCi/g	0.185 pCi/g
(MB) R3540630-4	Bismuth-214 (Ra-226)	0.250 pCi/g	1.25 pCi/g

pCi/g – Average picocuries per gram
pCi/l – Average picocuries per liter

Table 4. Field Duplicate Results Outside of Acceptance Criteria

Field Sample/Field Duplicate Identification	Analyte	Sample Result	Field Duplicate Result	RPD (%)	Qualifier
SW-3/ SW-Dup-1	Aluminum (Total)	2.51 mg/L	1.81 mg/L	32.4	J
SW-3/ SW-Dup-1	Radium-228	1.77 pCi/l	2.42 pCi/l31.0	31.0	J
SW-3/ SW-Dup-1	Combined Radium	1.98 pCi/l	2.79 pCi/l	34.0	J
SW-3/ SW-Dup-1	Radium-226	0.217 pCi/l	0.377 pCi/l	80.1	J
SD-3/ SD-Dup-1	Bismuth-214 (Ra-226)	0.714 pCi/g	0.403 pCi/g	55.7	J

% - Percent
J –Estimated
mg/L – Milligram per liter
pCi/g – Average picocuries per gram
pCi/l – Average picocuries per liter
RPD – Relative percent difference

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Laboratory Work Order 1911260

Samples: 56 Soil

Preservation and Holding Times

Samples were evaluated for agreement with the C-O-C. Samples were received in appropriate containers in good condition. The C-o-C was properly completed. Sample receipt temperatures were within the acceptance criteria of ≤ 6° C. Samples were preserved properly. All holding times were met.

Calibrations

According to the LRCs, all initial and continuing calibration results were acceptable.

Blanks

Method blanks were reviewed. Sample results within five times of the blank concentrations were qualified with ”U” as similar to the blank. Analytes detected in the method blanks are presented in Table 3. No results were qualified.

Laboratory Control Samples (LCS)

All LCS or LCS/LCS duplicate recoveries and relative percent differences (RPDs) were acceptable.

Matrix Spike/Matrix Spike Duplicates (MS/MSD)

Most MS/MSD recoveries and RPDs were acceptable. Results that were outside of the acceptance criteria are listed in Table 4. Batch (non-project) data were not evaluated. If the spiking amount was less than four times the concentration in the unspiked parent sample, the MS/MSD data may not represent the matrix effect and were not evaluated. Data are qualified as shown in Tables 2 and 4.

Serial Dilutions/Post Digestion Spikes

Most serial dilution RPDs were acceptable. Results that were outside of the acceptance criteria of ≤ 10% are listed in Table 5. Data are qualified as shown in Tables 2 and 5. All post digestion spike recoveries were acceptable.

Analytical Duplicates

Most analytical RPDs were within laboratory acceptance criteria. Results that were outside of the acceptance criteria are listed in Table 6. Data are qualified as shown in Tables 2 and 6.

Field Precision

Two field duplicate sample pairs were collected - SB39 and its field duplicate SB102 and SB42 and its field duplicate SB101. Field duplicate precision is evaluated using 50 RPD or three times the MQL as the criteria for soil samples. Data for field duplicate analyses are evaluated only if both samples in the

duplicate pair have a concentration greater than the MQL. Field duplicate precision outside the QAPP criteria are listed in Table 7. Data are qualified as shown in Tables 2 and 7.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in soil at the affected property.

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification	Metals	Uranium	Mercury	Anions	Alkalinity	Ammonia	FOC	Radium
BGSB-1	1911260-01	X	X	X	X	X	X	X	X
BGSB-2	1911260-02	X	X	X	X	X	X	X	X
BGSB-3	1911260-03	X	X	X	X	X	X	X	X
BGSB-4	1911260-04	X	X	X	X	X	X	X	X
BGSB-5	1911260-05	X	X	X	X	X	X	X	X
BGSB-6	1911260-06	X	X	X	X	X	X	X	X
BGSB-7	1911260-07	X	X	X	X	X	X	X	X
BGSB-8	1911260-08	X	X	X	X	X	X	X	X
BGSB-9	1911260-09	X	X	X	X	X	X	X	X
BGSB-10	1911260-10	X	X	X	X	X	X	X	X
SB-1	1911260-11	X	X	X	X	X	X	X	X
SB-2	1911260-41	X	--	--	X	X	--	X	--
SB-3	1911260-42	X	--	--	X	X	--	X	--
SB-4	1911260-43	X	--	--	X	X	--	X	--
SB-5	1911260-44	X	--	--	X	X	--	X	--
SB-6	1911260-45	X	--	--	X	X	--	X	--
SB-7	1911260-46	X	--	--	X	X	--	X	--
SB-8	1911260-47	X	--	--	X	X	--	X	--
SB-9	1911260-48	X	--	--	X	X	--	X	--
SB-10	1911260-49	X	--	--	X	X	--	X	--
SB-11	1911260-12	X	X	X	X	X	X	X	X
SB-12	1911260-50	X	--	--	X	X	--	X	--
SB-13	1911260-51	X	--	--	X	X	--	X	--
SB-14	1911260-13	X	X	X	X	X	X	X	X
SB-15	1911260-52	X	--	--	X	X	--	X	--
SB-16	1911260-14	X	X	X	X	X	X	X	X
SB-17	1911260-53	X	--	--	X	X	--	X	--
SB-18	1911260-54	X	--	--	X	X	--	X	--
SB-19	1911260-40	X	--	--	X	X	--	X	--
SB-20	1911260-39	X	--	--	X	X	--	X	--
SB-21	1911260-15	X	X	X	X	X	X	X	X
SB-22	1911260-38	X	--	--	X	X	--	X	--
SB-23	1911260-37	X	--	--	X	X	--	X	--
SB-24	1911260-36	X	--	--	X	X	--	X	--
SB-25	1911260-35	X	--	--	X	X	--	X	--
SB-26	1911260-16	X	X	X	X	X	X	X	X
SB-27	1911260-34	X	--	--	X	X	--	X	--
SB-28	1911260-33	X	--	--	X	X	--	X	--
SB-29	1911260-32	X	--	--	X	X	--	X	--
SB-30	1911260-17	X	X	X	X	X	X	X	X
SB-31	1911260-31	X	--	--	X	X	--	X	--
SB-32	1911260-30	X	--	--	X	X	--	X	--
SB-33	1911260-18	X	X	X	X	X	X	X	X
SB-34	1911260-29	X	--	--	X	X	--	X	--
SB-35	1911260-28	X	--	--	X	X	--	X	--
SB-36	1911260-27	X	--	--	X	X	--	X	--
SB-37	1911260-19	X	X	X	X	X	X	X	X
SB-38	1911260-26	X	--	--	X	X	--	X	--
SB-39	1911260-25	X	--	--	X	X	--	X	--

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification	Metals	Uranium	Mercury	Anions	Alkalinity	Ammonia	FOC	Radium
SB-40	1911260-20	X	X	X	X	X	X	X	X
SB-40	1911260-21	X	X	X	X	X	X	X	X
SB-41	1911260-22	X	--	--	X	X	--	X	--
SB-42	1911260-24	X	--	--	X	X	--	X	--
SB-44	1911260-23	X	--	--	X	X	--	X	--
SB-101	1911260-55	X	--	--	X	X	--	X	--
SB-102	1911260-56	X	--	--	X	X	--	X	--

-- Not analyzed for specified parameter
FOC – Fractional organic carbon by Walkley-Black

Table 2. Qualified Analytical Data

Field Identification	Analyte	Qualifier	Reason for Qualification
BGSB-1	Ammonia	JL	MS/MSD %R < AC
BGSB-1	Sulfate	J	Analytical duplicate RPD > AC
SB-1	Ammonia	JL	MS/MSD %R < AC
SB-3	Sulfate	J	Analytical duplicate RPD > AC
SB-16	FOC	JL	MS/MSD %R < AC
SB-19	Antimony	JL	MS/MSD %R < AC
SB-26	Antimony	JL	MS/MSD %R < AC
SB-26	Lead	J	Serial dilution RPD > AC
SB-39	Calcium	J	Field duplicate precision not met
SB-40	Ammonia	UJL	MS/MSD %R < AC
SB-42	Alkalinity	J	Field duplicate precision not met
SB-42	Calcium	J	Field duplicate precision not met
SB-42	Sodium	J	Field duplicate precision not met
SB-42	Sulfate	J	Field duplicate precision not met
SB-101	Alkalinity	J	Field duplicate precision not met
SB-101	Calcium	J	Field duplicate precision not met
SB-101	Sodium	J	Field duplicate precision not met
SB-101	Sulfate	J	Field duplicate precision not met
SB-102	Calcium	J	Field duplicate precision not met

%R – Percent recovery
AC – Acceptance criteria
J – Estimated
JL – Estimated/biased low
MS/MSD – Matrix spike/matrix spike duplicate
RPD – Relative percent difference
UJL – Not detected/estimated/biased low

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

Table 3. Blank Detections

Identification	Analyte	Concentration	Qualified Concentration
MB-93920	Lead	0.150 mg/kg	0.750 mg/kg
(MB) R3486995-3	RA-228	0.00402 pCi/g	0.0201 pCi/g
(MB) R3486995-3	RA-226	0.0340 pCi/g	0.170 pCi/g
(MB) R3486785-2	RA-226	0.0743 pCi/g	0.372 pCi/g

mg/kg – Milligram per kilogram
pCi/g – Average picocuries per gram

Table 4. Matrix Spike/Matrix Spike Duplicate Exceedances

Field Identification	Analyte	Matrix Spike Recovery (%)	Matrix Spike Duplicate Recovery (%)	RPD (%)	Qualification
BGSB-1	Ammonia	42.2	41.2	1.29	JL
SB-1	Ammonia	53.1	53.6	1.24	JL
SB-16	FOC	67.4	--	--	JL
SB-19	Antimony	61.3	59.2	11.2	JL
SB-26	Antimony	63.4	51.3	25.7	JL
SB-40	Ammonia	38.4	40.0	5.75	UJL

-- Only matrix spike analyzed
% - Percent
FOC – Fractional organic carbon
JL – Estimated/biased low
RPD – Relative percent difference
UJL – Not detected/estimated/biased low

Table 5. Serial Dilution Exceedances

Field Identification	Analyte	Serial Dilution RPD (%)	Qualification
SB-26	Lead	10.8	J

% - Percent
J – Estimated
RPD – Relative percent difference

Table 6. Analytical Duplicate Exceedances

Parent Sample Identification	Analyte	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD (%)	Qualification
BGSB-1	Sulfate	34.7	38.6	10.5	J
SB-3	Sulfate	23.8	20.5	15.1	J

% - Percent
J – Estimated
mg/kg – Milligram per kilogram

APPENDIX 10
LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Affected Property Assessment Report

Copano Site
Aransas and San Patricio County, Texas

RPD – Relative percent difference

Table 7. Field Results Outside of Acceptance Criteria

Field Identification	Analyte	Sample Result	Duplicate Result	RPD (%)	Qualified
SB-42/SB101	Calcium	21300 mg/kg	8850 mg/kg	82.6	J
SB-42/SB101	Sodium	9590 mg/kg	828 mg/kg	168	J
SB-42/SB101	Sulfate	2000 mg/kg	26.4 mg/kg	195	J
SB-42/SB101	Alkalinity	131 mg/L	915 mg/L	150	J
SB-39/SB-102	Calcium	7330 mg/kg	3800 mg/kg	63.4	J

% - Percent
J –Estimated
mg/kg – Milligram per kilogram
mg/L – Milligram per liter

February 28, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 1906186

RE: Copano GW 2Q19

Dear Kevin Dworsky:

DHL Analytical, Inc. received 10 sample(s) on 6/19/2019 for the analyses presented in the following report.

REVISION#1: This revision consists of adding Dissolved Uranium to the list of test parameters for all samples as per the client. Please replace the original report with this revised report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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№ 83323

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Victoria TX 77901
PHONE: 361-573-6442 FAX/E-MAIL:
DATA REPORTED TO: Sergio Ruiz, Greg Logan, Matt Wiseman
ADDITIONAL REPORT COPIES TO:

DATE: 6-18-19 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1906186
PROJECT LOCATION OR NAME: Copano 6W 2019
CLENT PROJECT #: 18111309-2003 COLLECTOR: GL

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☒ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
DB-5	01	6-18-19	12:40	W	P	6		X	X	X	X	8270 PEST ☐ 625 PEST/PCB ☐ 8082 PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8321 HERB ☐ T PHOS, AMMONIA ☒ METALS 6020 ☒ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☒ COD ☐ CHLORIDE ☒ ANIONS F, ☒ SO4 ☐ NO3 ☒ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☒ TSS ☐ % MOISTURE ☐ CYANIDE ☐ Total Alk, Carbs Cr, Mg, Mn, K Radionuclides, U, Ra 226/228	Metals: Al, Sb, As, Cr, Pb, Hg, Ni, Tl, V
MW-7B	02		13:35										
MW-7	03		14:10										
MW-4B	04		15:00										
MW-11	05		15:35										
MW-101	06		15:45										
MW-8	07		15:30										
MW-3RB	08		13:55										
MW-3R	09		12:55										
MW-1	10		11:35										

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	6/18/19 18:00	FEDEX
FEDEX	10/19/19 0914	[signature]
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 0.7°C / 28.0°C THERM #: 18
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

ORIGIN ID:VCTA (361) 541-0723
SERGIO RUIZ
GOLDER
620 E. AIRLINE
VICTORIA, TX 77901
UNITED STATES US

SHIP DATE: 18JUN19
ACTWGT: 35.00 LB
CAD: 2806631/INET4100
DIMS: 24x12x15 IN

BILL RECIPIENT

TO **SAMPLE RECEIVING**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF: 18105404
DEPT:

565J1/D210/23AD

FedEx Express

J19101901070luv

WED - 19 JUN 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
AUS
TX-US

MPS# 0263 **7755 0735 0568** 0201
Mstr# **7755 0735 0373**
2 of 2

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

CUSTODY SEAL
DATE 6/18/19
SIGNATURE
QEC Quality Environmental Containers 800-255-3950 • www.qecusa.com

CUSTODY SEAL
DATE 6/18/19
SIGNATURE
QEC Quality Environmental Containers 800-255-3950 • www.qecusa.com

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 6/19/2019

Work Order Number 1906186 | Received by JW

Checklist completed by: _____ (Signature) 6/19/2019 (Date) | Reviewed by 04 (Initials) 6/19/2019 (Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☐	No ☑	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	0.7 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? No		Checked by EC
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: Samples "MW-7", "MW-11B", & "MW-101" received w/ one 1L bottle for Ra testing, opened in transit.

Corrective Action Proceed w/ analysis using remaining bottle

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW 2Q19	**LRC Date:** 7/19/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1906186
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW 2Q19	**LRC Date:** 7/19/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1906186
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?		X			**S2-02**
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?		X			**S4-01**
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?		X			**S10-02**
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

02/28/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *28-Feb-20*

CLIENT: Golder
Project: Copano GW 2Q19
Lab Order: 1906186

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis (total & dissolved)
Method SW6020A - Uranium in Water Analysis (this parameter is not NELACP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis

Exception Report R1-01

The samples were received and log-in performed on 6/19/19. A total of 10 samples were received. For further login notes please refer to the Sample Receipt Checklist. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Ammonia analysis performed on 6/20/19 the matrix spike duplicate recovery was slightly below control limits. This was due to matrix effect. This is flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits. No further corrective actions were taken.

For Total and Dissolved Metals analyses performed on 6/21/19 and 6/20/19 (batches 91398 & 91399) the matrix spikes and/or matrix spike duplicate recoveries were out of control limits for Calcium or Dissolved Chromium. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate (batch 91398) was not from this work order. The sample selected for the matrix spike and matrix spike duplicate (batch 91399) was from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

Exception Report R10-01

For Anions analysis all samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride).

For Uranium analysis the Dissolved Uranium results were slightly higher than the Total Uranium results for all samples (except for samples MW-3RB, MW-3R and MW-1). These are within the acceptable variation limits. No further corrective actions were taken.

Exception Report S2-02

For Total Metals analysis performed on 6/21/19 LCVL2-190621 and LCVL3-190621 were above control limits for Vanadium. These are flagged accordingly in the QC summary report. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

Exception Report S4-01

For Dissolved Metals analysis samples MW-7B, MW-7, MW-3RB and MW-3R had low responses for the internal standards Bismuth and Indium. This was due to matrix interference. The associated analytes (Antimony & Lead) may be biased high. No further corrective actions were taken.

For Dissolved Metals analysis samples MW-11B, MW-11, MW-101, MW-8 and MW-1 had low responses for the internal standard Bismuth. This was due to matrix interference. The associated analyte (Lead) may be biased high. No further corrective actions were taken.

Exception Report S9-01

For Total and Dissolved Metals analyses performed on 6/21/19 and 6/20/19 (batches 91398 & 91399) the PDS recoveries were out of control limits for a total of four analytes. These are flagged accordingly in the QC summary report. The serial dilutions were within control limits for these analytes. No further corrective actions were taken.

For Total Metals analysis performed on 6/21/19 (batch 91398) the RPD for the serial dilution was slightly above control limits for Potassium. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Dissolved Mercury analysis performed on 6/20/19 (batch 91411) the PDS recovery was below control limits. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

Exception Report S10-02

For Anions analysis, the recovery of Fluoride for the Detectability Check Standard (DCS3-90659) was below the DHL Analytical internal control limits; the recovery meets TRRP specifications. This is flagged accordingly in the QC summary report. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *19-Jul-19*

CLIENT: Golder
Project: Copano GW 2Q19
Lab Order: 1906186

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1906186-01	DB-5		06/18/19 12:40 PM	6/19/2019
1906186-02	MW-7B		06/18/19 01:35 PM	6/19/2019
1906186-03	MW-7		06/18/19 02:10 PM	6/19/2019
1906186-04	MW-11B		06/18/19 03:00 PM	6/19/2019
1906186-05	MW-11		06/18/19 03:35 PM	6/19/2019
1906186-06	MW-101		06/18/19 03:45 PM	6/19/2019
1906186-07	MW-8		06/18/19 03:30 PM	6/19/2019
1906186-08	MW-3RB		06/18/19 01:59 PM	6/19/2019
1906186-09	MW-3R		06/18/19 12:55 PM	6/19/2019
1906186-10	MW-1		06/18/19 11:36 AM	6/19/2019

Lab Order: 1906186
Client: Golder
Project: Copano GW 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906186-01A	DB-5	06/18/19 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	DB-5	06/18/19 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	DB-5	06/18/19 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	DB-5	06/18/19 12:40 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 09:26 AM	91408
1906186-01B	DB-5	06/18/19 12:40 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/20/19 08:31 AM	91399
	DB-5	06/18/19 12:40 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 10:02 AM	91411
1906186-01C	DB-5	06/18/19 12:40 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/20/19 08:36 AM	91400
1906186-01D	DB-5	06/18/19 12:40 PM	Aqueous	M2320 B	Alkalinity Preparation	06/20/19 09:42 AM	91410
	DB-5	06/18/19 12:40 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	DB-5	06/18/19 12:40 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	DB-5	06/18/19 12:40 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	DB-5	06/18/19 12:40 PM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906186-02A	MW-7B	06/18/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-7B	06/18/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-7B	06/18/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-7B	06/18/19 01:35 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 09:26 AM	91408
1906186-02B	MW-7B	06/18/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/20/19 08:31 AM	91399
	MW-7B	06/18/19 01:35 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 10:02 AM	91411
1906186-02C	MW-7B	06/18/19 01:35 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/20/19 08:36 AM	91400
1906186-02D	MW-7B	06/18/19 01:35 PM	Aqueous	M2320 B	Alkalinity Preparation	06/20/19 09:42 AM	91410
	MW-7B	06/18/19 01:35 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-7B	06/18/19 01:35 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-7B	06/18/19 01:35 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-7B	06/18/19 01:35 PM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906186-03A	MW-7	06/18/19 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-7	06/18/19 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-7	06/18/19 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-7	06/18/19 02:10 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 09:26 AM	91408

Lab Order: 1906186
Client: Golder
Project: Copano GW 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906186-03B	MW-7	06/18/19 02:10 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/20/19 08:31 AM	91399
	MW-7	06/18/19 02:10 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 10:02 AM	91411
1906186-03C	MW-7	06/18/19 02:10 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/20/19 08:36 AM	91400
1906186-03D	MW-7	06/18/19 02:10 PM	Aqueous	M2320 B	Alkalinity Preparation	06/20/19 09:42 AM	91410
	MW-7	06/18/19 02:10 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-7	06/18/19 02:10 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-7	06/18/19 02:10 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-7	06/18/19 02:10 PM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906186-04A	MW-11B	06/18/19 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-11B	06/18/19 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-11B	06/18/19 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-11B	06/18/19 03:00 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 09:26 AM	91408
1906186-04B	MW-11B	06/18/19 03:00 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/20/19 08:31 AM	91399
	MW-11B	06/18/19 03:00 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 10:02 AM	91411
1906186-04C	MW-11B	06/18/19 03:00 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/20/19 08:36 AM	91400
1906186-04D	MW-11B	06/18/19 03:00 PM	Aqueous	M2320 B	Alkalinity Preparation	06/20/19 09:42 AM	91410
	MW-11B	06/18/19 03:00 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-11B	06/18/19 03:00 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-11B	06/18/19 03:00 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-11B	06/18/19 03:00 PM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906186-05A	MW-11	06/18/19 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-11	06/18/19 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-11	06/18/19 03:35 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 09:26 AM	91408
1906186-05B	MW-11	06/18/19 03:35 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/20/19 08:31 AM	91399
	MW-11	06/18/19 03:35 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 10:02 AM	91411
1906186-05C	MW-11	06/18/19 03:35 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/20/19 08:36 AM	91400
1906186-05D	MW-11	06/18/19 03:35 PM	Aqueous	M2320 B	Alkalinity Preparation	06/20/19 09:42 AM	91410
	MW-11	06/18/19 03:35 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356

Lab Order: 1906186
Client: Golder
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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906186-05D	MW-11	06/18/19 03:35 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-11	06/18/19 03:35 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-11	06/18/19 03:35 PM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906186-06A	MW-101	06/18/19 03:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-101	06/18/19 03:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-101	06/18/19 03:45 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 09:26 AM	91408
1906186-06B	MW-101	06/18/19 03:45 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/20/19 08:31 AM	91399
	MW-101	06/18/19 03:45 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 10:02 AM	91411
1906186-06C	MW-101	06/18/19 03:45 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/20/19 08:36 AM	91400
1906186-06D	MW-101	06/18/19 03:45 PM	Aqueous	M2320 B	Alkalinity Preparation	06/20/19 09:42 AM	91410
	MW-101	06/18/19 03:45 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-101	06/18/19 03:45 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-101	06/18/19 03:45 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-101	06/18/19 03:45 PM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906186-07A	MW-8	06/18/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-8	06/18/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-8	06/18/19 03:30 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 09:26 AM	91408
1906186-07B	MW-8	06/18/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/20/19 08:31 AM	91399
	MW-8	06/18/19 03:30 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 10:02 AM	91411
1906186-07C	MW-8	06/18/19 03:30 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/20/19 08:36 AM	91400
1906186-07D	MW-8	06/18/19 03:30 PM	Aqueous	M2320 B	Alkalinity Preparation	06/20/19 09:42 AM	91410
	MW-8	06/18/19 03:30 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-8	06/18/19 03:30 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-8	06/18/19 03:30 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-8	06/18/19 03:30 PM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906186-08A	MW-3RB	06/18/19 01:59 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-3RB	06/18/19 01:59 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-3RB	06/18/19 01:59 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906186-08A	MW-3RB	06/18/19 01:59 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 09:26 AM	91408
1906186-08B	MW-3RB	06/18/19 01:59 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/20/19 08:31 AM	91399
	MW-3RB	06/18/19 01:59 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 10:02 AM	91411
1906186-08C	MW-3RB	06/18/19 01:59 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/20/19 08:36 AM	91400
1906186-08D	MW-3RB	06/18/19 01:59 PM	Aqueous	M2320 B	Alkalinity Preparation	06/20/19 09:42 AM	91410
	MW-3RB	06/18/19 01:59 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-3RB	06/18/19 01:59 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-3RB	06/18/19 01:59 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-3RB	06/18/19 01:59 PM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906186-09A	MW-3R	06/18/19 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-3R	06/18/19 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-3R	06/18/19 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-3R	06/18/19 12:55 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 09:26 AM	91408
1906186-09B	MW-3R	06/18/19 12:55 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/20/19 08:31 AM	91399
	MW-3R	06/18/19 12:55 PM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 10:02 AM	91411
1906186-09C	MW-3R	06/18/19 12:55 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/20/19 08:36 AM	91400
1906186-09D	MW-3R	06/18/19 12:55 PM	Aqueous	M2320 B	Alkalinity Preparation	06/20/19 09:42 AM	91410
	MW-3R	06/18/19 12:55 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-3R	06/18/19 12:55 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-3R	06/18/19 12:55 PM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-3R	06/18/19 12:55 PM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906186-10A	MW-1	06/18/19 11:36 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-1	06/18/19 11:36 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-1	06/18/19 11:36 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/20/19 08:30 AM	91398
	MW-1	06/18/19 11:36 AM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 09:26 AM	91408
1906186-10B	MW-1	06/18/19 11:36 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/20/19 08:31 AM	91399
	MW-1	06/18/19 11:36 AM	Aqueous	SW7470A	Mercury Aq Prep	06/20/19 10:02 AM	91411
1906186-10C	MW-1	06/18/19 11:36 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/20/19 08:36 AM	91400

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906186-10D	MW-1	06/18/19 11:36 AM	Aqueous	M2320 B	Alkalinity Preparation	06/20/19 09:42 AM	91410
	MW-1	06/18/19 11:36 AM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-1	06/18/19 11:36 AM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-1	06/18/19 11:36 AM	Aqueous	E300	Anion Preparation	06/19/19 09:00 AM	91356
	MW-1	06/18/19 11:36 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW-1	06/18/19 11:36 AM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420

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Client: Golder
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906186-01A	DB-5	Aqueous	SW7470A	Mercury Total: Aqueous	91408	1	06/20/19 03:28 PM	CETAC2_HG_190620B
	DB-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	500	06/21/19 03:37 PM	ICP-MS4_190621B
	DB-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	10	06/21/19 04:19 PM	ICP-MS4_190621B
	DB-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1	06/21/19 12:47 PM	ICP-MS5_190621C
	DB-5	Aqueous	SW6020A	Uranium in Water by ICPMS	91398	1	06/21/19 12:47 PM	ICP-MS5_190621D
1906186-01B	DB-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91411	1	06/20/19 04:05 PM	CETAC2_HG_190620C
	DB-5	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91399	1	06/20/19 02:58 PM	ICP-MS4_190620C
1906186-01C	DB-5	Aqueous	M4500-NH3-D	Ammonia aqueous	91400	1	06/20/19 01:30 PM	WC_190620A
1906186-01D	DB-5	Aqueous	M2320 B	Alkalinity	91410	1	06/20/19 10:36 AM	TITRATOR_190620A
	DB-5	Aqueous	E300	Anions by IC method - Water	91356	100	06/19/19 04:27 PM	IC4_190619A
	DB-5	Aqueous	E300	Anions by IC method - Water	91356	2	06/19/19 08:11 PM	IC4_190619A
	DB-5	Aqueous	E300	Anions by IC method - Water	91356	1000	06/19/19 12:11 PM	IC4_190619A
	DB-5	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B
1906186-02A	MW-7B	Aqueous	SW7470A	Mercury Total: Aqueous	91408	1	06/20/19 03:31 PM	CETAC2_HG_190620B
	MW-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1	06/21/19 12:49 PM	ICP-MS5_190621C
	MW-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	10	06/21/19 04:21 PM	ICP-MS4_190621B
	MW-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1000	06/21/19 03:39 PM	ICP-MS4_190621B
	MW-7B	Aqueous	SW6020A	Uranium in Water by ICPMS	91398	1	06/21/19 12:49 PM	ICP-MS5_190621D
1906186-02B	MW-7B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91411	1	06/20/19 04:07 PM	CETAC2_HG_190620C
	MW-7B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91399	1	06/20/19 03:00 PM	ICP-MS4_190620C
1906186-02C	MW-7B	Aqueous	M4500-NH3-D	Ammonia aqueous	91400	1	06/20/19 01:30 PM	WC_190620A
1906186-02D	MW-7B	Aqueous	M2320 B	Alkalinity	91410	1	06/20/19 11:02 AM	TITRATOR_190620A
	MW-7B	Aqueous	E300	Anions by IC method - Water	91356	100	06/19/19 04:43 PM	IC4_190619A
	MW-7B	Aqueous	E300	Anions by IC method - Water	91356	10	06/19/19 08:27 PM	IC4_190619A
	MW-7B	Aqueous	E300	Anions by IC method - Water	91356	1000	06/19/19 12:59 PM	IC4_190619A
	MW-7B	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B

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Client: Golder
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906186-03A	MW-7	Aqueous	SW7470A	Mercury Total: Aqueous	91408	1	06/20/19 03:33 PM	CETAC2_HG_190620B
	MW-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	500	06/21/19 03:41 PM	ICP-MS4_190621B
	MW-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	10	06/21/19 04:23 PM	ICP-MS4_190621B
	MW-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1	06/21/19 12:51 PM	ICP-MS5_190621C
	MW-7	Aqueous	SW6020A	Uranium in Water by ICPMS	91398	1	06/21/19 12:51 PM	ICP-MS5_190621D
1906186-03B	MW-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91411	1	06/20/19 04:09 PM	CETAC2_HG_190620C
	MW-7	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91399	1	06/20/19 03:02 PM	ICP-MS4_190620C
1906186-03C	MW-7	Aqueous	M4500-NH3-D	Ammonia aqueous	91400	1	06/20/19 01:30 PM	WC_190620A
1906186-03D	MW-7	Aqueous	M2320 B	Alkalinity	91410	1	06/20/19 11:11 AM	TITRATOR_190620A
	MW-7	Aqueous	E300	Anions by IC method - Water	91356	1000	06/19/19 01:15 PM	IC4_190619A
	MW-7	Aqueous	E300	Anions by IC method - Water	91356	100	06/19/19 04:59 PM	IC4_190619A
	MW-7	Aqueous	E300	Anions by IC method - Water	91356	2	06/19/19 08:43 PM	IC4_190619A
	MW-7	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B
1906186-04A	MW-11B	Aqueous	SW7470A	Mercury Total: Aqueous	91408	1	06/20/19 03:35 PM	CETAC2_HG_190620B
	MW-11B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1	06/21/19 12:54 PM	ICP-MS5_190621C
	MW-11B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	500	06/21/19 03:43 PM	ICP-MS4_190621B
	MW-11B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	10	06/21/19 04:25 PM	ICP-MS4_190621B
	MW-11B	Aqueous	SW6020A	Uranium in Water by ICPMS	91398	1	06/21/19 12:54 PM	ICP-MS5_190621D
1906186-04B	MW-11B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91411	1	06/20/19 04:16 PM	CETAC2_HG_190620C
	MW-11B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91399	1	06/20/19 03:04 PM	ICP-MS4_190620C
1906186-04C	MW-11B	Aqueous	M4500-NH3-D	Ammonia aqueous	91400	1	06/20/19 01:30 PM	WC_190620A
1906186-04D	MW-11B	Aqueous	M2320 B	Alkalinity	91410	1	06/20/19 11:25 AM	TITRATOR_190620A
	MW-11B	Aqueous	E300	Anions by IC method - Water	91356	2	06/19/19 08:59 PM	IC4_190619A
	MW-11B	Aqueous	E300	Anions by IC method - Water	91356	1000	06/19/19 01:31 PM	IC4_190619A
	MW-11B	Aqueous	E300	Anions by IC method - Water	91356	100	06/19/19 05:15 PM	IC4_190619A
	MW-11B	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906186-05A	MW-11	Aqueous	SW7470A	Mercury Total: Aqueous	91408	1	06/20/19 03:42 PM	CETAC2_HG_190620B
	MW-11	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	500	06/21/19 03:45 PM	ICP-MS4_190621B
	MW-11	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1	06/21/19 12:56 PM	ICP-MS5_190621C
	MW-11	Aqueous	SW6020A	Uranium in Water by ICPMS	91398	1	06/21/19 12:56 PM	ICP-MS5_190621D
1906186-05B	MW-11	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91411	1	06/20/19 04:18 PM	CETAC2_HG_190620C
	MW-11	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91399	1	06/20/19 02:54 PM	ICP-MS4_190620C
1906186-05C	MW-11	Aqueous	M4500-NH3-D	Ammonia aqueous	91400	1	06/20/19 01:30 PM	WC_190620A
1906186-05D	MW-11	Aqueous	M2320 B	Alkalinity	91410	1	06/20/19 12:00 PM	TITRATOR_190620A
	MW-11	Aqueous	E300	Anions by IC method - Water	91356	1000	06/19/19 01:47 PM	IC4_190619A
	MW-11	Aqueous	E300	Anions by IC method - Water	91356	100	06/19/19 05:31 PM	IC4_190619A
	MW-11	Aqueous	E300	Anions by IC method - Water	91356	2	06/19/19 09:15 PM	IC4_190619A
	MW-11	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B
1906186-06A	MW-101	Aqueous	SW7470A	Mercury Total: Aqueous	91408	1	06/20/19 03:44 PM	CETAC2_HG_190620B
	MW-101	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	500	06/21/19 03:47 PM	ICP-MS4_190621B
	MW-101	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1	06/21/19 12:58 PM	ICP-MS5_190621C
	MW-101	Aqueous	SW6020A	Uranium in Water by ICPMS	91398	1	06/21/19 12:58 PM	ICP-MS5_190621D
1906186-06B	MW-101	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91411	1	06/20/19 04:21 PM	CETAC2_HG_190620C
	MW-101	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91399	1	06/20/19 03:06 PM	ICP-MS4_190620C
1906186-06C	MW-101	Aqueous	M4500-NH3-D	Ammonia aqueous	91400	1	06/20/19 01:30 PM	WC_190620A
1906186-06D	MW-101	Aqueous	M2320 B	Alkalinity	91410	1	06/20/19 12:35 PM	TITRATOR_190620A
	MW-101	Aqueous	E300	Anions by IC method - Water	91356	2	06/19/19 09:31 PM	IC4_190619A
	MW-101	Aqueous	E300	Anions by IC method - Water	91356	1000	06/19/19 02:03 PM	IC4_190619A
	MW-101	Aqueous	E300	Anions by IC method - Water	91356	100	06/19/19 05:47 PM	IC4_190619A
	MW-101	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B
1906186-07A	MW-8	Aqueous	SW7470A	Mercury Total: Aqueous	91408	1	06/20/19 03:47 PM	CETAC2_HG_190620B
	MW-8	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	500	06/21/19 03:49 PM	ICP-MS4_190621B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906186-07A	MW-8	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1	06/21/19 01:00 PM	ICP-MS5_190621C
	MW-8	Aqueous	SW6020A	Uranium in Water by ICPMS	91398	1	06/21/19 01:00 PM	ICP-MS5_190621D
1906186-07B	MW-8	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91411	1	06/20/19 04:23 PM	CETAC2_HG_190620C
	MW-8	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91399	1	06/20/19 03:08 PM	ICP-MS4_190620C
1906186-07C	MW-8	Aqueous	M4500-NH3-D	Ammonia aqueous	91400	1	06/20/19 01:30 PM	WC_190620A
1906186-07D	MW-8	Aqueous	M2320 B	Alkalinity	91410	1	06/20/19 12:53 PM	TITRATOR_190620A
	MW-8	Aqueous	E300	Anions by IC method - Water	91356	1000	06/19/19 02:19 PM	IC4_190619A
	MW-8	Aqueous	E300	Anions by IC method - Water	91356	100	06/19/19 06:03 PM	IC4_190619A
	MW-8	Aqueous	E300	Anions by IC method - Water	91356	2	06/19/19 09:47 PM	IC4_190619A
	MW-8	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B
1906186-08A	MW-3RB	Aqueous	SW7470A	Mercury Total: Aqueous	91408	1	06/20/19 03:49 PM	CETAC2_HG_190620B
	MW-3RB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	10	06/21/19 04:27 PM	ICP-MS4_190621B
	MW-3RB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1	06/21/19 01:02 PM	ICP-MS5_190621C
	MW-3RB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1000	06/21/19 03:51 PM	ICP-MS4_190621B
	MW-3RB	Aqueous	SW6020A	Uranium in Water by ICPMS	91398	1	06/21/19 01:02 PM	ICP-MS5_190621D
1906186-08B	MW-3RB	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91411	1	06/20/19 04:25 PM	CETAC2_HG_190620C
	MW-3RB	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91399	1	06/20/19 03:10 PM	ICP-MS4_190620C
1906186-08C	MW-3RB	Aqueous	M4500-NH3-D	Ammonia aqueous	91400	1	06/20/19 01:30 PM	WC_190620A
1906186-08D	MW-3RB	Aqueous	M2320 B	Alkalinity	91410	1	06/20/19 01:04 PM	TITRATOR_190620A
	MW-3RB	Aqueous	E300	Anions by IC method - Water	91356	1000	06/19/19 02:35 PM	IC4_190619A
	MW-3RB	Aqueous	E300	Anions by IC method - Water	91356	100	06/19/19 06:19 PM	IC4_190619A
	MW-3RB	Aqueous	E300	Anions by IC method - Water	91356	10	06/19/19 10:03 PM	IC4_190619A
	MW-3RB	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B
1906186-09A	MW-3R	Aqueous	SW7470A	Mercury Total: Aqueous	91408	1	06/20/19 03:51 PM	CETAC2_HG_190620B
	MW-3R	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	10	06/21/19 04:29 PM	ICP-MS4_190621B
	MW-3R	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1	06/21/19 01:25 PM	ICP-MS5_190621C

Lab Order: 1906186
Client: Golder
Project: Copano GW 2Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906186-09A	MW-3R	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1000	06/21/19 03:53 PM	ICP-MS4_190621B
	MW-3R	Aqueous	SW6020A	Uranium in Water by ICPMS	91398	1	06/21/19 01:25 PM	ICP-MS5_190621D
1906186-09B	MW-3R	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91411	1	06/20/19 04:27 PM	CETAC2_HG_190620C
	MW-3R	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91399	1	06/20/19 03:12 PM	ICP-MS4_190620C
1906186-09C	MW-3R	Aqueous	M4500-NH3-D	Ammonia aqueous	91400	1	06/20/19 01:30 PM	WC_190620A
1906186-09D	MW-3R	Aqueous	M2320 B	Alkalinity	91410	1	06/20/19 01:16 PM	TITRATOR_190620A
	MW-3R	Aqueous	E300	Anions by IC method - Water	91356	100	06/19/19 06:35 PM	IC4_190619A
	MW-3R	Aqueous	E300	Anions by IC method - Water	91356	10	06/19/19 10:19 PM	IC4_190619A
	MW-3R	Aqueous	E300	Anions by IC method - Water	91356	1000	06/19/19 02:51 PM	IC4_190619A
	MW-3R	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B
1906186-10A	MW-1	Aqueous	SW7470A	Mercury Total: Aqueous	91408	1	06/20/19 03:53 PM	CETAC2_HG_190620B
	MW-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	500	06/21/19 04:09 PM	ICP-MS4_190621B
	MW-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	10	06/21/19 04:31 PM	ICP-MS4_190621B
	MW-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91398	1	06/21/19 01:28 PM	ICP-MS5_190621C
	MW-1	Aqueous	SW6020A	Uranium in Water by ICPMS	91398	1	06/21/19 01:28 PM	ICP-MS5_190621D
1906186-10B	MW-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91411	1	06/20/19 04:30 PM	CETAC2_HG_190620C
	MW-1	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91399	1	06/20/19 03:14 PM	ICP-MS4_190620C
1906186-10C	MW-1	Aqueous	M4500-NH3-D	Ammonia aqueous	91400	1	06/20/19 01:30 PM	WC_190620A
1906186-10D	MW-1	Aqueous	M2320 B	Alkalinity	91410	1	06/20/19 01:34 PM	TITRATOR_190620A
	MW-1	Aqueous	E300	Anions by IC method - Water	91356	100	06/19/19 03:07 PM	IC4_190619A
	MW-1	Aqueous	E300	Anions by IC method - Water	91356	10	06/19/19 06:51 PM	IC4_190619A
	MW-1	Aqueous	E300	Anions by IC method - Water	91356	1	06/19/19 10:35 PM	IC4_190619A
	MW-1	Aqueous	E300	Anions by IC method - Water	91405	1000	06/21/19 10:55 AM	IC4_190621A
	MW-1	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	DB-5
Project:	Copano GW 2Q19	**Lab ID:**	1906186-01
Project No:	18111309-2003	**Collection Date:**	06/18/19 12:40 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0231	0.0100	0.0300	J	mg/L	1	06/20/19 02:58 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/20/19 02:58 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/20/19 02:58 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/20/19 02:58 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/20/19 02:58 PM
Dissolved Nickel	0.00797	0.00300	0.0100	J	mg/L	1	06/20/19 02:58 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/20/19 02:58 PM
Dissolved Vanadium	0.0171	0.000500	0.00100		mg/L	1	06/20/19 02:58 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0339	0.0100	0.0300		mg/L	1	06/21/19 12:47 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/21/19 12:47 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/21/19 12:47 PM
Calcium	692	50.0	150		mg/L	500	06/21/19 03:37 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/21/19 12:47 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/21/19 12:47 PM
Magnesium	934	50.0	150		mg/L	500	06/21/19 03:37 PM
Nickel	0.00864	0.00300	0.0100	J	mg/L	1	06/21/19 12:47 PM
Potassium	54.8	1.00	3.00		mg/L	10	06/21/19 04:19 PM
Sodium	7960	50.0	150		mg/L	500	06/21/19 03:37 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/21/19 12:47 PM
Vanadium	0.0205	0.000500	0.00100		mg/L	1	06/21/19 12:47 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 04:05 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 03:28 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0727	0.00300	0.0100	N	mg/L	1	06/21/19 12:47 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0746	0.00300	0.0100	N	mg/L	1	06/20/19 02:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	14600	300	1000		mg/L	1000	06/19/19 12:11 PM
Fluoride	<0.200	0.200	0.800		mg/L	2	06/19/19 08:11 PM
Nitrate-N	<0.200	0.200	1.00		mg/L	2	06/19/19 08:11 PM
Sulfate	2970	100	300		mg/L	100	06/19/19 04:27 PM

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	DB-5
Project:	Copano GW 2Q19	**Lab ID:**	1906186-01
Project No:	18111309-2003	**Collection Date:**	06/18/19 12:40 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	329	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 10:36 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 10:36 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 10:36 AM
Alkalinity, Total (As CaCO3)	329	20.0	20.0		mg/L @ pH 4.53	1	06/20/19 10:36 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.958	0.100	0.250		mg/L	1	06/20/19 01:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	30400	1000	1000		mg/L	1	06/20/19 05:45 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7B
Project:	Copano GW 2Q19	**Lab ID:**	1906186-02
Project No:	18111309-2003	**Collection Date:**	06/18/19 01:35 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0262	0.0100	0.0300	J	mg/L	1	06/20/19 03:00 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/20/19 03:00 PM
Dissolved Arsenic	0.00642	0.00200	0.00500		mg/L	1	06/20/19 03:00 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/20/19 03:00 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/20/19 03:00 PM
Dissolved Nickel	0.0118	0.00300	0.0100		mg/L	1	06/20/19 03:00 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/20/19 03:00 PM
Dissolved Vanadium	0.00302	0.000500	0.00100		mg/L	1	06/20/19 03:00 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0318	0.0100	0.0300		mg/L	1	06/21/19 12:49 PM
Antimony	0.00120	0.000800	0.00250	J	mg/L	1	06/21/19 12:49 PM
Arsenic	0.00495	0.00200	0.00500	J	mg/L	1	06/21/19 12:49 PM
Calcium	1490	100	300		mg/L	1000	06/21/19 03:39 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/21/19 12:49 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/21/19 12:49 PM
Magnesium	1760	100	300		mg/L	1000	06/21/19 03:39 PM
Nickel	0.0112	0.00300	0.0100		mg/L	1	06/21/19 12:49 PM
Potassium	88.0	1.00	3.00		mg/L	10	06/21/19 04:21 PM
Sodium	13900	100	300		mg/L	1000	06/21/19 03:39 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/21/19 12:49 PM
Vanadium	0.00532	0.000500	0.00100		mg/L	1	06/21/19 12:49 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 04:07 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 03:31 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0966	0.00300	0.0100	N	mg/L	1	06/21/19 12:49 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0967	0.00300	0.0100	N	mg/L	1	06/20/19 03:00 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	27400	300	1000		mg/L	1000	06/19/19 12:59 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	06/19/19 08:27 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/19/19 08:27 PM
Sulfate	4060	100	300		mg/L	100	06/19/19 04:43 PM

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C - Sample Result or QC discussed in Case Narrative
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E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7B
Project:	Copano GW 2Q19	**Lab ID:**	1906186-02
Project No:	18111309-2003	**Collection Date:**	06/18/19 01:35 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	236	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 11:02 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 11:02 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 11:02 AM
Alkalinity, Total (As CaCO3)	236	20.0	20.0		mg/L @ pH 4.53	1	06/20/19 11:02 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.929	0.100	0.250		mg/L	1	06/20/19 01:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	51000	1000	1000		mg/L	1	06/20/19 05:45 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7
Project:	Copano GW 2Q19	**Lab ID:**	1906186-03
Project No:	18111309-2003	**Collection Date:**	06/18/19 02:10 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0247	0.0100	0.0300	J	mg/L	1	06/20/19 03:02 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/20/19 03:02 PM
Dissolved Arsenic	0.00288	0.00200	0.00500	J	mg/L	1	06/20/19 03:02 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/20/19 03:02 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/20/19 03:02 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/20/19 03:02 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/20/19 03:02 PM
Dissolved Vanadium	<0.000500	0.000500	0.00100		mg/L	1	06/20/19 03:02 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0258	0.0100	0.0300	J	mg/L	1	06/21/19 12:51 PM
Antimony	0.000911	0.000800	0.00250	J	mg/L	1	06/21/19 12:51 PM
Arsenic	0.00273	0.00200	0.00500	J	mg/L	1	06/21/19 12:51 PM
Calcium	1070	50.0	150		mg/L	500	06/21/19 03:41 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/21/19 12:51 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/21/19 12:51 PM
Magnesium	1160	50.0	150		mg/L	500	06/21/19 03:41 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/21/19 12:51 PM
Potassium	49.0	1.00	3.00		mg/L	10	06/21/19 04:23 PM
Sodium	11000	50.0	150		mg/L	500	06/21/19 03:41 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/21/19 12:51 PM
Vanadium	0.000557	0.000500	0.00100	J	mg/L	1	06/21/19 12:51 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 04:09 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 03:33 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0739	0.00300	0.0100	N	mg/L	1	06/21/19 12:51 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0765	0.00300	0.0100	N	mg/L	1	06/20/19 03:02 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	19800	300	1000		mg/L	1000	06/19/19 01:15 PM
Fluoride	<0.200	0.200	0.800		mg/L	2	06/19/19 08:43 PM
Nitrate-N	3.88	0.200	1.00		mg/L	2	06/19/19 08:43 PM
Sulfate	3200	100	300		mg/L	100	06/19/19 04:59 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7
Project:	Copano GW 2Q19	**Lab ID:**	1906186-03
Project No:	18111309-2003	**Collection Date:**	06/18/19 02:10 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	198	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 11:11 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 11:11 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 11:11 AM
Alkalinity, Total (As CaCO3)	198	20.0	20.0		mg/L @ pH 4.53	1	06/20/19 11:11 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.580	0.100	0.250		mg/L	1	06/20/19 01:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	39600	1000	1000		mg/L	1	06/20/19 05:45 PM

Qualifiers:

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N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11B
Project:	Copano GW 2Q19	**Lab ID:**	1906186-04
Project No:	18111309-2003	**Collection Date:**	06/18/19 03:00 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0500	0.0100	0.0300		mg/L	1	06/20/19 03:04 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/20/19 03:04 PM
Dissolved Arsenic	0.00300	0.00200	0.00500	J	mg/L	1	06/20/19 03:04 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/20/19 03:04 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/20/19 03:04 PM
Dissolved Nickel	0.00698	0.00300	0.0100	J	mg/L	1	06/20/19 03:04 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/20/19 03:04 PM
Dissolved Vanadium	0.00487	0.000500	0.00100		mg/L	1	06/20/19 03:04 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0347	0.0100	0.0300		mg/L	1	06/21/19 12:54 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/21/19 12:54 PM
Arsenic	0.00271	0.00200	0.00500	J	mg/L	1	06/21/19 12:54 PM
Calcium	601	50.0	150		mg/L	500	06/21/19 03:43 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/21/19 12:54 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/21/19 12:54 PM
Magnesium	841	50.0	150		mg/L	500	06/21/19 03:43 PM
Nickel	0.00491	0.00300	0.0100	J	mg/L	1	06/21/19 12:54 PM
Potassium	42.8	1.00	3.00		mg/L	10	06/21/19 04:25 PM
Sodium	5400	50.0	150		mg/L	500	06/21/19 03:43 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/21/19 12:54 PM
Vanadium	0.00786	0.000500	0.00100		mg/L	1	06/21/19 12:54 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 04:16 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 03:35 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0873	0.00300	0.0100	N	mg/L	1	06/21/19 12:54 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0874	0.00300	0.0100	N	mg/L	1	06/20/19 03:04 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	9800	300	1000		mg/L	1000	06/19/19 01:31 PM
Fluoride	<0.200	0.200	0.800		mg/L	2	06/19/19 08:59 PM
Nitrate-N	<0.200	0.200	1.00		mg/L	2	06/19/19 08:59 PM
Sulfate	2140	100	300		mg/L	100	06/19/19 05:15 PM

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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11B
Project:	Copano GW 2Q19	**Lab ID:**	1906186-04
Project No:	18111309-2003	**Collection Date:**	06/18/19 03:00 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	324	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 11:25 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 11:25 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 11:25 AM
Alkalinity, Total (As CaCO3)	324	20.0	20.0		mg/L @ pH 4.53	1	06/20/19 11:25 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.305	0.100	0.250		mg/L	1	06/20/19 01:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	20800	1000	1000		mg/L	1	06/20/19 05:45 PM

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11
Project:	Copano GW 2Q19	**Lab ID:**	1906186-05
Project No:	18111309-2003	**Collection Date:**	06/18/19 03:35 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0624	0.0100	0.0300		mg/L	1	06/20/19 02:54 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/20/19 02:54 PM
Dissolved Arsenic	0.00275	0.00200	0.00500	J	mg/L	1	06/20/19 02:54 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/20/19 02:54 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/20/19 02:54 PM
Dissolved Nickel	0.0162	0.00300	0.0100		mg/L	1	06/20/19 02:54 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/20/19 02:54 PM
Dissolved Vanadium	0.0250	0.000500	0.00100		mg/L	1	06/20/19 02:54 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0227	0.0100	0.0300	J	mg/L	1	06/21/19 12:56 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/21/19 12:56 PM
Arsenic	0.00263	0.00200	0.00500	J	mg/L	1	06/21/19 12:56 PM
Calcium	348	50.0	150		mg/L	500	06/21/19 03:45 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/21/19 12:56 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/21/19 12:56 PM
Magnesium	578	50.0	150		mg/L	500	06/21/19 03:45 PM
Nickel	0.0165	0.00300	0.0100		mg/L	1	06/21/19 12:56 PM
Potassium	18.4	0.100	0.300		mg/L	1	06/21/19 12:56 PM
Sodium	5150	50.0	150		mg/L	500	06/21/19 03:45 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/21/19 12:56 PM
Vanadium	0.0268	0.000500	0.00100		mg/L	1	06/21/19 12:56 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 04:18 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 03:42 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0958	0.00300	0.0100	N	mg/L	1	06/21/19 12:56 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0989	0.00300	0.0100	N	mg/L	1	06/20/19 02:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	7650	300	1000		mg/L	1000	06/19/19 01:47 PM
Fluoride	<0.200	0.200	0.800		mg/L	2	06/19/19 09:15 PM
Nitrate-N	<0.200	0.200	1.00		mg/L	2	06/19/19 09:15 PM
Sulfate	1620	100	300		mg/L	100	06/19/19 05:31 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11
Project:	Copano GW 2Q19	**Lab ID:**	1906186-05
Project No:	18111309-2003	**Collection Date:**	06/18/19 03:35 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	974	10.0	20.0		mg/L @ pH 4.54	1	06/20/19 12:00 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/20/19 12:00 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/20/19 12:00 PM
Alkalinity, Total (As CaCO3)	974	20.0	20.0		mg/L @ pH 4.54	1	06/20/19 12:00 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.650	0.100	0.250		mg/L	1	06/20/19 01:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	17400	200	200		mg/L	1	06/20/19 05:45 PM

Qualifiers:

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-101
Project:	Copano GW 2Q19	**Lab ID:**	1906186-06
Project No:	18111309-2003	**Collection Date:**	06/18/19 03:45 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0446	0.0100	0.0300		mg/L	1	06/20/19 03:06 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/20/19 03:06 PM
Dissolved Arsenic	0.00265	0.00200	0.00500	J	mg/L	1	06/20/19 03:06 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/20/19 03:06 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/20/19 03:06 PM
Dissolved Nickel	0.0160	0.00300	0.0100		mg/L	1	06/20/19 03:06 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/20/19 03:06 PM
Dissolved Vanadium	0.0238	0.000500	0.00100		mg/L	1	06/20/19 03:06 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0218	0.0100	0.0300	J	mg/L	1	06/21/19 12:58 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/21/19 12:58 PM
Arsenic	0.00258	0.00200	0.00500	J	mg/L	1	06/21/19 12:58 PM
Calcium	334	50.0	150		mg/L	500	06/21/19 03:47 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/21/19 12:58 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/21/19 12:58 PM
Magnesium	576	50.0	150		mg/L	500	06/21/19 03:47 PM
Nickel	0.0165	0.00300	0.0100		mg/L	1	06/21/19 12:58 PM
Potassium	18.5	0.100	0.300		mg/L	1	06/21/19 12:58 PM
Sodium	5030	50.0	150		mg/L	500	06/21/19 03:47 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/21/19 12:58 PM
Vanadium	0.0271	0.000500	0.00100		mg/L	1	06/21/19 12:58 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 04:21 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 03:44 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0928	0.00300	0.0100	N	mg/L	1	06/21/19 12:58 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0971	0.00300	0.0100	N	mg/L	1	06/20/19 03:06 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	8220	300	1000		mg/L	1000	06/19/19 02:03 PM
Fluoride	<0.200	0.200	0.800		mg/L	2	06/19/19 09:31 PM
Nitrate-N	<0.200	0.200	1.00		mg/L	2	06/19/19 09:31 PM
Sulfate	1620	100	300		mg/L	100	06/19/19 05:47 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-101
Project:	Copano GW 2Q19	**Lab ID:**	1906186-06
Project No:	18111309-2003	**Collection Date:**	06/18/19 03:45 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	989	10.0	20.0		mg/L @ pH 4.54	1	06/20/19 12:35 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/20/19 12:35 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/20/19 12:35 PM
Alkalinity, Total (As CaCO3)	989	20.0	20.0		mg/L @ pH 4.54	1	06/20/19 12:35 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/20/19 01:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	17400	200	200		mg/L	1	06/20/19 05:45 PM

Qualifiers:

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-8
Project:	Copano GW 2Q19	**Lab ID:**	1906186-07
Project No:	18111309-2003	**Collection Date:**	06/18/19 03:30 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0238	0.0100	0.0300	J	mg/L	1	06/20/19 03:08 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/20/19 03:08 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/20/19 03:08 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/20/19 03:08 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/20/19 03:08 PM
Dissolved Nickel	0.0115	0.00300	0.0100		mg/L	1	06/20/19 03:08 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/20/19 03:08 PM
Dissolved Vanadium	0.00245	0.000500	0.00100		mg/L	1	06/20/19 03:08 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0368	0.0100	0.0300		mg/L	1	06/21/19 01:00 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/21/19 01:00 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/21/19 01:00 PM
Calcium	894	50.0	150		mg/L	500	06/21/19 03:49 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/21/19 01:00 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/21/19 01:00 PM
Magnesium	772	50.0	150		mg/L	500	06/21/19 03:49 PM
Nickel	0.0128	0.00300	0.0100		mg/L	1	06/21/19 01:00 PM
Potassium	24.8	0.100	0.300		mg/L	1	06/21/19 01:00 PM
Sodium	6850	50.0	150		mg/L	500	06/21/19 03:49 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/21/19 01:00 PM
Vanadium	0.00310	0.000500	0.00100		mg/L	1	06/21/19 01:00 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 04:23 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 03:47 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.275	0.00300	0.0100	N	mg/L	1	06/21/19 01:00 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.282	0.00300	0.0100	N	mg/L	1	06/20/19 03:08 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	11500	300	1000		mg/L	1000	06/19/19 02:19 PM
Fluoride	<0.200	0.200	0.800		mg/L	2	06/19/19 09:47 PM
Nitrate-N	<0.200	0.200	1.00		mg/L	2	06/19/19 09:47 PM
Sulfate	4280	100	300		mg/L	100	06/19/19 06:03 PM

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-8
Project:	Copano GW 2Q19	**Lab ID:**	1906186-07
Project No:	18111309-2003	**Collection Date:**	06/18/19 03:30 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	426	10.0	20.0		mg/L @ pH 4.54	1	06/20/19 12:53 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/20/19 12:53 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/20/19 12:53 PM
Alkalinity, Total (As CaCO3)	426	20.0	20.0		mg/L @ pH 4.54	1	06/20/19 12:53 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/20/19 01:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	25800	1000	1000		mg/L	1	06/20/19 05:45 PM

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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3RB
Project:	Copano GW 2Q19	**Lab ID:**	1906186-08
Project No:	18111309-2003	**Collection Date:**	06/18/19 01:59 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0208	0.0100	0.0300	J	mg/L	1	06/20/19 03:10 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/20/19 03:10 PM
Dissolved Arsenic	0.00724	0.00200	0.00500		mg/L	1	06/20/19 03:10 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/20/19 03:10 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/20/19 03:10 PM
Dissolved Nickel	0.00440	0.00300	0.0100	J	mg/L	1	06/20/19 03:10 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/20/19 03:10 PM
Dissolved Vanadium	0.00562	0.000500	0.00100		mg/L	1	06/20/19 03:10 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0951	0.0100	0.0300		mg/L	1	06/21/19 01:02 PM
Antimony	0.00156	0.000800	0.00250	J	mg/L	1	06/21/19 01:02 PM
Arsenic	0.00728	0.00200	0.00500		mg/L	1	06/21/19 01:02 PM
Calcium	1160	100	300		mg/L	1000	06/21/19 03:51 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/21/19 01:02 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/21/19 01:02 PM
Magnesium	1550	100	300		mg/L	1000	06/21/19 03:51 PM
Nickel	0.00474	0.00300	0.0100	J	mg/L	1	06/21/19 01:02 PM
Potassium	79.2	1.00	3.00		mg/L	10	06/21/19 04:27 PM
Sodium	12700	100	300		mg/L	1000	06/21/19 03:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/21/19 01:02 PM
Vanadium	0.00979	0.000500	0.00100		mg/L	1	06/21/19 01:02 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 04:25 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 03:49 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.109	0.00300	0.0100	N	mg/L	1	06/21/19 01:02 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.108	0.00300	0.0100	N	mg/L	1	06/20/19 03:10 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	21500	300	1000		mg/L	1000	06/19/19 02:35 PM
Fluoride	3.18	1.00	4.00	J	mg/L	10	06/19/19 10:03 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/19/19 10:03 PM
Sulfate	5850	100	300		mg/L	100	06/19/19 06:19 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3RB
Project:	Copano GW 2Q19	**Lab ID:**	1906186-08
Project No:	18111309-2003	**Collection Date:**	06/18/19 01:59 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	242	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 01:04 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 01:04 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 01:04 PM
Alkalinity, Total (As CaCO3)	242	20.0	20.0		mg/L @ pH 4.53	1	06/20/19 01:04 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/20/19 01:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	45900	1000	1000		mg/L	1	06/20/19 05:45 PM

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3R
Project:	Copano GW 2Q19	**Lab ID:**	1906186-09
Project No:	18111309-2003	**Collection Date:**	06/18/19 12:55 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0192	0.0100	0.0300	J	mg/L	1	06/20/19 03:12 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/20/19 03:12 PM
Dissolved Arsenic	0.00402	0.00200	0.00500	J	mg/L	1	06/20/19 03:12 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/20/19 03:12 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/20/19 03:12 PM
Dissolved Nickel	0.00335	0.00300	0.0100	J	mg/L	1	06/20/19 03:12 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/20/19 03:12 PM
Dissolved Vanadium	0.0141	0.000500	0.00100		mg/L	1	06/20/19 03:12 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0441	0.0100	0.0300		mg/L	1	06/21/19 01:25 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/21/19 01:25 PM
Arsenic	0.00409	0.00200	0.00500	J	mg/L	1	06/21/19 01:25 PM
Calcium	1200	100	300		mg/L	1000	06/21/19 03:53 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/21/19 01:25 PM
Lead	0.000360	0.000300	0.00100	J	mg/L	1	06/21/19 01:25 PM
Magnesium	1560	100	300		mg/L	1000	06/21/19 03:53 PM
Nickel	0.00382	0.00300	0.0100	J	mg/L	1	06/21/19 01:25 PM
Potassium	80.2	1.00	3.00		mg/L	10	06/21/19 04:29 PM
Sodium	12500	100	300		mg/L	1000	06/21/19 03:53 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/21/19 01:25 PM
Vanadium	0.0187	0.000500	0.00100		mg/L	1	06/21/19 01:25 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 04:27 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	0.000137	0.0000800	0.000200	J	mg/L	1	06/20/19 03:51 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.116	0.00300	0.0100	N	mg/L	1	06/21/19 01:25 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.115	0.00300	0.0100	N	mg/L	1	06/20/19 03:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	21600	300	1000		mg/L	1000	06/19/19 02:51 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	06/19/19 10:19 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/19/19 10:19 PM
Sulfate	5550	100	300		mg/L	100	06/19/19 06:35 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3R
Project:	Copano GW 2Q19	**Lab ID:**	1906186-09
Project No:	18111309-2003	**Collection Date:**	06/18/19 12:55 PM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	239	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 01:16 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 01:16 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 01:16 PM
Alkalinity, Total (As CaCO3)	239	20.0	20.0		mg/L @ pH 4.53	1	06/20/19 01:16 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/20/19 01:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	46500	1000	1000		mg/L	1	06/20/19 05:45 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-1
Project:	Copano GW 2Q19	**Lab ID:**	1906186-10
Project No:	18111309-2003	**Collection Date:**	06/18/19 11:36 AM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0232	0.0100	0.0300	J	mg/L	1	06/20/19 03:14 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/20/19 03:14 PM
Dissolved Arsenic	0.00468	0.00200	0.00500	J	mg/L	1	06/20/19 03:14 PM
Dissolved Chromium	0.00946	0.00200	0.00500		mg/L	1	06/20/19 03:14 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/20/19 03:14 PM
Dissolved Nickel	0.00600	0.00300	0.0100	J	mg/L	1	06/20/19 03:14 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/20/19 03:14 PM
Dissolved Vanadium	0.000840	0.000500	0.00100	J	mg/L	1	06/20/19 03:14 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0719	0.0100	0.0300		mg/L	1	06/21/19 01:28 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/21/19 01:28 PM
Arsenic	0.00525	0.00200	0.00500		mg/L	1	06/21/19 01:28 PM
Calcium	746	50.0	150		mg/L	500	06/21/19 04:09 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/21/19 01:28 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/21/19 01:28 PM
Magnesium	1100	50.0	150		mg/L	500	06/21/19 04:09 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/21/19 01:28 PM
Potassium	47.0	1.00	3.00		mg/L	10	06/21/19 04:31 PM
Sodium	8960	50.0	150		mg/L	500	06/21/19 04:09 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/21/19 01:28 PM
Vanadium	0.00197	0.000500	0.00100		mg/L	1	06/21/19 01:28 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 04:30 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/20/19 03:53 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0126	0.00300	0.0100	N	mg/L	1	06/21/19 01:28 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0120	0.00300	0.0100	N	mg/L	1	06/20/19 03:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	17000	300	1000		mg/L	1000	06/21/19 10:55 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	06/19/19 06:51 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/19/19 06:51 PM
Sulfate	2100	100	300		mg/L	100	06/19/19 03:07 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-1
Project:	Copano GW 2Q19	**Lab ID:**	1906186-10
Project No:	18111309-2003	**Collection Date:**	06/18/19 11:36 AM
Lab Order:	1906186	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	316	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 01:34 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 01:34 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/20/19 01:34 PM
Alkalinity, Total (As CaCO3)	316	20.0	20.0		mg/L @ pH 4.53	1	06/20/19 01:34 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	1.65	0.100	0.250		mg/L	1	06/20/19 01:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	31200	1000	1000		mg/L	1	06/20/19 05:45 PM

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SDL - Sample Detection Limit
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CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190611B

Sample ID: **DCS-91284**	Batch ID: **91284**	TestNo: **SW7470A**	Units: **mg/L**		
SampType: **DCS**	Run ID: **CETAC2_HG_190611B**	Analysis Date: **6/11/2019 5:01:26 PM**	Prep Date: **6/11/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000206	0.000200	0.000200	0	103	82	119	0	0	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190620B

The QC data in batch 91408 applies to the following samples: 1906186-01A, 1906186-02A, 1906186-03A, 1906186-04A, 1906186-05A, 1906186-06A, 1906186-07A, 1906186-08A, 1906186-09A, 1906186-10A

Sample ID: **MB-91408** Batch ID: **91408** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_190620B** Analysis Date: **6/20/2019 2:57:05 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91408** Batch ID: **91408** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_190620B** Analysis Date: **6/20/2019 3:01:37 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	85	115			

Sample ID: **LCSD-91408** Batch ID: **91408** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_190620B** Analysis Date: **6/20/2019 3:03:53 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	85	115	0	15	

Sample ID: **1906163-02A MS** Batch ID: **91408** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_190620B** Analysis Date: **6/20/2019 3:15:12 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00895	0.00100	0.0100	0	89.5	80	120			

Sample ID: **1906163-02A MSD** Batch ID: **91408** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_190620B** Analysis Date: **6/20/2019 3:17:28 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00915	0.00100	0.0100	0	91.5	80	120	2.21	15	

Sample ID: **1906163-02A SD** Batch ID: **91408** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_190620B** Analysis Date: **6/20/2019 3:19:44 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **1906163-02A PDS** Batch ID: **91408** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_190620B** Analysis Date: **6/20/2019 3:21:59 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0116	0.00100	0.0125	0	93.2	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190620B

Sample ID: **ICV-190620**	Batch ID: **R104688**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190620B**	Analysis Date: **6/20/2019 2:52:31 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00410	0.000200	0.00400	0	103	90	110			

Sample ID: **CCV1-190620**	Batch ID: **R104688**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190620B**	Analysis Date: **6/20/2019 3:37:54 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Sample ID: **CCV2-190620**	Batch ID: **R104688**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190620B**	Analysis Date: **6/20/2019 4:11:59 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00196	0.000200	0.00200	0	98.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190620C

The QC data in batch 91411 applies to the following samples: 1906186-01B, 1906186-02B, 1906186-03B, 1906186-04B, 1906186-05B, 1906186-06B, 1906186-07B, 1906186-08B, 1906186-09B, 1906186-10B

Sample ID: **MB-91411** Batch ID: **91411** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_190620C** Analysis Date: **6/20/2019 3:58:21 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91411** Batch ID: **91411** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_190620C** Analysis Date: **6/20/2019 4:00:37 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00192	0.000200	0.00200	0	96.0	85	115			

Sample ID: **LCSD-91411** Batch ID: **91411** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_190620C** Analysis Date: **6/20/2019 4:02:53 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00192	0.000200	0.00200	0	96.0	85	115	0	15	

Sample ID: **1906186-10B SD** Batch ID: **91411** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_190620C** Analysis Date: **6/20/2019 4:36:57 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1906186-10B PDS** Batch ID: **91411** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_190620C** Analysis Date: **6/20/2019 4:39:13 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000933	0.000200	0.00250	0	37.3	85	115			S

Sample ID: **1906186-10B MS** Batch ID: **91411** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_190620C** Analysis Date: **6/20/2019 4:51:28 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00166	0.00100	0.00200	0	82.8	80	120			

Sample ID: **1906186-10B MSD** Batch ID: **91411** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_190620C** Analysis Date: **6/20/2019 5:09:40 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00179	0.00100	0.00200	0	89.5	80	120	7.84	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190620C

Sample ID: **ICV-190620**	Batch ID: **R104689**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190620C**	Analysis Date: **6/20/2019 2:52:31 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00410	0.000200	0.00400	0	103	90	110			

Sample ID: **CCV1-190620**	Batch ID: **R104689**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190620C**	Analysis Date: **6/20/2019 3:37:54 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Sample ID: **CCV2-190620**	Batch ID: **R104689**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190620C**	Analysis Date: **6/20/2019 4:11:59 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00196	0.000200	0.00200	0	98.0	90	110			

Sample ID: **CCV3-190620**	Batch ID: **R104689**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190620C**	Analysis Date: **6/20/2019 5:11:58 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190409A

Sample ID: **DCS1-90246**	Batch ID: **90246**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_190409A**	Analysis Date: **4/9/2019 11:04:00 AM**	Prep Date: **4/8/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0237	0.0300	0.0200	0	118	70	130	0	0	
Antimony	0.000951	0.00250	0.00100	0	95.1	70	130	0	0	
Lead	0.000463	0.00100	0.000500	0	92.6	70	130	0	0	
Thallium	0.000453	0.00150	0.000500	0	90.6	70	130	0	0	
Vanadium	0.000514	0.00100	0.000500	0	103	70	130	0	0	

Sample ID: **DCS3-90246**	Batch ID: **90246**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_190409A**	Analysis Date: **4/9/2019 11:08:00 AM**	Prep Date: **4/8/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00537	0.00500	0.00500	0	107	70	130	0	0	
Chromium	0.00545	0.00500	0.00500	0	109	70	130	0	0	
Nickel	0.00549	0.0100	0.00500	0	110	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_190620C**

The QC data in batch 91399 applies to the following samples: 1906186-01B, 1906186-02B, 1906186-03B, 1906186-04B, 1906186-05B, 1906186-06B, 1906186-07B, 1906186-08B, 1906186-09B, 1906186-10B

Sample ID: **MB-91399** Batch ID: **91399** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190620C** Analysis Date: **6/20/2019 2:46:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-91399** Batch ID: **91399** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190620C** Analysis Date: **6/20/2019 2:48:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.14	0.0300	5.00	0	103	80	120			
Antimony	0.199	0.00250	0.200	0	99.6	80	120			
Arsenic	0.201	0.00500	0.200	0	101	80	120			
Chromium	0.207	0.00500	0.200	0	104	80	120			
Lead	0.204	0.00100	0.200	0	102	80	120			
Nickel	0.210	0.0100	0.200	0	105	80	120			
Thallium	0.214	0.00150	0.200	0	107	80	120			
Vanadium	0.202	0.00100	0.200	0	101	80	120			

Sample ID: **LCSD-91399** Batch ID: **91399** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190620C** Analysis Date: **6/20/2019 2:50:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.07	0.0300	5.00	0	101	80	120	1.44	15	
Antimony	0.202	0.00250	0.200	0	101	80	120	1.30	15	
Arsenic	0.202	0.00500	0.200	0	101	80	120	0.549	15	
Chromium	0.206	0.00500	0.200	0	103	80	120	0.573	15	
Lead	0.205	0.00100	0.200	0	103	80	120	0.650	15	
Nickel	0.212	0.0100	0.200	0	106	80	120	0.854	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	3.78	15	
Vanadium	0.201	0.00100	0.200	0	101	80	120	0.475	15	

Sample ID: **1906186-05B SD** Batch ID: **91399** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190620C** Analysis Date: **6/20/2019 2:56:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190620C

Sample ID: **1906186-05B SD**	Batch ID: **91399**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190620C**	Analysis Date: **6/20/2019 2:56:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0659	0.150	0	0.0624				5.41	10	
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00275				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Nickel	0.0177	0.0500	0	0.0162				8.99	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	0.0273	0.00500	0	0.0250				8.86	10	

Sample ID: **1906186-05B PDS**	Batch ID: **91399**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190620C**	Analysis Date: **6/20/2019 3:16:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.51	0.0300	5.00	0.0624	88.9	80	120			
Antimony	0.167	0.00250	0.200	0	83.7	80	120			
Arsenic	0.190	0.00500	0.200	0.00275	93.6	80	120			
Chromium	0.152	0.00500	0.200	0	75.9	80	120			S
Lead	0.203	0.00100	0.200	0	102	80	120			
Nickel	0.179	0.0100	0.200	0.0162	81.3	80	120			
Thallium	0.211	0.00150	0.200	0	106	80	120			
Vanadium	0.180	0.00100	0.200	0.0250	77.4	80	120			S

Sample ID: **1906186-05B MS**	Batch ID: **91399**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190620C**	Analysis Date: **6/20/2019 3:18:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.89	0.0300	5.00	0.0624	96.6	80	120			
Dissolved Antimony	0.174	0.00250	0.200	0	87.2	80	120			
Dissolved Arsenic	0.199	0.00500	0.200	0.00275	97.9	80	120			
Dissolved Chromium	0.157	0.00500	0.200	0	78.4	80	120			S
Dissolved Lead	0.215	0.00100	0.200	0	107	80	120			
Dissolved Nickel	0.183	0.0100	0.200	0.0162	83.2	80	120			
Dissolved Thallium	0.222	0.00150	0.200	0	111	80	120			
Dissolved Vanadium	0.189	0.00100	0.200	0.0250	81.8	80	120			

Sample ID: **1906186-05B MSD**	Batch ID: **91399**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190620C**	Analysis Date: **6/20/2019 3:19:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.86	0.0300	5.00	0.0624	95.9	80	120	0.706	15	
Dissolved Antimony	0.174	0.00250	0.200	0	86.9	80	120	0.399	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190620C

Sample ID: **1906186-05B MSD** Batch ID: **91399** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190620C** Analysis Date: **6/20/2019 3:19:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Arsenic	0.193	0.00500	0.200	0.00275	95.2	80	120	2.77	15	
Dissolved Chromium	0.159	0.00500	0.200	0	79.4	80	120	1.33	15	S
Dissolved Lead	0.216	0.00100	0.200	0	108	80	120	0.498	15	
Dissolved Nickel	0.177	0.0100	0.200	0.0162	80.4	80	120	3.06	15	
Dissolved Thallium	0.224	0.00150	0.200	0	112	80	120	1.04	15	
Dissolved Vanadium	0.191	0.00100	0.200	0.0250	82.8	80	120	1.06	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190620C

Sample ID: **ICV-190620** Batch ID: **R104693** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_190620C** Analysis Date: **6/20/2019 10:38:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.28	0.0300	2.50	0	91.3	90	110			
Antimony	0.0967	0.00250	0.100	0	96.7	90	110			
Arsenic	0.0980	0.00500	0.100	0	98.0	90	110			
Chromium	0.106	0.00500	0.100	0	106	90	110			
Lead	0.0979	0.00100	0.100	0	97.9	90	110			
Nickel	0.109	0.0100	0.100	0	109	90	110			
Thallium	0.100	0.00150	0.100	0	100	90	110			
Vanadium	0.101	0.00100	0.100	0	101	90	110			

Sample ID: **LCVL-190620** Batch ID: **R104693** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190620C** Analysis Date: **6/20/2019 10:42:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0981	0.0300	0.100	0	98.1	70	130			
Antimony	0.00189	0.00250	0.00200	0	94.3	70	130			
Arsenic	0.00495	0.00500	0.00500	0	99.0	70	130			
Chromium	0.00515	0.00500	0.00500	0	103	70	130			
Lead	0.000927	0.00100	0.00100	0	92.7	70	130			
Nickel	0.00522	0.0100	0.00500	0	104	70	130			
Thallium	0.000937	0.00150	0.00100	0	93.7	70	130			
Vanadium	0.000952	0.00100	0.00100	0	95.2	70	130			

Sample ID: **CCV3-190620** Batch ID: **R104693** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190620C** Analysis Date: **6/20/2019 2:39:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.99	0.0300	5.00	0	99.9	90	110			
Antimony	0.200	0.00250	0.200	0	100	90	110			
Arsenic	0.198	0.00500	0.200	0	99.0	90	110			
Chromium	0.205	0.00500	0.200	0	103	90	110			
Lead	0.200	0.00100	0.200	0	99.8	90	110			
Nickel	0.204	0.0100	0.200	0	102	90	110			
Thallium	0.202	0.00150	0.200	0	101	90	110			
Vanadium	0.200	0.00100	0.200	0	100	90	110			

Sample ID: **LCVL3-190620** Batch ID: **R104693** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190620C** Analysis Date: **6/20/2019 2:43:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0975	0.0300	0.100	0	97.5	70	130			
Antimony	0.00182	0.00250	0.00200	0	90.9	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190620C

Sample ID: **LCVL3-190620**	Batch ID: **R104693**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190620C**	Analysis Date: **6/20/2019 2:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00493	0.00500	0.00500	0	98.5	70	130			
Chromium	0.00499	0.00500	0.00500	0	99.8	70	130			
Lead	0.000931	0.00100	0.00100	0	93.1	70	130			
Nickel	0.00511	0.0100	0.00500	0	102	70	130			
Thallium	0.000930	0.00150	0.00100	0	93.0	70	130			
Vanadium	0.000922	0.00100	0.00100	0	92.2	70	130			

Sample ID: **CCV4-190620**	Batch ID: **R104693**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190620C**	Analysis Date: **6/20/2019 3:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.78	0.0300	5.00	0	95.6	90	110			
Antimony	0.186	0.00250	0.200	0	93.2	90	110			
Arsenic	0.198	0.00500	0.200	0	98.9	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Lead	0.200	0.00100	0.200	0	100	90	110			
Nickel	0.210	0.0100	0.200	0	105	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			
Vanadium	0.200	0.00100	0.200	0	99.8	90	110			

Sample ID: **LCVL4-190620**	Batch ID: **R104693**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190620C**	Analysis Date: **6/20/2019 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0927	0.0300	0.100	0	92.7	70	130			
Antimony	0.00174	0.00250	0.00200	0	87.1	70	130			
Arsenic	0.00474	0.00500	0.00500	0	94.8	70	130			
Chromium	0.00499	0.00500	0.00500	0	99.8	70	130			
Lead	0.000902	0.00100	0.00100	0	90.2	70	130			
Nickel	0.00505	0.0100	0.00500	0	101	70	130			
Thallium	0.000923	0.00150	0.00100	0	92.3	70	130			
Vanadium	0.000972	0.00100	0.00100	0	97.2	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190620D

The QC data in batch 91399 applies to the following samples: 1906186-01B, 1906186-02B, 1906186-03B, 1906186-04B, 1906186-05B, 1906186-06B, 1906186-07B, 1906186-08B, 1906186-09B, 1906186-10B

Sample ID: **MB-91399** Batch ID: **91399** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190620D** Analysis Date: **6/20/2019 2:46:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-91399** Batch ID: **91399** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190620D** Analysis Date: **6/20/2019 2:48:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.210	0.0100	0.200	0	105	80	120			N

Sample ID: **LCSD-91399** Batch ID: **91399** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190620D** Analysis Date: **6/20/2019 2:50:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.208	0.0100	0.200	0	104	80	120	0.948	15	N

Sample ID: **1906186-05B SD** Batch ID: **91399** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190620D** Analysis Date: **6/20/2019 2:56:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.0960	0.0500	0	0.0989				2.97	20	N

Sample ID: **1906186-05B PDS** Batch ID: **91399** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190620D** Analysis Date: **6/20/2019 3:16:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.304	0.0100	0.200	0.0989	102	75	125			N

Sample ID: **1906186-05B MS** Batch ID: **91399** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_190620D** Analysis Date: **6/20/2019 3:18:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.317	0.0100	0.200	0.0989	109	75	125			N

Sample ID: **1906186-05B MSD** Batch ID: **91399** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190620D** Analysis Date: **6/20/2019 3:19:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.317	0.0100	0.200	0.0989	109	75	125	0.029	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190620D

Sample ID: **ICV-190620**	Batch ID: **R109109**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190620D**	Analysis Date: **6/20/2019 10:38:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.100	0.0100	0.100	0	100	90	110			N

Sample ID: **LCVL-190620**	Batch ID: **R109109**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190620D**	Analysis Date: **6/20/2019 10:42:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00456	0.0100	0.00500	0	91.2	80	120			N

Sample ID: **CCV3-190620**	Batch ID: **R109109**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190620D**	Analysis Date: **6/20/2019 2:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.203	0.0100	0.200	0	101	90	110			N

Sample ID: **LCVL3-190620**	Batch ID: **R109109**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190620D**	Analysis Date: **6/20/2019 2:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00457	0.0100	0.00500	0	91.4	80	120			N

Sample ID: **CCV4-190620**	Batch ID: **R109109**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190620D**	Analysis Date: **6/20/2019 3:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.204	0.0100	0.200	0	102	90	110			N

Sample ID: **LCVL4-190620**	Batch ID: **R109109**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190620D**	Analysis Date: **6/20/2019 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00448	0.0100	0.00500	0	89.5	80	120			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

The QC data in batch 91398 applies to the following samples: 1906186-01A, 1906186-02A, 1906186-03A, 1906186-04A, 1906186-05A, 1906186-06A, 1906186-07A, 1906186-08A, 1906186-09A, 1906186-10A

Sample ID: **DCS2-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS4_190621B** Analysis Date: **6/21/2019 1:24:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0353	0.0300	0.0300	0	118	70	130			
Calcium	0.321	0.300	0.300	0	107	70	130			
Magnesium	0.323	0.300	0.300	0	108	70	130			
Potassium	0.303	0.300	0.300	0	101	70	130			
Sodium	0.300	0.300	0.300	0	100	70	130			

Sample ID: **DCS3-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS3** Run ID: **ICP-MS4_190621B** Analysis Date: **6/21/2019 1:27:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00522	0.00500	0.00500	0	104	70	130			
Chromium	0.00523	0.00500	0.00500	0	105	70	130			
Nickel	0.00557	0.0100	0.00500	0	111	70	130			

Sample ID: **DCS1-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS** Run ID: **ICP-MS4_190621B** Analysis Date: **6/21/2019 1:34:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.000904	0.00250	0.00100	0	90.4	70	130			
Lead	0.000475	0.00100	0.000500	0	95.0	70	130			
Thallium	0.000471	0.00150	0.000500	0	94.2	70	130			
Vanadium	0.000464	0.00100	0.000500	0	92.8	70	130			

Sample ID: **MB-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190621B** Analysis Date: **6/21/2019 3:25:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	<0.100	0.300								

Sample ID: **LCS-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190621B** Analysis Date: **6/21/2019 3:27:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.11	0.300	5.00	0	102	80	120			

Sample ID: **LCSD-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190621B** Analysis Date: **6/21/2019 3:29:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

Sample ID: **LCSD-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 3:29:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.03	0.300	5.00	0	101	80	120	1.58	15	

Sample ID: **1906174-07C SD**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 3:35:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	16.9	1.50	0	16.8				0.396	10	

Sample ID: **1906174-07C PDS**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 3:55:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	21.0	0.300	5.00	16.8	82.9	80	120			

Sample ID: **1906174-07C MS**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 3:57:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	21.4	0.300	5.00	16.8	91.9	80	120			

Sample ID: **1906174-07C MSD**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 3:59:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	21.4	0.300	5.00	16.8	91.3	80	120	0.137	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

Sample ID: **ICV-190621**	Batch ID: **R104720**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 12:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.66	0.300	2.50	0	106	90	110			
Magnesium	2.48	0.300	2.50	0	99.3	90	110			
Potassium	2.54	0.300	2.50	0	101	90	110			
Sodium	2.54	0.300	2.50	0	102	90	110			

Sample ID: **LCVL-190621**	Batch ID: **R104720**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 12:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.105	0.300	0.100	0	105	70	130			
Magnesium	0.101	0.300	0.100	0	101	70	130			
Potassium	0.0991	0.300	0.100	0	99.1	70	130			
Sodium	0.0987	0.300	0.100	0	98.7	70	130			

Sample ID: **CCV1-190621**	Batch ID: **R104720**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 3:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.17	0.300	5.00	0	103	90	110			
Magnesium	5.04	0.300	5.00	0	101	90	110			
Sodium	4.98	0.300	5.00	0	99.6	90	110			

Sample ID: **LCVL1-190621**	Batch ID: **R104720**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 3:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.108	0.300	0.100	0	108	70	130			
Magnesium	0.0997	0.300	0.100	0	99.7	70	130			
Sodium	0.0832	0.300	0.100	0	83.2	70	130			

Sample ID: **CCV2-190621**	Batch ID: **R104720**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 4:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.18	0.300	5.00	0	104	90	110			
Magnesium	5.04	0.300	5.00	0	101	90	110			
Sodium	4.99	0.300	5.00	0	99.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

Sample ID: **LCVL2-190621**	Batch ID: **R104720**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 4:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.113	0.300	0.100	0	113	70	130			
Magnesium	0.0999	0.300	0.100	0	99.9	70	130			
Sodium	0.0844	0.300	0.100	0	84.4	70	130			

Sample ID: **CCV3-190621**	Batch ID: **R104720**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 4:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.20	0.300	5.00	0	104	90	110			
Magnesium	5.08	0.300	5.00	0	102	90	110			
Potassium	5.10	0.300	5.00	0	102	90	110			
Sodium	4.99	0.300	5.00	0	99.8	90	110			

Sample ID: **LCVL3-190621**	Batch ID: **R104720**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 4:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0971	0.300	0.100	0	97.1	70	130			
Magnesium	0.0979	0.300	0.100	0	97.9	70	130			
Potassium	0.0995	0.300	0.100	0	99.5	70	130			
Sodium	0.0819	0.300	0.100	0	81.9	70	130			

Sample ID: **CCV4-190621**	Batch ID: **R104720**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 4:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	5.04	0.300	5.00	0	101	90	110			

Sample ID: **LCVL4-190621**	Batch ID: **R104720**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 4:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.0984	0.300	0.100	0	98.4	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190621C**

The QC data in batch 91398 applies to the following samples: 1906186-01A, 1906186-02A, 1906186-03A, 1906186-04A, 1906186-05A, 1906186-06A, 1906186-07A, 1906186-08A, 1906186-09A, 1906186-10A

Sample ID: **MB-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190621C** Analysis Date: **6/21/2019 12:31:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190621C** Analysis Date: **6/21/2019 12:34:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.07	0.0300	5.00	0	101	80	120			
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.210	0.00500	0.200	0	105	80	120			
Calcium	5.04	0.300	5.00	0	101	80	120			
Chromium	0.203	0.00500	0.200	0	101	80	120			
Lead	0.197	0.00100	0.200	0	98.5	80	120			
Magnesium	5.18	0.300	5.00	0	104	80	120			
Nickel	0.215	0.0100	0.200	0	107	80	120			
Potassium	5.06	0.300	5.00	0	101	80	120			
Thallium	0.198	0.00150	0.200	0	98.9	80	120			
Vanadium	0.204	0.00100	0.200	0	102	80	120			

Sample ID: **LCSD-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190621C** Analysis Date: **6/21/2019 12:36:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.09	0.0300	5.00	0	102	80	120	0.446	15	
Antimony	0.202	0.00250	0.200	0	101	80	120	0.283	15	
Arsenic	0.212	0.00500	0.200	0	106	80	120	1.04	15	
Calcium	5.05	0.300	5.00	0	101	80	120	0.026	15	
Chromium	0.203	0.00500	0.200	0	102	80	120	0.267	15	
Lead	0.196	0.00100	0.200	0	98.2	80	120	0.366	15	
Magnesium	5.11	0.300	5.00	0	102	80	120	1.48	15	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621C

Sample ID: **LCSD-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 12:36:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.215	0.0100	0.200	0	108	80	120	0.279	15	
Potassium	5.02	0.300	5.00	0	100	80	120	0.836	15	
Thallium	0.198	0.00150	0.200	0	98.8	80	120	0.085	15	
Vanadium	0.204	0.00100	0.200	0	102	80	120	0.251	15	

Sample ID: **1906174-07C SD**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 12:42:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.209	0.150	0	0.197				6.09	10	
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Calcium	91.8	1.50	0	90.1				1.87	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Magnesium	3.97	1.50	0	3.93				1.06	10	
Nickel	<0.0150	0.0500	0	0.00514				0	10	
Potassium	1.35	1.50	0	1.56				14.7	10	R
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	<0.00250	0.00500	0	0.000759				0	10	

Sample ID: **1906174-07C PDS**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 1:05:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.05	0.0300	5.00	0.197	97.1	80	120			
Antimony	0.188	0.00250	0.200	0	94.1	80	120			
Arsenic	0.188	0.00500	0.200	0	94.0	80	120			
Calcium	93.4	0.300	5.00	90.1	67.7	80	120			S
Chromium	0.187	0.00500	0.200	0	93.6	80	120			
Lead	0.188	0.00100	0.200	0	94.1	80	120			
Magnesium	10.5	0.300	5.00	3.93	132	80	120			S
Nickel	0.197	0.0100	0.200	0.00514	95.8	80	120			
Potassium	6.84	0.300	5.00	1.56	106	80	120			
Thallium	0.190	0.00150	0.200	0	95.1	80	120			
Vanadium	0.190	0.00100	0.200	0.000759	94.8	80	120			

Sample ID: **1906174-07C MS**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 1:07:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621C

Sample ID: **1906174-07C MS**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 1:07:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.36	0.0300	5.00	0.197	103	80	120			
Antimony	0.196	0.00250	0.200	0	98.0	80	120			
Arsenic	0.191	0.00500	0.200	0	95.7	80	120			
Calcium	96.2	0.300	5.00	90.1	122	80	120			S
Chromium	0.189	0.00500	0.200	0	94.6	80	120			
Lead	0.190	0.00100	0.200	0	95.1	80	120			
Magnesium	9.11	0.300	5.00	3.93	104	80	120			
Nickel	0.194	0.0100	0.200	0.00514	94.3	80	120			
Potassium	6.91	0.300	5.00	1.56	107	80	120			
Thallium	0.192	0.00150	0.200	0	96.1	80	120			
Vanadium	0.194	0.00100	0.200	0.000759	96.7	80	120			

Sample ID: **1906174-07C MSD**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 1:09:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.31	0.0300	5.00	0.197	102	80	120	0.851	15	
Antimony	0.198	0.00250	0.200	0	99.0	80	120	0.986	15	
Arsenic	0.193	0.00500	0.200	0	96.6	80	120	0.921	15	
Calcium	95.7	0.300	5.00	90.1	114	80	120	0.452	15	
Chromium	0.190	0.00500	0.200	0	95.2	80	120	0.644	15	
Lead	0.191	0.00100	0.200	0	95.6	80	120	0.450	15	
Magnesium	9.01	0.300	5.00	3.93	102	80	120	1.08	15	
Nickel	0.198	0.0100	0.200	0.00514	96.2	80	120	1.96	15	
Potassium	6.80	0.300	5.00	1.56	105	80	120	1.54	15	
Thallium	0.193	0.00150	0.200	0	96.4	80	120	0.303	15	
Vanadium	0.197	0.00100	0.200	0.000759	98.1	80	120	1.42	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621C

Sample ID: **ICV-190621** Batch ID: **R104717** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_190621C** Analysis Date: **6/21/2019 10:55:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.33	0.0300	2.50	0	93.3	90	110			
Antimony	0.0982	0.00250	0.100	0	98.2	90	110			
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Calcium	2.55	0.300	2.50	0	102	90	110			
Chromium	0.101	0.00500	0.100	0	101	90	110			
Lead	0.0954	0.00100	0.100	0	95.4	90	110			
Magnesium	2.46	0.300	2.50	0	98.4	90	110			
Nickel	0.107	0.0100	0.100	0	107	90	110			
Potassium	2.46	0.300	2.50	0	98.6	90	110			
Thallium	0.0958	0.00150	0.100	0	95.8	90	110			
Vanadium	0.100	0.00100	0.100	0	100	90	110			

Sample ID: **LCVL-190621** Batch ID: **R104717** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190621C** Analysis Date: **6/21/2019 11:04:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	70	130			
Antimony	0.00206	0.00250	0.00200	0	103	70	130			
Arsenic	0.00488	0.00500	0.00500	0	97.6	70	130			
Calcium	0.0948	0.300	0.100	0	94.8	70	130			
Chromium	0.00466	0.00500	0.00500	0	93.3	70	130			
Lead	0.000961	0.00100	0.00100	0	96.1	70	130			
Magnesium	0.0977	0.300	0.100	0	97.7	70	130			
Nickel	0.00514	0.0100	0.00500	0	103	70	130			
Potassium	0.0789	0.300	0.100	0	78.9	70	130			
Thallium	0.000958	0.00150	0.00100	0	95.8	70	130			
Vanadium	0.000944	0.00100	0.00100	0	94.4	70	130			

Sample ID: **CCV1-190621** Batch ID: **R104717** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190621C** Analysis Date: **6/21/2019 12:19:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.93	0.0300	5.00	0	98.6	90	110			
Antimony	0.200	0.00250	0.200	0	100	90	110			
Arsenic	0.203	0.00500	0.200	0	101	90	110			
Calcium	4.82	0.300	5.00	0	96.3	90	110			
Chromium	0.198	0.00500	0.200	0	99.0	90	110			
Lead	0.195	0.00100	0.200	0	97.5	90	110			
Magnesium	4.98	0.300	5.00	0	99.7	90	110			
Nickel	0.207	0.0100	0.200	0	103	90	110			
Potassium	4.90	0.300	5.00	0	98.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621C

Sample ID: **CCV1-190621**	Batch ID: **R104717**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 12:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.195	0.00150	0.200	0	97.7	90	110			
Vanadium	0.200	0.00100	0.200	0	100	90	110			

Sample ID: **LCVL1-190621**	Batch ID: **R104717**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 12:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	70	130			
Antimony	0.00205	0.00250	0.00200	0	103	70	130			
Arsenic	0.00504	0.00500	0.00500	0	101	70	130			
Calcium	0.0997	0.300	0.100	0	99.7	70	130			
Chromium	0.00490	0.00500	0.00500	0	97.9	70	130			
Lead	0.000968	0.00100	0.00100	0	96.8	70	130			
Magnesium	0.0980	0.300	0.100	0	98.0	70	130			
Nickel	0.00536	0.0100	0.00500	0	107	70	130			
Potassium	0.0780	0.300	0.100	0	78.0	70	130			
Thallium	0.000995	0.00150	0.00100	0	99.5	70	130			
Vanadium	0.000952	0.00100	0.00100	0	95.2	70	130			

Sample ID: **CCV2-190621**	Batch ID: **R104717**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 1:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.10	0.0300	5.00	0	102	90	110			
Antimony	0.197	0.00250	0.200	0	98.5	90	110			
Arsenic	0.198	0.00500	0.200	0	99.1	90	110			
Calcium	5.08	0.300	5.00	0	102	90	110			
Chromium	0.192	0.00500	0.200	0	95.8	90	110			
Lead	0.191	0.00100	0.200	0	95.4	90	110			
Magnesium	5.04	0.300	5.00	0	101	90	110			
Nickel	0.200	0.0100	0.200	0	100	90	110			
Potassium	5.12	0.300	5.00	0	102	90	110			
Thallium	0.192	0.00150	0.200	0	95.9	90	110			
Vanadium	0.195	0.00100	0.200	0	97.7	90	110			

Sample ID: **LCVL2-190621**	Batch ID: **R104717**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 1:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.104	0.0300	0.100	0	104	70	130			
Antimony	0.00207	0.00250	0.00200	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621C

Sample ID: **LCVL2-190621**	Batch ID: **R104717**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 1:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00491	0.00500	0.00500	0	98.2	70	130			
Calcium	0.0738	0.300	0.100	0	73.8	70	130			
Chromium	0.00422	0.00500	0.00500	0	84.4	70	130			
Lead	0.000931	0.00100	0.00100	0	93.1	70	130			
Magnesium	0.113	0.300	0.100	0	113	70	130			
Nickel	0.00484	0.0100	0.00500	0	96.8	70	130			
Potassium	0.129	0.300	0.100	0	129	70	130			
Thallium	0.000960	0.00150	0.00100	0	96.0	70	130			
Vanadium	0.00148	0.00100	0.00100	0	148	70	130			S

Sample ID: **CCV3-190621**	Batch ID: **R104717**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 1:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0	103	90	110			
Antimony	0.198	0.00250	0.200	0	98.8	90	110			
Arsenic	0.199	0.00500	0.200	0	99.3	90	110			
Chromium	0.192	0.00500	0.200	0	95.8	90	110			
Lead	0.192	0.00100	0.200	0	96.1	90	110			
Nickel	0.199	0.0100	0.200	0	99.7	90	110			
Thallium	0.193	0.00150	0.200	0	96.5	90	110			
Vanadium	0.196	0.00100	0.200	0	98.0	90	110			

Sample ID: **LCVL3-190621**	Batch ID: **R104717**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190621C**	Analysis Date: **6/21/2019 1:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0998	0.0300	0.100	0	99.8	70	130			
Antimony	0.00197	0.00250	0.00200	0	98.6	70	130			
Arsenic	0.00506	0.00500	0.00500	0	101	70	130			
Chromium	0.00424	0.00500	0.00500	0	84.8	70	130			
Lead	0.000901	0.00100	0.00100	0	90.1	70	130			
Nickel	0.00493	0.0100	0.00500	0	98.6	70	130			
Thallium	0.000910	0.00150	0.00100	0	91.0	70	130			
Vanadium	0.00174	0.00100	0.00100	0	174	70	130			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621D

The QC data in batch 91398 applies to the following samples: 1906186-01A, 1906186-02A, 1906186-03A, 1906186-04A, 1906186-05A, 1906186-06A, 1906186-07A, 1906186-08A, 1906186-09A, 1906186-10A

Sample ID: **DCS3-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS** Run ID: **ICP-MS5_190621D** Analysis Date: **6/21/2019 11:16:00 AM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00501	0.0100	0.00500	0	100	60	140			N

Sample ID: **MB-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190621D** Analysis Date: **6/21/2019 12:31:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190621D** Analysis Date: **6/21/2019 12:34:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.200	0.0100	0.200	0	99.9	80	120			N

Sample ID: **LCSD-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190621D** Analysis Date: **6/21/2019 12:36:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.199	0.0100	0.200	0	99.6	80	120	0.208	25	N

Sample ID: **1906174-07C SD** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190621D** Analysis Date: **6/21/2019 12:42:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.0150	0.0500	0	0				0	10	N

Sample ID: **1906174-07C PDS** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190621D** Analysis Date: **6/21/2019 1:05:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.188	0.0100	0.200	0	94.2	80	120			N

Sample ID: **1906174-07C MS** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_190621D** Analysis Date: **6/21/2019 1:07:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.189	0.0100	0.200	0	94.6	80	120			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621D

Sample ID: **1906174-07C MSD**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**		
SampType: **MSD**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 1:09:00 PM**	Prep Date: **6/20/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.192	0.0100	0.200	0	96.0	80	120	1.46	25	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621D

Sample ID: **ICV-190621**	Batch ID: **R104718**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 10:55:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0981	0.0100	0.100	0	98.1	90	110			N

Sample ID: **LCVL-190621**	Batch ID: **R104718**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 11:04:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00484	0.0100	0.00500	0	96.8	70	130			N

Sample ID: **CCV1-190621**	Batch ID: **R104718**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 12:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.197	0.0100	0.200	0	98.7	90	110			N

Sample ID: **LCVL1-190621**	Batch ID: **R104718**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 12:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00486	0.0100	0.00500	0	97.1	70	130			N

Sample ID: **CCV2-190621**	Batch ID: **R104718**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 1:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.188	0.0100	0.200	0	93.9	90	110			N

Sample ID: **LCVL2-190621**	Batch ID: **R104718**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 1:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00472	0.0100	0.00500	0	94.5	70	130			N

Sample ID: **CCV3-190621**	Batch ID: **R104718**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 1:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.189	0.0100	0.200	0	94.4	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621D

Sample ID: **LCVL3-190621** Batch ID: **R104718** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190621D** Analysis Date: **6/21/2019 1:44:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00471	0.0100	0.00500	0	94.2	70	130			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190430A

Sample ID: **DCS3-90659**	Batch ID: **90659**	TestNo: **E300**		Units: **mg/L**	
SampType: **DCS3**	Run ID: **IC4_190430A**	Analysis Date: **4/30/2019 1:09:55 PM**		Prep Date: **4/30/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.936	1.00	1.000	0	93.6	65	135	0	0	
Fluoride	0.209	0.400	0.4000	0	52.3	65	135	0	0	S
Nitrate-N	0.496	0.0500	0.5000	0	99.3	60	140	0	0	
Sulfate	2.97	3.00	3.000	0	99.0	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190619A

The QC data in batch 91356 applies to the following samples: 1906186-01D, 1906186-02D, 1906186-03D, 1906186-04D, 1906186-05D, 1906186-06D, 1906186-07D, 1906186-08D, 1906186-09D, 1906186-10D

Sample ID: **MB-91356** Batch ID: **91356** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_190619A** Analysis Date: **6/19/2019 9:55:51 AM** Prep Date: **6/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-91356** Batch ID: **91356** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_190619A** Analysis Date: **6/19/2019 10:11:51 AM** Prep Date: **6/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.40	1.00	10.00	0	94.0	90	110			
Fluoride	3.90	0.400	4.000	0	97.4	90	110			
Nitrate-N	5.03	0.500	5.000	0	101	90	110			
Sulfate	29.2	3.00	30.00	0	97.3	90	110			

Sample ID: **LCSD-91356** Batch ID: **91356** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_190619A** Analysis Date: **6/19/2019 10:27:51 AM** Prep Date: **6/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.54	1.00	10.00	0	95.4	90	110	1.50	20	
Fluoride	4.04	0.400	4.000	0	101	90	110	3.69	20	
Nitrate-N	5.08	0.500	5.000	0	102	90	110	1.11	20	
Sulfate	29.8	3.00	30.00	0	99.3	90	110	2.00	20	

Sample ID: **1906186-01DMS** Batch ID: **91356** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_190619A** Analysis Date: **6/19/2019 12:27:35 PM** Prep Date: **6/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	33300	1000	20000	14630	93.2	90	110			
Fluoride	21000	400	20000	0	105	90	110			
Nitrate-N	4490	500	4516	0	99.4	90	110			
Sulfate	22500	3000	20000	3037	97.1	90	110			

Sample ID: **1906186-01DMSD** Batch ID: **91356** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_190619A** Analysis Date: **6/19/2019 12:43:35 PM** Prep Date: **6/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	33100	1000	20000	14630	92.3	90	110	0.502	20	
Fluoride	21100	400	20000	0	106	90	110	0.371	20	
Nitrate-N	4460	500	4516	0	98.8	90	110	0.604	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190619A

Sample ID: **1906186-01DMSD**	Batch ID: **91356**	TestNo: **E300**		Units: **mg/L**	
SampType: **MSD**	Run ID: **IC4_190619A**	Analysis Date: **6/19/2019 12:43:35 PM**		Prep Date: **6/19/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	22400	3000	20000	3037	96.7	90	110	0.295	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190619A

Sample ID: **ICV-190619**	Batch ID: **R104670**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_190619A**	Analysis Date: **6/19/2019 9:23:50 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.1	1.00	25.00	0	96.3	90	110			
Fluoride	9.86	0.400	10.00	0	98.6	90	110			
Nitrate-N	12.6	0.500	12.50	0	101	90	110			
Sulfate	74.1	3.00	75.00	0	98.8	90	110			

Sample ID: **CCV1-190619**	Batch ID: **R104670**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190619A**	Analysis Date: **6/19/2019 3:55:35 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.57	1.00	10.00	0	95.7	90	110			
Fluoride	4.27	0.400	4.000	0	107	90	110			
Nitrate-N	5.11	0.500	5.000	0	102	90	110			
Sulfate	29.7	3.00	30.00	0	99.1	90	110			

Sample ID: **CCV2-190619**	Batch ID: **R104670**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190619A**	Analysis Date: **6/19/2019 7:39:35 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.36	0.400	4.000	0	109	90	110			
Nitrate-N	5.17	0.500	5.000	0	103	90	110			
Sulfate	30.0	3.00	30.00	0	100	90	110			

Sample ID: **CCV3-190619**	Batch ID: **R104670**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190619A**	Analysis Date: **6/19/2019 11:39:35 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.30	0.400	4.000	0	108	90	110			
Nitrate-N	5.10	0.500	5.000	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190621A

The QC data in batch 91405 applies to the following samples: 1906186-10D

Sample ID: **MB-91405**	Batch ID: **91405**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC4_190621A**	Analysis Date: **6/21/2019 10:07:57 AM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-91405**	Batch ID: **91405**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC4_190621A**	Analysis Date: **6/21/2019 10:23:57 AM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.45	1.00	10.00	0	94.5	90	110			

Sample ID: **LCSD-91405**	Batch ID: **91405**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC4_190621A**	Analysis Date: **6/21/2019 10:39:57 AM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.47	1.00	10.00	0	94.7	90	110	0.227	20	

Sample ID: **1906186-10DMS**	Batch ID: **91405**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_190621A**	Analysis Date: **6/21/2019 11:11:57 AM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	35500	1000	20000	17020	92.5	90	110			

Sample ID: **1906186-10DMSD**	Batch ID: **91405**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_190621A**	Analysis Date: **6/21/2019 11:27:57 AM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	35500	1000	20000	17020	92.3	90	110	0.134	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190621A

Sample ID: **ICV-190621**	Batch ID: **R104735**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_190621A**	Analysis Date: **6/21/2019 9:35:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.3	1.00	25.00	0	97.4	90	110			

Sample ID: **CCV1-190621**	Batch ID: **R104735**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190621A**	Analysis Date: **6/21/2019 2:55:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.62	1.00	10.00	0	96.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190620A

The QC data in batch 91410 applies to the following samples: 1906186-01D, 1906186-02D, 1906186-03D, 1906186-04D, 1906186-05D, 1906186-06D, 1906186-07D, 1906186-08D, 1906186-09D, 1906186-10D

Sample ID: **MB-91410** Batch ID: **91410** TestNo: **M2320 B** Units: **mg/L @ pH 4.22**
SampType: **MBLK** Run ID: **TITRATOR_190620A** Analysis Date: **6/20/2019 9:45:00 AM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-91410** Batch ID: **91410** TestNo: **M2320 B** Units: **mg/L @ pH 4.31**
SampType: **LCS** Run ID: **TITRATOR_190620A** Analysis Date: **6/20/2019 9:49:00 AM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.5	20.0	50.00	0	105	74	129			

Sample ID: **1906186-01D DUP** Batch ID: **91410** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_190620A** Analysis Date: **6/20/2019 10:50:00 AM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	324	20.0	0	329.1				1.47	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	324	20.0	0	329.1				1.47	20	

Sample ID: **1906205-01F DUP** Batch ID: **91410** TestNo: **M2320 B** Units: **mg/L @ pH 4.52**
SampType: **DUP** Run ID: **TITRATOR_190620A** Analysis Date: **6/20/2019 1:50:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	214	20.0	0	214.8				0.560	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	214	20.0	0	214.8				0.560	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190620A

Sample ID: **ICV-190620**	Batch ID: **R104686**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.34**
SampType: **ICV**	Run ID: **TITRATOR_190620A**	Analysis Date: **6/20/2019 9:38:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	11.5	20.0	0							
Alkalinity, Carbonate (As CaCO3)	87.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.4	20.0	100.0	0	99.4	98	102			

Sample ID: **CCV1-190620**	Batch ID: **R104686**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.27**
SampType: **CCV**	Run ID: **TITRATOR_190620A**	Analysis Date: **6/20/2019 1:21:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	33.9	20.0	0							
Alkalinity, Carbonate (As CaCO3)	66.6	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Sample ID: **CCV2-190620**	Batch ID: **R104686**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.24**
SampType: **CCV**	Run ID: **TITRATOR_190620A**	Analysis Date: **6/20/2019 1:55:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	37.4	20.0	0							
Alkalinity, Carbonate (As CaCO3)	63.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190605A

Sample ID: **DCS-91202**	Batch ID: **91202**	TestNo: **M4500-NH3-D**	Units: **mg/L**		
SampType: **DCS**	Run ID: **WC_190605A**	Analysis Date: **6/5/2019 2:00:00 PM**	Prep Date: **6/5/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.0703	0.250	0.1000	0	70.3	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190620A

The QC data in batch 91400 applies to the following samples: 1906186-01C, 1906186-02C, 1906186-03C, 1906186-04C, 1906186-05C, 1906186-06C, 1906186-07C, 1906186-08C, 1906186-09C, 1906186-10C

Sample ID: **MB-91400** Batch ID: **91400** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_190620A** Analysis Date: **6/20/2019 1:30:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-91400** Batch ID: **91400** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **LCS** Run ID: **WC_190620A** Analysis Date: **6/20/2019 1:30:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.14	0.250	5.000	0	103	80	120			

Sample ID: **1906186-01CMS** Batch ID: **91400** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_190620A** Analysis Date: **6/20/2019 1:30:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.08	0.250	5.000	0.9580	82.4	80	120			

Sample ID: **1906186-01CMSD** Batch ID: **91400** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_190620A** Analysis Date: **6/20/2019 1:30:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.88	0.250	5.000	0.9580	78.4	80	120	4.02	25	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190620A

Sample ID: **ICV-190620**	Batch ID: **R104681**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_190620A**	Analysis Date: **6/20/2019 1:30:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.79	0.250	2.500	0	112	80	120			

Sample ID: **CCV-190620**	Batch ID: **R104681**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_190620A**	Analysis Date: **6/20/2019 1:30:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.67	0.250	5.000	0	93.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190620B

The QC data in batch 91420 applies to the following samples: 1906186-01D, 1906186-02D, 1906186-03D, 1906186-04D, 1906186-05D, 1906186-06D, 1906186-07D, 1906186-08D, 1906186-09D, 1906186-10D

Sample ID: **MB-91420** Batch ID: **91420** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_190620B** Analysis Date: **6/20/2019 5:45:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-91420** Batch ID: **91420** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_190620B** Analysis Date: **6/20/2019 5:45:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	753	10.0	745.6	0	101	90	113			

Sample ID: **1906186-01D-DUP** Batch ID: **91420** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_190620B** Analysis Date: **6/20/2019 5:45:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	29300	1000	0	30400				3.69	5	

Sample ID: **1906186-02D-DUP** Batch ID: **91420** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_190620B** Analysis Date: **6/20/2019 5:45:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	50200	1000	0	51000				1.58	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *19-Jul-19*

CLIENT: Golder
Work Order: 1906186
Project: Copano GW 2Q19

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.2**	**g/L @ pH 4.2**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

July 18, 2019

DHL Analytical, Inc.

Sample Delivery Group: L1111620

Samples Received: 06/21/2019

Project Number:

Description:

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

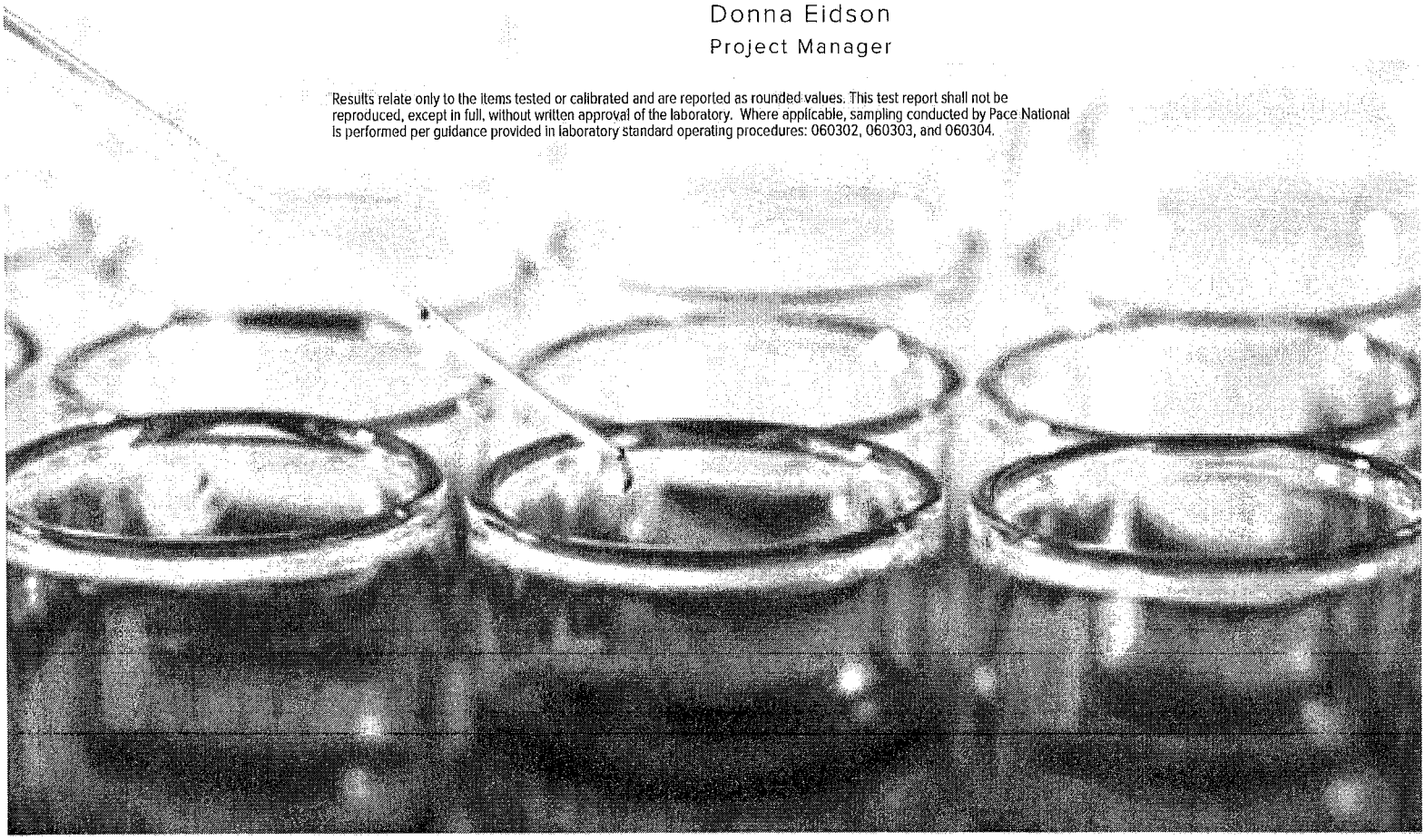


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DB-5 L1111620-01 Non-Potable Water

Collected by | Collected date/time 06/18/19 12:40 | Received date/time 06/21/19 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1303245	1	06/28/19 09:21	07/11/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1302188	1	06/26/19 14:27	07/11/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1302188	1	06/26/19 14:27	07/03/19 17:05	RGT	Mt. Juliet, TN

MW-7B L1111620-02 Non-Potable Water

Collected by | Collected date/time 06/18/19 13:35 | Received date/time 06/21/19 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1303245	1	06/28/19 09:21	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1302188	1	06/26/19 14:27	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1302188	1	06/26/19 14:27	07/03/19 17:05	RGT	Mt. Juliet, TN

MW-7 L1111620-03 Non-Potable Water

Collected by | Collected date/time 06/18/19 14:10 | Received date/time 06/21/19 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1303245	1	06/28/19 09:21	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1302188	1	06/26/19 14:27	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1302188	1	06/26/19 14:27	06/28/19 17:45	RGT	Mt. Juliet, TN

MW-11B L1111620-04 Non-Potable Water

Collected by | Collected date/time 06/18/19 15:00 | Received date/time 06/21/19 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1303245	1	06/28/19 09:21	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1302188	1	06/26/19 14:27	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1302188	1	06/26/19 14:27	06/28/19 17:45	RGT	Mt. Juliet, TN

MW-11 L1111620-05 Non-Potable Water

Collected by | Collected date/time 06/18/19 15:35 | Received date/time 06/21/19 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1303245	1	06/28/19 09:21	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1302188	1	06/26/19 14:27	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1302188	1	06/26/19 14:27	06/28/19 17:45	RGT	Mt. Juliet, TN

MW-101 L1111620-06 Non-Potable Water

Collected by | Collected date/time 06/18/19 15:45 | Received date/time 06/21/19 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1303245	1	06/28/19 09:21	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1302188	1	06/26/19 14:27	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1302188	1	06/26/19 14:27	06/28/19 17:45	RGT	Mt. Juliet, TN

MW-8 L1111620-07 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				06/18/19 15:30	06/21/19 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1303245	1	06/28/19 09:21	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1302188	1	06/26/19 14:27	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1302188	1	06/26/19 14:27	06/28/19 17:45	RGT	Mt. Juliet, TN

MW-3RB L1111620-08 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				06/18/19 13:59	06/21/19 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1303245	1	06/28/19 09:21	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307891	1	07/10/19 12:53	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307891	1	07/10/19 12:53	07/11/19 22:58	RGT	Mt. Juliet, TN

MW-3R L1111620-09 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				06/18/19 12:55	06/21/19 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1303245	1	06/28/19 09:21	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1302188	1	06/26/19 14:27	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1302188	1	06/26/19 14:27	06/28/19 17:45	RGT	Mt. Juliet, TN

MW-1 L1111620-10 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				06/18/19 11:36	06/21/19 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1303245	1	06/28/19 09:21	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1302188	1	06/26/19 14:27	07/12/19 12:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1302188	1	06/26/19 14:27	06/28/19 17:45	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	2.00		0.448	1.16	07/11/2019 12:15	WG1303245
(T) Barium	*107*			*62.0-143*	*07/11/2019 12:15*	WG1303245
(T) Yttrium	*104*			*79.0-136*	*07/11/2019 12:15*	WG1303245

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	2.74		0.816	1.51	07/11/2019 12:15	WG1302188

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.742		0.368	0.351	07/03/2019 17:05	WG1302188
(T) Barium-133	*102*			*30.0-143*	*07/03/2019 17:05*	WG1302188

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	7.78		0.436	0.626	07/12/2019 12:15	WG1303245
(T) Barium	*119*			*62.0-143*	*07/12/2019 12:15*	WG1303245
(T) Yttrium	*100*			*79.0-136*	*07/12/2019 12:15*	WG1303245

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	10.6		0.997	0.76	07/12/2019 12:15	WG1302188

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	2.81		0.561	0.134	07/03/2019 17:05	WG1302188
(T) Barium-133	*98.0*			*30.0-143*	*07/03/2019 17:05*	WG1302188

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	4.23		0.928	1.65	07/12/2019 12:15	WG1303245
(T) Barium	*111*			*62.0-143*	*07/12/2019 12:15*	WG1303245
(T) Yttrium	*97.3*			*79.0-136*	*07/12/2019 12:15*	WG1303245

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	5.16		1.38	2.12	07/12/2019 12:15	WG1302188

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.930		0.452	0.47	06/28/2019 17:45	WG1302188
(T) Barium-133	*76.0*			*30.0-143*	*06/28/2019 17:45*	WG1302188

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	5.15		0.818	1.58	07/12/2019 12:15	WG1303245
(T) Barium	*87.9*			*62.0-143*	*07/12/2019 12:15*	WG1303245
(T) Yttrium	*102*			*79.0-136*	*07/12/2019 12:15*	WG1303245

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	7.67		1.49	2.03	07/12/2019 12:15	WG1302188

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	2.52		0.671	0.451	06/28/2019 17:45	WG1302188
(T) Barium-133	*86.5*			*30.0-143*	*06/28/2019 17:45*	WG1302188

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.0566		0.390	0.72	07/12/2019 12:15	WG1303245
(T) Barium	*117*			*62.0-143*	*07/12/2019 12:15*	WG1303245
(T) Yttrium	*85.6*			*79.0-136*	*07/12/2019 12:15*	WG1303245

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.146		0.848	1.44	07/12/2019 12:15	WG1302188

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0892		0.458	0.719	06/28/2019 17:45	WG1302188
(T) Barium-133	*51.0*			*30.0-143*	*06/28/2019 17:45*	WG1302188

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.59		0.982	1.93	07/12/2019 12:15	WG1303245
(T) Barium	*110*			*62.0-143*	*07/12/2019 12:15*	WG1303245
(T) Yttrium	*87.4*			*79.0-136*	*07/12/2019 12:15*	WG1303245

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	1.90		1.33	2.4	07/12/2019 12:15	WG1302188

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.310		0.346	0.467	06/28/2019 17:45	WG1302188
(T) Barium-133	*53.5*			*30.0-143*	*06/28/2019 17:45*	WG1302188

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.03		0.351	0.749	07/12/2019 12:15	WG1303245
(T) Barium	*119*			*62.0-143*	*07/12/2019 12:15*	WG1303245
(T) Yttrium	*94.6*			*79.0-136*	*07/12/2019 12:15*	WG1303245

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	1.20		0.521	0.947	07/12/2019 12:15	WG1302188

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.172		0.170	0.198	06/28/2019 17:45	WG1302188
(T) Barium-133	*84.4*			*30.0-143*	*06/28/2019 17:45*	WG1302188

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	12.1		0.472	0.703	07/12/2019 12:15	WG1303245
(T) Barium	*109*			*62.0-143*	*07/12/2019 12:15*	WG1303245
(T) Yttrium	*95.0*			*79.0-136*	*07/12/2019 12:15*	WG1303245

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	14.0		1.02	0.947	07/12/2019 12:15	WG1307891

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.97		0.552	0.244	07/11/2019 22:58	WG1307891
(T) Barium-133	*108*			*30.0-143*	*07/11/2019 22:58*	WG1307891

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.33		0.351	0.74	07/12/2019 12:15	WG1303245
(T) Barium	*113*			*62.0-143*	*07/12/2019 12:15*	WG1303245
(T) Yttrium	*90.4*			*79.0-136*	*07/12/2019 12:15*	WG1303245

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	3.56		0.957	1.06	07/12/2019 12:15	WG1302188

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	2.23		0.606	0.323	06/28/2019 17:45	WG1302188
(T) Barium-133	*94.3*			*30.0-143*	*06/28/2019 17:45*	WG1302188

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.98		0.371	0.706	07/12/2019 12:15	WG1303245
(T) Barium	*108*			*62.0-143*	*07/12/2019 12:15*	WG1303245
(T) Yttrium	*90.4*			*79.0-136*	*07/12/2019 12:15*	WG1303245

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.85		0.932	0.933	07/12/2019 12:15	WG1302188

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.87		0.561	0.227	06/28/2019 17:45	WG1302188
(T) Barium-133	*87.3*			*30.0-143*	*06/28/2019 17:45*	WG1302188

Method Blank (MB)

(MB) R3431387-1 07/11/19 12:15

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.0949		0.437
(T) Barium	*101*		
(T) Yttrium	*99.9*		

L1111528-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1111528-01 07/11/19 12:15 • (DUP) R3431387-5 07/11/19 12:15

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.626	0.420	1	39.4	0.354		20	3
(T) Barium	*96.1*	*95.8*						
(T) Yttrium	*100*	*99.1*						

Laboratory Control Sample (LCS)

(LCS) R3431387-2 07/11/19 12:15

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.76	115	80.0-120	
(T) Barium			*111*		
(T) Yttrium			*107*		

L1111525-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1111525-01 07/11/19 12:15 • (MS) R3431387-3 07/11/19 12:15 • (MSD) R3431387-4 07/11/19 12:15

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	7.14	2.22	8.27	9.12	84.7	96.7	1	70.0-130			9.81		20
(T) Barium		*102*			*97.3*	*104*							
(T) Yttrium		*106*			*105*	*103*							

Method Blank (MB)

(MB) R3425801-1 06/27/19 17:37

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	0.000		0.0864
(T) Barium-133	*79.5*		

L1112603-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1112603-01 06/27/19 17:54 • (DUP) R3425801-5 06/27/19 17:54

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.102	0.509	1	133	0.933		20	3
(T) Barium-133	*87.2*	*92.0*						

Laboratory Control Sample (LCS)

(LCS) R3425801-2 06/27/19 17:37

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	4.94	98.3	80.0-120	
(T) Barium-133			*88.5*		

L1112603-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1112603-04 06/27/19 17:54 • (MS) R3425801-3 06/27/19 17:54 • (MSD) R3425801-4 06/27/19 17:54

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.356	19.5	20.3	95.0	99.1	1	75.0-125			4.18		20
(T) Barium-133		*95.3*			*98.0*	*87.8*							

Method Blank (MB)

(MB) R3430255-1 07/11/19 22:58

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	-0.00359		0.0473
(T) Barium-133	*94.2*		

L1116542-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1116542-06 07/11/19 23:01 • (DUP) R3430255-3 07/11/19 22:58

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.187	0.250	1	28.6	0.191		20	3
(T) Barium-133	*84.5*	*88.0*						

Laboratory Control Sample (LCS)

(LCS) R3430255-2 07/11/19 22:58

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	5.19	103	80.0-120	
(T) Barium-133			*43.7*		

L1116542-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1116542-04 07/11/19 23:00 • (MS) R3430255-4 07/11/19 23:02 • (MSD) R3430255-5 07/11/19 23:02

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.0201	19.4	17.6	96.5	87.7	1	75.0-125			9.55		20
(T) Barium-133		*63.2*			*84.6*	*82.9*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER.	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRRTX	SDG#:	1111628
Cooler Received/Opened On: 6/21/19	Temperature:	Amb
Received By: Eric Struck		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			✓
Preservation Correct / Checked?		✓	

1111620

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1906186

G228

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

19-Jun-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra-228 E904.0	Ra-226 M7500 Ra B M	Requested Tests				
DB-5	Aqueous	-01E	06/18/19 12:40 PM	1LHDPEHNO3	1						-01
DB-5	Aqueous	-01F	06/18/19 12:40 PM	1LHDPEHNO3		1					"
MW-7B	Aqueous	-02E	06/18/19 01:35 PM	1LHDPEHNO3	1						02
MW-7B	Aqueous	-02F	06/18/19 01:35 PM	1LHDPEHNO3		1					"
MW-7	Aqueous	-03E	06/18/19 02:10 PM	1LHDPEHNO3	1	1					03
MW-11B	Aqueous	-04E	06/18/19 03:00 PM	1LHDPEHNO3	1	1					04
MW-11	Aqueous	-05E	06/18/19 03:35 PM	1LHDPEHNO3	1						05
MW-11	Aqueous	-05F	06/18/19 03:35 PM	1LHDPEHNO3		1					"
MW-101	Aqueous	-06E	06/18/19 03:45 PM	1LHDPEHNO3	1	1					06
MW-8	Aqueous	-07E	06/18/19 03:30 PM	1LHDPEHNO3	1						07
MW-8	Aqueous	-07F	06/18/19 03:30 PM	1LHDPEHNO3		1					"
MW-3RB	Aqueous	-08E	06/18/19 01:59 PM	1LHDPEHNO3	1						08
MW-3RB	Aqueous	-08F	06/18/19 01:59 PM	1LHDPEHNO3		1					"
MW-3R	Aqueous	-09E	06/18/19 12:55 PM	1LHDPEHNO3	1						09
MW-3R	Aqueous	-09F	06/18/19 12:55 PM	1LHDPEHNO3		1					"
MW-1	Aqueous	-10E	06/18/19 11:36 AM	1LHDPEHNO3	1						10
MW-1	Aqueous	-10F	06/18/19 11:36 AM	1LHDPEHNO3		1					"

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General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

	Date/Time		Date/Time
Relinquished by:	6/19/19 1700	Received by:	6/21/19, @ 1030
Relinquished by:		Received by:	

February 28, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 1906206

RE: Copano 2Q19

Dear Kevin Dworsky:

DHL Analytical, Inc. received 16 sample(s) on 6/20/2019 for the analyses presented in the following report.

REVISION#1: This revision consists of adding Dissolved Uranium to the list of test parameters for all samples as per the client. Please replace the original report with this revised report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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Subcontract Report 1906206 102

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 83322

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Victoria TX 77901
PHONE: 361-573-6442 FAX/E-MAIL:
DATA REPORTED TO: Sergio Ruiz, Greg Logan, Kevin Dworsky
ADDITIONAL REPORT COPIES TO: Matt Wickham

DATE: 6-19-19 PAGE 1 OF 2
PO #: DHL WORK ORDER #: 1906206
PROJECT LOCATION OR NAME: Coppo 2019
CLENT PROJECT #: 18111309-2003 COLLECTOR: Greg Logan & Victor Gonzalez

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 | NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX1 1 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-1 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4	ICE	UNPRESERVED	FIELD NOTES
MW-10	01	6-17-19	8:55	W	P	6		X	X		X	
MW-5	02		9:35									
MW-5B	03		10:05									
MW3-1	04		11:00									
MW3-2	05		11:35									
MW3-3	06		12:30									
MW3-4	07		13:10									
MW3-4B	08		13:45									
MW-202	09		11:45									
MW-9	10		8:57									
MW-4	11		9:55									
MW3-7B	12		11:10									
MW3-7	13		12:06			↓						
MW4-7A	14		13:12			18						MS/MSD
MW4-7B	15	↓	14:38	↓	↓	6		↓	↓		↓	

See Attached Paper For Analyses

RELINQUISHED BY: (Signature) DATE/TIME 6-19-19/18:00 RECEIVED BY: (Signature) Fed Ex
RELINQUISHED BY: (Signature) FEDEX DATE/TIME 6-20-19 1150 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 4.8 C / 19.4 C 23.0 C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 70492

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Victoria Tx 77901
PHONE: 361-573-6442 FAX/E-MAIL:
DATA REPORTED TO: Sergio Ruiz, Greg Logan, Kevin Bwasky
ADDITIONAL REPORT COPIES TO: Matt Wickham

DATE: 6-19-19 PAGE 1 OF 2
PO #: DHL WORK ORDER #: 1906206
PROJECT LOCATION OR NAME: Copano 2019
CLENT PROJECT #: 1811309-2003 COLLECTOR: Greg Logan Jr & Victor Gonzalez

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION HCl	HNO_3	H_2SO_4 ☒ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
MW4-7	16	6/19/19	15:30	W	P	6		X	X		X		

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ _____ ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS _____ ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

See attached paper for analysis

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	6/19/19 18:00	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: _____ THERM #: _____
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Dissolved Metals[1]	SW6020A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Metals.
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Dissolved Mercury	SW7470A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Mercury.
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:

1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium

2) From time of sample collection

ORIGIN ID:CRPA (254) 366-9297
GREG LOGAN

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 19JUN19
ACTWGT: 51.70 LB
CAD: 6990729/SSF02002
DIMS: 26x14x14 IN

BILL THIRD PARTY

TO **SAMPLE RECEIVING**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

1 of 4

TRK# 0201 **7879 9445 7087**

MASTER

THU - 20 JUN 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**

CUSTODY SEAL
DATE 6-19-19
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • www.qecusa.com

ORIGIN ID:CRPA (254) 366-9297
GREG LOGAN

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

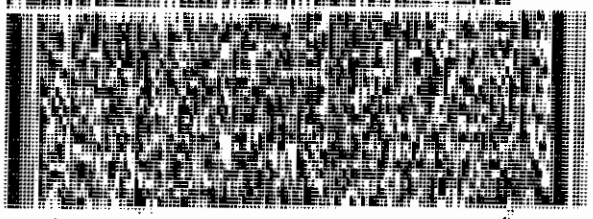
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DIMS: 24x15x17 IN

BILL THIRD PARTY

TO **SAMPLE RECEIVING**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:



FedEx
Express

2 of 4

MPS# 0263 7879 9445 7098

Mstr# 7879 9445 7087

0201

THU - 20 JUN 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US AUS



CUSTODY SEAL
DATE 6-18-19
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • www.qecusa.com

ORIGIN ID:CRPA (254) 366-9297
GREG LOGAN

2201 DOUBLE CREEK DR STE 4004

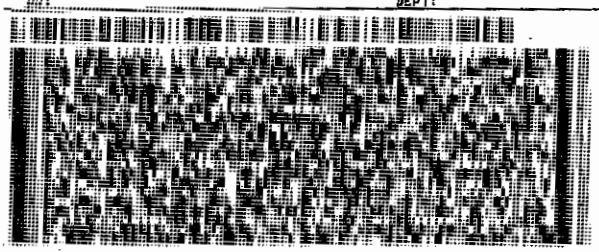
ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 18JUN19
ACTWGT: 49.10 LB
CAD: 6990729/SSFD2002
DIMS: 26x14x14 IN

BILL THIRD PARTY

TO **SAMPLE RECEIVING**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV: DEPT:
PO:



FedEx Express

J191019010701av

4 of 4

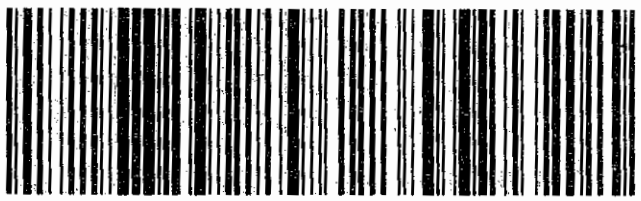
MPS# 0263 7879 9445 7113

Mstr# 7879 9445 7087 0201

THU - 20 JUN 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**



CUSTODY SEAL
DATE 6-19-19
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • www.qecusa.com

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 6/20/2019

Work Order Number 1906206 | Received by JW

Checklist completed by: _____ (Signature) 6/20/2019 (Date) | Reviewed by _____ (Initials) 6/20/2019 (Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.8 °C /29.4/20
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: One of four coolers not received due to FedEx error.

Corrective Action _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano 2Q19	**LRC Date:** 7/19/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1906206
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano 2Q19	**LRC Date:** 7/19/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1906206
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?		X			**S2-02**
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?		X			**S2-04**
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?		X			**S4-01**
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?		X			**S10-02**
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

02/28/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *28-Feb-20*

CLIENT: Golder
Project: Copano 2Q19
Lab Order: 1906206

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis (total & dissolved)
Method SW6020A - Uranium in Water Analysis (this parameter is not NELACP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 6/20/19. A total of 16 samples were received. One of the four coolers did not arrive at DHL Analytical due to FedEx error. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Ammonia analysis performed on 6/21/19 the matrix spike and matrix spike duplicate recoveries were above control limits. This was due to matrix effect. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits. No further corrective actions were taken.

For Total Metals analysis performed on 6/25/19 (batch 91453) the matrix spike and matrix spike duplicate recoveries were out of control limits for four analytes. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Exception Report R10-01

For Anions analysis all samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride).

For Anions analysis samples MW-10, MW-5, MW-5B, MW3-1, MW3-2 and MW3-3 were analyzed outside of HoldTime for Nitrate-N. The Nitrate-N results for these samples are flagged with a "C" to designate this.

For Uranium analysis the Dissolved Uranium results were slightly higher than the Total Uranium results for 9 samples. These are within the acceptable variation limits. No further corrective actions were taken.

Exception Report S2-02

For Total Metals analysis performed on 6/25/19 LCVL1-190625 and LCVL2-190625 were above control limits for Vanadium. These are flagged accordingly in the QC summary report. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

Exception Report S2-04

For Total Metals analysis performed on 6/25/19 Vanadium was detected above the reporting limit in CCB1-190625. The associated samples may be biased high for this analyte. No further corrective actions were taken.

Exception Report S4-01

For Dissolved Metals analysis sample MW3-4B had the low response for the internal standard Bismuth. This was due to matrix interference. The associated analyte (Lead) may be biased high. No further corrective actions were taken.

Exception Report S9-01

For Dissolved Metals analysis performed on 6/26/19 (batch 91506) the PDS recovery was slightly below control limits for Nickel. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

For Dissolved Mercury analysis performed on 6/24/19 (batch 91459) the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

Exception Report S10-02

For Anions analysis, the recovery of Fluoride for the Detectability Check Standard (DCS3-90659) was below the DHL Analytical internal control limits; the recovery meets TRRP specifications. This is flagged accordingly in the QC summary report. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *22-Jul-19*

CLIENT: Golder
Project: Copano 2Q19
Lab Order: 1906206

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1906206-01	MW-10		06/19/19 08:55 AM	6/20/2019
1906206-02	MW-5		06/19/19 09:35 AM	6/20/2019
1906206-03	MW-5B		06/19/19 10:05 AM	6/20/2019
1906206-04	MW3-1		06/19/19 11:00 AM	6/20/2019
1906206-05	MW3-2		06/19/19 11:35 AM	6/20/2019
1906206-06	MW3-3		06/19/19 12:30 PM	6/20/2019
1906206-07	MW3-4		06/19/19 01:10 PM	6/20/2019
1906206-08	MW3-4B		06/19/19 01:45 PM	6/20/2019
1906206-09	MW-202		06/19/19 11:45 AM	6/20/2019
1906206-10	MW-9		06/19/19 08:57 AM	6/20/2019
1906206-11	MW-4		06/19/19 09:55 AM	6/20/2019
1906206-12	MW3-7B		06/19/19 11:10 AM	6/20/2019
1906206-13	MW3-7		06/19/19 12:06 PM	6/20/2019
1906206-14	MW4-7A		06/19/19 01:12 PM	6/20/2019
1906206-15	MW4-7B		06/19/19 02:38 PM	6/20/2019
1906206-16	MW4-7		06/19/19 03:30 PM	6/20/2019

Lab Order: 1906206
Client: Golder
Project: Copano 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906206-01A	MW-10	06/19/19 08:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW-10	06/19/19 08:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW-10	06/19/19 08:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW-10	06/19/19 08:55 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-01B	MW-10	06/19/19 08:55 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW-10	06/19/19 08:55 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-01C	MW-10	06/19/19 08:55 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-01D	MW-10	06/19/19 08:55 AM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW-10	06/19/19 08:55 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW-10	06/19/19 08:55 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW-10	06/19/19 08:55 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW-10	06/19/19 08:55 AM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906206-02A	MW-5	06/19/19 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW-5	06/19/19 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW-5	06/19/19 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW-5	06/19/19 09:35 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-02B	MW-5	06/19/19 09:35 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW-5	06/19/19 09:35 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-02C	MW-5	06/19/19 09:35 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-02D	MW-5	06/19/19 09:35 AM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW-5	06/19/19 09:35 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW-5	06/19/19 09:35 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW-5	06/19/19 09:35 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW-5	06/19/19 09:35 AM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906206-03A	MW-5B	06/19/19 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW-5B	06/19/19 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW-5B	06/19/19 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW-5B	06/19/19 10:05 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456

Lab Order: 1906206
Client: Golder
Project: Copano 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906206-03B	MW-5B	06/19/19 10:05 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW-5B	06/19/19 10:05 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-03C	MW-5B	06/19/19 10:05 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-03D	MW-5B	06/19/19 10:05 AM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW-5B	06/19/19 10:05 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW-5B	06/19/19 10:05 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW-5B	06/19/19 10:05 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW-5B	06/19/19 10:05 AM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906206-04A	MW3-1	06/19/19 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-1	06/19/19 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-1	06/19/19 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-1	06/19/19 11:00 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-04B	MW3-1	06/19/19 11:00 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW3-1	06/19/19 11:00 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-04C	MW3-1	06/19/19 11:00 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-04D	MW3-1	06/19/19 11:00 AM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW3-1	06/19/19 11:00 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-1	06/19/19 11:00 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-1	06/19/19 11:00 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-1	06/19/19 11:00 AM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906206-05A	MW3-2	06/19/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-2	06/19/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-2	06/19/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-2	06/19/19 11:35 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-05B	MW3-2	06/19/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW3-2	06/19/19 11:35 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-05C	MW3-2	06/19/19 11:35 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-05D	MW3-2	06/19/19 11:35 AM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424

Lab Order: 1906206
Client: Golder
Project: Copano 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906206-05D	MW3-2	06/19/19 11:35 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-2	06/19/19 11:35 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-2	06/19/19 11:35 AM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-2	06/19/19 11:35 AM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906206-06A	MW3-3	06/19/19 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-3	06/19/19 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-3	06/19/19 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-3	06/19/19 12:30 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-06B	MW3-3	06/19/19 12:30 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW3-3	06/19/19 12:30 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-06C	MW3-3	06/19/19 12:30 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-06D	MW3-3	06/19/19 12:30 PM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW3-3	06/19/19 12:30 PM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-3	06/19/19 12:30 PM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-3	06/19/19 12:30 PM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-3	06/19/19 12:30 PM	Aqueous	M2540C	TDS Preparation	06/20/19 02:23 PM	91420
1906206-07A	MW3-4	06/19/19 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-4	06/19/19 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-4	06/19/19 01:10 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-07B	MW3-4	06/19/19 01:10 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW3-4	06/19/19 01:10 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-07C	MW3-4	06/19/19 01:10 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-07D	MW3-4	06/19/19 01:10 PM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW3-4	06/19/19 01:10 PM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-4	06/19/19 01:10 PM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-4	06/19/19 01:10 PM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-4	06/19/19 01:10 PM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906206-08A	MW3-4B	06/19/19 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453

Lab Order: 1906206
Client: Golder
Project: Copano 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906206-08A	MW3-4B	06/19/19 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-4B	06/19/19 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW3-4B	06/19/19 01:45 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:26 AM	91456
1906206-08B	MW3-4B	06/19/19 01:45 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW3-4B	06/19/19 01:45 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906206-08C	MW3-4B	06/19/19 01:45 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-08D	MW3-4B	06/19/19 01:45 PM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW3-4B	06/19/19 01:45 PM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-4B	06/19/19 01:45 PM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-4B	06/19/19 01:45 PM	Aqueous	E300	Anion Preparation	06/21/19 09:00 AM	91405
	MW3-4B	06/19/19 01:45 PM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906206-09A	MW-202	06/19/19 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW-202	06/19/19 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW-202	06/19/19 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW-202	06/19/19 11:45 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906206-09B	MW-202	06/19/19 11:45 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW-202	06/19/19 11:45 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906206-09C	MW-202	06/19/19 11:45 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-09D	MW-202	06/19/19 11:45 AM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW-202	06/19/19 11:45 AM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW-202	06/19/19 11:45 AM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW-202	06/19/19 11:45 AM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW-202	06/19/19 11:45 AM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906206-10C	MW-9	06/19/19 08:57 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-10D	MW-9	06/19/19 08:57 AM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW-9	06/19/19 08:57 AM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW-9	06/19/19 08:57 AM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW-9	06/19/19 08:57 AM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404

Lab Order: 1906206
Client: Golder
Project: Copano 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906206-10D	MW-9	06/19/19 08:57 AM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906206-11C	MW-4	06/19/19 09:55 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-11D	MW-4	06/19/19 09:55 AM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW-4	06/19/19 09:55 AM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW-4	06/19/19 09:55 AM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW-4	06/19/19 09:55 AM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW-4	06/19/19 09:55 AM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906206-12C	MW3-7B	06/19/19 11:10 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-12D	MW3-7B	06/19/19 11:10 AM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW3-7B	06/19/19 11:10 AM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW3-7B	06/19/19 11:10 AM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW3-7B	06/19/19 11:10 AM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW3-7B	06/19/19 11:10 AM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906206-13C	MW3-7	06/19/19 12:06 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-13D	MW3-7	06/19/19 12:06 PM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW3-7	06/19/19 12:06 PM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW3-7	06/19/19 12:06 PM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW3-7	06/19/19 12:06 PM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW3-7	06/19/19 12:06 PM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906206-14C	MW4-7A	06/19/19 01:12 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-14D	MW4-7A	06/19/19 01:12 PM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW4-7A	06/19/19 01:12 PM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW4-7A	06/19/19 01:12 PM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW4-7A	06/19/19 01:12 PM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW4-7A	06/19/19 01:12 PM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906206-15A	MW4-7B	06/19/19 02:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW4-7B	06/19/19 02:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW4-7B	06/19/19 02:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453

Lab Order: 1906206
Client: Golder
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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906206-15A	MW4-7B	06/19/19 02:38 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906206-15B	MW4-7B	06/19/19 02:38 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW4-7B	06/19/19 02:38 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906206-15C	MW4-7B	06/19/19 02:38 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-15D	MW4-7B	06/19/19 02:38 PM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW4-7B	06/19/19 02:38 PM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW4-7B	06/19/19 02:38 PM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW4-7B	06/19/19 02:38 PM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW4-7B	06/19/19 02:38 PM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906206-16A	MW4-7	06/19/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW4-7	06/19/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW4-7	06/19/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/24/19 08:25 AM	91453
	MW4-7	06/19/19 03:30 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906206-16B	MW4-7	06/19/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW4-7	06/19/19 03:30 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906206-16C	MW4-7	06/19/19 03:30 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/21/19 09:28 AM	91432
1906206-16D	MW4-7	06/19/19 03:30 PM	Aqueous	M2320 B	Alkalinity Preparation	06/21/19 08:20 AM	91424
	MW4-7	06/19/19 03:30 PM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW4-7	06/19/19 03:30 PM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW4-7	06/19/19 03:30 PM	Aqueous	E300	Anion Preparation	06/20/19 01:31 PM	91404
	MW4-7	06/19/19 03:30 PM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906206-01A	MW-10	Aqueous	SW7470A	Mercury Total: Aqueous	91456	1	06/24/19 03:30 PM	CETAC2_HG_190624A
	MW-10	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	500	06/25/19 03:01 PM	ICP-MS4_190625A
	MW-10	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	10	06/25/19 03:46 PM	ICP-MS4_190625A
	MW-10	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1	06/25/19 11:08 AM	ICP-MS5_190625A
	MW-10	Aqueous	SW6020A	Uranium in Water by ICPMS	91453	1	06/25/19 11:08 AM	ICP-MS5_190625B
1906206-01B	MW-10	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91456	1	06/24/19 03:33 PM	CETAC2_HG_190624B
	MW-10	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 01:39 PM	ICP-MS5_190626B
1906206-01C	MW-10	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-01D	MW-10	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 09:52 AM	TITRATOR_190621B
	MW-10	Aqueous	E300	Anions by IC method - Water	91405	10	06/21/19 01:51 PM	IC4_190621A
	MW-10	Aqueous	E300	Anions by IC method - Water	91405	1000	06/21/19 03:32 PM	IC4_190621A
	MW-10	Aqueous	E300	Anions by IC method - Water	91405	100	06/21/19 07:00 PM	IC4_190621A
	MW-10	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B
1906206-02A	MW-5	Aqueous	SW7470A	Mercury Total: Aqueous	91456	1	06/24/19 03:35 PM	CETAC2_HG_190624A
	MW-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	500	06/25/19 03:03 PM	ICP-MS4_190625A
	MW-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	10	06/25/19 03:51 PM	ICP-MS4_190625A
	MW-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1	06/25/19 11:10 AM	ICP-MS5_190625A
	MW-5	Aqueous	SW6020A	Uranium in Water by ICPMS	91453	1	06/25/19 11:10 AM	ICP-MS5_190625B
1906206-02B	MW-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91456	1	06/24/19 03:37 PM	CETAC2_HG_190624B
	MW-5	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 01:42 PM	ICP-MS5_190626B
1906206-02C	MW-5	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-02D	MW-5	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 10:37 AM	TITRATOR_190621B
	MW-5	Aqueous	E300	Anions by IC method - Water	91405	10	06/21/19 01:35 PM	IC4_190621A
	MW-5	Aqueous	E300	Anions by IC method - Water	91405	1000	06/21/19 03:48 PM	IC4_190621A
	MW-5	Aqueous	E300	Anions by IC method - Water	91405	100	06/21/19 07:16 PM	IC4_190621A
	MW-5	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906206-03A	MW-5B	Aqueous	SW7470A	Mercury Total: Aqueous	91456	1	06/24/19 03:39 PM	CETAC2_HG_190624 A
	MW-5B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	500	06/25/19 03:05 PM	ICP-MS4_190625A
	MW-5B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	10	06/25/19 03:53 PM	ICP-MS4_190625A
	MW-5B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1	06/25/19 11:12 AM	ICP-MS5_190625A
	MW-5B	Aqueous	SW6020A	Uranium in Water by ICPMS	91453	1	06/25/19 11:12 AM	ICP-MS5_190625B
1906206-03B	MW-5B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91456	1	06/24/19 03:46 PM	CETAC2_HG_190624 B
	MW-5B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 01:44 PM	ICP-MS5_190626B
1906206-03C	MW-5B	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-03D	MW-5B	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 10:51 AM	TITRATOR_190621B
	MW-5B	Aqueous	E300	Anions by IC method - Water	91405	10	06/21/19 01:19 PM	IC4_190621A
	MW-5B	Aqueous	E300	Anions by IC method - Water	91405	1000	06/21/19 04:04 PM	IC4_190621A
	MW-5B	Aqueous	E300	Anions by IC method - Water	91405	100	06/21/19 07:32 PM	IC4_190621A
	MW-5B	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B
1906206-04A	MW3-1	Aqueous	SW7470A	Mercury Total: Aqueous	91456	1	06/24/19 03:49 PM	CETAC2_HG_190624 A
	MW3-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1	06/25/19 11:21 AM	ICP-MS5_190625A
	MW3-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	500	06/25/19 03:07 PM	ICP-MS4_190625A
	MW3-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	10	06/25/19 03:55 PM	ICP-MS4_190625A
	MW3-1	Aqueous	SW6020A	Uranium in Water by ICPMS	91453	1	06/25/19 11:21 AM	ICP-MS5_190625B
1906206-04B	MW3-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91456	1	06/24/19 03:51 PM	CETAC2_HG_190624 B
	MW3-1	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 01:46 PM	ICP-MS5_190626B
1906206-04C	MW3-1	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-04D	MW3-1	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 11:03 AM	TITRATOR_190621B
	MW3-1	Aqueous	E300	Anions by IC method - Water	91405	10	06/21/19 01:03 PM	IC4_190621A
	MW3-1	Aqueous	E300	Anions by IC method - Water	91405	1000	06/21/19 04:20 PM	IC4_190621A
	MW3-1	Aqueous	E300	Anions by IC method - Water	91405	100	06/21/19 07:48 PM	IC4_190621A
	MW3-1	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906206-05A	MW3-2	Aqueous	SW7470A	Mercury Total: Aqueous	91456	1	06/24/19 03:53 PM	CETAC2_HG_190624 A
	MW3-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1	06/25/19 11:25 AM	ICP-MS5_190625A
	MW3-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	500	06/25/19 03:09 PM	ICP-MS4_190625A
	MW3-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	10	06/25/19 03:57 PM	ICP-MS4_190625A
	MW3-2	Aqueous	SW6020A	Uranium in Water by ICPMS	91453	1	06/25/19 11:25 AM	ICP-MS5_190625B
1906206-05B	MW3-2	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91456	1	06/24/19 03:55 PM	CETAC2_HG_190624 B
	MW3-2	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 01:48 PM	ICP-MS5_190626B
1906206-05C	MW3-2	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-05D	MW3-2	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 11:15 AM	TITRATOR_190621B
	MW3-2	Aqueous	E300	Anions by IC method - Water	91405	100	06/21/19 08:04 PM	IC4_190621A
	MW3-2	Aqueous	E300	Anions by IC method - Water	91405	10	06/21/19 12:47 PM	IC4_190621A
	MW3-2	Aqueous	E300	Anions by IC method - Water	91405	1000	06/21/19 04:36 PM	IC4_190621A
	MW3-2	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B
1906206-06A	MW3-3	Aqueous	SW7470A	Mercury Total: Aqueous	91456	1	06/24/19 03:58 PM	CETAC2_HG_190624 A
	MW3-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	500	06/25/19 03:11 PM	ICP-MS4_190625A
	MW3-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	10	06/25/19 03:58 PM	ICP-MS4_190625A
	MW3-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1	06/25/19 11:29 AM	ICP-MS5_190625A
	MW3-3	Aqueous	SW6020A	Uranium in Water by ICPMS	91453	1	06/25/19 11:29 AM	ICP-MS5_190625B
1906206-06B	MW3-3	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91456	1	06/24/19 04:00 PM	CETAC2_HG_190624 B
	MW3-3	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 01:50 PM	ICP-MS5_190626B
1906206-06C	MW3-3	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-06D	MW3-3	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 11:25 AM	TITRATOR_190621B
	MW3-3	Aqueous	E300	Anions by IC method - Water	91405	10	06/21/19 12:31 PM	IC4_190621A
	MW3-3	Aqueous	E300	Anions by IC method - Water	91405	1000	06/21/19 04:52 PM	IC4_190621A
	MW3-3	Aqueous	E300	Anions by IC method - Water	91405	100	06/21/19 08:20 PM	IC4_190621A
	MW3-3	Aqueous	M2540C	Total Dissolved Solids	91420	1	06/20/19 05:45 PM	WC_190620B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906206-07A	MW3-4	Aqueous	SW7470A	Mercury Total: Aqueous	91456	1	06/24/19 04:02 PM	CETAC2_HG_190624 A
	MW3-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	500	06/25/19 03:13 PM	ICP-MS4_190625A
	MW3-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1	06/25/19 11:32 AM	ICP-MS5_190625A
	MW3-4	Aqueous	SW6020A	Uranium in Water by ICPMS	91453	1	06/25/19 11:32 AM	ICP-MS5_190625B
1906206-07B	MW3-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91456	1	06/24/19 04:04 PM	CETAC2_HG_190624 B
	MW3-4	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 01:53 PM	ICP-MS5_190626B
1906206-07C	MW3-4	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-07D	MW3-4	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 11:35 AM	TITRATOR_190621B
	MW3-4	Aqueous	E300	Anions by IC method - Water	91405	1000	06/21/19 05:08 PM	IC4_190621A
	MW3-4	Aqueous	E300	Anions by IC method - Water	91405	100	06/21/19 08:36 PM	IC4_190621A
	MW3-4	Aqueous	E300	Anions by IC method - Water	91405	10	06/21/19 12:15 PM	IC4_190621A
	MW3-4	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906206-08A	MW3-4B	Aqueous	SW7470A	Mercury Total: Aqueous	91456	1	06/24/19 04:07 PM	CETAC2_HG_190624 A
	MW3-4B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1000	06/25/19 03:15 PM	ICP-MS4_190625A
	MW3-4B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	20	06/25/19 04:00 PM	ICP-MS4_190625A
	MW3-4B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1	06/25/19 11:34 AM	ICP-MS5_190625A
	MW3-4B	Aqueous	SW6020A	Uranium in Water by ICPMS	91453	1	06/25/19 11:34 AM	ICP-MS5_190625B
1906206-08B	MW3-4B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91459	1	06/24/19 04:20 PM	CETAC2_HG_190624 B
	MW3-4B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 01:55 PM	ICP-MS5_190626B
1906206-08C	MW3-4B	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-08D	MW3-4B	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 11:47 AM	TITRATOR_190621B
	MW3-4B	Aqueous	E300	Anions by IC method - Water	91405	10	06/21/19 11:59 AM	IC4_190621A
	MW3-4B	Aqueous	E300	Anions by IC method - Water	91405	1000	06/21/19 05:24 PM	IC4_190621A
	MW3-4B	Aqueous	E300	Anions by IC method - Water	91405	100	06/21/19 08:52 PM	IC4_190621A
	MW3-4B	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906206-09A	MW-202	Aqueous	SW7470A	Mercury Total: Aqueous	91459	1	06/24/19 04:23 PM	CETAC2_HG_190624 A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906206-09A	MW-202	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1	06/25/19 11:36 AM	ICP-MS5_190625A
	MW-202	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	500	06/25/19 03:17 PM	ICP-MS4_190625A
	MW-202	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	10	06/25/19 04:02 PM	ICP-MS4_190625A
	MW-202	Aqueous	SW6020A	Uranium in Water by ICPMS	91453	1	06/25/19 11:36 AM	ICP-MS5_190625B
1906206-09B	MW-202	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91459	1	06/24/19 04:25 PM	CETAC2_HG_190624 B
	MW-202	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 01:57 PM	ICP-MS5_190626B
1906206-09C	MW-202	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-09D	MW-202	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 11:58 AM	TITRATOR_190621B
	MW-202	Aqueous	E300	Anions by IC method - Water	91404	1000	06/20/19 03:49 PM	IC2_190620B
	MW-202	Aqueous	E300	Anions by IC method - Water	91404	100	06/20/19 07:33 PM	IC2_190620B
	MW-202	Aqueous	E300	Anions by IC method - Water	91404	10	06/20/19 10:45 PM	IC2_190620B
	MW-202	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906206-10C	MW-9	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-10D	MW-9	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 12:23 PM	TITRATOR_190621B
	MW-9	Aqueous	E300	Anions by IC method - Water	91404	10	06/20/19 11:01 PM	IC2_190620B
	MW-9	Aqueous	E300	Anions by IC method - Water	91404	1000	06/20/19 04:05 PM	IC2_190620B
	MW-9	Aqueous	E300	Anions by IC method - Water	91404	100	06/20/19 07:49 PM	IC2_190620B
	MW-9	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906206-11C	MW-4	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-11D	MW-4	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 12:38 PM	TITRATOR_190621B
	MW-4	Aqueous	E300	Anions by IC method - Water	91404	1000	06/20/19 04:21 PM	IC2_190620B
	MW-4	Aqueous	E300	Anions by IC method - Water	91404	100	06/20/19 08:05 PM	IC2_190620B
	MW-4	Aqueous	E300	Anions by IC method - Water	91404	10	06/20/19 11:17 PM	IC2_190620B
	MW-4	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906206-12C	MW3-7B	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-12D	MW3-7B	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 12:41 PM	TITRATOR_190621B
	MW3-7B	Aqueous	E300	Anions by IC method - Water	91404	1000	06/20/19 04:37 PM	IC2_190620B

Lab Order: 1906206
Client: Golder
Project: Copano 2Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906206-12D	MW3-7B	Aqueous	E300	Anions by IC method - Water	91404	100	06/20/19 08:21 PM	IC2_190620B
	MW3-7B	Aqueous	E300	Anions by IC method - Water	91404	10	06/20/19 11:33 PM	IC2_190620B
	MW3-7B	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906206-13C	MW3-7	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-13D	MW3-7	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 12:55 PM	TITRATOR_190621B
	MW3-7	Aqueous	E300	Anions by IC method - Water	91404	10	06/20/19 11:49 PM	IC2_190620B
	MW3-7	Aqueous	E300	Anions by IC method - Water	91404	1000	06/20/19 04:53 PM	IC2_190620B
	MW3-7	Aqueous	E300	Anions by IC method - Water	91404	100	06/20/19 08:37 PM	IC2_190620B
	MW3-7	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906206-14C	MW4-7A	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-14D	MW4-7A	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 01:10 PM	TITRATOR_190621B
	MW4-7A	Aqueous	E300	Anions by IC method - Water	91404	1000	06/20/19 05:09 PM	IC2_190620B
	MW4-7A	Aqueous	E300	Anions by IC method - Water	91404	100	06/20/19 08:53 PM	IC2_190620B
	MW4-7A	Aqueous	E300	Anions by IC method - Water	91404	10	06/21/19 12:05 AM	IC2_190620B
	MW4-7A	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906206-15A	MW4-7B	Aqueous	SW7470A	Mercury Total: Aqueous	91459	1	06/24/19 04:27 PM	CETAC2_HG_190624A
	MW4-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1	06/25/19 12:14 PM	ICP-MS5_190625A
	MW4-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1000	06/25/19 03:33 PM	ICP-MS4_190625A
	MW4-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	20	06/25/19 04:04 PM	ICP-MS4_190625A
	MW4-7B	Aqueous	SW6020A	Uranium in Water by ICPMS	91453	1	06/25/19 12:14 PM	ICP-MS5_190625B
1906206-15B	MW4-7B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91459	1	06/24/19 04:29 PM	CETAC2_HG_190624B
	MW4-7B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 02:20 PM	ICP-MS5_190626B
1906206-15C	MW4-7B	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-15D	MW4-7B	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 01:38 PM	TITRATOR_190621B
	MW4-7B	Aqueous	E300	Anions by IC method - Water	91404	1000	06/20/19 05:57 PM	IC2_190620B
	MW4-7B	Aqueous	E300	Anions by IC method - Water	91404	100	06/20/19 09:09 PM	IC2_190620B
	MW4-7B	Aqueous	E300	Anions by IC method - Water	91404	10	06/21/19 12:21 AM	IC2_190620B

Lab Order: 1906206
Client: Golder
Project: Copano 2Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906206-15D	MW4-7B	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906206-16A	MW4-7	Aqueous	SW7470A	Mercury Total: Aqueous	91459	1	06/24/19 04:32 PM	CETAC2_HG_190624A
	MW4-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	500	06/25/19 03:35 PM	ICP-MS4_190625A
	MW4-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	10	06/25/19 04:06 PM	ICP-MS4_190625A
	MW4-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91453	1	06/25/19 12:16 PM	ICP-MS5_190625A
	MW4-7	Aqueous	SW6020A	Uranium in Water by ICPMS	91453	1	06/25/19 12:16 PM	ICP-MS5_190625B
1906206-16B	MW4-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91459	1	06/24/19 04:34 PM	CETAC2_HG_190624B
	MW4-7	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 02:22 PM	ICP-MS5_190626B
1906206-16C	MW4-7	Aqueous	M4500-NH3-D	Ammonia aqueous	91432	1	06/21/19 01:45 PM	WC_190621A
1906206-16D	MW4-7	Aqueous	M2320 B	Alkalinity	91424	1	06/21/19 01:50 PM	TITRATOR_190621B
	MW4-7	Aqueous	E300	Anions by IC method - Water	91404	1000	06/20/19 06:13 PM	IC2_190620B
	MW4-7	Aqueous	E300	Anions by IC method - Water	91404	100	06/20/19 09:25 PM	IC2_190620B
	MW4-7	Aqueous	E300	Anions by IC method - Water	91404	10	06/21/19 12:37 AM	IC2_190620B
	MW4-7	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-10
Project:	Copano 2Q19	**Lab ID:**	1906206-01
Project No:	18111309-2003	**Collection Date:**	06/19/19 08:55 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0187	0.0100	0.0300	J	mg/L	1	06/26/19 01:39 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 01:39 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:39 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:39 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 01:39 PM
Dissolved Nickel	0.0142	0.00300	0.0100		mg/L	1	06/26/19 01:39 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 01:39 PM
Dissolved Vanadium	0.00515	0.000500	0.00100		mg/L	1	06/26/19 01:39 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0229	0.0100	0.0300	J	mg/L	1	06/25/19 11:08 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/25/19 11:08 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:08 AM
Calcium	609	50.0	150		mg/L	500	06/25/19 03:01 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:08 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/25/19 11:08 AM
Magnesium	639	50.0	150		mg/L	500	06/25/19 03:01 PM
Nickel	0.0159	0.00300	0.0100		mg/L	1	06/25/19 11:08 AM
Potassium	16.5	1.00	3.00		mg/L	10	06/25/19 03:46 PM
Sodium	5440	50.0	150		mg/L	500	06/25/19 03:01 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/25/19 11:08 AM
Vanadium	0.00522	0.000500	0.00100		mg/L	1	06/25/19 11:08 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 03:33 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 03:30 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.167	0.00300	0.0100	N	mg/L	1	06/25/19 11:08 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.165	0.00300	0.0100	N	mg/L	1	06/26/19 01:39 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	8710	300	1000		mg/L	1000	06/21/19 03:32 PM
Fluoride	1.32	1.00	4.00	J	mg/L	10	06/21/19 01:51 PM
Nitrate-N	<1.00	1.00	5.00	C	mg/L	10	06/21/19 01:51 PM
Sulfate	3170	100	300		mg/L	100	06/21/19 07:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-10
Project:	Copano 2Q19	**Lab ID:**	1906206-01
Project No:	18111309-2003	**Collection Date:**	06/19/19 08:55 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	561	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 09:52 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 09:52 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 09:52 AM
Alkalinity, Total (As CaCO3)	561	20.0	20.0		mg/L @ pH 4.54	1	06/21/19 09:52 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	20600	1000	1000		mg/L	1	06/20/19 05:45 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5
Project:	Copano 2Q19	**Lab ID:**	1906206-02
Project No:	18111309-2003	**Collection Date:**	06/19/19 09:35 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0150	0.0100	0.0300	J	mg/L	1	06/26/19 01:42 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 01:42 PM
Dissolved Arsenic	0.00264	0.00200	0.00500	J	mg/L	1	06/26/19 01:42 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:42 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 01:42 PM
Dissolved Nickel	0.0136	0.00300	0.0100		mg/L	1	06/26/19 01:42 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 01:42 PM
Dissolved Vanadium	0.00756	0.000500	0.00100		mg/L	1	06/26/19 01:42 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0239	0.0100	0.0300	J	mg/L	1	06/25/19 11:10 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/25/19 11:10 AM
Arsenic	0.00260	0.00200	0.00500	J	mg/L	1	06/25/19 11:10 AM
Calcium	918	50.0	150		mg/L	500	06/25/19 03:03 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:10 AM
Lead	0.000414	0.000300	0.00100	J	mg/L	1	06/25/19 11:10 AM
Magnesium	1150	50.0	150		mg/L	500	06/25/19 03:03 PM
Nickel	0.0129	0.00300	0.0100		mg/L	1	06/25/19 11:10 AM
Potassium	47.0	1.00	3.00		mg/L	10	06/25/19 03:51 PM
Sodium	7080	50.0	150		mg/L	500	06/25/19 03:03 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/25/19 11:10 AM
Vanadium	0.00725	0.000500	0.00100		mg/L	1	06/25/19 11:10 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 03:37 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 03:35 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.107	0.00300	0.0100	N	mg/L	1	06/25/19 11:10 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.112	0.00300	0.0100	N	mg/L	1	06/26/19 01:42 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	13200	300	1000		mg/L	1000	06/21/19 03:48 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	06/21/19 01:35 PM
Nitrate-N	<1.00	1.00	5.00	C	mg/L	10	06/21/19 01:35 PM
Sulfate	3230	100	300		mg/L	100	06/21/19 07:16 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5
Project:	Copano 2Q19	**Lab ID:**	1906206-02
Project No:	18111309-2003	**Collection Date:**	06/19/19 09:35 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	478	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 10:37 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 10:37 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 10:37 AM
Alkalinity, Total (As CaCO3)	478	20.0	20.0		mg/L @ pH 4.54	1	06/21/19 10:37 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	27800	1000	1000		mg/L	1	06/20/19 05:45 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5B
Project:	Copano 2Q19	**Lab ID:**	1906206-03
Project No:	18111309-2003	**Collection Date:**	06/19/19 10:05 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0150	0.0100	0.0300	J	mg/L	1	06/26/19 01:44 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 01:44 PM
Dissolved Arsenic	0.00484	0.00200	0.00500	J	mg/L	1	06/26/19 01:44 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:44 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 01:44 PM
Dissolved Nickel	0.00938	0.00300	0.0100	J	mg/L	1	06/26/19 01:44 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 01:44 PM
Dissolved Vanadium	0.00125	0.000500	0.00100		mg/L	1	06/26/19 01:44 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0589	0.0100	0.0300		mg/L	1	06/25/19 11:12 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/25/19 11:12 AM
Arsenic	0.00427	0.00200	0.00500	J	mg/L	1	06/25/19 11:12 AM
Calcium	930	50.0	150		mg/L	500	06/25/19 03:05 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:12 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/25/19 11:12 AM
Magnesium	885	50.0	150		mg/L	500	06/25/19 03:05 PM
Nickel	0.00889	0.00300	0.0100	J	mg/L	1	06/25/19 11:12 AM
Potassium	57.8	1.00	3.00		mg/L	10	06/25/19 03:53 PM
Sodium	5710	50.0	150		mg/L	500	06/25/19 03:05 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/25/19 11:12 AM
Vanadium	0.00217	0.000500	0.00100		mg/L	1	06/25/19 11:12 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 03:46 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 03:39 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0535	0.00300	0.0100	N	mg/L	1	06/25/19 11:12 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0564	0.00300	0.0100	N	mg/L	1	06/26/19 01:44 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	12300	300	1000		mg/L	1000	06/21/19 04:04 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	06/21/19 01:19 PM
Nitrate-N	<1.00	1.00	5.00	C	mg/L	10	06/21/19 01:19 PM
Sulfate	2060	100	300		mg/L	100	06/21/19 07:32 PM

Qualifiers:

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DF- Dilution Factor
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5B
Project:	Copano 2Q19	**Lab ID:**	1906206-03
Project No:	18111309-2003	**Collection Date:**	06/19/19 10:05 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	313	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 10:51 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 10:51 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 10:51 AM
Alkalinity, Total (As CaCO3)	313	20.0	20.0		mg/L @ pH 4.54	1	06/21/19 10:51 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.214	0.100	0.250	J	mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	23600	1000	1000		mg/L	1	06/20/19 05:45 PM

Qualifiers:

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J - Analyte detected between SDL and RL
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DF- Dilution Factor
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-1
Project:	Copano 2Q19	**Lab ID:**	1906206-04
Project No:	18111309-2003	**Collection Date:**	06/19/19 11:00 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0150	0.0100	0.0300	J	mg/L	1	06/26/19 01:46 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 01:46 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:46 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:46 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 01:46 PM
Dissolved Nickel	0.00554	0.00300	0.0100	J	mg/L	1	06/26/19 01:46 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 01:46 PM
Dissolved Vanadium	0.00160	0.000500	0.00100		mg/L	1	06/26/19 01:46 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0280	0.0100	0.0300	J	mg/L	1	06/25/19 11:21 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/25/19 11:21 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:21 AM
Calcium	1040	50.0	150		mg/L	500	06/25/19 03:07 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:21 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/25/19 11:21 AM
Magnesium	1270	50.0	150		mg/L	500	06/25/19 03:07 PM
Nickel	0.00528	0.00300	0.0100	J	mg/L	1	06/25/19 11:21 AM
Potassium	39.8	1.00	3.00		mg/L	10	06/25/19 03:55 PM
Sodium	9660	50.0	150		mg/L	500	06/25/19 03:07 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/25/19 11:21 AM
Vanadium	0.00143	0.000500	0.00100		mg/L	1	06/25/19 11:21 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 03:51 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 03:49 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.111	0.00300	0.0100	N	mg/L	1	06/25/19 11:21 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.111	0.00300	0.0100	N	mg/L	1	06/26/19 01:46 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	17800	300	1000		mg/L	1000	06/21/19 04:20 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	06/21/19 01:03 PM
Nitrate-N	<1.00	1.00	5.00	C	mg/L	10	06/21/19 01:03 PM
Sulfate	4100	100	300		mg/L	100	06/21/19 07:48 PM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-1
Project:	Copano 2Q19	**Lab ID:**	1906206-04
Project No:	18111309-2003	**Collection Date:**	06/19/19 11:00 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	237	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:03 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:03 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:03 AM
Alkalinity, Total (As CaCO3)	237	20.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:03 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	36100	1000	1000		mg/L	1	06/20/19 05:45 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-2
Project:	Copano 2Q19	**Lab ID:**	1906206-05
Project No:	18111309-2003	**Collection Date:**	06/19/19 11:35 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.145	0.0100	0.0300		mg/L	1	06/26/19 01:48 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 01:48 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:48 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:48 PM
Dissolved Lead	0.000377	0.000300	0.00100	J	mg/L	1	06/26/19 01:48 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/26/19 01:48 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 01:48 PM
Dissolved Vanadium	0.00272	0.000500	0.00100		mg/L	1	06/26/19 01:48 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0305	0.0100	0.0300		mg/L	1	06/25/19 11:25 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/25/19 11:25 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:25 AM
Calcium	871	50.0	150		mg/L	500	06/25/19 03:09 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:25 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/25/19 11:25 AM
Magnesium	1320	50.0	150		mg/L	500	06/25/19 03:09 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/25/19 11:25 AM
Potassium	50.1	1.00	3.00		mg/L	10	06/25/19 03:57 PM
Sodium	9350	50.0	150		mg/L	500	06/25/19 03:09 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/25/19 11:25 AM
Vanadium	0.00250	0.000500	0.00100		mg/L	1	06/25/19 11:25 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 03:55 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 03:53 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.132	0.00300	0.0100	N	mg/L	1	06/25/19 11:25 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.133	0.00300	0.0100	N	mg/L	1	06/26/19 01:48 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	16800	300	1000		mg/L	1000	06/21/19 04:36 PM
Fluoride	1.23	1.00	4.00	J	mg/L	10	06/21/19 12:47 PM
Nitrate-N	<1.00	1.00	5.00	C	mg/L	10	06/21/19 12:47 PM
Sulfate	3980	100	300		mg/L	100	06/21/19 08:04 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-2
Project:	Copano 2Q19	**Lab ID:**	1906206-05
Project No:	18111309-2003	**Collection Date:**	06/19/19 11:35 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	254	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:15 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:15 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:15 AM
Alkalinity, Total (As CaCO3)	254	20.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:15 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	35300	1000	1000		mg/L	1	06/20/19 05:45 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-3
Project:	Copano 2Q19	**Lab ID:**	1906206-06
Project No:	18111309-2003	**Collection Date:**	06/19/19 12:30 PM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0179	0.0100	0.0300	J	mg/L	1	06/26/19 01:50 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 01:50 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:50 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:50 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 01:50 PM
Dissolved Nickel	0.00338	0.00300	0.0100	J	mg/L	1	06/26/19 01:50 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 01:50 PM
Dissolved Vanadium	0.00206	0.000500	0.00100		mg/L	1	06/26/19 01:50 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0303	0.0100	0.0300		mg/L	1	06/25/19 11:29 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/25/19 11:29 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:29 AM
Calcium	1040	50.0	150		mg/L	500	06/25/19 03:11 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:29 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/25/19 11:29 AM
Magnesium	1350	50.0	150		mg/L	500	06/25/19 03:11 PM
Nickel	0.00339	0.00300	0.0100	J	mg/L	1	06/25/19 11:29 AM
Potassium	53.0	1.00	3.00		mg/L	10	06/25/19 03:58 PM
Sodium	9400	50.0	150		mg/L	500	06/25/19 03:11 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/25/19 11:29 AM
Vanadium	0.00210	0.000500	0.00100		mg/L	1	06/25/19 11:29 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 04:00 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 03:58 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.123	0.00300	0.0100	N	mg/L	1	06/25/19 11:29 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.128	0.00300	0.0100	N	mg/L	1	06/26/19 01:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	17700	300	1000		mg/L	1000	06/21/19 04:52 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	06/21/19 12:31 PM
Nitrate-N	<1.00	1.00	5.00	C	mg/L	10	06/21/19 12:31 PM
Sulfate	4500	100	300		mg/L	100	06/21/19 08:20 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
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S - Spike Recovery outside control limits
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-3
Project:	Copano 2Q19	**Lab ID:**	1906206-06
Project No:	18111309-2003	**Collection Date:**	06/19/19 12:30 PM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	217	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:25 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:25 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:25 AM
Alkalinity, Total (As CaCO3)	217	20.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:25 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	36100	1000	1000		mg/L	1	06/20/19 05:45 PM

Qualifiers:

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DF- Dilution Factor
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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4
Project:	Copano 2Q19	**Lab ID:**	1906206-07
Project No:	18111309-2003	**Collection Date:**	06/19/19 01:10 PM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0179	0.0100	0.0300	J	mg/L	1	06/26/19 01:53 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 01:53 PM
Dissolved Arsenic	0.0129	0.00200	0.00500		mg/L	1	06/26/19 01:53 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:53 PM
Dissolved Lead	0.000552	0.000300	0.00100	J	mg/L	1	06/26/19 01:53 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/26/19 01:53 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 01:53 PM
Dissolved Vanadium	0.0300	0.000500	0.00100		mg/L	1	06/26/19 01:53 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0302	0.0100	0.0300		mg/L	1	06/25/19 11:32 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/25/19 11:32 AM
Arsenic	0.0125	0.00200	0.00500		mg/L	1	06/25/19 11:32 AM
Calcium	308	50.0	150		mg/L	500	06/25/19 03:13 PM
Chromium	0.00227	0.00200	0.00500	J	mg/L	1	06/25/19 11:32 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/25/19 11:32 AM
Magnesium	875	50.0	150		mg/L	500	06/25/19 03:13 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/25/19 11:32 AM
Potassium	182	50.0	150		mg/L	500	06/25/19 03:13 PM
Sodium	8090	50.0	150		mg/L	500	06/25/19 03:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/25/19 11:32 AM
Vanadium	0.0287	0.000500	0.00100		mg/L	1	06/25/19 11:32 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 04:04 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 04:02 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0595	0.00300	0.0100	N	mg/L	1	06/25/19 11:32 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0620	0.00300	0.0100	N	mg/L	1	06/26/19 01:53 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	15400	300	1000		mg/L	1000	06/21/19 05:08 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	06/21/19 12:15 PM
Nitrate-N	1.01	1.00	5.00	J	mg/L	10	06/21/19 12:15 PM
Sulfate	2080	100	300		mg/L	100	06/21/19 08:36 PM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4
Project:	Copano 2Q19	**Lab ID:**	1906206-07
Project No:	18111309-2003	**Collection Date:**	06/19/19 01:10 PM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	228	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:35 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:35 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:35 AM
Alkalinity, Total (As CaCO3)	228	20.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:35 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	28300	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4B
Project:	Copano 2Q19	**Lab ID:**	1906206-08
Project No:	18111309-2003	**Collection Date:**	06/19/19 01:45 PM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0134	0.0100	0.0300	J	mg/L	1	06/26/19 01:55 PM
Dissolved Antimony	0.00107	0.000800	0.00250	J	mg/L	1	06/26/19 01:55 PM
Dissolved Arsenic	0.00350	0.00200	0.00500	J	mg/L	1	06/26/19 01:55 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:55 PM
Dissolved Lead	0.000580	0.000300	0.00100	J	mg/L	1	06/26/19 01:55 PM
Dissolved Nickel	0.00611	0.00300	0.0100	J	mg/L	1	06/26/19 01:55 PM
Dissolved Thallium	0.00128	0.000500	0.00150	J	mg/L	1	06/26/19 01:55 PM
Dissolved Vanadium	0.00816	0.000500	0.00100		mg/L	1	06/26/19 01:55 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0362	0.0100	0.0300		mg/L	1	06/25/19 11:34 AM
Antimony	0.000915	0.000800	0.00250	J	mg/L	1	06/25/19 11:34 AM
Arsenic	0.00394	0.00200	0.00500	J	mg/L	1	06/25/19 11:34 AM
Calcium	1280	100	300		mg/L	1000	06/25/19 03:15 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:34 AM
Lead	0.000529	0.000300	0.00100	J	mg/L	1	06/25/19 11:34 AM
Magnesium	2740	100	300		mg/L	1000	06/25/19 03:15 PM
Nickel	0.00634	0.00300	0.0100	J	mg/L	1	06/25/19 11:34 AM
Potassium	257	2.00	6.00		mg/L	20	06/25/19 04:00 PM
Sodium	20800	100	300		mg/L	1000	06/25/19 03:15 PM
Thallium	0.00127	0.000500	0.00150	J	mg/L	1	06/25/19 11:34 AM
Vanadium	0.00778	0.000500	0.00100		mg/L	1	06/25/19 11:34 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 04:20 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 04:07 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.130	0.00300	0.0100	N	mg/L	1	06/25/19 11:34 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.133	0.00300	0.0100	N	mg/L	1	06/26/19 01:55 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	40100	300	1000		mg/L	1000	06/21/19 05:24 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	06/21/19 11:59 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/21/19 11:59 AM
Sulfate	5780	100	300		mg/L	100	06/21/19 08:52 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4B
Project:	Copano 2Q19	**Lab ID:**	1906206-08
Project No:	18111309-2003	**Collection Date:**	06/19/19 01:45 PM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	227	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:47 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:47 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:47 AM
Alkalinity, Total (As CaCO3)	227	20.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:47 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	80500	5000	5000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-202
Project:	Copano 2Q19	**Lab ID:**	1906206-09
Project No:	18111309-2003	**Collection Date:**	06/19/19 11:45 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.143	0.0100	0.0300		mg/L	1	06/26/19 01:57 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 01:57 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:57 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:57 PM
Dissolved Lead	0.000348	0.000300	0.00100	J	mg/L	1	06/26/19 01:57 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/26/19 01:57 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 01:57 PM
Dissolved Vanadium	0.00283	0.000500	0.00100		mg/L	1	06/26/19 01:57 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0462	0.0100	0.0300		mg/L	1	06/25/19 11:36 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/25/19 11:36 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:36 AM
Calcium	876	50.0	150		mg/L	500	06/25/19 03:17 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 11:36 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/25/19 11:36 AM
Magnesium	1340	50.0	150		mg/L	500	06/25/19 03:17 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/25/19 11:36 AM
Potassium	49.8	1.00	3.00		mg/L	10	06/25/19 04:02 PM
Sodium	9750	50.0	150		mg/L	500	06/25/19 03:17 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/25/19 11:36 AM
Vanadium	0.00259	0.000500	0.00100		mg/L	1	06/25/19 11:36 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 04:25 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 04:23 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.133	0.00300	0.0100	N	mg/L	1	06/25/19 11:36 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.138	0.00300	0.0100	N	mg/L	1	06/26/19 01:57 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	17600	300	1000		mg/L	1000	06/20/19 03:49 PM
Fluoride	8.25	1.00	4.00		mg/L	10	06/20/19 10:45 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/20/19 10:45 PM
Sulfate	4180	100	300		mg/L	100	06/20/19 07:33 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-202
Project:	Copano 2Q19	**Lab ID:**	1906206-09
Project No:	18111309-2003	**Collection Date:**	06/19/19 11:45 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	247	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:58 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:58 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:58 AM
Alkalinity, Total (As CaCO3)	247	20.0	20.0		mg/L @ pH 4.53	1	06/21/19 11:58 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	34800	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

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DF- Dilution Factor
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-9
Project:	Copano 2Q19	**Lab ID:**	1906206-10
Project No:	18111309-2003	**Collection Date:**	06/19/19 08:57 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	10300	300	1000		mg/L	1000	06/20/19 04:05 PM
Fluoride	2.88	1.00	4.00	J	mg/L	10	06/20/19 11:01 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/20/19 11:01 PM
Sulfate	1250	100	300		mg/L	100	06/20/19 07:49 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	432	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 12:23 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 12:23 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 12:23 PM
Alkalinity, Total (As CaCO3)	432	20.0	20.0		mg/L @ pH 4.54	1	06/21/19 12:23 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	18100	200	200		mg/L	1	06/24/19 05:00 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-4
Project:	Copano 2Q19	**Lab ID:**	1906206-11
Project No:	18111309-2003	**Collection Date:**	06/19/19 09:55 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	22300	300	1000		mg/L	1000	06/20/19 04:21 PM
Fluoride	8.03	1.00	4.00		mg/L	10	06/20/19 11:17 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/20/19 11:17 PM
Sulfate	6850	100	300		mg/L	100	06/20/19 08:05 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	306	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 12:38 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 12:38 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 12:38 PM
Alkalinity, Total (As CaCO3)	306	20.0	20.0		mg/L @ pH 4.53	1	06/21/19 12:38 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	1.39	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	44600	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7B
Project:	Copano 2Q19	**Lab ID:**	1906206-12
Project No:	18111309-2003	**Collection Date:**	06/19/19 11:10 AM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	20700	300	1000		mg/L	1000	06/20/19 04:37 PM
Fluoride	7.30	1.00	4.00		mg/L	10	06/20/19 11:33 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/20/19 11:33 PM
Sulfate	3840	100	300		mg/L	100	06/20/19 08:21 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	89.6	10.0	20.0		mg/L @ pH 4.51	1	06/21/19 12:41 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	06/21/19 12:41 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	06/21/19 12:41 PM
Alkalinity, Total (As CaCO3)	89.6	20.0	20.0		mg/L @ pH 4.51	1	06/21/19 12:41 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.605	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	39700	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7
Project:	Copano 2Q19	**Lab ID:**	1906206-13
Project No:	18111309-2003	**Collection Date:**	06/19/19 12:06 PM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	22200	300	1000		mg/L	1000	06/20/19 04:53 PM
Fluoride	9.05	1.00	4.00		mg/L	10	06/20/19 11:49 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/20/19 11:49 PM
Sulfate	5420	100	300		mg/L	100	06/20/19 08:37 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	293	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 12:55 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 12:55 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 12:55 PM
Alkalinity, Total (As CaCO3)	293	20.0	20.0		mg/L @ pH 4.53	1	06/21/19 12:55 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	42600	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7A
Project:	Copano 2Q19	**Lab ID:**	1906206-14
Project No:	18111309-2003	**Collection Date:**	06/19/19 01:12 PM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	15600	300	1000		mg/L	1000	06/20/19 05:09 PM
Fluoride	7.37	1.00	4.00		mg/L	10	06/21/19 12:05 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/21/19 12:05 AM
Sulfate	2470	100	300		mg/L	100	06/20/19 08:53 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	342	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 01:10 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 01:10 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 01:10 PM
Alkalinity, Total (As CaCO3)	342	20.0	20.0		mg/L @ pH 4.53	1	06/21/19 01:10 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	28200	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

ND - Not Detected at the SDL
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B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7B
Project:	Copano 2Q19	**Lab ID:**	1906206-15
Project No:	18111309-2003	**Collection Date:**	06/19/19 02:38 PM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0194	0.0100	0.0300	J	mg/L	1	06/26/19 02:20 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 02:20 PM
Dissolved Arsenic	0.00308	0.00200	0.00500	J	mg/L	1	06/26/19 02:20 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:20 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 02:20 PM
Dissolved Nickel	0.00431	0.00300	0.0100	J	mg/L	1	06/26/19 02:20 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 02:20 PM
Dissolved Vanadium	0.00506	0.000500	0.00100		mg/L	1	06/26/19 02:20 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0277	0.0100	0.0300	J	mg/L	1	06/25/19 12:14 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/25/19 12:14 PM
Arsenic	0.00310	0.00200	0.00500	J	mg/L	1	06/25/19 12:14 PM
Calcium	1240	100	300		mg/L	1000	06/25/19 03:33 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 12:14 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/25/19 12:14 PM
Magnesium	1840	100	300		mg/L	1000	06/25/19 03:33 PM
Nickel	0.00420	0.00300	0.0100	J	mg/L	1	06/25/19 12:14 PM
Potassium	102	2.00	6.00		mg/L	20	06/25/19 04:04 PM
Sodium	12400	100	300		mg/L	1000	06/25/19 03:33 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/25/19 12:14 PM
Vanadium	0.00532	0.000500	0.00100		mg/L	1	06/25/19 12:14 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 04:29 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 04:27 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0581	0.00300	0.0100	N	mg/L	1	06/25/19 12:14 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0604	0.00300	0.0100	N	mg/L	1	06/26/19 02:20 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	26100	300	1000		mg/L	1000	06/20/19 05:57 PM
Fluoride	8.30	1.00	4.00		mg/L	10	06/21/19 12:21 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/21/19 12:21 AM
Sulfate	4350	100	300		mg/L	100	06/20/19 09:09 PM

Qualifiers:

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B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7B
Project:	Copano 2Q19	**Lab ID:**	1906206-15
Project No:	18111309-2003	**Collection Date:**	06/19/19 02:38 PM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	273	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 01:38 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 01:38 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/21/19 01:38 PM
Alkalinity, Total (As CaCO3)	273	20.0	20.0		mg/L @ pH 4.53	1	06/21/19 01:38 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	46600	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7
Project:	Copano 2Q19	**Lab ID:**	1906206-16
Project No:	18111309-2003	**Collection Date:**	06/19/19 03:30 PM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0148	0.0100	0.0300	J	mg/L	1	06/26/19 02:22 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 02:22 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:22 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:22 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 02:22 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/26/19 02:22 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 02:22 PM
Dissolved Vanadium	0.00112	0.000500	0.00100		mg/L	1	06/26/19 02:22 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0343	0.0100	0.0300		mg/L	1	06/25/19 12:16 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/25/19 12:16 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 12:16 PM
Calcium	709	50.0	150		mg/L	500	06/25/19 03:35 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/25/19 12:16 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/25/19 12:16 PM
Magnesium	839	50.0	150		mg/L	500	06/25/19 03:35 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/25/19 12:16 PM
Potassium	47.3	1.00	3.00		mg/L	10	06/25/19 04:06 PM
Sodium	7470	50.0	150		mg/L	500	06/25/19 03:35 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/25/19 12:16 PM
Vanadium	0.00116	0.000500	0.00100		mg/L	1	06/25/19 12:16 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 04:34 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 04:32 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0625	0.00300	0.0100	N	mg/L	1	06/25/19 12:16 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0655	0.00300	0.0100	N	mg/L	1	06/26/19 02:22 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	14700	300	1000		mg/L	1000	06/20/19 06:13 PM
Fluoride	7.03	1.00	4.00		mg/L	10	06/21/19 12:37 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/21/19 12:37 AM
Sulfate	2750	100	300		mg/L	100	06/20/19 09:25 PM

Qualifiers:

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7
Project:	Copano 2Q19	**Lab ID:**	1906206-16
Project No:	18111309-2003	**Collection Date:**	06/19/19 03:30 PM
Lab Order:	1906206	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	265	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 01:50 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 01:50 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/21/19 01:50 PM
Alkalinity, Total (As CaCO3)	265	20.0	20.0		mg/L @ pH 4.54	1	06/21/19 01:50 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/21/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	26700	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
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DF- Dilution Factor
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190611B

Sample ID: **DCS-91284**	Batch ID: **91284**	TestNo: **SW7470A**	Units: **mg/L**		
SampType: **DCS**	Run ID: **CETAC2_HG_190611B**	Analysis Date: **6/11/2019 5:01:26 PM**	Prep Date: **6/11/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000206	0.000200	0.000200	0	103	82	119	0	0	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190624A

The QC data in batch 91456 applies to the following samples: 1906206-01A, 1906206-01B, 1906206-02A, 1906206-02B, 1906206-03A, 1906206-03B, 1906206-04A, 1906206-04B, 1906206-05A, 1906206-05B, 1906206-06A, 1906206-06B, 1906206-07A, 1906206-07B, 1906206-08A

Sample ID: **MB-91456** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 3:03:42 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91456** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 3:05:58 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00190	0.000200	0.00200	0	95.0	85	115			

Sample ID: **LCSD-91456** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 3:08:14 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00186	0.000200	0.00200	0	93.0	85	115	2.13	15	

Sample ID: **1906203-01B MS** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 3:12:47 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00196	0.000200	0.00200	0	98.0	80	120			

Sample ID: **1906203-01B MSD** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 3:15:02 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00192	0.000200	0.00200	0	96.0	80	120	2.06	15	

Sample ID: **1906203-01B SD** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 3:17:18 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1906203-01B PDS** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 3:19:33 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00235	0.000200	0.00250	0	94.0	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190624A

The QC data in batch 91459 applies to the following samples: 1906206-08B, 1906206-09A, 1906206-09B, 1906206-15A, 1906206-15B, 1906206-16A, 1906206-16B

Sample ID: **MB-91459**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 4:14:08 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91459**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 4:16:24 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00190	0.000200	0.00200	0	95.0	85	115			

Sample ID: **LCSD-91459**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 4:18:40 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	85	115	0.528	15	

Sample ID: **1906231-01A SD**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 4:57:15 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1906231-01A PDS**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 4:59:31 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00161	0.000200	0.00250	0	64.4	85	115			S

Sample ID: **1906231-01A MS**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 5:21:06 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00191	0.00100	0.00200	0	95.5	80	120			

Sample ID: **1906231-01A MSD**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 5:23:23 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00196	0.00100	0.00200	0	98.0	80	120	2.58	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190624A

Sample ID: **ICV-190624**	Batch ID: **R104752**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 2:59:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00409	0.000200	0.00400	0	102	90	110			

Sample ID: **CCV1-190624**	Batch ID: **R104752**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 3:42:15 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00197	0.000200	0.00200	0	98.5	90	110			

Sample ID: **CCV2-190624**	Batch ID: **R104752**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 4:09:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV3-190624**	Batch ID: **R104752**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 4:43:36 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV4-190624**	Batch ID: **R104752**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 5:25:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190624B

The QC data in batch 91456 applies to the following samples: 1906206-01A, 1906206-01B, 1906206-02A, 1906206-02B, 1906206-03A, 1906206-03B, 1906206-04A, 1906206-04B, 1906206-05A, 1906206-05B, 1906206-06A, 1906206-06B, 1906206-07A, 1906206-07B, 1906206-08A

Sample ID: **MB-91456** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 3:03:42 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91456** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 3:05:58 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00190	0.000200	0.00200	0	95.0	85	115			

Sample ID: **LCSD-91456** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 3:08:14 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00186	0.000200	0.00200	0	93.0	85	115	2.13	15	

Sample ID: **1906203-01B MS** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 3:12:47 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00196	0.000200	0.00200	0	98.0	80	120			

Sample ID: **1906203-01B MSD** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 3:15:02 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00192	0.000200	0.00200	0	96.0	80	120	2.06	15	

Sample ID: **1906203-01B SD** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 3:17:18 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1906203-01B PDS** Batch ID: **91456** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 3:19:33 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00235	0.000200	0.00250	0	94.0	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190624B

The QC data in batch 91459 applies to the following samples: 1906206-08B, 1906206-09A, 1906206-09B, 1906206-15A, 1906206-15B, 1906206-16A, 1906206-16B

Sample ID: **MB-91459**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 4:14:08 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91459**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 4:16:24 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00190	0.000200	0.00200	0	95.0	85	115			

Sample ID: **LCSD-91459**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 4:18:40 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	85	115	0.528	15	

Sample ID: **1906231-01A SD**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 4:57:15 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1906231-01A PDS**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 4:59:31 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00161	0.000200	0.00250	0	64.4	85	115			S

Sample ID: **1906231-01A MS**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 5:21:06 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00191	0.00100	0.00200	0	95.5	80	120			

Sample ID: **1906231-01A MSD**	Batch ID: **91459**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 5:23:23 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00196	0.00100	0.00200	0	98.0	80	120	2.58	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190624B

Sample ID: **ICV-190624**	Batch ID: **R104753**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 2:59:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00409	0.000200	0.00400	0	102	90	110			

Sample ID: **CCV1-190624**	Batch ID: **R104753**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 3:42:15 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00197	0.000200	0.00200	0	98.5	90	110			

Sample ID: **CCV2-190624**	Batch ID: **R104753**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 4:09:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV3-190624**	Batch ID: **R104753**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 4:43:36 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV4-190624**	Batch ID: **R104753**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 5:25:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

Sample ID: **DCS2-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS4_190621B** Analysis Date: **6/21/2019 1:24:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	
Magnesium	0.323	0.300	0.300	0	108	70	130	0	0	
Potassium	0.303	0.300	0.300	0	101	70	130	0	0	
Sodium	0.300	0.300	0.300	0	100	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190625A

The QC data in batch 91453 applies to the following samples: 1906206-01A, 1906206-02A, 1906206-03A, 1906206-04A, 1906206-05A, 1906206-06A, 1906206-07A, 1906206-08A, 1906206-09A, 1906206-15A, 1906206-16A

Sample ID: **MB-91453** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190625A** Analysis Date: **6/25/2019 2:49:00 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	<0.100	0.300								
Magnesium	<0.100	0.300								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								

Sample ID: **LCS-91453** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190625A** Analysis Date: **6/25/2019 2:51:00 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.88	0.300	5.00	0	97.6	80	120			
Magnesium	5.09	0.300	5.00	0	102	80	120			
Potassium	4.94	0.300	5.00	0	98.8	80	120			
Sodium	5.16	0.300	5.00	0	103	80	120			

Sample ID: **LCSD-91453** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190625A** Analysis Date: **6/25/2019 2:53:00 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.91	0.300	5.00	0	98.3	80	120	0.731	15	
Magnesium	5.11	0.300	5.00	0	102	80	120	0.465	15	
Potassium	4.98	0.300	5.00	0	99.5	80	120	0.709	15	
Sodium	5.14	0.300	5.00	0	103	80	120	0.502	15	

Sample ID: **1906232-01A SD** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190625A** Analysis Date: **6/25/2019 2:59:00 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	<250	750	0	231				0	10	
Magnesium	959	750	0	955				0.475	10	
Potassium	<250	750	0	212				0	10	
Sodium	8760	750	0	8880				1.28	10	

Sample ID: **1906232-01A PDS** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190625A** Analysis Date: **6/25/2019 3:19:00 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2740	150	2500	231	100	80	120			
Magnesium	3410	150	2500	955	98.1	80	120			
Potassium	2650	150	2500	212	97.6	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190625A

Sample ID: **1906232-01A PDS**	Batch ID: **91453**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190625A**	Analysis Date: **6/25/2019 3:19:00 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	11300	150	2500	8880	98.5	80	120			

Sample ID: **1906232-01A MS**	Batch ID: **91453**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190625A**	Analysis Date: **6/25/2019 3:21:00 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	217	150	5.00	231	-286	80	120			S
Magnesium	914	150	5.00	955	-802	80	120			S
Potassium	201	150	5.00	212	-222	80	120			S
Sodium	8370	150	5.00	8880	-10000	80	120			S

Sample ID: **1906232-01A MSD**	Batch ID: **91453**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190625A**	Analysis Date: **6/25/2019 3:22:00 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	228	150	5.00	231	-55.5	80	120	5.18	15	S
Magnesium	961	150	5.00	955	136	80	120	5.00	15	S
Potassium	206	150	5.00	212	-111	80	120	2.73	15	S
Sodium	8820	150	5.00	8880	-1050	80	120	5.23	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190625A

Sample ID: **ICV-190625** Batch ID: **R104767** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_190625A** Analysis Date: **6/25/2019 10:35:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.54	0.300	2.50	0	102	90	110			
Magnesium	2.48	0.300	2.50	0	99.3	90	110			
Potassium	2.48	0.300	2.50	0	99.2	90	110			
Sodium	2.58	0.300	2.50	0	103	90	110			

Sample ID: **LCVL-190625** Batch ID: **R104767** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190625A** Analysis Date: **6/25/2019 10:40:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.103	0.300	0.100	0	103	70	130			
Magnesium	0.0991	0.300	0.100	0	99.1	70	130			
Potassium	0.0997	0.300	0.100	0	99.7	70	130			
Sodium	0.103	0.300	0.100	0	103	70	130			

Sample ID: **CCV4-190625** Batch ID: **R104767** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190625A** Analysis Date: **6/25/2019 2:39:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.96	0.300	5.00	0	99.3	90	110			
Magnesium	5.09	0.300	5.00	0	102	90	110			
Potassium	4.99	0.300	5.00	0	99.8	90	110			
Sodium	5.10	0.300	5.00	0	102	90	110			

Sample ID: **LCVL4-190625** Batch ID: **R104767** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190625A** Analysis Date: **6/25/2019 2:45:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0919	0.300	0.100	0	91.9	70	130			
Magnesium	0.0981	0.300	0.100	0	98.1	70	130			
Potassium	0.0993	0.300	0.100	0	99.3	70	130			
Sodium	0.110	0.300	0.100	0	110	70	130			

Sample ID: **CCV5-190625** Batch ID: **R104767** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190625A** Analysis Date: **6/25/2019 3:24:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.97	0.300	5.00	0	99.3	90	110			
Magnesium	5.12	0.300	5.00	0	102	90	110			
Potassium	4.96	0.300	5.00	0	99.2	90	110			
Sodium	5.12	0.300	5.00	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190625A

Sample ID: **LCVL5-190625**	Batch ID: **R104767**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190625A**	Analysis Date: **6/25/2019 3:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0944	0.300	0.100	0	94.4	70	130			
Magnesium	0.0989	0.300	0.100	0	98.9	70	130			
Potassium	0.0984	0.300	0.100	0	98.4	70	130			
Sodium	0.108	0.300	0.100	0	108	70	130			

Sample ID: **CCV6-190625**	Batch ID: **R104767**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190625A**	Analysis Date: **6/25/2019 3:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.94	0.300	5.00	0	98.8	90	110			
Magnesium	5.10	0.300	5.00	0	102	90	110			
Potassium	5.04	0.300	5.00	0	101	90	110			
Sodium	5.20	0.300	5.00	0	104	90	110			

Sample ID: **LCVL6-190625**	Batch ID: **R104767**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190625A**	Analysis Date: **6/25/2019 3:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0960	0.300	0.100	0	96.0	70	130			
Magnesium	0.0993	0.300	0.100	0	99.3	70	130			
Potassium	0.0953	0.300	0.100	0	95.3	70	130			
Sodium	0.109	0.300	0.100	0	109	70	130			

Sample ID: **CCV7-190625**	Batch ID: **R104767**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190625A**	Analysis Date: **6/25/2019 4:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	5.07	0.300	5.00	0	101	90	110			

Sample ID: **LCVL7-190625**	Batch ID: **R104767**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190625A**	Analysis Date: **6/25/2019 4:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.0955	0.300	0.100	0	95.5	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621A

Sample ID: **DCS1-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:12:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00103	0.00250	0.00100	0	103	70	130	0	0	
Lead	0.000545	0.00100	0.000500	0	109	70	130	0	0	
Thallium	0.000527	0.00150	0.000500	0	105	70	130	0	0	
Vanadium	0.000614	0.00100	0.000500	0	123	70	130	0	0	

Sample ID: **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:14:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0383	0.0300	0.0300	0	128	70	130	0	0	
Calcium	0.305	0.300	0.300	0	102	70	130	0	0	
Magnesium	0.315	0.300	0.300	0	105	70	130	0	0	
Potassium	0.319	0.300	0.300	0	106	70	130	0	0	
Sodium	0.295	0.300	0.300	0	98.4	70	130	0	0	

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:16:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00512	0.00500	0.00500	0	102	70	130	0	0	
Chromium	0.00500	0.00500	0.00500	0	100	70	130	0	0	
Nickel	0.00513	0.0100	0.00500	0	103	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621D

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 11:16:00 AM**		Prep Date: **6/20/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00501	0.0100	0.00500	0	100	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190625A

The QC data in batch 91453 applies to the following samples: 1906206-01A, 1906206-02A, 1906206-03A, 1906206-04A, 1906206-05A, 1906206-06A, 1906206-07A, 1906206-08A, 1906206-09A, 1906206-15A, 1906206-16A

Sample ID: **MB-91453** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 10:54:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-91453** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 10:57:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.95	0.0300	5.00	0	98.9	80	120			
Antimony	0.199	0.00250	0.200	0	99.4	80	120			
Arsenic	0.210	0.00500	0.200	0	105	80	120			
Chromium	0.205	0.00500	0.200	0	102	80	120			
Lead	0.198	0.00100	0.200	0	99.2	80	120			
Nickel	0.219	0.0100	0.200	0	109	80	120			
Thallium	0.198	0.00150	0.200	0	98.9	80	120			
Vanadium	0.203	0.00100	0.200	0	102	80	120			

Sample ID: **LCSD-91453** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 10:59:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.07	0.0300	5.00	0	101	80	120	2.54	15	
Antimony	0.202	0.00250	0.200	0	101	80	120	1.77	15	
Arsenic	0.214	0.00500	0.200	0	107	80	120	2.04	15	
Chromium	0.209	0.00500	0.200	0	105	80	120	1.94	15	
Lead	0.200	0.00100	0.200	0	100	80	120	0.823	15	
Nickel	0.220	0.0100	0.200	0	110	80	120	0.872	15	
Thallium	0.199	0.00150	0.200	0	99.7	80	120	0.800	15	
Vanadium	0.208	0.00100	0.200	0	104	80	120	2.16	15	

Sample ID: **1906232-01A SD** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 11:06:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190625A

Sample ID: **1906232-01A SD** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 11:06:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0345				0	10	
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	0.0218	0.0250	0	0.0202				7.55	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Nickel	<0.0150	0.0500	0	0.0134				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	<0.00250	0.00500	0	0.00117				0	10	

Sample ID: **1906232-01A PDS** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 11:43:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.69	0.0300	5.00	0.0345	93.2	80	120			
Antimony	0.195	0.00250	0.200	0	97.3	80	120			
Arsenic	0.202	0.00500	0.200	0.0202	90.9	80	120			
Chromium	0.179	0.00500	0.200	0	89.5	80	120			
Lead	0.188	0.00100	0.200	0	93.8	80	120			
Nickel	0.189	0.0100	0.200	0.0134	87.6	80	120			
Thallium	0.188	0.00150	0.200	0	94.0	80	120			
Vanadium	0.186	0.00100	0.200	0.00117	92.4	80	120			

Sample ID: **1906232-01A MS** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 11:47:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.81	0.0300	5.00	0.0345	95.6	80	120			
Antimony	0.188	0.00250	0.200	0	94.0	80	120			
Arsenic	0.203	0.00500	0.200	0.0202	91.3	80	120			
Chromium	0.175	0.00500	0.200	0	87.3	80	120			
Lead	0.187	0.00100	0.200	0	93.6	80	120			
Nickel	0.183	0.0100	0.200	0.0134	84.9	80	120			
Thallium	0.190	0.00150	0.200	0	95.0	80	120			
Vanadium	0.185	0.00100	0.200	0.00117	91.8	80	120			

Sample ID: **1906232-01A MSD** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 11:50:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.74	0.0300	5.00	0.0345	94.1	80	120	1.57	15	
Antimony	0.186	0.00250	0.200	0	92.8	80	120	1.33	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190625A

Sample ID: **1906232-01A MSD** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 11:50:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.200	0.00500	0.200	0.0202	90.0	80	120	1.22	15	
Chromium	0.173	0.00500	0.200	0	86.3	80	120	1.20	15	
Lead	0.186	0.00100	0.200	0	92.8	80	120	0.862	15	
Nickel	0.182	0.0100	0.200	0.0134	84.4	80	120	0.564	15	
Thallium	0.187	0.00150	0.200	0	93.6	80	120	1.47	15	
Vanadium	0.182	0.00100	0.200	0.00117	90.5	80	120	1.43	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190625A

Sample ID: **ICV-190625** Batch ID: **R104766** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 10:43:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.32	0.0300	2.50	0	93.0	90	110			
Antimony	0.0986	0.00250	0.100	0	98.6	90	110			
Arsenic	0.105	0.00500	0.100	0	105	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Lead	0.0958	0.00100	0.100	0	95.8	90	110			
Nickel	0.109	0.0100	0.100	0	109	90	110			
Thallium	0.0959	0.00150	0.100	0	95.9	90	110			
Vanadium	0.100	0.00100	0.100	0	100	90	110			

Sample ID: **LCVL-190625** Batch ID: **R104766** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 10:47:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0975	0.0300	0.100	0	97.5	70	130			
Antimony	0.00205	0.00250	0.00200	0	103	70	130			
Arsenic	0.00520	0.00500	0.00500	0	104	70	130			
Chromium	0.00489	0.00500	0.00500	0	97.7	70	130			
Lead	0.000993	0.00100	0.00100	0	99.3	70	130			
Nickel	0.00521	0.0100	0.00500	0	104	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			
Vanadium	0.000991	0.00100	0.00100	0	99.1	70	130			

Sample ID: **CCV1-190625** Batch ID: **R104766** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 11:58:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.03	0.0300	5.00	0	101	90	110			
Antimony	0.192	0.00250	0.200	0	95.8	90	110			
Arsenic	0.194	0.00500	0.200	0	96.8	90	110			
Chromium	0.186	0.00500	0.200	0	93.2	90	110			
Lead	0.190	0.00100	0.200	0	95.2	90	110			
Nickel	0.198	0.0100	0.200	0	98.8	90	110			
Thallium	0.189	0.00150	0.200	0	94.4	90	110			
Vanadium	0.190	0.00100	0.200	0	94.8	90	110			

Sample ID: **LCVL1-190625** Batch ID: **R104766** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 12:09:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0973	0.0300	0.100	0	97.3	70	130			
Antimony	0.00198	0.00250	0.00200	0	98.8	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190625A

Sample ID: **LCVL1-190625** Batch ID: **R104766** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 12:09:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00486	0.00500	0.00500	0	97.1	70	130			
Chromium	0.00401	0.00500	0.00500	0	80.1	70	130			
Lead	0.000914	0.00100	0.00100	0	91.4	70	130			
Nickel	0.00498	0.0100	0.00500	0	99.7	70	130			
Thallium	0.000918	0.00150	0.00100	0	91.8	70	130			
Vanadium	0.00151	0.00100	0.00100	0	151	70	130			S

Sample ID: **CCV2-190625** Batch ID: **R104766** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 12:28:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.02	0.0300	5.00	0	100	90	110			
Antimony	0.192	0.00250	0.200	0	96.1	90	110			
Arsenic	0.198	0.00500	0.200	0	99.0	90	110			
Chromium	0.188	0.00500	0.200	0	94.2	90	110			
Lead	0.190	0.00100	0.200	0	95.2	90	110			
Nickel	0.201	0.0100	0.200	0	101	90	110			
Thallium	0.189	0.00150	0.200	0	94.7	90	110			
Vanadium	0.190	0.00100	0.200	0	95.1	90	110			

Sample ID: **LCVL2-190625** Batch ID: **R104766** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190625A** Analysis Date: **6/25/2019 12:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.105	0.0300	0.100	0	105	70	130			
Antimony	0.00199	0.00250	0.00200	0	99.7	70	130			
Arsenic	0.00495	0.00500	0.00500	0	99.0	70	130			
Chromium	0.00403	0.00500	0.00500	0	80.6	70	130			
Lead	0.000930	0.00100	0.00100	0	93.0	70	130			
Nickel	0.00477	0.0100	0.00500	0	95.4	70	130			
Thallium	0.000904	0.00150	0.00100	0	90.4	70	130			
Vanadium	0.00142	0.00100	0.00100	0	142	70	130			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190625B

The QC data in batch 91453 applies to the following samples: 1906206-01A, 1906206-02A, 1906206-03A, 1906206-04A, 1906206-05A, 1906206-06A, 1906206-07A, 1906206-08A, 1906206-09A, 1906206-15A, 1906206-16A

Sample ID: **MB-91453** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190625B** Analysis Date: **6/25/2019 10:54:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-91453** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190625B** Analysis Date: **6/25/2019 10:57:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.200	0.0100	0.200	0	99.9	80	120			N

Sample ID: **LCSD-91453** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190625B** Analysis Date: **6/25/2019 10:59:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.203	0.0100	0.200	0	102	80	120	1.80	25	N

Sample ID: **1906232-01A SD** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190625B** Analysis Date: **6/25/2019 11:06:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0164	0.0500	0	0.0166				1.17	10	N

Sample ID: **1906232-01A PDS** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190625B** Analysis Date: **6/25/2019 11:43:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.213	0.0100	0.200	0.0166	98.0	80	120			N

Sample ID: **1906232-01A MS** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_190625B** Analysis Date: **6/25/2019 11:47:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.210	0.0100	0.200	0.0166	96.9	80	120			N

Sample ID: **1906232-01A MSD** Batch ID: **91453** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190625B** Analysis Date: **6/25/2019 11:50:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0.0166	95.1	80	120	1.65	25	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190625B

Sample ID: **ICV-190625**	Batch ID: **R104770**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190625B**	Analysis Date: **6/25/2019 10:43:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0978	0.0100	0.100	0	97.8	90	110			N

Sample ID: **LCVL-190625**	Batch ID: **R104770**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190625B**	Analysis Date: **6/25/2019 10:47:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00490	0.0100	0.00500	0	97.9	70	130			N

Sample ID: **CCV1-190625**	Batch ID: **R104770**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190625B**	Analysis Date: **6/25/2019 11:58:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.185	0.0100	0.200	0	92.4	90	110			N

Sample ID: **LCVL1-190625**	Batch ID: **R104770**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190625B**	Analysis Date: **6/25/2019 12:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00457	0.0100	0.00500	0	91.4	70	130			N

Sample ID: **CCV2-190625**	Batch ID: **R104770**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190625B**	Analysis Date: **6/25/2019 12:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.182	0.0100	0.200	0	91.2	90	110			N

Sample ID: **LCVL2-190625**	Batch ID: **R104770**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190625B**	Analysis Date: **6/25/2019 12:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00456	0.0100	0.00500	0	91.3	70	130			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

The QC data in batch 91506 applies to the following samples: 1906206-01B, 1906206-02B, 1906206-03B, 1906206-04B, 1906206-05B, 1906206-06B, 1906206-07B, 1906206-08B, 1906206-09B, 1906206-15B, 1906206-16B

Sample ID: **MB-91506** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 1:26:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-91506** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 1:28:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.18	0.0300	5.00	0	104	80	120			
Antimony	0.199	0.00250	0.200	0	99.7	80	120			
Arsenic	0.203	0.00500	0.200	0	102	80	120			
Chromium	0.199	0.00500	0.200	0	99.7	80	120			
Lead	0.193	0.00100	0.200	0	96.6	80	120			
Nickel	0.213	0.0100	0.200	0	106	80	120			
Thallium	0.195	0.00150	0.200	0	97.3	80	120			
Vanadium	0.202	0.00100	0.200	0	101	80	120			

Sample ID: **LCSD-91506** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 1:30:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.21	0.0300	5.00	0	104	80	120	0.732	15	
Antimony	0.202	0.00250	0.200	0	101	80	120	1.09	15	
Arsenic	0.205	0.00500	0.200	0	103	80	120	0.945	15	
Chromium	0.203	0.00500	0.200	0	101	80	120	1.60	15	
Lead	0.197	0.00100	0.200	0	98.4	80	120	1.82	15	
Nickel	0.214	0.0100	0.200	0	107	80	120	0.402	15	
Thallium	0.197	0.00150	0.200	0	98.4	80	120	1.10	15	
Vanadium	0.207	0.00100	0.200	0	103	80	120	2.34	15	

Sample ID: **1906231-01B SD** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 1:37:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **1906231-01B SD**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 1:37:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0210				0	10	
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00266				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Nickel	<0.0150	0.0500	0	0.00788				0	10	
Thallium	<0.00250	0.00750	0	0.00109				0	10	
Vanadium	<0.00250	0.00500	0	0.00118				0	10	

Sample ID: **1906231-01B PDS**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 1:59:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.56	0.0300	5.00	0.0210	90.7	80	120			
Antimony	0.185	0.00250	0.200	0	92.3	80	120			
Arsenic	0.174	0.00500	0.200	0.00266	85.7	80	120			
Chromium	0.165	0.00500	0.200	0	82.6	80	120			
Lead	0.194	0.00100	0.200	0	97.2	80	120			
Nickel	0.167	0.0100	0.200	0.00788	79.5	80	120			S
Thallium	0.199	0.00150	0.200	0.00109	99.0	80	120			
Vanadium	0.176	0.00100	0.200	0.00118	87.5	80	120			

Sample ID: **1906231-01B MS**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 2:02:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0.0210	99.2	80	120			
Antimony	0.194	0.00250	0.200	0	96.9	80	120			
Arsenic	0.189	0.00500	0.200	0.00266	93.0	80	120			
Chromium	0.171	0.00500	0.200	0	85.4	80	120			
Lead	0.206	0.00100	0.200	0	103	80	120			
Nickel	0.172	0.0100	0.200	0.00788	82.3	80	120			
Thallium	0.211	0.00150	0.200	0.00109	105	80	120			
Vanadium	0.186	0.00100	0.200	0.00118	92.2	80	120			

Sample ID: **1906231-01B MSD**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 2:04:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.00	0.0300	5.00	0.0210	99.6	80	120	0.319	15	
Antimony	0.196	0.00250	0.200	0	98.1	80	120	1.20	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **1906231-01B MSD** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 2:04:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.188	0.00500	0.200	0.00266	92.9	80	120	0.090	15	
Chromium	0.172	0.00500	0.200	0	85.8	80	120	0.507	15	
Lead	0.208	0.00100	0.200	0	104	80	120	0.932	15	
Nickel	0.174	0.0100	0.200	0.00788	82.9	80	120	0.737	15	
Thallium	0.212	0.00150	0.200	0.00109	106	80	120	0.766	15	
Vanadium	0.186	0.00100	0.200	0.00118	92.2	80	120	0.008	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **ICV-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 10:45:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.36	0.0300	2.50	0	94.3	90	110			
Antimony	0.100	0.00250	0.100	0	100	90	110			
Arsenic	0.105	0.00500	0.100	0	105	90	110			
Chromium	0.101	0.00500	0.100	0	101	90	110			
Lead	0.0985	0.00100	0.100	0	98.5	90	110			
Nickel	0.106	0.0100	0.100	0	106	90	110			
Thallium	0.0990	0.00150	0.100	0	99.0	90	110			
Vanadium	0.103	0.00100	0.100	0	103	90	110			

Sample ID: **LCVL-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 10:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0890	0.0300	0.100	0	89.0	70	130			
Antimony	0.00194	0.00250	0.00200	0	97.1	70	130			
Arsenic	0.00506	0.00500	0.00500	0	101	70	130			
Chromium	0.00458	0.00500	0.00500	0	91.6	70	130			
Lead	0.000981	0.00100	0.00100	0	98.1	70	130			
Nickel	0.00497	0.0100	0.00500	0	99.4	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			
Vanadium	0.000889	0.00100	0.00100	0	88.9	70	130			

Sample ID: **CCV3-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 12:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0	99.5	90	110			
Antimony	0.193	0.00250	0.200	0	96.6	90	110			
Arsenic	0.201	0.00500	0.200	0	100	90	110			
Chromium	0.190	0.00500	0.200	0	95.0	90	110			
Lead	0.190	0.00100	0.200	0	95.1	90	110			
Nickel	0.206	0.0100	0.200	0	103	90	110			
Thallium	0.190	0.00150	0.200	0	95.2	90	110			
Vanadium	0.194	0.00100	0.200	0	97.2	90	110			

Sample ID: **LCVL3-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 1:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0983	0.0300	0.100	0	98.3	70	130			
Antimony	0.00194	0.00250	0.00200	0	97.0	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **LCVL3-190626** Batch ID: **R104801** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 1:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00482	0.00500	0.00500	0	96.4	70	130			
Chromium	0.00397	0.00500	0.00500	0	79.5	70	130			
Lead	0.000928	0.00100	0.00100	0	92.8	70	130			
Nickel	0.00444	0.0100	0.00500	0	88.9	70	130			
Thallium	0.000998	0.00150	0.00100	0	99.8	70	130			
Vanadium	0.00118	0.00100	0.00100	0	118	70	130			

Sample ID: **CCV4-190626** Batch ID: **R104801** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 2:10:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.08	0.0300	5.00	0	102	90	110			
Antimony	0.192	0.00250	0.200	0	96.2	90	110			
Arsenic	0.197	0.00500	0.200	0	98.6	90	110			
Chromium	0.186	0.00500	0.200	0	92.9	90	110			
Lead	0.189	0.00100	0.200	0	94.6	90	110			
Nickel	0.199	0.0100	0.200	0	99.3	90	110			
Thallium	0.190	0.00150	0.200	0	94.9	90	110			
Vanadium	0.192	0.00100	0.200	0	96.0	90	110			

Sample ID: **LCVL4-190626** Batch ID: **R104801** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 2:15:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0940	0.0300	0.100	0	94.0	70	130			
Antimony	0.00199	0.00250	0.00200	0	99.6	70	130			
Arsenic	0.00508	0.00500	0.00500	0	102	70	130			
Chromium	0.00378	0.00500	0.00500	0	75.7	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Nickel	0.00430	0.0100	0.00500	0	86.1	70	130			
Thallium	0.000969	0.00150	0.00100	0	96.9	70	130			
Vanadium	0.00130	0.00100	0.00100	0	130	70	130			

Sample ID: **CCV5-190626** Batch ID: **R104801** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 2:48:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.05	0.0300	5.00	0	101	90	110			
Antimony	0.194	0.00250	0.200	0	97.2	90	110			
Arsenic	0.199	0.00500	0.200	0	99.6	90	110			
Chromium	0.184	0.00500	0.200	0	92.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **CCV5-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 2:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.191	0.00100	0.200	0	95.5	90	110			
Nickel	0.199	0.0100	0.200	0	99.4	90	110			
Thallium	0.192	0.00150	0.200	0	95.8	90	110			
Vanadium	0.190	0.00100	0.200	0	95.2	90	110			

Sample ID: **LCVL5-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 2:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0976	0.0300	0.100	0	97.6	70	130			
Antimony	0.00194	0.00250	0.00200	0	97.1	70	130			
Arsenic	0.00493	0.00500	0.00500	0	98.6	70	130			
Chromium	0.00356	0.00500	0.00500	0	71.2	70	130			
Lead	0.000927	0.00100	0.00100	0	92.7	70	130			
Nickel	0.00433	0.0100	0.00500	0	86.6	70	130			
Thallium	0.000948	0.00150	0.00100	0	94.8	70	130			
Vanadium	0.00126	0.00100	0.00100	0	126	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626D

The QC data in batch 91506 applies to the following samples: 1906206-01B, 1906206-02B, 1906206-03B, 1906206-04B, 1906206-05B, 1906206-06B, 1906206-07B, 1906206-08B, 1906206-09B, 1906206-15B, 1906206-16B

Sample ID: **MB-91506** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190626D** Analysis Date: **6/26/2019 1:26:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-91506** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190626D** Analysis Date: **6/26/2019 1:28:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	98.1	80	120			N

Sample ID: **LCSD-91506** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190626D** Analysis Date: **6/26/2019 1:30:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.200	0.0100	0.200	0	100	80	120	2.13	15	N

Sample ID: **1906231-01B SD** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190626D** Analysis Date: **6/26/2019 1:37:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0625	0.0500	0	0.0697				10.9	20	N

Sample ID: **1906231-01B PDS** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190626D** Analysis Date: **6/26/2019 1:59:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.262	0.0100	0.200	0.0697	95.9	75	125			N

Sample ID: **1906231-01B MS** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_190626D** Analysis Date: **6/26/2019 2:02:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.275	0.0100	0.200	0.0697	102	75	125			N

Sample ID: **1906231-01B MSD** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190626D** Analysis Date: **6/26/2019 2:04:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.276	0.0100	0.200	0.0697	103	75	125	0.494	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626D

Sample ID: **ICV-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 10:45:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.101	0.0100	0.100	0	101	90	110			N

Sample ID: **LCVL-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 10:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00487	0.0100	0.00500	0	97.4	80	120			N

Sample ID: **CCV3-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 12:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.190	0.0100	0.200	0	95.0	90	110			N

Sample ID: **LCVL3-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 1:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00472	0.0100	0.00500	0	94.4	80	120			N

Sample ID: **CCV4-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 2:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.181	0.0100	0.200	0	90.3	90	110			N

Sample ID: **LCVL4-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 2:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00454	0.0100	0.00500	0	90.9	80	120			N

Sample ID: **CCV5-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 2:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.182	0.0100	0.200	0	91.0	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626D

Sample ID: **LCVL5-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 2:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00454	0.0100	0.00500	0	90.8	80	120			N

Sample ID: **CCV6-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 3:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.182	0.0100	0.200	0	91.2	90	110			N

Sample ID: **LCVL6-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 3:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00459	0.0100	0.00500	0	91.7	80	120			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190530A

Sample ID: **DCS2-91133** Batch ID: **91133** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_190530A** Analysis Date: **5/30/2019 12:45:08 PM** Prep Date: **5/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.546	1.00	0.5000	0	109	65	135	0	0	
Fluoride	0.236	0.400	0.2000	0	118	65	135	0	0	
Nitrate-N	0.246	0.0500	0.2500	0	98.3	60	140	0	0	
Sulfate	1.59	3.00	1.500	0	106	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190620B

The QC data in batch 91404 applies to the following samples: 1906206-09D, 1906206-10D, 1906206-11D, 1906206-12D, 1906206-13D, 1906206-14D, 1906206-15D, 1906206-16D

Sample ID: **MB-91404** Batch ID: **91404** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_190620B** Analysis Date: **6/20/2019 10:20:53 AM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-91404** Batch ID: **91404** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_190620B** Analysis Date: **6/20/2019 10:36:53 AM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	4.03	0.400	4.000	0	101	90	110			
Nitrate-N	5.10	0.500	5.000	0	102	90	110			
Sulfate	30.9	3.00	30.00	0	103	90	110			

Sample ID: **LCSD-91404** Batch ID: **91404** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_190620B** Analysis Date: **6/20/2019 10:52:53 AM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.589	20	
Fluoride	4.05	0.400	4.000	0	101	90	110	0.627	20	
Nitrate-N	5.17	0.500	5.000	0	103	90	110	1.40	20	
Sulfate	31.0	3.00	30.00	0	103	90	110	0.367	20	

Sample ID: **1906206-14DMS** Batch ID: **91404** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_190620B** Analysis Date: **6/20/2019 5:25:49 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	36100	1000	20000	15640	102	90	110			
Fluoride	21300	400	20000	0	107	90	110			
Nitrate-N	4590	500	4516	0	102	90	110			
Sulfate	22900	3000	20000	2425	102	90	110			

Sample ID: **1906206-14DMSD** Batch ID: **91404** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_190620B** Analysis Date: **6/20/2019 5:41:50 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	36100	1000	20000	15640	102	90	110	0.177	20	
Fluoride	21400	400	20000	0	107	90	110	0.373	20	
Nitrate-N	4610	500	4516	0	102	90	110	0.395	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190620B

Sample ID: **1906206-14DMSD**	Batch ID: **91404**	TestNo: **E300**	Units: **mg/L**		
SampType: **MSD**	Run ID: **IC2_190620B**	Analysis Date: **6/20/2019 5:41:50 PM**	Prep Date: **6/20/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	23100	3000	20000	2425	104	90	110	0.934	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190620B

Sample ID: **ICV-190620**	Batch ID: **R104696**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190620B**	Analysis Date: **6/20/2019 9:48:53 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.9	1.00	25.00	0	104	90	110			
Fluoride	10.3	0.400	10.00	0	103	90	110			
Nitrate-N	13.2	0.500	12.50	0	105	90	110			
Sulfate	78.0	3.00	75.00	0	104	90	110			

Sample ID: **CCV1-190620**	Batch ID: **R104696**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190620B**	Analysis Date: **6/20/2019 3:09:04 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	4.13	0.400	4.000	0	103	90	110			
Nitrate-N	5.23	0.500	5.000	0	105	90	110			
Sulfate	31.3	3.00	30.00	0	104	90	110			

Sample ID: **CCV2-190620**	Batch ID: **R104696**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190620B**	Analysis Date: **6/20/2019 7:01:49 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.17	0.400	4.000	0	104	90	110			
Nitrate-N	5.27	0.500	5.000	0	105	90	110			
Sulfate	31.5	3.00	30.00	0	105	90	110			

Sample ID: **CCV3-190620**	Batch ID: **R104696**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190620B**	Analysis Date: **6/20/2019 10:13:49 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.22	0.400	4.000	0	105	90	110			
Nitrate-N	5.32	0.500	5.000	0	106	90	110			
Sulfate	31.7	3.00	30.00	0	106	90	110			

Sample ID: **CCV4-190620**	Batch ID: **R104696**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190620B**	Analysis Date: **6/21/2019 1:41:49 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.24	0.400	4.000	0	106	90	110			
Nitrate-N	5.31	0.500	5.000	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190430A

Sample ID: **DCS3-90659** Batch ID: **90659** TestNo: **E300** Units: **mg/L**
SampType: **DCS3** Run ID: **IC4_190430A** Analysis Date: **4/30/2019 1:09:55 PM** Prep Date: **4/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.936	1.00	1.000	0	93.6	65	135	0	0	
Fluoride	0.209	0.400	0.4000	0	52.3	65	135	0	0	S
Nitrate-N	0.496	0.0500	0.5000	0	99.3	60	140	0	0	
Sulfate	2.97	3.00	3.000	0	99.0	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190621A

The QC data in batch 91405 applies to the following samples: 1906206-01D, 1906206-02D, 1906206-03D, 1906206-04D, 1906206-05D, 1906206-06D, 1906206-07D, 1906206-08D

Sample ID: **MB-91405** Batch ID: **91405** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_190621A** Analysis Date: **6/21/2019 10:07:57 AM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-91405** Batch ID: **91405** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_190621A** Analysis Date: **6/21/2019 10:23:57 AM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.45	1.00	10.00	0	94.5	90	110			
Fluoride	4.05	0.400	4.000	0	101	90	110			
Nitrate-N	5.06	0.500	5.000	0	101	90	110			
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Sample ID: **LCSD-91405** Batch ID: **91405** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_190621A** Analysis Date: **6/21/2019 10:39:57 AM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.47	1.00	10.00	0	94.7	90	110	0.227	20	
Fluoride	4.07	0.400	4.000	0	102	90	110	0.519	20	
Nitrate-N	5.04	0.500	5.000	0	101	90	110	0.444	20	
Sulfate	29.4	3.00	30.00	0	98.0	90	110	0.250	20	

Sample ID: **1906186-10DMS** Batch ID: **91405** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_190621A** Analysis Date: **6/21/2019 11:11:57 AM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	35500	1000	20000	17020	92.5	90	110			
Fluoride	21400	400	20000	0	107	90	110			
Nitrate-N	4440	500	4516	0	98.4	90	110			
Sulfate	22000	3000	20000	2241	98.9	90	110			

Sample ID: **1906186-10DMSD** Batch ID: **91405** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_190621A** Analysis Date: **6/21/2019 11:27:57 AM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	35500	1000	20000	17020	92.3	90	110	0.134	20	
Fluoride	21400	400	20000	0	107	90	110	0.023	20	
Nitrate-N	4400	500	4516	0	97.5	90	110	0.877	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190621A

Sample ID: **1906186-10DMSD**	Batch ID: **91405**	TestNo: **E300**		Units: **mg/L**	
SampType: **MSD**	Run ID: **IC4_190621A**	Analysis Date: **6/21/2019 11:27:57 AM**		Prep Date: **6/21/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	21700	3000	20000	2241	97.4	90	110	1.38	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190621A

Sample ID: **ICV-190621**	Batch ID: **R104735**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_190621A**	Analysis Date: **6/21/2019 9:35:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.3	1.00	25.00	0	97.4	90	110			
Fluoride	10.1	0.400	10.00	0	101	90	110			
Nitrate-N	12.8	0.500	12.50	0	103	90	110			
Sulfate	74.2	3.00	75.00	0	98.9	90	110			

Sample ID: **CCV1-190621**	Batch ID: **R104735**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190621A**	Analysis Date: **6/21/2019 2:55:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.62	1.00	10.00	0	96.2	90	110			
Fluoride	4.36	0.400	4.000	0	109	90	110			
Nitrate-N	5.16	0.500	5.000	0	103	90	110			
Sulfate	29.9	3.00	30.00	0	99.8	90	110			

Sample ID: **CCV2-190621**	Batch ID: **R104735**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190621A**	Analysis Date: **6/21/2019 6:28:30 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.59	1.00	10.00	0	95.9	90	110			
Sulfate	29.9	3.00	30.00	0	99.6	90	110			

Sample ID: **CCV3-190621**	Batch ID: **R104735**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190621A**	Analysis Date: **6/21/2019 9:40:30 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	30.4	3.00	30.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190621B

The QC data in batch 91424 applies to the following samples: 1906206-01D, 1906206-02D, 1906206-03D, 1906206-04D, 1906206-05D, 1906206-06D, 1906206-07D, 1906206-08D, 1906206-09D, 1906206-10D, 1906206-11D, 1906206-12D, 1906206-13D, 1906206-14D, 1906206-15D, 1906206-16D

Sample ID: **MB-91424** Batch ID: **91424** TestNo: **M2320 B** Units: **mg/L @ pH 4.28**
SampType: **MBLK** Run ID: **TITRATOR_190621B** Analysis Date: **6/21/2019 9:09:00 AM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-91424** Batch ID: **91424** TestNo: **M2320 B** Units: **mg/L @ pH 4.27**
SampType: **LCS** Run ID: **TITRATOR_190621B** Analysis Date: **6/21/2019 9:13:00 AM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.7	20.0	50.00	0	105	74	129			

Sample ID: **1906206-01D DUP** Batch ID: **91424** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_190621B** Analysis Date: **6/21/2019 10:15:00 AM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	552	20.0	0	561.0				1.64	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	552	20.0	0	561.0				1.64	20	

Sample ID: **1906206-14D-DUP** Batch ID: **91424** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_190621B** Analysis Date: **6/21/2019 1:24:00 PM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	341	20.0	0	342.2				0.351	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	341	20.0	0	342.2				0.351	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190621B

Sample ID: **ICV-190621**	Batch ID: **R104703**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.21**
SampType: **ICV**	Run ID: **TITRATOR_190621B**	Analysis Date: **6/21/2019 9:00:00 AM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	9.84	20.0	0							
Alkalinity, Carbonate (As CaCO3)	92.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	102	20.0	100.0	0	102	98	102			

Sample ID: **CCV1-190621**	Batch ID: **R104703**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.29**
SampType: **CCV**	Run ID: **TITRATOR_190621B**	Analysis Date: **6/21/2019 12:03:00 PM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	29.3	20.0	0							
Alkalinity, Carbonate (As CaCO3)	74.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	104	20.0	100.0	0	104	90	110			

Sample ID: **CCV2-190621**	Batch ID: **R104703**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.38**
SampType: **CCV**	Run ID: **TITRATOR_190621B**	Analysis Date: **6/21/2019 2:12:00 PM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	43.0	20.0	0							
Alkalinity, Carbonate (As CaCO3)	60.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	103	20.0	100.0	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190605A

Sample ID: **DCS-91202**	Batch ID: **91202**	TestNo: **M4500-NH3-D**		Units: **mg/L**	
SampType: **DCS**	Run ID: **WC_190605A**	Analysis Date: **6/5/2019 2:00:00 PM**		Prep Date: **6/5/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.0703	0.250	0.1000	0	70.3	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190620B

The QC data in batch 91420 applies to the following samples: 1906206-01D, 1906206-02D, 1906206-03D, 1906206-04D, 1906206-05D, 1906206-06D

Sample ID: **MB-91420**	Batch ID: **91420**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_190620B**	Analysis Date: **6/20/2019 5:45:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-91420**	Batch ID: **91420**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_190620B**	Analysis Date: **6/20/2019 5:45:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	753	10.0	745.6	0	101	90	113			

Sample ID: **1906186-01D-DUP**	Batch ID: **91420**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190620B**	Analysis Date: **6/20/2019 5:45:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	29300	1000	0	30400				3.69	5	

Sample ID: **1906186-02D-DUP**	Batch ID: **91420**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190620B**	Analysis Date: **6/20/2019 5:45:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	50200	1000	0	51000				1.58	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190621A

The QC data in batch 91432 applies to the following samples: 1906206-01C, 1906206-02C, 1906206-03C, 1906206-04C, 1906206-05C, 1906206-06C, 1906206-07C, 1906206-08C, 1906206-09C, 1906206-10C, 1906206-11C, 1906206-12C, 1906206-13C, 1906206-14C, 1906206-15C, 1906206-16C

Sample ID: **MB-91432** Batch ID: **91432** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_190621A** Analysis Date: **6/21/2019 1:45:00 PM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-91432** Batch ID: **91432** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **LCS** Run ID: **WC_190621A** Analysis Date: **6/21/2019 1:45:00 PM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.09	0.250	5.000	0	102	80	120			

Sample ID: **1906206-03CMS** Batch ID: **91432** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_190621A** Analysis Date: **6/21/2019 1:45:00 PM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	7.25	0.250	5.000	0.2140	141	80	120			S

Sample ID: **1906206-03CMSD** Batch ID: **91432** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_190621A** Analysis Date: **6/21/2019 1:45:00 PM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	8.01	0.250	5.000	0.2140	156	80	120	9.96	25	S

Sample ID: **CCV1-190621** Batch ID: **91432** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **CCV** Run ID: **WC_190621A** Analysis Date: **6/21/2019 1:45:00 PM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.11	0.250	5.000	0	102	80	120			

Sample ID: **1906206-14CMS** Batch ID: **91432** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_190621A** Analysis Date: **6/21/2019 1:45:00 PM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.88	0.250	5.000	0	97.6	80	120			

Sample ID: **1906206-14CMSD** Batch ID: **91432** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_190621A** Analysis Date: **6/21/2019 1:45:00 PM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.26	0.250	5.000	0	105	80	120	7.50	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190621A

Sample ID: **ICV-190621**	Batch ID: **R104716**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_190621A**	Analysis Date: **6/21/2019 1:45:00 PM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.84	0.250	2.500	0	114	80	120			

Sample ID: **CCV2-190621**	Batch ID: **R104716**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_190621A**	Analysis Date: **6/21/2019 1:45:00 PM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.62	0.250	5.000	0	92.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190624B

The QC data in batch 91469 applies to the following samples: 1906206-07D, 1906206-08D, 1906206-09D, 1906206-10D, 1906206-11D, 1906206-12D, 1906206-13D, 1906206-14D, 1906206-15D, 1906206-16D

Sample ID: **MB-91469** Batch ID: **91469** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_190624B** Analysis Date: **6/24/2019 5:00:00 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-91469** Batch ID: **91469** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_190624B** Analysis Date: **6/24/2019 5:00:00 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	755	10.0	745.6	0	101	90	113			

Sample ID: **1906206-07D-DUP** Batch ID: **91469** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_190624B** Analysis Date: **6/24/2019 5:00:00 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	28200	1000	0	28300				0.354	5	

Sample ID: **1906206-14D-DUP** Batch ID: **91469** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_190624B** Analysis Date: **6/24/2019 5:00:00 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	27800	1000	0	28200				1.43	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *22-Jul-19*

CLIENT: Golder
Work Order: 1906206
Project: Copano 2Q19

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.2**	**g/L @ pH 4.2**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

July 15, 2019

DHL Analytical, Inc.

Sample Delivery Group:	L1112448
Samples Received:	06/25/2019
Project Number:	1906206
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

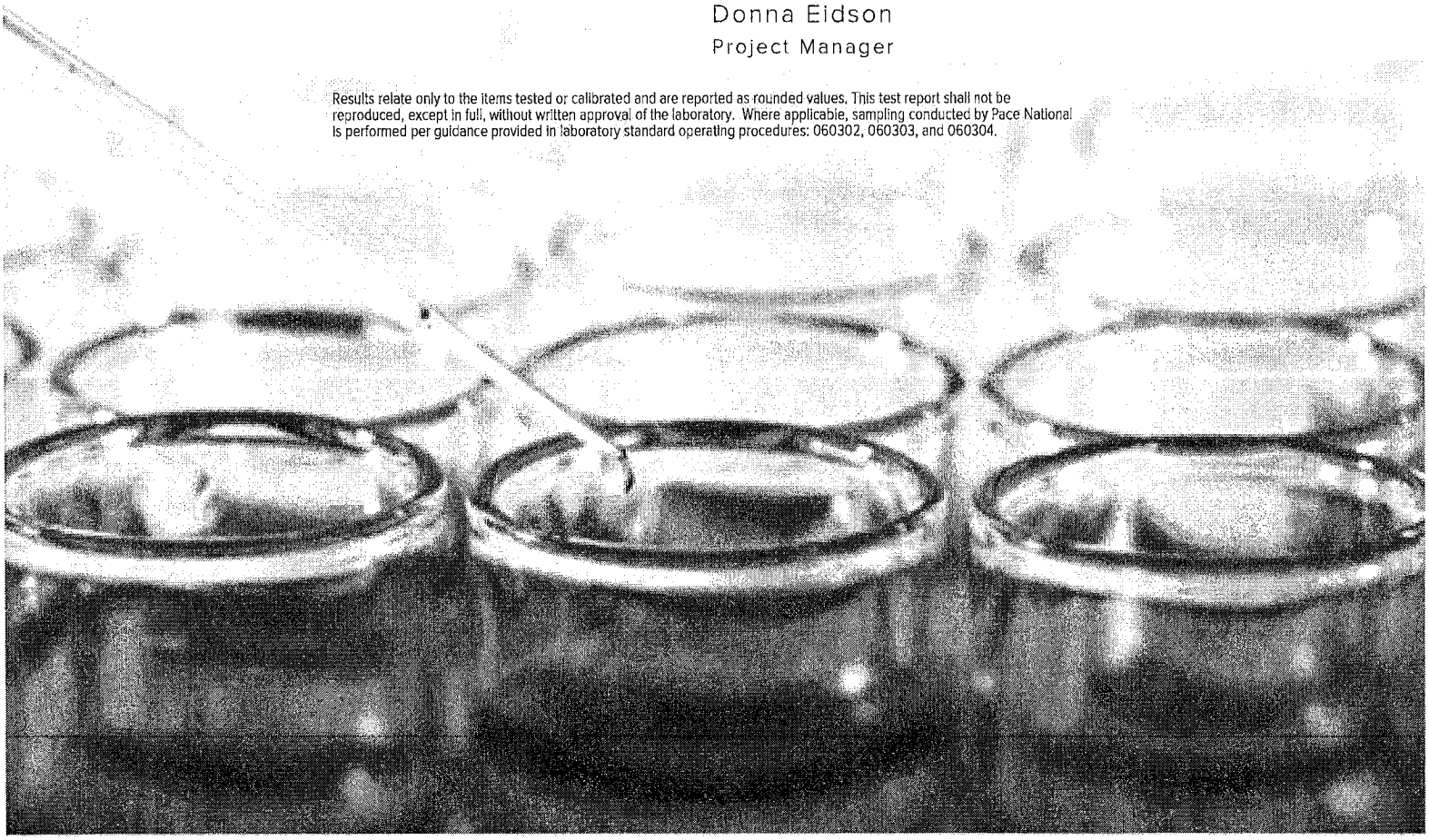


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MW-10 L1112448-01 Non-Potable Water

Collected by | Collected date/time 06/19/19 08:55 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1304879	1	07/02/19 08:29	07/05/19 11:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307891	1	07/10/19 12:53	07/11/19 22:58	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307891	1	07/10/19 12:53	07/11/19 22:58	RGT	Mt. Juliet, TN

MW-5 L1112448-02 Non-Potable Water

Collected by | Collected date/time 06/19/19 09:35 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1304879	1	07/02/19 08:29	07/05/19 11:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307891	1	07/10/19 12:53	07/11/19 23:04	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307891	1	07/10/19 12:53	07/11/19 23:04	RGT	Mt. Juliet, TN

MW-5B L1112448-03 Non-Potable Water

Collected by | Collected date/time 06/19/19 10:05 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1304879	1	07/02/19 08:29	07/05/19 11:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307891	1	07/10/19 12:53	07/11/19 22:58	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307891	1	07/10/19 12:53	07/11/19 22:58	RGT	Mt. Juliet, TN

MW3-1 L1112448-04 Non-Potable Water

Collected by | Collected date/time 06/19/19 11:00 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1304879	1	07/02/19 08:29	07/05/19 11:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307891	1	07/10/19 12:53	07/11/19 22:59	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307891	1	07/10/19 12:53	07/11/19 22:59	RGT	Mt. Juliet, TN

MW3-2 L1112448-05 Non-Potable Water

Collected by | Collected date/time 06/19/19 11:35 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1304879	1	07/02/19 08:29	07/05/19 11:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307891	1	07/10/19 12:53	07/11/19 22:59	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307891	1	07/10/19 12:53	07/11/19 22:59	RGT	Mt. Juliet, TN

MW3-3 L1112448-06 Non-Potable Water

Collected by | Collected date/time 06/19/19 12:30 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1304879	1	07/02/19 08:29	07/05/19 11:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307891	1	07/10/19 12:53	07/11/19 22:59	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307891	1	07/10/19 12:53	07/11/19 22:59	RGT	Mt. Juliet, TN

MW3-4 L1112448-07 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				06/19/19 13:10	06/25/19 11:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1304879	1	07/02/19 08:29	07/05/19 11:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307891	1	07/10/19 12:53	07/11/19 22:59	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307891	1	07/10/19 12:53	07/11/19 22:59	RGT	Mt. Juliet, TN

MW3-4B L1112448-08 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				06/19/19 13:45	06/25/19 11:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1304879	1	07/02/19 08:29	07/05/19 14:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307891	1	07/10/19 12:53	07/11/19 23:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307891	1	07/10/19 12:53	07/11/19 23:00	RGT	Mt. Juliet, TN

MW-202 L1112448-09 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				06/19/19 11:45	06/25/19 11:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1304879	1	07/02/19 08:29	07/05/19 14:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307891	1	07/10/19 12:53	07/11/19 23:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307891	1	07/10/19 12:53	07/11/19 23:00	RGT	Mt. Juliet, TN

MW4-7B L1112448-10 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				06/19/19 14:38	06/25/19 11:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1304879	1	07/02/19 08:29	07/05/19 14:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307891	1	07/10/19 12:53	07/11/19 23:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307891	1	07/10/19 12:53	07/11/19 23:00	RGT	Mt. Juliet, TN

MW4-7 L1112448-11 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				06/19/19 15:30	06/25/19 11:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1304879	1	07/02/19 08:29	07/05/19 14:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307891	1	07/10/19 12:53	07/11/19 23:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307891	1	07/10/19 12:53	07/11/19 23:00	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	-0.554		0.462	0.855	07/05/2019 11:30	WG1304879
(T) Barium	*100*			*62.0-143*	*07/05/2019 11:30*	WG1304879
(T) Yttrium	*88.0*			*79.0-136*	*07/05/2019 11:30*	WG1304879

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	0.147		0.680	1.18	07/11/2019 22:58	WG1307891

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.147		0.218	0.327	07/11/2019 22:58	WG1307891
(T) Barium-133	*94.7*			*30.0-143*	*07/11/2019 22:58*	WG1307891

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	3.85		0.465	0.808	07/05/2019 11:30	WG1304879
(T) Barium	*94.3*			*62.0-143*	*07/05/2019 11:30*	WG1304879
(T) Yttrium	*87.5*			*79.0-136*	*07/05/2019 11:30*	WG1304879

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	4.86		0.886	1.12	07/11/2019 23:04	WG1307891

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	1.01		0.421	0.313	07/11/2019 23:04	WG1307891
(T) Barium-133	*95.3*			*30.0-143*	*07/11/2019 23:04*	WG1307891

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	9.63		0.571	0.841	07/05/2019 11:30	WG1304879
(T) Barium	*94.2*			*62.0-143*	*07/05/2019 11:30*	WG1304879
(T) Yttrium	*84.5*			*79.0-136*	*07/05/2019 11:30*	WG1304879

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	12.8		1.24	1.12	07/11/2019 22:58	WG1307891

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	3.19		0.667	0.281	07/11/2019 22:58	WG1307891
(T) Barium-133	*107*			*30.0-143*	*07/11/2019 22:58*	WG1307891

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.15		0.455	0.81	07/05/2019 11:30	WG1304879
(T) Barium	*91.9*			*62.0-143*	*07/05/2019 11:30*	WG1304879
(T) Yttrium	*88.2*			*79.0-136*	*07/05/2019 11:30*	WG1304879

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	1.64		0.755	1.08	07/11/2019 22:59	WG1307891

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.491		0.300	0.27	07/11/2019 22:59	WG1307891
(T) Barium-133	*111*	C1		*30.0-143*	*07/11/2019 22:59*	WG1307891

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	2.06		0.509	0.846	07/05/2019 11:30	WG1304879
(T) Barium	*99.5*			*62.0-143*	*07/05/2019 11:30*	WG1304879
(T) Yttrium	*90.5*			*79.0-136*	*07/05/2019 11:30*	WG1304879

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	4.04		1.04	1.11	07/11/2019 22:59	WG1307891

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	1.98		0.531	0.265	07/11/2019 22:59	WG1307891
(T) Barium-133	*97.5*			*30.0-143*	*07/11/2019 22:59*	WG1307891

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	3.54		0.438	0.716	07/05/2019 11:30	WG1304879
(T) Barium	*117*			*62.0-143*	*07/05/2019 11:30*	WG1304879
(T) Yttrium	*88.2*			*79.0-136*	*07/05/2019 11:30*	WG1304879

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	3.91		0.727	1.02	07/11/2019 22:59	WG1307891

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.373		0.289	0.308	07/11/2019 22:59	WG1307891
(T) Barium-133	*98.1*			*30.0-143*	*07/11/2019 22:59*	WG1307891

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	2.26		0.438	0.901	07/05/2019 11:30	WG1304879
(T) Barium	*88.7*			*62.0-143*	*07/05/2019 11:30*	WG1304879
(T) Yttrium	*89.1*			*79.0-136*	*07/05/2019 11:30*	WG1304879

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	2.65		0.681	1.1	07/11/2019 22:59	WG1307891

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.390		0.243	0.194	07/11/2019 22:59	WG1307891
(T) Barium-133	*86.3*			*30.0-143*	*07/11/2019 22:59*	WG1307891

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	20.8		0.706	0.767	07/05/2019 14:50	WG1304879
(T) Barium	*90.8*			*62.0-143*	*07/05/2019 14:50*	WG1304879
(T) Yttrium	*87.9*			*79.0-136*	*07/05/2019 14:50*	WG1304879

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	23.9		1.36	0.973	07/11/2019 23:00	WG1307891

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	3.11		0.657	0.206	07/11/2019 23:00	WG1307891
(T) Barium-133	*98.8*			*30.0-143*	*07/11/2019 23:00*	WG1307891

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.91		0.418	0.602	07/05/2019 14:50	WG1304879
(T) Barium	*99.4*			*62.0-143*	*07/05/2019 14:50*	WG1304879
(T) Yttrium	*91.4*			*79.0-136*	*07/05/2019 14:50*	WG1304879

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	3.10		0.791	0.81	07/11/2019 23:00	WG1307891

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	1.19		0.373	0.208	07/11/2019 23:00	WG1307891
(T) Barium-133	*99.6*			*30.0-143*	*07/11/2019 23:00*	WG1307891

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	14.6		0.582	0.515	07/05/2019 14:50	WG1304879
(T) Barium	*118*			*62.0-143*	*07/05/2019 14:50*	WG1304879
(T) Yttrium	*96.2*			*79.0-136*	*07/05/2019 14:50*	WG1304879

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	17.9		1.48	1.14	07/11/2019 23:00	WG1307891

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	3.28		0.901	0.627	07/11/2019 23:00	WG1307891
(T) Barium-133	*49.2*			*30.0-143*	*07/11/2019 23:00*	WG1307891

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.75		0.515	0.723	07/05/2019 14:50	WG1304879
(T) Barium	*102*			*62.0-143*	*07/05/2019 14:50*	WG1304879
(T) Yttrium	*83.9*			*79.0-136*	*07/05/2019 14:50*	WG1304879

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	2.27		0.953	1.19	07/11/2019 23:00	WG1307891

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.518		0.438	0.469	07/11/2019 23:00	WG1307891
(T) Barium-133	*42.5*			*30.0-143*	*07/11/2019 23:00*	WG1307891

Method Blank (MB)

(MB) R3428536-1 07/05/19 11:30

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.212		0.481
(T) Barium	*109*		
(T) Yttrium	*88.5*		

L1113469-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1113469-01 07/05/19 14:50 • (DUP) R3428536-5 07/05/19 11:30

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	-0.359	0.873	1	200	1.49		20	3
(T) Barium	*107*	*114*						
(T) Yttrium	*92.5*	*86.4*						

Laboratory Control Sample (LCS)

(LCS) R3428536-2 07/05/19 11:30

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.91	118	80.0-120	
(T) Barium			*105*		
(T) Yttrium			*83.6*		

L1113780-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1113780-01 07/05/19 14:50 • (MS) R3428536-3 07/05/19 11:30 • (MSD) R3428536-4 07/05/19 11:30

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	20.0	1.13	23.4	19.5	111	92.0	1	70.0-130			17.8		20
(T) Barium		*110*			*100*	*102*							
(T) Yttrium		*103*			*86.4*	*88.0*							

Method Blank (MB)

(MB) R3430255-1 07/11/19 22:58

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	-0.00359		0.0473
(T) Barium-133	*94.2*		

L1116542-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1116542-06 07/11/19 23:01 • (DUP) R3430255-3 07/11/19 22:58

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.187	0.250	1	28.6	0.191		20	3
(T) Barium-133	*84.5*	*88.0*						

Laboratory Control Sample (LCS)

(LCS) R3430255-2 07/11/19 22:58

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.19	103	80.0-120	
(T) Barium-133			*43.7*		

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
C1	Tracer recovery limits have been exceeded; values are outside upper control limits.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

[1] Cp
[2] Tc
[3] Ss
[4] Cn
[5] Sr
[6] Qc
[7] Gl
[8] Al
[9] Sc

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

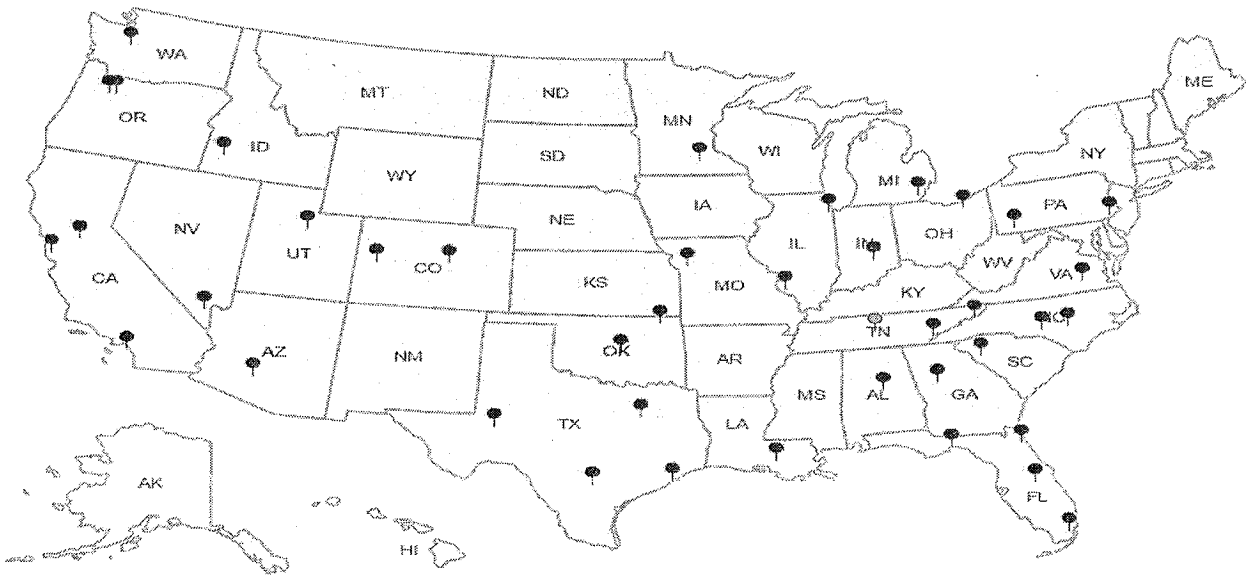
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: OHLRTA		SDG#:	1112498
Cooler Received/Opened On: 6/25/19		Temperature:	Amb
Received By: Carol Kemp			
Signature: Carol Kemp			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1906206

H126

1112448

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

21-Jun-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra-228 E904.0	Ra-226 M7500 Ra B M	Requested Tests			
MW-10	Aqueous	-01E	06/19/19 08:55 AM	1LHDPEHNO3	1	1				-01
MW-5	Aqueous	-02E	06/19/19 09:35 AM	1LHDPEHNO3	1	1				02
MW-5B	Aqueous	-03E	06/19/19 10:05 AM	1LHDPEHNO3	1					03
MW-5B	Aqueous	-03F	06/19/19 10:05 AM	1LHDPEHNO3		1				"
MW3-1	Aqueous	-04E	06/19/19 11:00 AM	1LHDPEHNO3	1	1				04
MW3-2	Aqueous	-05E	06/19/19 11:35 AM	1LHDPEHNO3	1					05
MW3-2	Aqueous	-05F	06/19/19 11:35 AM	1LHDPEHNO3		1				"
MW3-3	Aqueous	-06E	06/19/19 12:30 PM	1LHDPEHNO3	1	1				06
MW3-4	Aqueous	-07E	06/19/19 01:10 PM	1LHDPEHNO3	1					07
MW3-4	Aqueous	-07F	06/19/19 01:10 PM	1LHDPEHNO3		1				"
MW3-4B	Aqueous	-08E	06/19/19 01:45 PM	1LHDPEHNO3	1					08
MW3-4B	Aqueous	-08F	06/19/19 01:45 PM	1LHDPEHNO3		1				"
MW-202	Aqueous	-09E	06/19/19 11:45 AM	1LHDPEHNO3	1					09
MW-202	Aqueous	-09F	06/19/19 11:45 AM	1LHDPEHNO3		1				"
MW4-7B	Aqueous	-15E	06/19/19 02:38 PM	1LHDPEHNO3	1					10
MW4-7B	Aqueous	-15F	06/19/19 02:38 PM	1LHDPEHNO3		1				"
MW4-7	Aqueous	-16E	06/19/19 03:30 PM	1LHDPEHNO3	1					11
MW4-7	Aqueous	-16F	06/19/19 03:30 PM	1LHDPEHNO3		1				"

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

Amb

	Date/Time		Date/Time
Relinquished by:	6/21/19 1700	Received by: Carol Kemp	6/25/19 11:00 CK
Relinquished by:		Received by:	

February 28, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 1906231

RE: Copano GW 2Q19

Dear Kevin Dworsky:

DHL Analytical, Inc. received 11 sample(s) on 6/21/2019 for the analyses presented in the following report.

REVISION#1: This revision consists of adding Dissolved Uranium to the list of test parameters for all samples as per the client. Please replace the original report with this revised report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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Subcontract Report 1906231 99

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 83321

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Victoria, TX 77901
PHONE: 361-573-6442 FAX/E-MAIL:
DATA REPORTED TO: Sergio Ruiz, Greg Logan, Victor Gonzalez
ADDITIONAL REPORT COPIES TO: Kevin Dwerry, Matt Wickham

DATE: 6-20-19 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1906231
PROJECT LOCATION OR NAME: Coleman GW 2019
CLENT PROJECT #: 18111309-2003 COLLECTOR: Greg Logan JR.

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☒ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☒ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
MW4-3B	01	6-20-19	12:40	W	P	6		X	X		V	
MW4-3	02		12:08									
MW4-4	03		11:10									
MW3-6	04		10:05									
MW3-5	05		9:25									
MW-303	06		12:10									
MW4-1	07		9:05									
MW4-2A	08		10:05									
MW4-2	09		11:35									
MW-6R	10		12:45									
MW-6RB	11	↓	13:35	↓	↓	↓		↓	↓		↓	

See attached List

RELINQUISHED BY: (Signature) DATE/TIME 6-20-19 1820 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) DATE/TIME 6-21-19 0918 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP 29.3/23.2/3.2 THERM #: 18
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Dissolved Metals[1]	SW6020A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Metals.
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Dissolved Mercury	SW7470A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Mercury.
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:

1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium

2) From time of sample collection



5

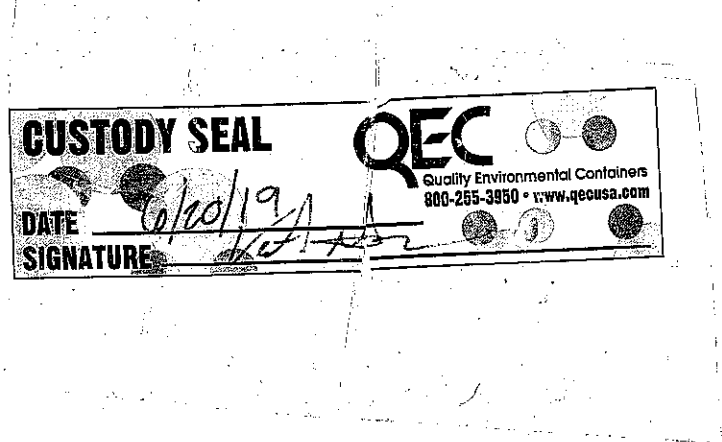
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3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

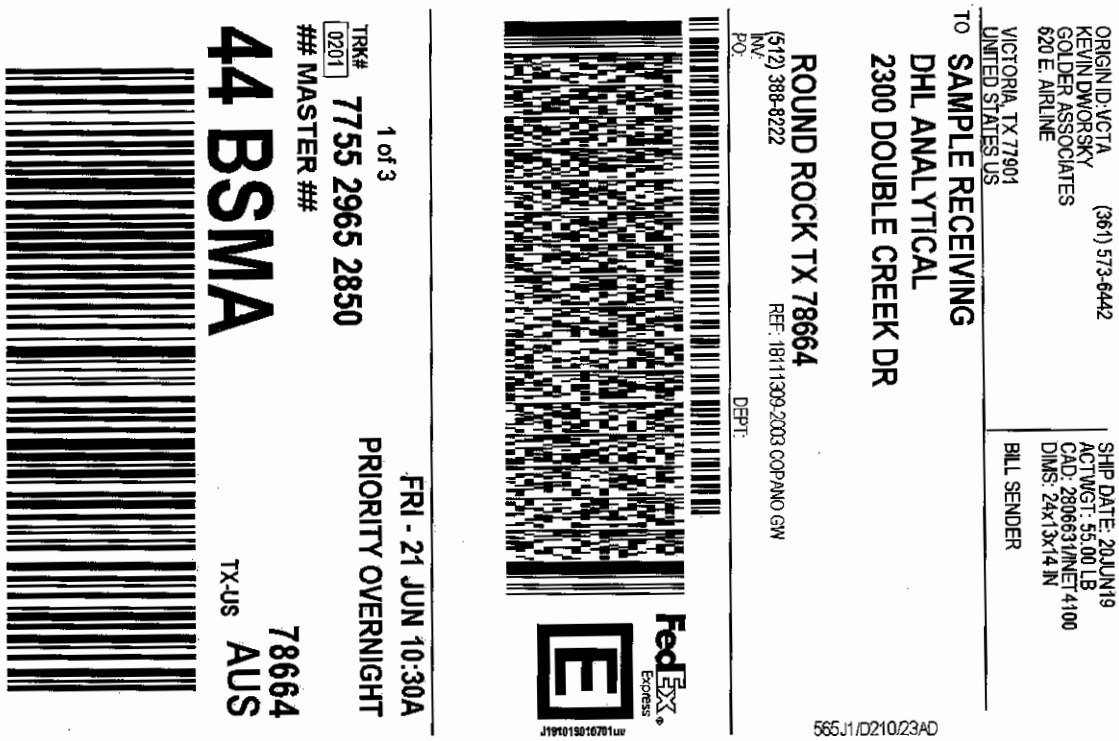
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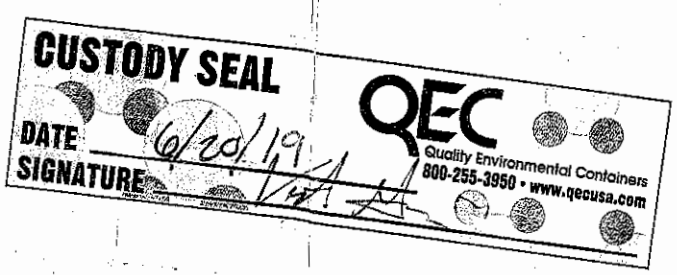
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DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 6/21/2019

Work Order Number 1906231 | Received by JW

Checklist completed by: _____ (Signature) 6/21/2019 (Date) | Reviewed by CC (Initials) 6/21/2019 (Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	29.3 °C/28.2/3.2°C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW 2Q19	**LRC Date:** 7/18/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1906231
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW 2Q19	**LRC Date:** 7/18/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1906231
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	**X**				
		2) Were percent RSDs or correlation coefficient criteria met?	**X**				
		3) Was the number of standards recommended in the method used for all analytes?	**X**				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	**X**				
		5) Are ICAL data available for all instruments used?	**X**				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	**X**				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	**X**				
		2) Were percent differences for each analyte within the method-required QC limits?		**X**			**S2-02**
		3) Was the ICAL curve verified for each analyte?	**X**				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	**X**				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	**X**				
		2) Were ion abundance data within the method-required QC limits?	**X**				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	**X**				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	**X**				
		2) Were data associated with manual integrations flagged on the raw data?	**X**				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			**X**		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			**X**		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	**X**				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		**X**			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	**X**				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	**X**				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	**X**				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	**X**				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	**X**				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	**X**				
		2) Is documentation of the analyst's competency up-to-date and on file?	**X**				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	**X**				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

02/28/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *28-Feb-20*

CLIENT: Golder
Project: Copano GW 2Q19
Lab Order: 1906231

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis (total & dissolved)
Method SW6020A - Uranium in Water Analysis (this parameter is not NELACP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis

Exception Report R1-01

The samples were received and log-in performed on 6/21/19. A total of 11 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Ammonia analysis performed on 6/28/19 the matrix spike and matrix spike duplicate recoveries were slightly above control limits. This was due to matrix effect. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits. No further corrective actions were taken.

For Metals analysis performed on 6/26/19 (batch 91480) the matrix spike and matrix spike duplicate recoveries were out of control limits for three analytes. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Exception Report R10-01

For Anions analysis nine samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride).

For Uranium analysis the Dissolved Uranium results were slightly higher than the Total Uranium results for samples MW4-3B, MW3-6 and MW-6RB. These are within the acceptable variation limits. No further corrective actions were taken.

Exception Report S2-02

For Metals analysis performed on 6/26/19 LCVL6-190626 was above control limits for Vanadium. This

is flagged accordingly in the QC summary report. The associated ICV6-190626 was within control limits for this analyte. No further corrective actions were taken.

Exception Report S9-01

For Metals analysis performed on 6/26/19 (batch 91506) the PDS recovery was slightly below control limits for Nickel. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 6/26/19 (batch 91480) the RPD for the serial dilution was slightly above control limits for Lead. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Mercury analysis performed on 6/24/19 (batch 91459) the PDS recoveries were below control limits. These were due to matrix effect. These are flagged accordingly. The serial dilutions were within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *18-Jul-19*

CLIENT: Golder
Project: Copano GW 2Q19
Lab Order: 1906231

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1906231-01	MW4-3B		06/20/19 12:48 PM	6/21/2019
1906231-02	MW4-3		06/20/19 12:00 PM	6/21/2019
1906231-03	MW4-4		06/20/19 11:10 AM	6/21/2019
1906231-04	MW3-6		06/20/19 10:00 AM	6/21/2019
1906231-05	MW3-5		06/20/19 09:25 AM	6/21/2019
1906231-06	MW-303		06/20/19 12:10 PM	6/21/2019
1906231-07	MW4-1		06/20/19 09:05 AM	6/21/2019
1906231-08	MW4-2A		06/20/19 10:05 AM	6/21/2019
1906231-09	MW4-2		06/20/19 11:35 AM	6/21/2019
1906231-10	MW-6R		06/20/19 12:45 PM	6/21/2019
1906231-11	MW-6RB		06/20/19 01:35 PM	6/21/2019

Lab Order: 1906231
Client: Golder
Project: Copano GW 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906231-01A	MW4-3B	06/20/19 12:48 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-3B	06/20/19 12:48 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-3B	06/20/19 12:48 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-3B	06/20/19 12:48 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906231-01B	MW4-3B	06/20/19 12:48 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW4-3B	06/20/19 12:48 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906231-01C	MW4-3B	06/20/19 12:48 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/28/19 09:54 AM	91569
1906231-01D	MW4-3B	06/20/19 12:48 PM	Aqueous	M2320 B	Alkalinity Preparation	06/24/19 08:20 AM	91451
	MW4-3B	06/20/19 12:48 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-3B	06/20/19 12:48 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-3B	06/20/19 12:48 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-3B	06/20/19 12:48 PM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906231-02A	MW4-3	06/20/19 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-3	06/20/19 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-3	06/20/19 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-3	06/20/19 12:00 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906231-02B	MW4-3	06/20/19 12:00 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW4-3	06/20/19 12:00 PM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906231-02C	MW4-3	06/20/19 12:00 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/28/19 09:54 AM	91569
1906231-02D	MW4-3	06/20/19 12:00 PM	Aqueous	M2320 B	Alkalinity Preparation	06/24/19 08:20 AM	91451
	MW4-3	06/20/19 12:00 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-3	06/20/19 12:00 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-3	06/20/19 12:00 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-3	06/20/19 12:00 PM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906231-03A	MW4-4	06/20/19 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-4	06/20/19 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-4	06/20/19 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-4	06/20/19 11:10 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459

Lab Order: 1906231
Client: Golder
Project: Copano GW 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906231-03B	MW4-4	06/20/19 11:10 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW4-4	06/20/19 11:10 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906231-03C	MW4-4	06/20/19 11:10 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/28/19 09:54 AM	91569
1906231-03D	MW4-4	06/20/19 11:10 AM	Aqueous	M2320 B	Alkalinity Preparation	06/24/19 08:20 AM	91451
	MW4-4	06/20/19 11:10 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-4	06/20/19 11:10 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-4	06/20/19 11:10 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-4	06/20/19 11:10 AM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906231-04A	MW3-6	06/20/19 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW3-6	06/20/19 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW3-6	06/20/19 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW3-6	06/20/19 10:00 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906231-04B	MW3-6	06/20/19 10:00 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW3-6	06/20/19 10:00 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906231-04C	MW3-6	06/20/19 10:00 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/28/19 09:54 AM	91569
1906231-04D	MW3-6	06/20/19 10:00 AM	Aqueous	M2320 B	Alkalinity Preparation	06/24/19 08:20 AM	91451
	MW3-6	06/20/19 10:00 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW3-6	06/20/19 10:00 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW3-6	06/20/19 10:00 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW3-6	06/20/19 10:00 AM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906231-05A	MW3-5	06/20/19 09:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW3-5	06/20/19 09:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW3-5	06/20/19 09:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW3-5	06/20/19 09:25 AM	Aqueous	SW7470A	Mercury Aq Prep	06/24/19 08:28 AM	91459
1906231-05B	MW3-5	06/20/19 09:25 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW3-5	06/20/19 09:25 AM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481
1906231-05C	MW3-5	06/20/19 09:25 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/28/19 09:54 AM	91569
1906231-05D	MW3-5	06/20/19 09:25 AM	Aqueous	M2320 B	Alkalinity Preparation	06/24/19 08:20 AM	91451

Lab Order: 1906231
Client: Golder
Project: Copano GW 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906231-05D	MW3-5	06/20/19 09:25 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW3-5	06/20/19 09:25 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW3-5	06/20/19 09:25 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW3-5	06/20/19 09:25 AM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906231-06A	MW-303	06/20/19 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW-303	06/20/19 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW-303	06/20/19 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW-303	06/20/19 12:10 PM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481
1906231-06B	MW-303	06/20/19 12:10 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW-303	06/20/19 12:10 PM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481
1906231-06C	MW-303	06/20/19 12:10 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/28/19 09:54 AM	91569
1906231-06D	MW-303	06/20/19 12:10 PM	Aqueous	M2320 B	Alkalinity Preparation	06/24/19 08:20 AM	91451
	MW-303	06/20/19 12:10 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW-303	06/20/19 12:10 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW-303	06/20/19 12:10 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW-303	06/20/19 12:10 PM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469
1906231-07A	MW4-1	06/20/19 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-1	06/20/19 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-1	06/20/19 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-1	06/20/19 09:05 AM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481
1906231-07B	MW4-1	06/20/19 09:05 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW4-1	06/20/19 09:05 AM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481
1906231-07C	MW4-1	06/20/19 09:05 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/28/19 09:54 AM	91569
1906231-07D	MW4-1	06/20/19 09:05 AM	Aqueous	M2320 B	Alkalinity Preparation	06/24/19 08:20 AM	91451
	MW4-1	06/20/19 09:05 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-1	06/20/19 09:05 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-1	06/20/19 09:05 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-1	06/20/19 09:05 AM	Aqueous	M2540C	TDS Preparation	06/24/19 12:02 PM	91469

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Client: Golder
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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906231-08A	MW4-2A	06/20/19 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-2A	06/20/19 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-2A	06/20/19 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-2A	06/20/19 10:05 AM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481
1906231-08B	MW4-2A	06/20/19 10:05 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW4-2A	06/20/19 10:05 AM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481
1906231-08C	MW4-2A	06/20/19 10:05 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/28/19 09:54 AM	91569
1906231-08D	MW4-2A	06/20/19 10:05 AM	Aqueous	M2320 B	Alkalinity Preparation	06/24/19 08:20 AM	91451
	MW4-2A	06/20/19 10:05 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-2A	06/20/19 10:05 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-2A	06/20/19 10:05 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-2A	06/20/19 10:05 AM	Aqueous	M2540C	TDS Preparation	06/26/19 05:00 PM	91523
1906231-09A	MW4-2	06/20/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-2	06/20/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-2	06/20/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW4-2	06/20/19 11:35 AM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481
1906231-09B	MW4-2	06/20/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:14 AM	91506
	MW4-2	06/20/19 11:35 AM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481
1906231-09C	MW4-2	06/20/19 11:35 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/28/19 09:54 AM	91569
1906231-09D	MW4-2	06/20/19 11:35 AM	Aqueous	M2320 B	Alkalinity Preparation	06/24/19 08:20 AM	91451
	MW4-2	06/20/19 11:35 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-2	06/20/19 11:35 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-2	06/20/19 11:35 AM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW4-2	06/20/19 11:35 AM	Aqueous	M2540C	TDS Preparation	06/26/19 05:00 PM	91523
1906231-10A	MW-6R	06/20/19 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW-6R	06/20/19 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW-6R	06/20/19 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW-6R	06/20/19 12:45 PM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906231-10B	MW-6R	06/20/19 12:45 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:16 AM	91507
	MW-6R	06/20/19 12:45 PM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481
1906231-10C	MW-6R	06/20/19 12:45 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/28/19 09:54 AM	91569
1906231-10D	MW-6R	06/20/19 12:45 PM	Aqueous	M2320 B	Alkalinity Preparation	06/24/19 08:20 AM	91451
	MW-6R	06/20/19 12:45 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW-6R	06/20/19 12:45 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW-6R	06/20/19 12:45 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW-6R	06/20/19 12:45 PM	Aqueous	M2540C	TDS Preparation	06/26/19 05:00 PM	91523
1906231-11A	MW-6RB	06/20/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW-6RB	06/20/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW-6RB	06/20/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/25/19 09:19 AM	91480
	MW-6RB	06/20/19 01:35 PM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481
1906231-11B	MW-6RB	06/20/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/26/19 09:16 AM	91507
	MW-6RB	06/20/19 01:35 PM	Aqueous	SW7470A	Mercury Aq Prep	06/25/19 09:41 AM	91481
1906231-11C	MW-6RB	06/20/19 01:35 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	06/28/19 09:54 AM	91569
1906231-11D	MW-6RB	06/20/19 01:35 PM	Aqueous	M2320 B	Alkalinity Preparation	06/24/19 08:20 AM	91451
	MW-6RB	06/20/19 01:35 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW-6RB	06/20/19 01:35 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW-6RB	06/20/19 01:35 PM	Aqueous	E300	Anion Preparation	06/21/19 09:25 AM	91431
	MW-6RB	06/20/19 01:35 PM	Aqueous	M2540C	TDS Preparation	06/26/19 05:00 PM	91523

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906231-01A	MW4-3B	Aqueous	SW7470A	Mercury Total: Aqueous	91459	1	06/24/19 04:50 PM	CETAC2_HG_190624A
	MW4-3B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	500	06/26/19 02:14 PM	ICP-MS4_190626B
	MW4-3B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	10	06/26/19 03:02 PM	ICP-MS4_190626B
	MW4-3B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	1	06/26/19 12:06 PM	ICP-MS5_190626B
	MW4-3B	Aqueous	SW6020A	Uranium in Water by ICPMS	91480	1	06/26/19 12:06 PM	ICP-MS5_190626C
1906231-01B	MW4-3B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91459	1	06/24/19 05:01 PM	CETAC2_HG_190624B
	MW4-3B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 01:35 PM	ICP-MS5_190626B
1906231-01C	MW4-3B	Aqueous	M4500-NH3-D	Ammonia aqueous	91569	1	06/28/19 01:45 PM	WC_190628A
1906231-01D	MW4-3B	Aqueous	M2320 B	Alkalinity	91451	1	06/24/19 11:31 AM	TITRATOR_190624A
	MW4-3B	Aqueous	E300	Anions by IC method - Water	91431	10	06/21/19 10:56 PM	IC2_190621A
	MW4-3B	Aqueous	E300	Anions by IC method - Water	91431	1000	06/21/19 12:16 PM	IC2_190621A
	MW4-3B	Aqueous	E300	Anions by IC method - Water	91431	100	06/21/19 05:36 PM	IC2_190621A
	MW4-3B	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906231-02A	MW4-3	Aqueous	SW7470A	Mercury Total: Aqueous	91459	1	06/24/19 05:04 PM	CETAC2_HG_190624A
	MW4-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	500	06/26/19 02:16 PM	ICP-MS4_190626B
	MW4-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	10	06/26/19 03:03 PM	ICP-MS4_190626B
	MW4-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	1	06/26/19 12:08 PM	ICP-MS5_190626B
	MW4-3	Aqueous	SW6020A	Uranium in Water by ICPMS	91480	1	06/26/19 12:08 PM	ICP-MS5_190626C
1906231-02B	MW4-3	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91459	1	06/24/19 05:06 PM	CETAC2_HG_190624B
	MW4-3	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 02:24 PM	ICP-MS5_190626B
1906231-02C	MW4-3	Aqueous	M4500-NH3-D	Ammonia aqueous	91569	1	06/28/19 01:45 PM	WC_190628A
1906231-02D	MW4-3	Aqueous	M2320 B	Alkalinity	91451	1	06/24/19 11:50 AM	TITRATOR_190624A
	MW4-3	Aqueous	E300	Anions by IC method - Water	91431	1000	06/21/19 01:04 PM	IC2_190621A
	MW4-3	Aqueous	E300	Anions by IC method - Water	91431	100	06/21/19 05:52 PM	IC2_190621A
	MW4-3	Aqueous	E300	Anions by IC method - Water	91431	10	06/21/19 11:12 PM	IC2_190621A
	MW4-3	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906231-03A	MW4-4	Aqueous	SW7470A	Mercury Total: Aqueous	91459	1	06/24/19 05:09 PM	CETAC2_HG_190624A
	MW4-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	1	06/26/19 12:10 PM	ICP-MS5_190626B
	MW4-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	500	06/26/19 02:18 PM	ICP-MS4_190626B
	MW4-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	10	06/26/19 03:05 PM	ICP-MS4_190626B
	MW4-4	Aqueous	SW6020A	Uranium in Water by ICPMS	91480	1	06/26/19 12:10 PM	ICP-MS5_190626C
1906231-03B	MW4-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91459	1	06/24/19 05:12 PM	CETAC2_HG_190624B
	MW4-4	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 02:27 PM	ICP-MS5_190626B
1906231-03C	MW4-4	Aqueous	M4500-NH3-D	Ammonia aqueous	91569	1	06/28/19 01:45 PM	WC_190628A
1906231-03D	MW4-4	Aqueous	M2320 B	Alkalinity	91451	1	06/24/19 12:04 PM	TITRATOR_190624A
	MW4-4	Aqueous	E300	Anions by IC method - Water	91431	10	06/21/19 11:28 PM	IC2_190621A
	MW4-4	Aqueous	E300	Anions by IC method - Water	91431	1000	06/21/19 01:52 PM	IC2_190621A
	MW4-4	Aqueous	E300	Anions by IC method - Water	91431	100	06/21/19 06:08 PM	IC2_190621A
	MW4-4	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906231-04A	MW3-6	Aqueous	SW7470A	Mercury Total: Aqueous	91459	1	06/24/19 05:14 PM	CETAC2_HG_190624A
	MW3-6	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	500	06/26/19 02:20 PM	ICP-MS4_190626B
	MW3-6	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	10	06/26/19 03:07 PM	ICP-MS4_190626B
	MW3-6	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	1	06/26/19 12:12 PM	ICP-MS5_190626B
	MW3-6	Aqueous	SW6020A	Uranium in Water by ICPMS	91480	1	06/26/19 12:12 PM	ICP-MS5_190626C
1906231-04B	MW3-6	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91459	1	06/24/19 05:16 PM	CETAC2_HG_190624B
	MW3-6	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 02:29 PM	ICP-MS5_190626B
1906231-04C	MW3-6	Aqueous	M4500-NH3-D	Ammonia aqueous	91569	1	06/28/19 01:45 PM	WC_190628A
1906231-04D	MW3-6	Aqueous	M2320 B	Alkalinity	91451	1	06/24/19 12:29 PM	TITRATOR_190624A
	MW3-6	Aqueous	E300	Anions by IC method - Water	91431	1000	06/21/19 02:08 PM	IC2_190621A
	MW3-6	Aqueous	E300	Anions by IC method - Water	91431	100	06/21/19 06:24 PM	IC2_190621A
	MW3-6	Aqueous	E300	Anions by IC method - Water	91431	10	06/21/19 11:44 PM	IC2_190621A
	MW3-6	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906231-05A	MW3-5	Aqueous	SW7470A	Mercury Total: Aqueous	91459	1	06/24/19 05:18 PM	CETAC2_HG_190624A
	MW3-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	1	06/26/19 12:14 PM	ICP-MS5_190626B
	MW3-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	10	06/26/19 03:09 PM	ICP-MS4_190626B
	MW3-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	500	06/26/19 02:22 PM	ICP-MS4_190626B
	MW3-5	Aqueous	SW6020A	Uranium in Water by ICPMS	91480	1	06/26/19 12:14 PM	ICP-MS5_190626C
1906231-05B	MW3-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91481	1	06/25/19 04:34 PM	CETAC2_HG_190625C
	MW3-5	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 02:31 PM	ICP-MS5_190626B
1906231-05C	MW3-5	Aqueous	M4500-NH3-D	Ammonia aqueous	91569	1	06/28/19 01:45 PM	WC_190628A
1906231-05D	MW3-5	Aqueous	M2320 B	Alkalinity	91451	1	06/24/19 12:46 PM	TITRATOR_190624A
	MW3-5	Aqueous	E300	Anions by IC method - Water	91431	1000	06/21/19 02:24 PM	IC2_190621A
	MW3-5	Aqueous	E300	Anions by IC method - Water	91431	100	06/21/19 06:40 PM	IC2_190621A
	MW3-5	Aqueous	E300	Anions by IC method - Water	91431	10	06/22/19	IC2_190621A
	MW3-5	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906231-06A	MW-303	Aqueous	SW7470A	Mercury Total: Aqueous	91481	1	06/25/19 04:37 PM	CETAC2_HG_190625B
	MW-303	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	500	06/26/19 02:24 PM	ICP-MS4_190626B
	MW-303	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	10	06/26/19 03:11 PM	ICP-MS4_190626B
	MW-303	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	1	06/26/19 12:17 PM	ICP-MS5_190626B
	MW-303	Aqueous	SW6020A	Uranium in Water by ICPMS	91480	1	06/26/19 12:17 PM	ICP-MS5_190626C
1906231-06B	MW-303	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91481	1	06/25/19 04:39 PM	CETAC2_HG_190625C
	MW-303	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 02:33 PM	ICP-MS5_190626B
1906231-06C	MW-303	Aqueous	M4500-NH3-D	Ammonia aqueous	91569	1	06/28/19 01:45 PM	WC_190628A
1906231-06D	MW-303	Aqueous	M2320 B	Alkalinity	91451	1	06/24/19 01:03 PM	TITRATOR_190624A
	MW-303	Aqueous	E300	Anions by IC method - Water	91431	1000	06/21/19 02:40 PM	IC2_190621A
	MW-303	Aqueous	E300	Anions by IC method - Water	91431	100	06/21/19 06:56 PM	IC2_190621A
	MW-303	Aqueous	E300	Anions by IC method - Water	91431	10	06/22/19 12:16 AM	IC2_190621A
	MW-303	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906231-07A	MW4-1	Aqueous	SW7470A	Mercury Total: Aqueous	91481	1	06/25/19 04:41 PM	CETAC2_HG_190625B
	MW4-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	500	06/26/19 02:10 PM	ICP-MS4_190626B
	MW4-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	10	06/26/19 02:58 PM	ICP-MS4_190626B
	MW4-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	1	06/26/19 12:01 PM	ICP-MS5_190626B
	MW4-1	Aqueous	SW6020A	Uranium in Water by ICPMS	91480	1	06/26/19 12:01 PM	ICP-MS5_190626C
1906231-07B	MW4-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91481	1	06/25/19 04:44 PM	CETAC2_HG_190625C
	MW4-1	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 02:35 PM	ICP-MS5_190626B
1906231-07C	MW4-1	Aqueous	M4500-NH3-D	Ammonia aqueous	91569	1	06/28/19 01:45 PM	WC_190628A
1906231-07D	MW4-1	Aqueous	M2320 B	Alkalinity	91451	1	06/24/19 01:33 PM	TITRATOR_190624A
	MW4-1	Aqueous	E300	Anions by IC method - Water	91431	10	06/22/19 12:32 AM	IC2_190621A
	MW4-1	Aqueous	E300	Anions by IC method - Water	91431	100	06/21/19 07:12 PM	IC2_190621A
	MW4-1	Aqueous	E300	Anions by IC method - Water	91431	1000	06/21/19 02:56 PM	IC2_190621A
	MW4-1	Aqueous	M2540C	Total Dissolved Solids	91469	1	06/24/19 05:00 PM	WC_190624B
1906231-08A	MW4-2A	Aqueous	SW7470A	Mercury Total: Aqueous	91481	1	06/25/19 04:46 PM	CETAC2_HG_190625B
	MW4-2A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	500	06/26/19 02:26 PM	ICP-MS4_190626B
	MW4-2A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	10	06/26/19 03:13 PM	ICP-MS4_190626B
	MW4-2A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	1	06/26/19 12:19 PM	ICP-MS5_190626B
	MW4-2A	Aqueous	SW6020A	Uranium in Water by ICPMS	91480	1	06/26/19 12:19 PM	ICP-MS5_190626C
1906231-08B	MW4-2A	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91481	1	06/25/19 04:48 PM	CETAC2_HG_190625C
	MW4-2A	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 02:38 PM	ICP-MS5_190626B
1906231-08C	MW4-2A	Aqueous	M4500-NH3-D	Ammonia aqueous	91569	1	06/28/19 01:45 PM	WC_190628A
1906231-08D	MW4-2A	Aqueous	M2320 B	Alkalinity	91451	1	06/24/19 01:54 PM	TITRATOR_190624A
	MW4-2A	Aqueous	E300	Anions by IC method - Water	91431	1000	06/21/19 03:12 PM	IC2_190621A
	MW4-2A	Aqueous	E300	Anions by IC method - Water	91431	100	06/21/19 07:28 PM	IC2_190621A
	MW4-2A	Aqueous	E300	Anions by IC method - Water	91431	10	06/22/19 12:48 AM	IC2_190621A
	MW4-2A	Aqueous	M2540C	Total Dissolved Solids	91523	1	06/27/19 03:40 PM	WC_190627A

Lab Order: 1906231
Client: Golder
Project: Copano GW 2Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906231-09A	MW4-2	Aqueous	SW7470A	Mercury Total: Aqueous	91481	1	06/25/19 05:03 PM	CETAC2_HG_190625B
	MW4-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	10	06/26/19 03:15 PM	ICP-MS4_190626B
	MW4-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	1	06/26/19 12:21 PM	ICP-MS5_190626B
	MW4-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	500	06/26/19 02:28 PM	ICP-MS4_190626B
	MW4-2	Aqueous	SW6020A	Uranium in Water by ICPMS	91480	1	06/26/19 12:21 PM	ICP-MS5_190626C
1906231-09B	MW4-2	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91481	1	06/25/19 05:06 PM	CETAC2_HG_190625C
	MW4-2	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91506	1	06/26/19 02:40 PM	ICP-MS5_190626B
1906231-09C	MW4-2	Aqueous	M4500-NH3-D	Ammonia aqueous	91569	1	06/28/19 01:45 PM	WC_190628A
1906231-09D	MW4-2	Aqueous	M2320 B	Alkalinity	91451	1	06/24/19 02:40 PM	TITRATOR_190624A
	MW4-2	Aqueous	E300	Anions by IC method - Water	91431	10	06/22/19 01:04 AM	IC2_190621A
	MW4-2	Aqueous	E300	Anions by IC method - Water	91431	1000	06/21/19 03:28 PM	IC2_190621A
	MW4-2	Aqueous	E300	Anions by IC method - Water	91431	100	06/21/19 08:48 PM	IC2_190621A
	MW4-2	Aqueous	M2540C	Total Dissolved Solids	91523	1	06/27/19 03:40 PM	WC_190627A
1906231-10A	MW-6R	Aqueous	SW7470A	Mercury Total: Aqueous	91481	1	06/25/19 05:08 PM	CETAC2_HG_190625B
	MW-6R	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	500	06/26/19 02:30 PM	ICP-MS4_190626B
	MW-6R	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	10	06/26/19 03:17 PM	ICP-MS4_190626B
	MW-6R	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	1	06/26/19 12:23 PM	ICP-MS5_190626B
	MW-6R	Aqueous	SW6020A	Uranium in Water by ICPMS	91480	1	06/26/19 12:23 PM	ICP-MS5_190626C
1906231-10B	MW-6R	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91481	1	06/25/19 05:10 PM	CETAC2_HG_190625C
	MW-6R	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91507	1	06/26/19 03:21 PM	ICP-MS5_190626B
1906231-10C	MW-6R	Aqueous	M4500-NH3-D	Ammonia aqueous	91569	1	06/28/19 01:45 PM	WC_190628A
1906231-10D	MW-6R	Aqueous	M2320 B	Alkalinity	91451	1	06/24/19 03:18 PM	TITRATOR_190624A
	MW-6R	Aqueous	E300	Anions by IC method - Water	91431	1000	06/21/19 03:44 PM	IC2_190621A
	MW-6R	Aqueous	E300	Anions by IC method - Water	91431	100	06/21/19 09:04 PM	IC2_190621A
	MW-6R	Aqueous	E300	Anions by IC method - Water	91431	10	06/22/19 01:20 AM	IC2_190621A
	MW-6R	Aqueous	M2540C	Total Dissolved Solids	91523	1	06/27/19 03:40 PM	WC_190627A

Lab Order: 1906231
Client: Golder
Project: Copano GW 2Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906231-11A	MW-6RB	Aqueous	SW7470A	Mercury Total: Aqueous	91481	1	06/25/19 05:13 PM	CETAC2_HG_190625B
	MW-6RB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	1	06/26/19 12:56 PM	ICP-MS5_190626B
	MW-6RB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	500	06/26/19 02:46 PM	ICP-MS4_190626B
	MW-6RB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91480	10	06/26/19 03:33 PM	ICP-MS4_190626B
	MW-6RB	Aqueous	SW6020A	Uranium in Water by ICPMS	91480	1	06/26/19 12:56 PM	ICP-MS5_190626C
1906231-11B	MW-6RB	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91481	1	06/25/19 05:15 PM	CETAC2_HG_190625C
	MW-6RB	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91507	1	06/26/19 03:07 PM	ICP-MS5_190626B
1906231-11C	MW-6RB	Aqueous	M4500-NH3-D	Ammonia aqueous	91569	1	06/28/19 01:45 PM	WC_190628A
1906231-11D	MW-6RB	Aqueous	M2320 B	Alkalinity	91451	1	06/24/19 03:39 PM	TITRATOR_190624A
	MW-6RB	Aqueous	E300	Anions by IC method - Water	91431	1000	06/21/19 05:04 PM	IC2_190621A
	MW-6RB	Aqueous	E300	Anions by IC method - Water	91431	100	06/21/19 09:20 PM	IC2_190621A
	MW-6RB	Aqueous	E300	Anions by IC method - Water	91431	10	06/22/19 02:56 AM	IC2_190621A
	MW-6RB	Aqueous	M2540C	Total Dissolved Solids	91523	1	06/27/19 03:40 PM	WC_190627A

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3B
Project:	Copano GW 2Q19	**Lab ID:**	1906231-01
Project No:	18111309-2003	**Collection Date:**	06/20/19 12:48 PM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0210	0.0100	0.0300	J	mg/L	1	06/26/19 01:35 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 01:35 PM
Dissolved Arsenic	0.00266	0.00200	0.00500	J	mg/L	1	06/26/19 01:35 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 01:35 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 01:35 PM
Dissolved Nickel	0.00788	0.00300	0.0100	J	mg/L	1	06/26/19 01:35 PM
Dissolved Thallium	0.00109	0.000500	0.00150	J	mg/L	1	06/26/19 01:35 PM
Dissolved Vanadium	0.00118	0.000500	0.00100		mg/L	1	06/26/19 01:35 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0338	0.0100	0.0300		mg/L	1	06/26/19 12:06 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 12:06 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:06 PM
Calcium	1300	50.0	150		mg/L	500	06/26/19 02:14 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:06 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 12:06 PM
Magnesium	1490	50.0	150		mg/L	500	06/26/19 02:14 PM
Nickel	0.00732	0.00300	0.0100	J	mg/L	1	06/26/19 12:06 PM
Potassium	93.3	1.00	3.00		mg/L	10	06/26/19 03:02 PM
Sodium	9740	50.0	150		mg/L	500	06/26/19 02:14 PM
Thallium	0.000858	0.000500	0.00150	J	mg/L	1	06/26/19 12:06 PM
Vanadium	0.000910	0.000500	0.00100	J	mg/L	1	06/26/19 12:06 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 05:01 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 04:50 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0680	0.00300	0.0100	N	mg/L	1	06/26/19 12:06 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0697	0.00300	0.0100	N	mg/L	1	06/26/19 01:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	19300	300	1000		mg/L	1000	06/21/19 12:16 PM
Fluoride	7.06	1.00	4.00		mg/L	10	06/21/19 10:56 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/21/19 10:56 PM
Sulfate	3800	100	300		mg/L	100	06/21/19 05:36 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3B
Project:	Copano GW 2Q19	**Lab ID:**	1906231-01
Project No:	18111309-2003	**Collection Date:**	06/20/19 12:48 PM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	265	10.0	20.0		mg/L @ pH 4.53	1	06/24/19 11:31 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/24/19 11:31 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/24/19 11:31 AM
Alkalinity, Total (As CaCO3)	265	20.0	20.0		mg/L @ pH 4.53	1	06/24/19 11:31 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.691	0.100	0.250		mg/L	1	06/28/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	39400	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3
Project:	Copano GW 2Q19	**Lab ID:**	1906231-02
Project No:	18111309-2003	**Collection Date:**	06/20/19 12:00 PM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0133	0.0100	0.0300	J	mg/L	1	06/26/19 02:24 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 02:24 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:24 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:24 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 02:24 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/26/19 02:24 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 02:24 PM
Dissolved Vanadium	0.00199	0.000500	0.00100		mg/L	1	06/26/19 02:24 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0254	0.0100	0.0300	J	mg/L	1	06/26/19 12:08 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 12:08 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:08 PM
Calcium	1270	50.0	150		mg/L	500	06/26/19 02:16 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:08 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 12:08 PM
Magnesium	1530	50.0	150		mg/L	500	06/26/19 02:16 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/26/19 12:08 PM
Potassium	65.1	1.00	3.00		mg/L	10	06/26/19 03:03 PM
Sodium	10600	50.0	150		mg/L	500	06/26/19 02:16 PM
Thallium	0.000513	0.000500	0.00150	J	mg/L	1	06/26/19 12:08 PM
Vanadium	0.00183	0.000500	0.00100		mg/L	1	06/26/19 12:08 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 05:06 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 05:04 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.114	0.00300	0.0100	N	mg/L	1	06/26/19 12:08 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.109	0.00300	0.0100	N	mg/L	1	06/26/19 02:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	22600	300	1000		mg/L	1000	06/21/19 01:04 PM
Fluoride	7.85	1.00	4.00		mg/L	10	06/21/19 11:12 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/21/19 11:12 PM
Sulfate	4030	100	300		mg/L	100	06/21/19 05:52 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3
Project:	Copano GW 2Q19	**Lab ID:**	1906231-02
Project No:	18111309-2003	**Collection Date:**	06/20/19 12:00 PM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	225	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 11:50 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 11:50 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 11:50 AM
Alkalinity, Total (As CaCO3)	225	20.0	20.0		mg/L @ pH 4.54	1	06/24/19 11:50 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.523	0.100	0.250		mg/L	1	06/28/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	38300	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-4
Project:	Copano GW 2Q19	**Lab ID:**	1906231-03
Project No:	18111309-2003	**Collection Date:**	06/20/19 11:10 AM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0144	0.0100	0.0300	J	mg/L	1	06/26/19 02:27 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 02:27 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:27 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:27 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 02:27 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/26/19 02:27 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 02:27 PM
Dissolved Vanadium	0.00178	0.000500	0.00100		mg/L	1	06/26/19 02:27 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0177	0.0100	0.0300	J	mg/L	1	06/26/19 12:10 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 12:10 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:10 PM
Calcium	1120	50.0	150		mg/L	500	06/26/19 02:18 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:10 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 12:10 PM
Magnesium	1150	50.0	150		mg/L	500	06/26/19 02:18 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/26/19 12:10 PM
Potassium	47.8	1.00	3.00		mg/L	10	06/26/19 03:05 PM
Sodium	8760	50.0	150		mg/L	500	06/26/19 02:18 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 12:10 PM
Vanadium	0.00170	0.000500	0.00100		mg/L	1	06/26/19 12:10 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 05:12 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 05:09 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.102	0.00300	0.0100	N	mg/L	1	06/26/19 12:10 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0992	0.00300	0.0100	N	mg/L	1	06/26/19 02:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	16000	300	1000		mg/L	1000	06/21/19 01:52 PM
Fluoride	7.47	1.00	4.00		mg/L	10	06/21/19 11:28 PM
Nitrate-N	1.22	1.00	5.00	J	mg/L	10	06/21/19 11:28 PM
Sulfate	4500	100	300		mg/L	100	06/21/19 06:08 PM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-4
Project:	Copano GW 2Q19	**Lab ID:**	1906231-03
Project No:	18111309-2003	**Collection Date:**	06/20/19 11:10 AM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	184	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 12:04 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 12:04 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 12:04 PM
Alkalinity, Total (As CaCO3)	184	20.0	20.0		mg/L @ pH 4.54	1	06/24/19 12:04 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/28/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	32500	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-6
Project:	Copano GW 2Q19	**Lab ID:**	1906231-04
Project No:	18111309-2003	**Collection Date:**	06/20/19 10:00 AM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0210	0.0100	0.0300	J	mg/L	1	06/26/19 02:29 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 02:29 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:29 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:29 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 02:29 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/26/19 02:29 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 02:29 PM
Dissolved Vanadium	0.000977	0.000500	0.00100	J	mg/L	1	06/26/19 02:29 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.264	0.0100	0.0300		mg/L	1	06/26/19 12:12 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 12:12 PM
Arsenic	0.00294	0.00200	0.00500	J	mg/L	1	06/26/19 12:12 PM
Calcium	1130	50.0	150		mg/L	500	06/26/19 02:20 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:12 PM
Lead	0.000480	0.000300	0.00100	J	mg/L	1	06/26/19 12:12 PM
Magnesium	1490	50.0	150		mg/L	500	06/26/19 02:20 PM
Nickel	0.00617	0.00300	0.0100	J	mg/L	1	06/26/19 12:12 PM
Potassium	57.1	1.00	3.00		mg/L	10	06/26/19 03:07 PM
Sodium	10600	50.0	150		mg/L	500	06/26/19 02:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 12:12 PM
Vanadium	0.00198	0.000500	0.00100		mg/L	1	06/26/19 12:12 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 05:16 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 05:14 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0972	0.00300	0.0100	N	mg/L	1	06/26/19 12:12 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0975	0.00300	0.0100	N	mg/L	1	06/26/19 02:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	19300	300	1000		mg/L	1000	06/21/19 02:08 PM
Fluoride	9.87	1.00	4.00		mg/L	10	06/21/19 11:44 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/21/19 11:44 PM
Sulfate	4820	100	300		mg/L	100	06/21/19 06:24 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-6
Project:	Copano GW 2Q19	**Lab ID:**	1906231-04
Project No:	18111309-2003	**Collection Date:**	06/20/19 10:00 AM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	335	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 12:29 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 12:29 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 12:29 PM
Alkalinity, Total (As CaCO3)	335	20.0	20.0		mg/L @ pH 4.54	1	06/24/19 12:29 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/28/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	40500	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-5
Project:	Copano GW 2Q19	**Lab ID:**	1906231-05
Project No:	18111309-2003	**Collection Date:**	06/20/19 09:25 AM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0141	0.0100	0.0300	J	mg/L	1	06/26/19 02:31 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 02:31 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:31 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:31 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 02:31 PM
Dissolved Nickel	0.00782	0.00300	0.0100	J	mg/L	1	06/26/19 02:31 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 02:31 PM
Dissolved Vanadium	0.00258	0.000500	0.00100		mg/L	1	06/26/19 02:31 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0490	0.0100	0.0300		mg/L	1	06/26/19 12:14 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 12:14 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:14 PM
Calcium	1100	50.0	150		mg/L	500	06/26/19 02:22 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:14 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 12:14 PM
Magnesium	1380	50.0	150		mg/L	500	06/26/19 02:22 PM
Nickel	0.00954	0.00300	0.0100	J	mg/L	1	06/26/19 12:14 PM
Potassium	75.8	1.00	3.00		mg/L	10	06/26/19 03:09 PM
Sodium	11000	50.0	150		mg/L	500	06/26/19 02:22 PM
Thallium	0.000533	0.000500	0.00150	J	mg/L	1	06/26/19 12:14 PM
Vanadium	0.00271	0.000500	0.00100		mg/L	1	06/26/19 12:14 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/25/19 04:34 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/19 05:18 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.138	0.00300	0.0100	N	mg/L	1	06/26/19 12:14 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.133	0.00300	0.0100	N	mg/L	1	06/26/19 02:31 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	20000	300	1000		mg/L	1000	06/21/19 02:24 PM
Fluoride	9.51	1.00	4.00		mg/L	10	06/22/19
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/22/19
Sulfate	5140	100	300		mg/L	100	06/21/19 06:40 PM

Qualifiers:

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-5
Project:	Copano GW 2Q19	**Lab ID:**	1906231-05
Project No:	18111309-2003	**Collection Date:**	06/20/19 09:25 AM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	224	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 12:46 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 12:46 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 12:46 PM
Alkalinity, Total (As CaCO3)	224	20.0	20.0		mg/L @ pH 4.54	1	06/24/19 12:46 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/28/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	42200	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-303
Project:	Copano GW 2Q19	**Lab ID:**	1906231-06
Project No:	18111309-2003	**Collection Date:**	06/20/19 12:10 PM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0138	0.0100	0.0300	J	mg/L	1	06/26/19 02:33 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 02:33 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:33 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:33 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 02:33 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/26/19 02:33 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 02:33 PM
Dissolved Vanadium	0.00183	0.000500	0.00100		mg/L	1	06/26/19 02:33 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0395	0.0100	0.0300		mg/L	1	06/26/19 12:17 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 12:17 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:17 PM
Calcium	1290	50.0	150		mg/L	500	06/26/19 02:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:17 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 12:17 PM
Magnesium	1550	50.0	150		mg/L	500	06/26/19 02:24 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/26/19 12:17 PM
Potassium	63.9	1.00	3.00		mg/L	10	06/26/19 03:11 PM
Sodium	10500	50.0	150		mg/L	500	06/26/19 02:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 12:17 PM
Vanadium	0.00189	0.000500	0.00100		mg/L	1	06/26/19 12:17 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/25/19 04:39 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/25/19 04:37 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.111	0.00300	0.0100	N	mg/L	1	06/26/19 12:17 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.109	0.00300	0.0100	N	mg/L	1	06/26/19 02:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	22000	300	1000		mg/L	1000	06/21/19 02:40 PM
Fluoride	9.07	1.00	4.00		mg/L	10	06/22/19 12:16 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/22/19 12:16 AM
Sulfate	4130	100	300		mg/L	100	06/21/19 06:56 PM

Qualifiers:

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DF- Dilution Factor
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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-303
Project:	Copano GW 2Q19	**Lab ID:**	1906231-06
Project No:	18111309-2003	**Collection Date:**	06/20/19 12:10 PM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	222	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 01:03 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 01:03 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 01:03 PM
Alkalinity, Total (As CaCO3)	222	20.0	20.0		mg/L @ pH 4.54	1	06/24/19 01:03 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/28/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	40000	1000	1000		mg/L	1	06/24/19 05:00 PM

Qualifiers:

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DF- Dilution Factor
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See Final Page of Report for MQLs and MDLs
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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-1
Project:	Copano GW 2Q19	**Lab ID:**	1906231-07
Project No:	18111309-2003	**Collection Date:**	06/20/19 09:05 AM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0153	0.0100	0.0300	J	mg/L	1	06/26/19 02:35 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 02:35 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:35 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:35 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 02:35 PM
Dissolved Nickel	0.00498	0.00300	0.0100	J	mg/L	1	06/26/19 02:35 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 02:35 PM
Dissolved Vanadium	0.000792	0.000500	0.00100	J	mg/L	1	06/26/19 02:35 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.632	0.0100	0.0300		mg/L	1	06/26/19 12:01 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 12:01 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:01 PM
Calcium	819	50.0	150		mg/L	500	06/26/19 02:10 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:01 PM
Lead	0.00167	0.000300	0.00100		mg/L	1	06/26/19 12:01 PM
Magnesium	845	50.0	150		mg/L	500	06/26/19 02:10 PM
Nickel	0.00860	0.00300	0.0100	J	mg/L	1	06/26/19 12:01 PM
Potassium	36.3	1.00	3.00		mg/L	10	06/26/19 02:58 PM
Sodium	6450	50.0	150		mg/L	500	06/26/19 02:10 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 12:01 PM
Vanadium	0.00798	0.000500	0.00100		mg/L	1	06/26/19 12:01 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/25/19 04:44 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/25/19 04:41 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.199	0.00300	0.0100	N	mg/L	1	06/26/19 12:01 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.175	0.00300	0.0100	N	mg/L	1	06/26/19 02:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	12500	300	1000		mg/L	1000	06/21/19 02:56 PM
Fluoride	5.55	1.00	4.00		mg/L	10	06/22/19 12:32 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/22/19 12:32 AM
Sulfate	3120	100	300		mg/L	100	06/21/19 07:12 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-1
Project:	Copano GW 2Q19	**Lab ID:**	1906231-07
Project No:	18111309-2003	**Collection Date:**	06/20/19 09:05 AM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	437	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 01:33 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 01:33 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 01:33 PM
Alkalinity, Total (As CaCO3)	437	20.0	20.0		mg/L @ pH 4.54	1	06/24/19 01:33 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/28/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	25400	1000	1000		mg/L	1	06/24/19 05:00 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2A
Project:	Copano GW 2Q19	**Lab ID:**	1906231-08
Project No:	18111309-2003	**Collection Date:**	06/20/19 10:05 AM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0186	0.0100	0.0300	J	mg/L	1	06/26/19 02:38 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 02:38 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:38 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:38 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 02:38 PM
Dissolved Nickel	0.0100	0.00300	0.0100		mg/L	1	06/26/19 02:38 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 02:38 PM
Dissolved Vanadium	0.00809	0.000500	0.00100		mg/L	1	06/26/19 02:38 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0282	0.0100	0.0300	J	mg/L	1	06/26/19 12:19 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 12:19 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:19 PM
Calcium	1140	50.0	150		mg/L	500	06/26/19 02:26 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:19 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 12:19 PM
Magnesium	1060	50.0	150		mg/L	500	06/26/19 02:26 PM
Nickel	0.0106	0.00300	0.0100		mg/L	1	06/26/19 12:19 PM
Potassium	49.6	1.00	3.00		mg/L	10	06/26/19 03:13 PM
Sodium	7850	50.0	150		mg/L	500	06/26/19 02:26 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 12:19 PM
Vanadium	0.00850	0.000500	0.00100		mg/L	1	06/26/19 12:19 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/25/19 04:48 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/25/19 04:46 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.112	0.00300	0.0100	N	mg/L	1	06/26/19 12:19 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.112	0.00300	0.0100	N	mg/L	1	06/26/19 02:38 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	15700	300	1000		mg/L	1000	06/21/19 03:12 PM
Fluoride	5.66	1.00	4.00		mg/L	10	06/22/19 12:48 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/22/19 12:48 AM
Sulfate	4150	100	300		mg/L	100	06/21/19 07:28 PM

Qualifiers:

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2A
Project:	Copano GW 2Q19	**Lab ID:**	1906231-08
Project No:	18111309-2003	**Collection Date:**	06/20/19 10:05 AM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	302	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 01:54 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 01:54 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 01:54 PM
Alkalinity, Total (As CaCO3)	302	20.0	20.0		mg/L @ pH 4.54	1	06/24/19 01:54 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/28/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	30000	1000	1000		mg/L	1	06/27/19 03:40 PM

Qualifiers:

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2
Project:	Copano GW 2Q19	**Lab ID:**	1906231-09
Project No:	18111309-2003	**Collection Date:**	06/20/19 11:35 AM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0226	0.0100	0.0300	J	mg/L	1	06/26/19 02:40 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 02:40 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 02:40 PM
Dissolved Chromium	0.00266	0.00200	0.00500	J	mg/L	1	06/26/19 02:40 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 02:40 PM
Dissolved Nickel	0.00338	0.00300	0.0100	J	mg/L	1	06/26/19 02:40 PM
Dissolved Thallium	0.000649	0.000500	0.00150	J	mg/L	1	06/26/19 02:40 PM
Dissolved Vanadium	0.00396	0.000500	0.00100		mg/L	1	06/26/19 02:40 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0286	0.0100	0.0300	J	mg/L	1	06/26/19 12:21 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 12:21 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:21 PM
Calcium	1270	50.0	150		mg/L	500	06/26/19 02:28 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:21 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 12:21 PM
Magnesium	1630	50.0	150		mg/L	500	06/26/19 02:28 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	06/26/19 12:21 PM
Potassium	83.4	1.00	3.00		mg/L	10	06/26/19 03:15 PM
Sodium	11500	50.0	150		mg/L	500	06/26/19 02:28 PM
Thallium	0.000629	0.000500	0.00150	J	mg/L	1	06/26/19 12:21 PM
Vanadium	0.00401	0.000500	0.00100		mg/L	1	06/26/19 12:21 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/25/19 05:06 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/25/19 05:03 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.117	0.00300	0.0100	N	mg/L	1	06/26/19 12:21 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.116	0.00300	0.0100	N	mg/L	1	06/26/19 02:40 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	23400	300	1000		mg/L	1000	06/21/19 03:28 PM
Fluoride	8.97	1.00	4.00		mg/L	10	06/22/19 01:04 AM
Nitrate-N	1.36	1.00	5.00	J	mg/L	10	06/22/19 01:04 AM
Sulfate	5470	100	300		mg/L	100	06/21/19 08:48 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2
Project:	Copano GW 2Q19	**Lab ID:**	1906231-09
Project No:	18111309-2003	**Collection Date:**	06/20/19 11:35 AM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	234	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 02:40 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 02:40 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 02:40 PM
Alkalinity, Total (As CaCO3)	234	20.0	20.0		mg/L @ pH 4.54	1	06/24/19 02:40 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/28/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	44200	1000	1000		mg/L	1	06/27/19 03:40 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6R
Project:	Copano GW 2Q19	**Lab ID:**	1906231-10
Project No:	18111309-2003	**Collection Date:**	06/20/19 12:45 PM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0168	0.0100	0.0300	J	mg/L	1	06/26/19 03:21 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 03:21 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 03:21 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 03:21 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 03:21 PM
Dissolved Nickel	0.00508	0.00300	0.0100	J	mg/L	1	06/26/19 03:21 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 03:21 PM
Dissolved Vanadium	0.00722	0.000500	0.00100		mg/L	1	06/26/19 03:21 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0191	0.0100	0.0300	J	mg/L	1	06/26/19 12:23 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/26/19 12:23 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:23 PM
Calcium	655	50.0	150		mg/L	500	06/26/19 02:30 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:23 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 12:23 PM
Magnesium	556	50.0	150		mg/L	500	06/26/19 02:30 PM
Nickel	0.00549	0.00300	0.0100	J	mg/L	1	06/26/19 12:23 PM
Potassium	23.9	1.00	3.00		mg/L	10	06/26/19 03:17 PM
Sodium	7480	50.0	150		mg/L	500	06/26/19 02:30 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 12:23 PM
Vanadium	0.00711	0.000500	0.00100		mg/L	1	06/26/19 12:23 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/25/19 05:10 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	0.000109	0.0000800	0.000200	J	mg/L	1	06/25/19 05:08 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.469	0.00300	0.0100	N	mg/L	1	06/26/19 12:23 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.447	0.00300	0.0100	N	mg/L	1	06/26/19 03:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	12400	300	1000		mg/L	1000	06/21/19 03:44 PM
Fluoride	6.60	1.00	4.00		mg/L	10	06/22/19 01:20 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/22/19 01:20 AM
Sulfate	3850	100	300		mg/L	100	06/21/19 09:04 PM

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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6R
Project:	Copano GW 2Q19	**Lab ID:**	1906231-10
Project No:	18111309-2003	**Collection Date:**	06/20/19 12:45 PM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	624	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 03:18 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 03:18 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 03:18 PM
Alkalinity, Total (As CaCO3)	624	20.0	20.0		mg/L @ pH 4.54	1	06/24/19 03:18 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/28/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	26200	1000	1000		mg/L	1	06/27/19 03:40 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6RB
Project:	Copano GW 2Q19	**Lab ID:**	1906231-11
Project No:	18111309-2003	**Collection Date:**	06/20/19 01:35 PM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0213	0.0100	0.0300	J	mg/L	1	06/26/19 03:07 PM
Dissolved Antimony	0.00348	0.000800	0.00250		mg/L	1	06/26/19 03:07 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 03:07 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 03:07 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 03:07 PM
Dissolved Nickel	0.0129	0.00300	0.0100		mg/L	1	06/26/19 03:07 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 03:07 PM
Dissolved Vanadium	0.00194	0.000500	0.00100		mg/L	1	06/26/19 03:07 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0170	0.0100	0.0300	J	mg/L	1	06/26/19 12:56 PM
Antimony	0.00333	0.000800	0.00250		mg/L	1	06/26/19 12:56 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:56 PM
Calcium	602	50.0	150		mg/L	500	06/26/19 02:46 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/26/19 12:56 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/26/19 12:56 PM
Magnesium	588	50.0	150		mg/L	500	06/26/19 02:46 PM
Nickel	0.0140	0.00300	0.0100		mg/L	1	06/26/19 12:56 PM
Potassium	46.9	1.00	3.00		mg/L	10	06/26/19 03:33 PM
Sodium	5760	50.0	150		mg/L	500	06/26/19 02:46 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/26/19 12:56 PM
Vanadium	0.00184	0.000500	0.00100		mg/L	1	06/26/19 12:56 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/25/19 05:15 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/25/19 05:13 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0879	0.00300	0.0100	N	mg/L	1	06/26/19 12:56 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0895	0.00300	0.0100	N	mg/L	1	06/26/19 03:07 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	11400	300	1000		mg/L	1000	06/21/19 05:04 PM
Fluoride	4.69	1.00	4.00		mg/L	10	06/22/19 02:56 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	06/22/19 02:56 AM
Sulfate	2590	100	300		mg/L	100	06/21/19 09:20 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6RB
Project:	Copano GW 2Q19	**Lab ID:**	1906231-11
Project No:	18111309-2003	**Collection Date:**	06/20/19 01:35 PM
Lab Order:	1906231	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	350	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 03:39 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 03:39 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/24/19 03:39 PM
Alkalinity, Total (As CaCO3)	350	20.0	20.0		mg/L @ pH 4.54	1	06/24/19 03:39 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	06/28/19 01:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	20800	1000	1000		mg/L	1	06/27/19 03:40 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190611B

Sample ID: **DCS-91284**	Batch ID: **91284**	TestNo: **SW7470A**	Units: **mg/L**		
SampType: **DCS**	Run ID: **CETAC2_HG_190611B**	Analysis Date: **6/11/2019 5:01:26 PM**	Prep Date: **6/11/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000206	0.000200	0.000200	0	103	82	119	0	0	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190624A

The QC data in batch 91459 applies to the following samples: 1906231-01A, 1906231-01B, 1906231-02A, 1906231-02B, 1906231-03A, 1906231-03B, 1906231-04A, 1906231-04B, 1906231-05A

Sample ID: **MB-91459** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 4:14:08 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91459** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 4:16:24 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00190	0.000200	0.00200	0	95.0	85	115			

Sample ID: **LCSD-91459** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 4:18:40 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	85	115	0.528	15	

Sample ID: **1906231-01A SD** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 4:57:15 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1906231-01A PDS** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 4:59:31 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00161	0.000200	0.00250	0	64.4	85	115			S

Sample ID: **1906231-01A MS** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 5:21:06 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00191	0.00100	0.00200	0	95.5	80	120			

Sample ID: **1906231-01A MSD** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_190624A** Analysis Date: **6/24/2019 5:23:23 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.00100	0.00200	0	98.0	80	120	2.58	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190624A

Sample ID: **ICV-190624**	Batch ID: **R104752**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 2:59:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00409	0.000200	0.00400	0	102	90	110			

Sample ID: **CCV2-190624**	Batch ID: **R104752**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 4:09:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV3-190624**	Batch ID: **R104752**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 4:43:36 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV4-190624**	Batch ID: **R104752**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624A**	Analysis Date: **6/24/2019 5:25:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190624B

The QC data in batch 91459 applies to the following samples: 1906231-01A, 1906231-01B, 1906231-02A, 1906231-02B, 1906231-03A, 1906231-03B, 1906231-04A, 1906231-04B, 1906231-05A

Sample ID: **MB-91459** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 4:14:08 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91459** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 4:16:24 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00190	0.000200	0.00200	0	95.0	85	115			

Sample ID: **LCSD-91459** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 4:18:40 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	85	115	0.528	15	

Sample ID: **1906231-01A SD** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 4:57:15 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1906231-01A PDS** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 4:59:31 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00161	0.000200	0.00250	0	64.4	85	115			S

Sample ID: **1906231-01A MS** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 5:21:06 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00191	0.00100	0.00200	0	95.5	80	120			

Sample ID: **1906231-01A MSD** Batch ID: **91459** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_190624B** Analysis Date: **6/24/2019 5:23:23 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.00100	0.00200	0	98.0	80	120	2.58	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190624B

Sample ID: **ICV-190624**	Batch ID: **R104753**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 2:59:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00409	0.000200	0.00400	0	102	90	110			

Sample ID: **CCV2-190624**	Batch ID: **R104753**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 4:09:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV3-190624**	Batch ID: **R104753**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 4:43:36 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV4-190624**	Batch ID: **R104753**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190624B**	Analysis Date: **6/24/2019 5:25:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190625B

The QC data in batch 91481 applies to the following samples: 1906231-05B, 1906231-06A, 1906231-06B, 1906231-07A, 1906231-07B, 1906231-08A, 1906231-08B, 1906231-09A, 1906231-09B, 1906231-10A, 1906231-10B, 1906231-11A, 1906231-11B

Sample ID: **MB-91481** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_190625B** Analysis Date: **6/25/2019 4:07:47 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91481** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_190625B** Analysis Date: **6/25/2019 4:12:19 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	85	115			

Sample ID: **LCSD-91481** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_190625B** Analysis Date: **6/25/2019 4:14:35 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00205	0.000200	0.00200	0	103	85	115	1.97	15	

Sample ID: **1906216-01A MS** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_190625B** Analysis Date: **6/25/2019 4:21:22 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0104	0.00100	0.0100	0	104	80	120			

Sample ID: **1906216-01A MSD** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_190625B** Analysis Date: **6/25/2019 4:23:38 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00980	0.00100	0.0100	0	98.0	80	120	5.46	15	

Sample ID: **1906216-01A SD** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_190625B** Analysis Date: **6/25/2019 4:25:54 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **1906216-01A PDS** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_190625B** Analysis Date: **6/25/2019 4:28:11 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0122	0.00100	0.0125	0	97.2	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190625B

Sample ID: **ICV-190625**	Batch ID: **R104772**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190625B**	Analysis Date: **6/25/2019 4:03:13 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00411	0.000200	0.00400	0	103	90	110			

Sample ID: **CCV1-190625**	Batch ID: **R104772**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190625B**	Analysis Date: **6/25/2019 4:59:20 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Sample ID: **CCV2-190625**	Batch ID: **R104772**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190625B**	Analysis Date: **6/25/2019 5:17:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190625C

The QC data in batch 91481 applies to the following samples: 1906231-05B, 1906231-06A, 1906231-06B, 1906231-07A, 1906231-07B, 1906231-08A, 1906231-08B, 1906231-09A, 1906231-09B, 1906231-10A, 1906231-10B, 1906231-11A, 1906231-11B

Sample ID: **MB-91481** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_190625C** Analysis Date: **6/25/2019 4:07:47 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91481** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_190625C** Analysis Date: **6/25/2019 4:12:19 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	85	115			

Sample ID: **LCSD-91481** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_190625C** Analysis Date: **6/25/2019 4:14:35 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00205	0.000200	0.00200	0	103	85	115	1.97	15	

Sample ID: **1906216-01A MS** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_190625C** Analysis Date: **6/25/2019 4:21:22 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0104	0.00100	0.0100	0	104	80	120			

Sample ID: **1906216-01A MSD** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_190625C** Analysis Date: **6/25/2019 4:23:38 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00980	0.00100	0.0100	0	98.0	80	120	5.46	15	

Sample ID: **1906216-01A SD** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_190625C** Analysis Date: **6/25/2019 4:25:54 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **1906216-01A PDS** Batch ID: **91481** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_190625C** Analysis Date: **6/25/2019 4:28:11 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0122	0.00100	0.0125	0	97.2	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190625C

Sample ID: **ICV-190625**	Batch ID: **R104773**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190625C**	Analysis Date: **6/25/2019 4:03:13 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00411	0.000200	0.00400	0	103	90	110			

Sample ID: **CCV1-190625**	Batch ID: **R104773**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190625C**	Analysis Date: **6/25/2019 4:59:20 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Sample ID: **CCV2-190625**	Batch ID: **R104773**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190625C**	Analysis Date: **6/25/2019 5:17:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

Sample ID: **DCS2-91398** Batch ID: **91398** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS4_190621B** Analysis Date: **6/21/2019 1:24:00 PM** Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	
Magnesium	0.323	0.300	0.300	0	108	70	130	0	0	
Potassium	0.303	0.300	0.300	0	101	70	130	0	0	
Sodium	0.300	0.300	0.300	0	100	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_190626B**

The QC data in batch 91480 applies to the following samples: 1906231-01A, 1906231-02A, 1906231-03A, 1906231-04A, 1906231-05A, 1906231-06A, 1906231-07A, 1906231-08A, 1906231-09A, 1906231-10A, 1906231-11A

Sample ID: **MB-91480** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190626B** Analysis Date: **6/26/2019 2:02:00 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	<0.100	0.300								
Magnesium	<0.100	0.300								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								

Sample ID: **LCS-91480** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190626B** Analysis Date: **6/26/2019 2:04:00 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.89	0.300	5.00	0	97.9	80	120			
Magnesium	4.89	0.300	5.00	0	97.8	80	120			
Potassium	4.86	0.300	5.00	0	97.2	80	120			
Sodium	4.99	0.300	5.00	0	99.7	80	120			

Sample ID: **LCSD-91480** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190626B** Analysis Date: **6/26/2019 2:06:00 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.90	0.300	5.00	0	97.9	80	120	0.025	15	
Magnesium	4.93	0.300	5.00	0	98.5	80	120	0.706	15	
Potassium	4.96	0.300	5.00	0	99.2	80	120	2.04	15	
Sodium	5.01	0.300	5.00	0	100	80	120	0.528	15	

Sample ID: **1906231-07A SD** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190626B** Analysis Date: **6/26/2019 2:12:00 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	851	750	0	818				3.95	10	
Magnesium	848	750	0	844				0.378	10	
Sodium	6300	750	0	6450				2.39	10	

Sample ID: **1906231-07A PDS** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190626B** Analysis Date: **6/26/2019 2:32:00 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	3450	150	2500	819	105	80	120			
Magnesium	3300	150	2500	845	98.3	80	120			
Sodium	9130	150	2500	6450	107	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190626B

Sample ID: **1906231-07A MS**	Batch ID: **91480**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 2:34:00 PM**	Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	812	150	5.00	819	-134	80	120			S
Magnesium	846	150	5.00	845	30.2	80	120			S
Sodium	6320	150	5.00	6450	-2710	80	120			S

Sample ID: **1906231-07A MSD**	Batch ID: **91480**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 2:36:00 PM**	Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	816	150	5.00	819	-53.5	80	120	0.494	15	S
Magnesium	836	150	5.00	845	-179	80	120	1.24	15	S
Sodium	6380	150	5.00	6450	-1480	80	120	0.963	15	S

Sample ID: **1906231-07A SD**	Batch ID: **91480**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 3:00:00 PM**	Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	37.2	15.0	0	36.3				2.34	10	

Sample ID: **1906231-07A PDS**	Batch ID: **91480**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 3:19:00 PM**	Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	92.8	3.00	50.0	36.3	113	80	120			

Sample ID: **1906231-07A MS**	Batch ID: **91480**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 3:21:00 PM**	Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	41.4	3.00	5.00	36.3	101	80	120			

Sample ID: **1906231-07A MSD**	Batch ID: **91480**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 3:23:00 PM**	Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	41.0	3.00	5.00	36.3	93.7	80	120	0.870	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190626B

Sample ID: **ICV-190626** Batch ID: **R104802** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_190626B** Analysis Date: **6/26/2019 10:34:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.65	0.300	2.50	0	106	90	110			
Magnesium	2.43	0.300	2.50	0	97.3	90	110			
Potassium	2.50	0.300	2.50	0	100	90	110			
Sodium	2.51	0.300	2.50	0	101	90	110			

Sample ID: **LCVL-190626** Batch ID: **R104802** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190626B** Analysis Date: **6/26/2019 10:38:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0969	0.300	0.100	0	96.9	70	130			
Magnesium	0.0995	0.300	0.100	0	99.5	70	130			
Potassium	0.0994	0.300	0.100	0	99.4	70	130			
Sodium	0.100	0.300	0.100	0	100	70	130			

Sample ID: **CCV2-190626** Batch ID: **R104802** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190626B** Analysis Date: **6/26/2019 12:23:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.91	0.300	5.00	0	98.2	90	110			
Magnesium	4.86	0.300	5.00	0	97.2	90	110			
Potassium	4.88	0.300	5.00	0	97.6	90	110			
Sodium	4.92	0.300	5.00	0	98.3	90	110			

Sample ID: **LCVL2-190626** Batch ID: **R104802** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190626B** Analysis Date: **6/26/2019 12:27:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0921	0.300	0.100	0	92.1	70	130			
Magnesium	0.0996	0.300	0.100	0	99.6	70	130			
Potassium	0.0983	0.300	0.100	0	98.3	70	130			
Sodium	0.0991	0.300	0.100	0	99.1	70	130			

Sample ID: **CCV3-190626** Batch ID: **R104802** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190626B** Analysis Date: **6/26/2019 2:38:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.92	0.300	5.00	0	98.5	90	110			
Magnesium	4.95	0.300	5.00	0	99.0	90	110			
Potassium	4.93	0.300	5.00	0	98.5	90	110			
Sodium	4.98	0.300	5.00	0	99.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190626B

Sample ID: **LCVL3-190626**	Batch ID: **R104802**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 2:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0950	0.300	0.100	0	95.0	70	130			
Magnesium	0.0997	0.300	0.100	0	99.7	70	130			
Potassium	0.0943	0.300	0.100	0	94.3	70	130			
Sodium	0.101	0.300	0.100	0	101	70	130			

Sample ID: **CCV4-190626**	Batch ID: **R104802**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 2:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.94	0.300	5.00	0	98.8	90	110			
Magnesium	4.90	0.300	5.00	0	98.0	90	110			
Sodium	4.95	0.300	5.00	0	99.0	90	110			

Sample ID: **LCVL4-190626**	Batch ID: **R104802**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 2:54:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0939	0.300	0.100	0	93.9	70	130			
Magnesium	0.0972	0.300	0.100	0	97.2	70	130			
Sodium	0.100	0.300	0.100	0	100	70	130			

Sample ID: **CCV5-190626**	Batch ID: **R104802**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 3:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	4.94	0.300	5.00	0	98.8	90	110			

Sample ID: **LCVL5-190626**	Batch ID: **R104802**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 3:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.0970	0.300	0.100	0	97.0	70	130			

Sample ID: **CCV6-190626**	Batch ID: **R104802**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 3:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	4.98	0.300	5.00	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190626B

Sample ID: **LCVL6-190626**	Batch ID: **R104802**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **LCVL**	Run ID: **ICP-MS4_190626B**	Analysis Date: **6/26/2019 3:40:00 PM**		Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.0957	0.300	0.100	0	95.7	70	130			

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621A

Sample ID: **DCS1-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:12:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00103	0.00250	0.00100	0	103	70	130	0	0	
Lead	0.000545	0.00100	0.000500	0	109	70	130	0	0	
Thallium	0.000527	0.00150	0.000500	0	105	70	130	0	0	
Vanadium	0.000614	0.00100	0.000500	0	123	70	130	0	0	

Sample ID: **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:14:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0383	0.0300	0.0300	0	128	70	130	0	0	
Calcium	0.305	0.300	0.300	0	102	70	130	0	0	
Magnesium	0.315	0.300	0.300	0	105	70	130	0	0	
Potassium	0.319	0.300	0.300	0	106	70	130	0	0	
Sodium	0.295	0.300	0.300	0	98.4	70	130	0	0	

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:16:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00512	0.00500	0.00500	0	102	70	130	0	0	
Chromium	0.00500	0.00500	0.00500	0	100	70	130	0	0	
Nickel	0.00513	0.0100	0.00500	0	103	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621D

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 11:16:00 AM**		Prep Date: **6/20/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00501	0.0100	0.00500	0	100	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

The QC data in batch 91480 applies to the following samples: 1906231-01A, 1906231-02A, 1906231-03A, 1906231-04A, 1906231-05A, 1906231-06A, 1906231-07A, 1906231-08A, 1906231-09A, 1906231-10A, 1906231-11A

Sample ID: **MB-91480** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 11:52:00 AM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-91480** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 11:55:00 AM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.90	0.0300	5.00	0	98.1	80	120			
Antimony	0.196	0.00250	0.200	0	97.8	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Chromium	0.198	0.00500	0.200	0	98.9	80	120			
Lead	0.193	0.00100	0.200	0	96.5	80	120			
Nickel	0.209	0.0100	0.200	0	104	80	120			
Thallium	0.193	0.00150	0.200	0	96.6	80	120			
Vanadium	0.199	0.00100	0.200	0	99.5	80	120			

Sample ID: **LCSD-91480** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 11:57:00 AM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.88	0.0300	5.00	0	97.7	80	120	0.430	15	
Antimony	0.198	0.00250	0.200	0	98.8	80	120	1.00	15	
Arsenic	0.203	0.00500	0.200	0	102	80	120	0.131	15	
Chromium	0.200	0.00500	0.200	0	100	80	120	1.09	15	
Lead	0.194	0.00100	0.200	0	97.1	80	120	0.664	15	
Nickel	0.209	0.0100	0.200	0	104	80	120	0.132	15	
Thallium	0.195	0.00150	0.200	0	97.5	80	120	0.932	15	
Vanadium	0.202	0.00100	0.200	0	101	80	120	1.29	15	

Sample ID: **1906231-07A SD** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 12:03:00 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **1906231-07A SD**	Batch ID: **91480**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 12:03:00 PM**	Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.652	0.150	0	0.632				3.16	10	
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	0.00194	0.00500	0	0.00167				14.9	10	R
Nickel	<0.0150	0.0500	0	0.00860				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	0.00830	0.00500	0	0.00798				3.92	10	

Sample ID: **1906231-07A PDS**	Batch ID: **91480**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 12:25:00 PM**	Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.24	0.0300	5.00	0.632	92.1	80	120			
Antimony	0.194	0.00250	0.200	0	96.9	80	120			
Arsenic	0.187	0.00500	0.200	0	93.7	80	120			
Chromium	0.177	0.00500	0.200	0	88.4	80	120			
Lead	0.192	0.00100	0.200	0.00167	95.4	80	120			
Nickel	0.184	0.0100	0.200	0.00860	87.7	80	120			
Thallium	0.194	0.00150	0.200	0	97.0	80	120			
Vanadium	0.191	0.00100	0.200	0.00798	91.3	80	120			

Sample ID: **1906231-07A MS**	Batch ID: **91480**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 12:28:00 PM**	Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.47	0.0300	5.00	0.632	96.7	80	120			
Antimony	0.192	0.00250	0.200	0	95.9	80	120			
Arsenic	0.193	0.00500	0.200	0	96.3	80	120			
Chromium	0.175	0.00500	0.200	0	87.6	80	120			
Lead	0.195	0.00100	0.200	0.00167	96.9	80	120			
Nickel	0.183	0.0100	0.200	0.00860	87.4	80	120			
Thallium	0.197	0.00150	0.200	0	98.7	80	120			
Vanadium	0.194	0.00100	0.200	0.00798	92.8	80	120			

Sample ID: **1906231-07A MSD**	Batch ID: **91480**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 12:30:00 PM**	Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.57	0.0300	5.00	0.632	98.7	80	120	1.79	15	
Antimony	0.192	0.00250	0.200	0	95.8	80	120	0.162	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **1906231-07A MSD** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 12:30:00 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.193	0.00500	0.200	0	96.3	80	120	0.067	15	
Chromium	0.176	0.00500	0.200	0	88.2	80	120	0.692	15	
Lead	0.200	0.00100	0.200	0.00167	99.0	80	120	2.15	15	
Nickel	0.184	0.0100	0.200	0.00860	87.9	80	120	0.582	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	2.05	15	
Vanadium	0.196	0.00100	0.200	0.00798	93.8	80	120	1.05	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

The QC data in batch 91506 applies to the following samples: 1906231-01B, 1906231-02B, 1906231-03B, 1906231-04B, 1906231-05B, 1906231-06B, 1906231-07B, 1906231-08B, 1906231-09B

Sample ID: **MB-91506** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 1:26:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-91506** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 1:28:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.18	0.0300	5.00	0	104	80	120			
Antimony	0.199	0.00250	0.200	0	99.7	80	120			
Arsenic	0.203	0.00500	0.200	0	102	80	120			
Chromium	0.199	0.00500	0.200	0	99.7	80	120			
Lead	0.193	0.00100	0.200	0	96.6	80	120			
Nickel	0.213	0.0100	0.200	0	106	80	120			
Thallium	0.195	0.00150	0.200	0	97.3	80	120			
Vanadium	0.202	0.00100	0.200	0	101	80	120			

Sample ID: **LCSD-91506** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 1:30:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.21	0.0300	5.00	0	104	80	120	0.732	15	
Antimony	0.202	0.00250	0.200	0	101	80	120	1.09	15	
Arsenic	0.205	0.00500	0.200	0	103	80	120	0.945	15	
Chromium	0.203	0.00500	0.200	0	101	80	120	1.60	15	
Lead	0.197	0.00100	0.200	0	98.4	80	120	1.82	15	
Nickel	0.214	0.0100	0.200	0	107	80	120	0.402	15	
Thallium	0.197	0.00150	0.200	0	98.4	80	120	1.10	15	
Vanadium	0.207	0.00100	0.200	0	103	80	120	2.34	15	

Sample ID: **1906231-01B SD** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 1:37:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **1906231-01B SD**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 1:37:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0210				0	10	
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00266				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Nickel	<0.0150	0.0500	0	0.00788				0	10	
Thallium	<0.00250	0.00750	0	0.00109				0	10	
Vanadium	<0.00250	0.00500	0	0.00118				0	10	

Sample ID: **1906231-01B PDS**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 1:59:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.56	0.0300	5.00	0.0210	90.7	80	120			
Antimony	0.185	0.00250	0.200	0	92.3	80	120			
Arsenic	0.174	0.00500	0.200	0.00266	85.7	80	120			
Chromium	0.165	0.00500	0.200	0	82.6	80	120			
Lead	0.194	0.00100	0.200	0	97.2	80	120			
Nickel	0.167	0.0100	0.200	0.00788	79.5	80	120			S
Thallium	0.199	0.00150	0.200	0.00109	99.0	80	120			
Vanadium	0.176	0.00100	0.200	0.00118	87.5	80	120			

Sample ID: **1906231-01B MS**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 2:02:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.98	0.0300	5.00	0.0210	99.2	80	120			
Dissolved Antimony	0.194	0.00250	0.200	0	96.9	80	120			
Dissolved Arsenic	0.189	0.00500	0.200	0.00266	93.0	80	120			
Dissolved Chromium	0.171	0.00500	0.200	0	85.4	80	120			
Dissolved Lead	0.206	0.00100	0.200	0	103	80	120			
Dissolved Nickel	0.172	0.0100	0.200	0.00788	82.3	80	120			
Dissolved Thallium	0.211	0.00150	0.200	0.00109	105	80	120			
Dissolved Vanadium	0.186	0.00100	0.200	0.00118	92.2	80	120			

Sample ID: **1906231-01B MSD**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 2:04:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	5.00	0.0300	5.00	0.0210	99.6	80	120	0.319	15	
Dissolved Antimony	0.196	0.00250	0.200	0	98.1	80	120	1.20	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **1906231-01B MSD** Batch ID: **91506** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 2:04:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Arsenic	0.188	0.00500	0.200	0.00266	92.9	80	120	0.090	15	
Dissolved Chromium	0.172	0.00500	0.200	0	85.8	80	120	0.507	15	
Dissolved Lead	0.208	0.00100	0.200	0	104	80	120	0.932	15	
Dissolved Nickel	0.174	0.0100	0.200	0.00788	82.9	80	120	0.737	15	
Dissolved Thallium	0.212	0.00150	0.200	0.00109	106	80	120	0.766	15	
Dissolved Vanadium	0.186	0.00100	0.200	0.00118	92.2	80	120	0.008	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190626B**

The QC data in batch 91507 applies to the following samples: 1906231-10B, 1906231-11B

Sample ID: **MB-91507** Batch ID: **91507** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 2:58:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-91507** Batch ID: **91507** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 3:00:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.19	0.0300	5.00	0	104	80	120			
Antimony	0.199	0.00250	0.200	0	99.6	80	120			
Arsenic	0.205	0.00500	0.200	0	102	80	120			
Chromium	0.194	0.00500	0.200	0	96.9	80	120			
Lead	0.193	0.00100	0.200	0	96.5	80	120			
Nickel	0.208	0.0100	0.200	0	104	80	120			
Thallium	0.194	0.00150	0.200	0	96.9	80	120			
Vanadium	0.199	0.00100	0.200	0	99.4	80	120			

Sample ID: **LCSD-91507** Batch ID: **91507** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 3:03:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.09	0.0300	5.00	0	102	80	120	1.89	15	
Antimony	0.195	0.00250	0.200	0	97.5	80	120	2.14	15	
Arsenic	0.201	0.00500	0.200	0	100	80	120	2.05	15	
Chromium	0.191	0.00500	0.200	0	95.6	80	120	1.36	15	
Lead	0.190	0.00100	0.200	0	95.0	80	120	1.57	15	
Nickel	0.205	0.0100	0.200	0	102	80	120	1.25	15	
Thallium	0.191	0.00150	0.200	0	95.3	80	120	1.59	15	
Vanadium	0.197	0.00100	0.200	0	98.3	80	120	1.12	15	

Sample ID: **1906231-11B PDS** Batch ID: **91507** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 3:23:00 PM** Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.57	0.0300	5.00	0.0213	90.9	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **1906231-11B PDS**	Batch ID: **91507**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 3:23:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0.00348	95.2	80	120			
Arsenic	0.182	0.00500	0.200	0	91.2	80	120			
Chromium	0.172	0.00500	0.200	0	85.8	80	120			
Lead	0.202	0.00100	0.200	0	101	80	120			
Nickel	0.181	0.0100	0.200	0.0129	83.8	80	120			
Thallium	0.203	0.00150	0.200	0	101	80	120			
Vanadium	0.182	0.00100	0.200	0.00194	89.9	80	120			

Sample ID: **1906231-11B MS**	Batch ID: **91507**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 3:25:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.91	0.0300	5.00	0.0213	97.9	80	120			
Dissolved Antimony	0.198	0.00250	0.200	0.00348	97.1	80	120			
Dissolved Arsenic	0.192	0.00500	0.200	0	96.0	80	120			
Dissolved Chromium	0.173	0.00500	0.200	0	86.7	80	120			
Dissolved Lead	0.208	0.00100	0.200	0	104	80	120			
Dissolved Nickel	0.184	0.0100	0.200	0.0129	85.8	80	120			
Dissolved Thallium	0.210	0.00150	0.200	0	105	80	120			
Dissolved Vanadium	0.186	0.00100	0.200	0.00194	92.1	80	120			

Sample ID: **1906231-11B MSD**	Batch ID: **91507**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 3:27:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.92	0.0300	5.00	0.0213	98.0	80	120	0.090	15	
Dissolved Antimony	0.198	0.00250	0.200	0.00348	97.1	80	120	0.085	15	
Dissolved Arsenic	0.194	0.00500	0.200	0	97.0	80	120	0.997	15	
Dissolved Chromium	0.174	0.00500	0.200	0	87.1	80	120	0.520	15	
Dissolved Lead	0.203	0.00100	0.200	0	102	80	120	2.05	15	
Dissolved Nickel	0.187	0.0100	0.200	0.0129	86.8	80	120	1.12	15	
Dissolved Thallium	0.204	0.00150	0.200	0	102	80	120	2.58	15	
Dissolved Vanadium	0.190	0.00100	0.200	0.00194	94.0	80	120	2.11	15	

Sample ID: **1906231-11B SD**	Batch ID: **91507**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 3:09:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0213				0	10	
Antimony	<0.00400	0.0125	0	0.00348				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **1906231-11B SD**	Batch ID: **91507**	TestNo: **SW6020B**	Units: **mg/L**		
SampType: **SD**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 3:09:00 PM**	Prep Date: **6/26/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Nickel	<0.0150	0.0500	0	0.0129				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	<0.00250	0.00500	0	0.00194				0	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **ICV-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 10:45:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.36	0.0300	2.50	0	94.3	90	110			
Antimony	0.100	0.00250	0.100	0	100	90	110			
Arsenic	0.105	0.00500	0.100	0	105	90	110			
Chromium	0.101	0.00500	0.100	0	101	90	110			
Lead	0.0985	0.00100	0.100	0	98.5	90	110			
Nickel	0.106	0.0100	0.100	0	106	90	110			
Thallium	0.0990	0.00150	0.100	0	99.0	90	110			
Vanadium	0.103	0.00100	0.100	0	103	90	110			

Sample ID: **LCVL-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 10:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0890	0.0300	0.100	0	89.0	70	130			
Antimony	0.00194	0.00250	0.00200	0	97.1	70	130			
Arsenic	0.00506	0.00500	0.00500	0	101	70	130			
Chromium	0.00458	0.00500	0.00500	0	91.6	70	130			
Lead	0.000981	0.00100	0.00100	0	98.1	70	130			
Nickel	0.00497	0.0100	0.00500	0	99.4	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			
Vanadium	0.000889	0.00100	0.00100	0	88.9	70	130			

Sample ID: **CCV1-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 11:26:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.94	0.0300	5.00	0	98.8	90	110			
Antimony	0.200	0.00250	0.200	0	100	90	110			
Arsenic	0.209	0.00500	0.200	0	104	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Lead	0.199	0.00100	0.200	0	99.4	90	110			
Nickel	0.214	0.0100	0.200	0	107	90	110			
Thallium	0.199	0.00150	0.200	0	99.3	90	110			
Vanadium	0.206	0.00100	0.200	0	103	90	110			

Sample ID: **LCVL1-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 11:30:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0921	0.0300	0.100	0	92.1	70	130			
Antimony	0.00203	0.00250	0.00200	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **LCVL1-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 11:30:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00502	0.00500	0.00500	0	100	70	130			
Chromium	0.00466	0.00500	0.00500	0	93.1	70	130			
Lead	0.000992	0.00100	0.00100	0	99.2	70	130			
Nickel	0.00498	0.0100	0.00500	0	99.6	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			
Vanadium	0.000980	0.00100	0.00100	0	98.0	70	130			

Sample ID: **CCV2-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 12:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0	99.6	90	110			
Antimony	0.192	0.00250	0.200	0	96.0	90	110			
Arsenic	0.198	0.00500	0.200	0	99.2	90	110			
Chromium	0.186	0.00500	0.200	0	92.8	90	110			
Lead	0.190	0.00100	0.200	0	94.9	90	110			
Nickel	0.200	0.0100	0.200	0	99.8	90	110			
Thallium	0.189	0.00150	0.200	0	94.6	90	110			
Vanadium	0.191	0.00100	0.200	0	95.4	90	110			

Sample ID: **LCVL2-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 12:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0961	0.0300	0.100	0	96.1	70	130			
Antimony	0.00190	0.00250	0.00200	0	95.0	70	130			
Arsenic	0.00504	0.00500	0.00500	0	101	70	130			
Chromium	0.00384	0.00500	0.00500	0	76.7	70	130			
Lead	0.000962	0.00100	0.00100	0	96.2	70	130			
Nickel	0.00456	0.0100	0.00500	0	91.1	70	130			
Thallium	0.000951	0.00150	0.00100	0	95.1	70	130			
Vanadium	0.00128	0.00100	0.00100	0	128	70	130			

Sample ID: **CCV3-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 12:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0	99.5	90	110			
Antimony	0.193	0.00250	0.200	0	96.6	90	110			
Arsenic	0.201	0.00500	0.200	0	100	90	110			
Chromium	0.190	0.00500	0.200	0	95.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **CCV3-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 12:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.190	0.00100	0.200	0	95.1	90	110			
Nickel	0.206	0.0100	0.200	0	103	90	110			
Thallium	0.190	0.00150	0.200	0	95.2	90	110			
Vanadium	0.194	0.00100	0.200	0	97.2	90	110			

Sample ID: **LCVL3-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 1:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0983	0.0300	0.100	0	98.3	70	130			
Antimony	0.00194	0.00250	0.00200	0	97.0	70	130			
Arsenic	0.00482	0.00500	0.00500	0	96.4	70	130			
Chromium	0.00397	0.00500	0.00500	0	79.5	70	130			
Lead	0.000928	0.00100	0.00100	0	92.8	70	130			
Nickel	0.00444	0.0100	0.00500	0	88.9	70	130			
Thallium	0.000998	0.00150	0.00100	0	99.8	70	130			
Vanadium	0.00118	0.00100	0.00100	0	118	70	130			

Sample ID: **CCV4-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 2:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.08	0.0300	5.00	0	102	90	110			
Antimony	0.192	0.00250	0.200	0	96.2	90	110			
Arsenic	0.197	0.00500	0.200	0	98.6	90	110			
Chromium	0.186	0.00500	0.200	0	92.9	90	110			
Lead	0.189	0.00100	0.200	0	94.6	90	110			
Nickel	0.199	0.0100	0.200	0	99.3	90	110			
Thallium	0.190	0.00150	0.200	0	94.9	90	110			
Vanadium	0.192	0.00100	0.200	0	96.0	90	110			

Sample ID: **LCVL4-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 2:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0940	0.0300	0.100	0	94.0	70	130			
Antimony	0.00199	0.00250	0.00200	0	99.6	70	130			
Arsenic	0.00508	0.00500	0.00500	0	102	70	130			
Chromium	0.00378	0.00500	0.00500	0	75.7	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Nickel	0.00430	0.0100	0.00500	0	86.1	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **LCVL4-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 2:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.000969	0.00150	0.00100	0	96.9	70	130			
Vanadium	0.00130	0.00100	0.00100	0	130	70	130			

Sample ID: **CCV5-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 2:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.05	0.0300	5.00	0	101	90	110			
Antimony	0.194	0.00250	0.200	0	97.2	90	110			
Arsenic	0.199	0.00500	0.200	0	99.6	90	110			
Chromium	0.184	0.00500	0.200	0	92.1	90	110			
Lead	0.191	0.00100	0.200	0	95.5	90	110			
Nickel	0.199	0.0100	0.200	0	99.4	90	110			
Thallium	0.192	0.00150	0.200	0	95.8	90	110			
Vanadium	0.190	0.00100	0.200	0	95.2	90	110			

Sample ID: **LCVL5-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 2:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0976	0.0300	0.100	0	97.6	70	130			
Antimony	0.00194	0.00250	0.00200	0	97.1	70	130			
Arsenic	0.00493	0.00500	0.00500	0	98.6	70	130			
Chromium	0.00356	0.00500	0.00500	0	71.2	70	130			
Lead	0.000927	0.00100	0.00100	0	92.7	70	130			
Nickel	0.00433	0.0100	0.00500	0	86.6	70	130			
Thallium	0.000948	0.00150	0.00100	0	94.8	70	130			
Vanadium	0.00126	0.00100	0.00100	0	126	70	130			

Sample ID: **CCV6-190626**	Batch ID: **R104801**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626B**	Analysis Date: **6/26/2019 3:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.99	0.0300	5.00	0	99.8	90	110			
Antimony	0.193	0.00250	0.200	0	96.6	90	110			
Arsenic	0.197	0.00500	0.200	0	98.3	90	110			
Chromium	0.187	0.00500	0.200	0	93.7	90	110			
Lead	0.190	0.00100	0.200	0	95.0	90	110			
Nickel	0.199	0.0100	0.200	0	99.5	90	110			
Thallium	0.189	0.00150	0.200	0	94.7	90	110			
Vanadium	0.193	0.00100	0.200	0	96.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626B

Sample ID: **LCVL6-190626** Batch ID: **R104801** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190626B** Analysis Date: **6/26/2019 3:44:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0988	0.0300	0.100	0	98.8	70	130			
Antimony	0.00191	0.00250	0.00200	0	95.3	70	130			
Arsenic	0.00505	0.00500	0.00500	0	101	70	130			
Chromium	0.00366	0.00500	0.00500	0	73.2	70	130			
Lead	0.000915	0.00100	0.00100	0	91.5	70	130			
Nickel	0.00426	0.0100	0.00500	0	85.3	70	130			
Thallium	0.000943	0.00150	0.00100	0	94.3	70	130			
Vanadium	0.00145	0.00100	0.00100	0	145	70	130			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190626C**

The QC data in batch 91480 applies to the following samples: 1906231-01A, 1906231-02A, 1906231-03A, 1906231-04A, 1906231-05A, 1906231-06A, 1906231-07A, 1906231-08A, 1906231-09A, 1906231-10A, 1906231-11A

Sample ID: **MB-91480** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190626C** Analysis Date: **6/26/2019 11:52:00 AM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-91480** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190626C** Analysis Date: **6/26/2019 11:55:00 AM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.197	0.0100	0.200	0	98.3	80	120			N

Sample ID: **LCSD-91480** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190626C** Analysis Date: **6/26/2019 11:57:00 AM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.198	0.0100	0.200	0	98.9	80	120	0.656	25	N

Sample ID: **1906231-07A SD** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190626C** Analysis Date: **6/26/2019 12:03:00 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.189	0.0500	0	0.199				4.75	10	N

Sample ID: **1906231-07A PDS** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190626C** Analysis Date: **6/26/2019 12:25:00 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.371	0.0100	0.200	0.199	86.3	80	120			N

Sample ID: **1906231-07A MS** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_190626C** Analysis Date: **6/26/2019 12:28:00 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.378	0.0100	0.200	0.199	89.9	80	120			N

Sample ID: **1906231-07A MSD** Batch ID: **91480** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190626C** Analysis Date: **6/26/2019 12:30:00 PM** Prep Date: **6/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.388	0.0100	0.200	0.199	94.7	80	120	2.50	25	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626C

Sample ID: **ICV-190626**	Batch ID: **R104803**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190626C**	Analysis Date: **6/26/2019 10:45:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.101	0.0100	0.100	0	101	90	110			N

Sample ID: **LCVL-190626**	Batch ID: **R104803**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626C**	Analysis Date: **6/26/2019 10:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00487	0.0100	0.00500	0	97.4	70	130			N

Sample ID: **CCV1-190626**	Batch ID: **R104803**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626C**	Analysis Date: **6/26/2019 11:26:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.202	0.0100	0.200	0	101	90	110			N

Sample ID: **LCVL1-190626**	Batch ID: **R104803**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626C**	Analysis Date: **6/26/2019 11:30:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00477	0.0100	0.00500	0	95.3	70	130			N

Sample ID: **CCV2-190626**	Batch ID: **R104803**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626C**	Analysis Date: **6/26/2019 12:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.188	0.0100	0.200	0	93.8	90	110			N

Sample ID: **LCVL2-190626**	Batch ID: **R104803**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626C**	Analysis Date: **6/26/2019 12:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00459	0.0100	0.00500	0	91.7	70	130			N

Sample ID: **CCV3-190626**	Batch ID: **R104803**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626C**	Analysis Date: **6/26/2019 12:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.190	0.0100	0.200	0	95.0	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626C

Sample ID: **LCVL3-190626** Batch ID: **R104803** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190626C** Analysis Date: **6/26/2019 1:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00472	0.0100	0.00500	0	94.4	70	130			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626D

The QC data in batch 91506 applies to the following samples: 1906231-01B, 1906231-02B, 1906231-03B, 1906231-04B, 1906231-05B, 1906231-06B, 1906231-07B, 1906231-08B, 1906231-09B

Sample ID: **MB-91506**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 1:26:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-91506**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 1:28:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	98.1	80	120			N

Sample ID: **LCSD-91506**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 1:30:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.200	0.0100	0.200	0	100	80	120	2.13	15	N

Sample ID: **1906231-01B SD**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 1:37:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.0625	0.0500	0	0.0697				10.9	20	N

Sample ID: **1906231-01B PDS**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 1:59:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.262	0.0100	0.200	0.0697	95.9	75	125			N

Sample ID: **1906231-01B MS**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 2:02:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.275	0.0100	0.200	0.0697	102	75	125			N

Sample ID: **1906231-01B MSD**	Batch ID: **91506**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 2:04:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.276	0.0100	0.200	0.0697	103	75	125	0.494	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190626D**

The QC data in batch 91507 applies to the following samples: 1906231-10B, 1906231-11B

Sample ID: **MB-91507**	Batch ID: **91507**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 2:58:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-91507**	Batch ID: **91507**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 3:00:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.191	0.0100	0.200	0	95.5	80	120			N

Sample ID: **LCSD-91507**	Batch ID: **91507**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 3:03:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.189	0.0100	0.200	0	94.3	80	120	1.28	15	N

Sample ID: **1906231-11B SD**	Batch ID: **91507**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 3:09:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.0863	0.0500	0	0.0895				3.64	20	N

Sample ID: **1906231-11B PDS**	Batch ID: **91507**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 3:23:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.291	0.0100	0.200	0.0895	101	75	125			N

Sample ID: **1906231-11B MS**	Batch ID: **91507**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 3:25:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.297	0.0100	0.200	0.0895	104	75	125			N

Sample ID: **1906231-11B MSD**	Batch ID: **91507**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 3:27:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.295	0.0100	0.200	0.0895	103	75	125	0.857	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626D

Sample ID: **ICV-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 10:45:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.101	0.0100	0.100	0	101	90	110			N

Sample ID: **LCVL-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 10:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00487	0.0100	0.00500	0	97.4	80	120			N

Sample ID: **CCV3-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 12:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.190	0.0100	0.200	0	95.0	90	110			N

Sample ID: **LCVL3-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 1:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00472	0.0100	0.00500	0	94.4	80	120			N

Sample ID: **CCV4-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 2:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.181	0.0100	0.200	0	90.3	90	110			N

Sample ID: **LCVL4-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 2:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00454	0.0100	0.00500	0	90.9	80	120			N

Sample ID: **CCV5-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 2:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.182	0.0100	0.200	0	91.0	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190626D

Sample ID: **LCVL5-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 2:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00454	0.0100	0.00500	0	90.8	80	120			N

Sample ID: **CCV6-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 3:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.182	0.0100	0.200	0	91.2	90	110			N

Sample ID: **LCVL6-190626**	Batch ID: **R109113**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190626D**	Analysis Date: **6/26/2019 3:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00459	0.0100	0.00500	0	91.7	80	120			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190530A

Sample ID: **DCS2-91133**	Batch ID: **91133**	TestNo: **E300**		Units: **mg/L**	
SampType: **DCS2**	Run ID: **IC2_190530A**	Analysis Date: **5/30/2019 12:45:08 PM**		Prep Date: **5/30/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.546	1.00	0.5000	0	109	65	135	0	0	
Fluoride	0.236	0.400	0.2000	0	118	65	135	0	0	
Nitrate-N	0.246	0.0500	0.2500	0	98.3	60	140	0	0	
Sulfate	1.59	3.00	1.500	0	106	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190621A

The QC data in batch 91431 applies to the following samples: 1906231-01D, 1906231-02D, 1906231-03D, 1906231-04D, 1906231-05D, 1906231-06D, 1906231-07D, 1906231-08D, 1906231-09D, 1906231-10D, 1906231-11D

Sample ID: **MB-91431** Batch ID: **91431** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_190621A** Analysis Date: **6/21/2019 10:16:19 AM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-91431** Batch ID: **91431** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_190621A** Analysis Date: **6/21/2019 10:32:19 AM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	4.10	0.400	4.000	0	102	90	110			
Nitrate-N	5.23	0.500	5.000	0	105	90	110			
Sulfate	31.2	3.00	30.00	0	104	90	110			

Sample ID: **LCSD-91431** Batch ID: **91431** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_190621A** Analysis Date: **6/21/2019 10:48:19 AM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110	0.659	20	
Fluoride	4.12	0.400	4.000	0	103	90	110	0.582	20	
Nitrate-N	5.27	0.500	5.000	0	105	90	110	0.826	20	
Sulfate	31.4	3.00	30.00	0	105	90	110	0.702	20	

Sample ID: **1906231-01DMS** Batch ID: **91431** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_190621A** Analysis Date: **6/21/2019 12:32:16 PM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	39100	1000	20000	19330	99.0	90	110			
Fluoride	21100	400	20000	0	106	90	110			
Nitrate-N	4590	500	4516	0	102	90	110			
Sulfate	24200	3000	20000	3548	103	90	110			

Sample ID: **1906231-01DMSD** Batch ID: **91431** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_190621A** Analysis Date: **6/21/2019 12:48:16 PM** Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	39100	1000	20000	19330	98.8	90	110	0.129	20	
Fluoride	21100	400	20000	0	106	90	110	0.200	20	
Nitrate-N	4560	500	4516	0	101	90	110	0.541	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190621A

Sample ID: **1906231-01DMSD**	Batch ID: **91431**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_190621A**	Analysis Date: **6/21/2019 12:48:16 PM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	24100	3000	20000	3548	103	90	110	0.308	20	

Sample ID: **1906231-02DMS**	Batch ID: **91431**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_190621A**	Analysis Date: **6/21/2019 1:20:16 PM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	42100	1000	20000	22640	97.2	90	110			
Fluoride	21100	400	20000	0	105	90	110			
Nitrate-N	4540	500	4516	0	101	90	110			
Sulfate	24500	3000	20000	4000	102	90	110			

Sample ID: **1906231-02DMSD**	Batch ID: **91431**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_190621A**	Analysis Date: **6/21/2019 1:36:16 PM**	Prep Date: **6/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	42100	1000	20000	22640	97.2	90	110	0.037	20	
Fluoride	21100	400	20000	0	106	90	110	0.364	20	
Nitrate-N	4580	500	4516	0	101	90	110	0.771	20	
Sulfate	24500	3000	20000	4000	103	90	110	0.194	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190621A

Sample ID: **ICV-190621**	Batch ID: **R104734**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190621A**	Analysis Date: **6/21/2019 9:44:19 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.5	1.00	25.00	0	106	90	110			
Fluoride	10.5	0.400	10.00	0	105	90	110			
Nitrate-N	13.5	0.500	12.50	0	108	90	110			
Sulfate	80.0	3.00	75.00	0	107	90	110			

Sample ID: **CCV1-190621**	Batch ID: **R104734**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190621A**	Analysis Date: **6/21/2019 4:32:16 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.14	0.400	4.000	0	104	90	110			
Nitrate-N	5.27	0.500	5.000	0	105	90	110			
Sulfate	31.3	3.00	30.00	0	104	90	110			

Sample ID: **CCV2-190621**	Batch ID: **R104734**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190621A**	Analysis Date: **6/21/2019 8:16:16 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Sulfate	31.6	3.00	30.00	0	105	90	110			

Sample ID: **CCV3-190621**	Batch ID: **R104734**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190621A**	Analysis Date: **6/21/2019 10:24:16 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.17	0.400	4.000	0	104	90	110			
Nitrate-N	5.29	0.500	5.000	0	106	90	110			
Sulfate	31.6	3.00	30.00	0	105	90	110			

Sample ID: **CCV4-190621**	Batch ID: **R104734**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190621A**	Analysis Date: **6/22/2019 2:24:16 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.19	0.400	4.000	0	105	90	110			
Nitrate-N	5.27	0.500	5.000	0	105	90	110			

Sample ID: **CCV5-190621**	Batch ID: **R104734**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190621A**	Analysis Date: **6/22/2019 5:04:16 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.22	0.400	4.000	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190621A

Sample ID: **CCV5-190621**	Batch ID: **R104734**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190621A**	Analysis Date: **6/22/2019 5:04:16 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	5.27	0.500	5.000	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190624A

The QC data in batch 91451 applies to the following samples: 1906231-01D, 1906231-02D, 1906231-03D, 1906231-04D, 1906231-05D, 1906231-06D, 1906231-07D, 1906231-08D, 1906231-09D, 1906231-10D, 1906231-11D

Sample ID: **MB-91451** Batch ID: **91451** TestNo: **M2320 B** Units: **mg/L @ pH 4.52**
SampType: **MBLK** Run ID: **TITRATOR_190624A** Analysis Date: **6/24/2019 10:51:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-91451** Batch ID: **91451** TestNo: **M2320 B** Units: **mg/L @ pH 4.23**
SampType: **LCS** Run ID: **TITRATOR_190624A** Analysis Date: **6/24/2019 10:55:00 AM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	51.4	20.0	50.00	0	103	74	129			

Sample ID: **1906231-08D DUP** Batch ID: **91451** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_190624A** Analysis Date: **6/24/2019 2:15:00 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	301	20.0	0	301.6				0.099	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	301	20.0	0	301.6				0.099	20	

Sample ID: **1906231-11D DUP** Batch ID: **91451** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_190624A** Analysis Date: **6/24/2019 4:00:00 PM** Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	347	20.0	0	349.8				0.775	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	347	20.0	0	349.8				0.775	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190624A

Sample ID: **ICV-190624**	Batch ID: **R104755**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.32**
SampType: **ICV**	Run ID: **TITRATOR_190624A**	Analysis Date: **6/24/2019 10:45:00 AM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	8.40	20.0	0							
Alkalinity, Carbonate (As CaCO3)	91.7	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	98	102			

Sample ID: **CCV1-190624**	Batch ID: **R104755**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.32**
SampType: **CCV**	Run ID: **TITRATOR_190624A**	Analysis Date: **6/24/2019 2:22:00 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	32.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	67.7	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.9	20.0	100.0	0	99.9	90	110			

Sample ID: **CCV2-190624**	Batch ID: **R104755**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.46**
SampType: **CCV**	Run ID: **TITRATOR_190624A**	Analysis Date: **6/24/2019 4:07:00 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	42.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	56.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.5	20.0	100.0	0	98.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190605A

Sample ID: **DCS-91202**	Batch ID: **91202**	TestNo: **M4500-NH3-D**	Units: **mg/L**		
SampType: **DCS**	Run ID: **WC_190605A**	Analysis Date: **6/5/2019 2:00:00 PM**	Prep Date: **6/5/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.0703	0.250	0.1000	0	70.3	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190624B

The QC data in batch 91469 applies to the following samples: 1906231-01D, 1906231-02D, 1906231-03D, 1906231-04D, 1906231-05D, 1906231-06D, 1906231-07D

Sample ID: **MB-91469**	Batch ID: **91469**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_190624B**	Analysis Date: **6/24/2019 5:00:00 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-91469**	Batch ID: **91469**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_190624B**	Analysis Date: **6/24/2019 5:00:00 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	755	10.0	745.6	0	101	90	113			

Sample ID: **1906206-07D-DUP**	Batch ID: **91469**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190624B**	Analysis Date: **6/24/2019 5:00:00 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	28200	1000	0	28300				0.354	5	

Sample ID: **1906206-14D-DUP**	Batch ID: **91469**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190624B**	Analysis Date: **6/24/2019 5:00:00 PM**	Prep Date: **6/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	27800	1000	0	28200				1.43	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190627A

The QC data in batch 91523 applies to the following samples: 1906231-08D, 1906231-09D, 1906231-10D, 1906231-11D

Sample ID: **MB-91523**	Batch ID: **91523**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_190627A**	Analysis Date: **6/27/2019 3:40:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-91523**	Batch ID: **91523**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_190627A**	Analysis Date: **6/27/2019 3:40:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	760	10.0	745.6	0	102	90	113			

Sample ID: **1906231-08D-DUP**	Batch ID: **91523**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190627A**	Analysis Date: **6/27/2019 3:40:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	28800	1000	0	30000				4.08	5	

Sample ID: **1906231-09D-DUP**	Batch ID: **91523**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190627A**	Analysis Date: **6/27/2019 3:40:00 PM**	Prep Date: **6/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	42100	1000	0	44200				4.87	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190628A

The QC data in batch 91569 applies to the following samples: 1906231-01C, 1906231-02C, 1906231-03C, 1906231-04C, 1906231-05C, 1906231-06C, 1906231-07C, 1906231-08C, 1906231-09C, 1906231-10C, 1906231-11C

Sample ID: **MB-91569** Batch ID: **91569** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_190628A** Analysis Date: **6/28/2019 1:45:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-91569** Batch ID: **91569** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **LCS** Run ID: **WC_190628A** Analysis Date: **6/28/2019 1:45:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.94	0.250	5.000	0	98.8	80	120			

Sample ID: **1906231-01CMS** Batch ID: **91569** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_190628A** Analysis Date: **6/28/2019 1:45:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.78	0.250	5.000	0.6910	81.8	80	120			

Sample ID: **1906231-01CMSD** Batch ID: **91569** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_190628A** Analysis Date: **6/28/2019 1:45:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.70	0.250	5.000	0.6910	80.2	80	120	1.69	25	

Sample ID: **1906265-02AMS** Batch ID: **91569** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_190628A** Analysis Date: **6/28/2019 1:45:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	7.39	0.250	5.000	1.050	127	80	120			S

Sample ID: **1906265-02AMSD** Batch ID: **91569** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_190628A** Analysis Date: **6/28/2019 1:45:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	7.26	0.250	5.000	1.050	124	80	120	1.77	25	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190628A

Sample ID: **ICV-190628**	Batch ID: **R104868**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_190628A**	Analysis Date: **6/28/2019 1:45:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.60	0.250	2.500	0	104	80	120			

Sample ID: **CCV1-190628**	Batch ID: **R104868**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_190628A**	Analysis Date: **6/28/2019 1:45:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.13	0.250	5.000	0	103	80	120			

Sample ID: **CCV2-190628**	Batch ID: **R104868**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_190628A**	Analysis Date: **6/28/2019 1:45:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.89	0.250	5.000	0	118	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906231
Project: Copano GW 2Q19

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.5**	**g/L @ pH 4.5**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

July 17, 2019

2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

DHL Analytical, Inc.

Sample Delivery Group:	L1112597
Samples Received:	06/25/2019
Project Number:	
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

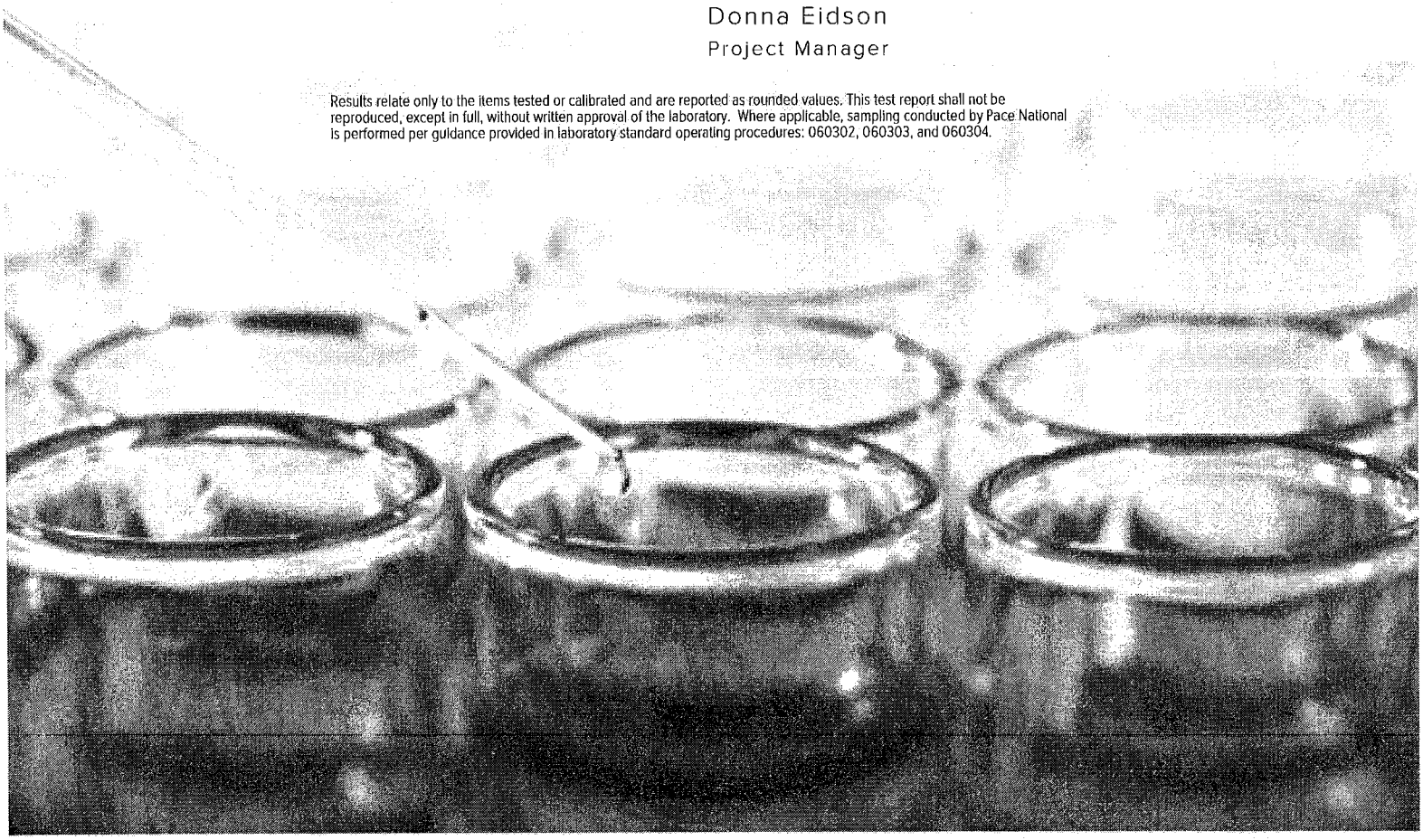


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MW4-3B L1112597-01 Non-Potable Water

Collected by | Collected date/time 06/20/19 12:48 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1305725	1	07/03/19 09:20	07/09/19 11:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307892	1	07/12/19 12:41	07/15/19 19:31	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307892	1	07/12/19 12:41	07/15/19 19:31	RGT	Mt. Juliet, TN

MW4-3 L1112597-02 Non-Potable Water

Collected by | Collected date/time 06/20/19 12:00 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1305725	1	07/03/19 09:20	07/09/19 11:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307892	1	07/12/19 12:41	07/15/19 19:31	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307892	1	07/12/19 12:41	07/15/19 19:31	RGT	Mt. Juliet, TN

MW4-4 L1112597-03 Non-Potable Water

Collected by | Collected date/time 06/20/19 11:10 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1305725	1	07/03/19 09:20	07/09/19 11:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307892	1	07/12/19 12:41	07/15/19 19:31	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307892	1	07/12/19 12:41	07/15/19 19:31	RGT	Mt. Juliet, TN

MW3-6 L1112597-04 Non-Potable Water

Collected by | Collected date/time 06/20/19 10:00 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1305725	1	07/03/19 09:20	07/09/19 11:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307892	1	07/12/19 12:41	07/15/19 19:31	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307892	1	07/12/19 12:41	07/15/19 19:31	RGT	Mt. Juliet, TN

MW3-5 L1112597-05 Non-Potable Water

Collected by | Collected date/time 06/20/19 09:25 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1305725	1	07/03/19 09:20	07/09/19 15:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307892	1	07/12/19 12:41	07/15/19 19:31	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307892	1	07/12/19 12:41	07/15/19 19:31	RGT	Mt. Juliet, TN

MW-303 L1112597-06 Non-Potable Water

Collected by | Collected date/time 06/20/19 12:10 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1305725	1	07/03/19 09:20	07/09/19 15:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307892	1	07/12/19 12:41	07/15/19 19:31	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307892	1	07/12/19 12:41	07/15/19 19:31	RGT	Mt. Juliet, TN

MW4-1 L1112597-07 Non-Potable Water

Collected by | Collected date/time 06/20/19 09:05 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1305725	1	07/03/19 09:20	07/09/19 15:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307892	1	07/12/19 12:41	07/16/19 08:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307892	1	07/12/19 12:41	07/16/19 08:09	RGT	Mt. Juliet, TN

MW4-2A L1112597-08 Non-Potable Water

Collected by | Collected date/time 06/20/19 10:05 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1305725	1	07/03/19 09:20	07/09/19 15:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307892	1	07/12/19 12:41	07/16/19 08:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307892	1	07/12/19 12:41	07/16/19 08:09	RGT	Mt. Juliet, TN

MW4-2 L1112597-09 Non-Potable Water

Collected by | Collected date/time 06/20/19 11:35 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1305725	1	07/03/19 09:20	07/09/19 15:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307892	1	07/12/19 12:41	07/16/19 08:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307892	1	07/12/19 12:41	07/16/19 08:09	RGT	Mt. Juliet, TN

MW-6R L1112597-10 Non-Potable Water

Collected by | Collected date/time 06/20/19 12:45 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1305725	1	07/03/19 09:20	07/09/19 15:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307892	1	07/12/19 12:41	07/16/19 08:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307892	1	07/12/19 12:41	07/16/19 08:09	RGT	Mt. Juliet, TN

MW-6RB L1112597-11 Non-Potable Water

Collected by | Collected date/time 06/20/19 13:35 | Received date/time 06/25/19 11:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1305725	1	07/03/19 09:20	07/09/19 15:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1307892	1	07/12/19 12:41	07/16/19 08:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1307892	1	07/12/19 12:41	07/16/19 08:09	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	2.03		0.445	0.715	07/09/2019 11:50	WG1305725
(T) Barium	*102*			*62.0-143*	*07/09/2019 11:50*	WG1305725
(T) Yttrium	*91.5*			*79.0-136*	*07/09/2019 11:50*	WG1305725

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	2.44		0.727	0.963	07/15/2019 19:31	WG1307892

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.403		0.282	0.248	07/15/2019 19:31	WG1307892
(T) Barium-133	*67.7*			*30.0-143*	*07/15/2019 19:31*	WG1307892

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.39		0.517	0.9	07/09/2019 11:50	WG1305725
(T) Barium	*96.5*			*62.0-143*	*07/09/2019 11:50*	WG1305725
(T) Yttrium	*89.8*			*79.0-136*	*07/09/2019 11:50*	WG1305725

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.67		1.19	1.51	07/15/2019 19:31	WG1307892

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.28		0.677	0.611	07/15/2019 19:31	WG1307892
(T) Barium-133	*46.0*			*30.0-143*	*07/15/2019 19:31*	WG1307892

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	3.66		0.407	0.67	07/09/2019 11:50	WG1305725
(T) Barium	*115*			*62.0-143*	*07/09/2019 11:50*	WG1305725
(T) Yttrium	*96.8*			*79.0-136*	*07/09/2019 11:50*	WG1305725

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	4.38		0.872	1.11	07/15/2019 19:31	WG1307892

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.724		0.465	0.435	07/15/2019 19:31	WG1307892
(T) Barium-133	*58.1*			*30.0-143*	*07/15/2019 19:31*	WG1307892

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	3.48		0.433	0.765	07/09/2019 11:50	WG1305725
(T) Barium	*99.4*			*62.0-143*	*07/09/2019 11:50*	WG1305725
(T) Yttrium	*91.7*			*79.0-136*	*07/09/2019 11:50*	WG1305725

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.84		0.772	1.19	07/15/2019 19:31	WG1307892

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.357		0.339	0.422	07/15/2019 19:31	WG1307892
(T) Barium-133	*61.4*			*30.0-143*	*07/15/2019 19:31*	WG1307892

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	2.23		0.462	0.682	07/09/2019 15:00	WG1305725
(T) Barium	*104*			*62.0-143*	*07/09/2019 15:00*	WG1305725
(T) Yttrium	*90.5*			*79.0-136*	*07/09/2019 15:00*	WG1305725

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	2.71		0.809	1.03	07/15/2019 19:31	WG1307892

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.480		0.347	0.352	07/15/2019 19:31	WG1307892
(T) Barium-133	*65.1*			*30.0-143*	*07/15/2019 19:31*	WG1307892

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.71		0.455	0.666	07/09/2019 15:00	WG1305725
(T) Barium	*111*			*62.0-143*	*07/09/2019 15:00*	WG1305725
(T) Yttrium	*89.4*			*79.0-136*	*07/09/2019 15:00*	WG1305725

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	2.62		0.881	0.926	07/15/2019 19:31	WG1307892

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.917		0.426	0.26	07/15/2019 19:31	WG1307892
(T) Barium-133	*64.4*			*30.0-143*	*07/15/2019 19:31*	WG1307892

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	3.76		0.443	0.572	07/09/2019 15:00	WG1305725
(T) Barium	*113*			*62.0-143*	*07/09/2019 15:00*	WG1305725
(T) Yttrium	*89.7*			*79.0-136*	*07/09/2019 15:00*	WG1305725

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	4.31		0.776	0.896	07/16/2019 08:09	WG1307892

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.546		0.333	0.324	07/16/2019 08:09	WG1307892
(T) Barium-133	*79.6*			*30.0-143*	*07/16/2019 08:09*	WG1307892

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	2.52		0.437	0.582	07/09/2019 15:00	WG1305725
(T) Barium	*119*			*62.0-143*	*07/09/2019 15:00*	WG1305725
(T) Yttrium	*94.6*			*79.0-136*	*07/09/2019 15:00*	WG1305725

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	2.73		0.727	1.01	07/16/2019 08:09	WG1307892

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.209		0.290	0.424	07/16/2019 08:09	WG1307892
(T) Barium-133	*66.3*			*30.0-143*	*07/16/2019 08:09*	WG1307892

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	2.79		0.433	0.628	07/09/2019 15:00	WG1305725
(T) Barium	*108*			*62.0-143*	*07/09/2019 15:00*	WG1305725
(T) Yttrium	*96.8*			*79.0-136*	*07/09/2019 15:00*	WG1305725

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	3.38		0.889	1.11	07/16/2019 08:09	WG1307892

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.589		0.456	0.486	07/16/2019 08:09	WG1307892
(T) Barium-133	*52.0*			*30.0-143*	*07/16/2019 08:09*	WG1307892

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	3.05		0.495	0.847	07/09/2019 15:00	WG1305725
(T) Barium	*96.1*			*62.0-143*	*07/09/2019 15:00*	WG1305725
(T) Yttrium	*87.0*			*79.0-136*	*07/09/2019 15:00*	WG1305725

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	3.92		0.926	1.21	07/16/2019 08:09	WG1307892

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.871		0.431	0.358	07/16/2019 08:09	WG1307892
(T) Barium-133	*72.3*			*30.0-143*	*07/16/2019 08:09*	WG1307892

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	3.11		0.468	0.795	07/09/2019 15:00	WG1305725
(T) Barium	*96.2*			*62.0-143*	*07/09/2019 15:00*	WG1305725
(T) Yttrium	*87.7*			*79.0-136*	*07/09/2019 15:00*	WG1305725

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.85		0.826	1.06	07/16/2019 08:09	WG1307892

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.734		0.358	0.269	07/16/2019 08:09	WG1307892
(T) Barium-133	*85.1*			*30.0-143*	*07/16/2019 08:09*	WG1307892

Method Blank (MB)

(MB) R3429135-1 07/09/19 11:50

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.257		0.507
(T) Barium	*98.4*		
(T) Yttrium	*86.4*		

L1111984-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1111984-01 07/09/19 11:50 • (DUP) R3429135-5 07/09/19 11:50

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	1.70	0.771	1	75.1	1.57		20	3
(T) Barium	*92.2*	*86.7*						
(T) Yttrium	*97.1*	*89.3*						

Laboratory Control Sample (LCS)

(LCS) R3429135-2 07/09/19 11:50

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.16	103	80.0-120	
(T) Barium			*109*		
(T) Yttrium			*88.8*		

L1111984-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1111984-02 07/09/19 11:50 • (MS) R3429135-3 07/09/19 11:50 • (MSD) R3429135-4 07/09/19 11:50

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	7.14	0.758	8.80	7.80	113	98.6	1	70.0-130			12.0		20
(T) Barium		*94.2*			*88.1*	*98.0*							
(T) Yttrium		*91.2*			*87.1*	*89.5*							

Method Blank (MB)

(MB) R3431468-5 07/15/19 18:14

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	-0.00266		0.0613
(T) Barium-133	*64.5*		

L1116860-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1116860-01 07/16/19 08:09 • (DUP) R3431468-4 07/15/19 15:35

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.290	0.0149	1	180	1.01		20	3
(T) Barium-133	*72.3*	*91.7*						

Laboratory Control Sample (LCS)

(LCS) R3431468-1 07/15/19 15:35

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	5.05	101	80.0-120	
(T) Barium-133			*81.2*		

L1112597-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1112597-11 07/16/19 08:09 • (MS) R3431468-2 07/15/19 15:35 • (MSD) R3431468-3 07/15/19 15:35

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.734	23.3	24.6	112	119	1	75.0-125			5.46		20
(T) Barium-133		*85.1*			*64.0*	*60.6*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

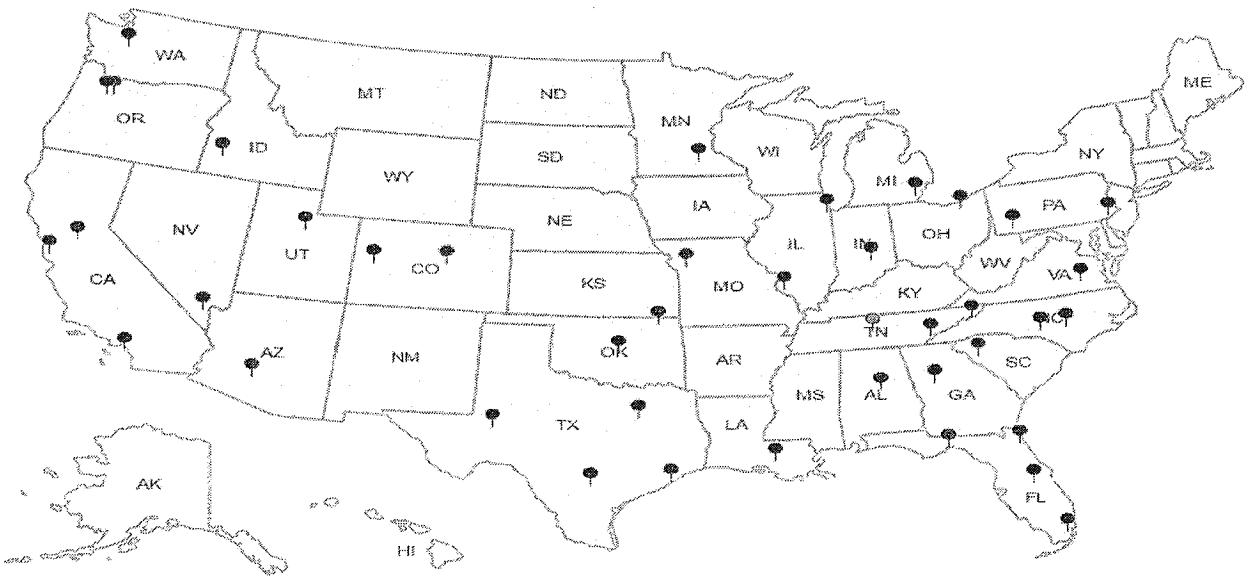
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



CHAIN-OF-CUSTODY RECORD

1112597

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

Work Order: 1906231

H127

21-Jun-19

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests: Ra-228 E904.0	Ra-226 M7500 Ra B M					
MW4-3B	Aqueous	-01E	06/20/19 12:48 PM	1LHDPEHNO3	1	1					-01
MW4-3B	Aqueous	-01F	06/20/19 12:48 PM	1LHDPEHNO3							1
MW4-3	Aqueous	-02E	06/20/19 12:00 PM	1LHDPEHNO3	1	1					02
MW4-3	Aqueous	-02F	06/20/19 12:00 PM	1LHDPEHNO3							1
MW4-4	Aqueous	-03E	06/20/19 11:10 AM	1LHDPEHNO3	1	1					03
MW4-4	Aqueous	-03F	06/20/19 11:10 AM	1LHDPEHNO3							1
MW3-6	Aqueous	-04E	06/20/19 10:00 AM	1LHDPEHNO3	1	1					04
MW3-6	Aqueous	-04F	06/20/19 10:00 AM	1LHDPEHNO3							1
MW3-5	Aqueous	-05E	06/20/19 09:25 AM	1LHDPEHNO3	1	1					05
MW3-5	Aqueous	-05F	06/20/19 09:25 AM	1LHDPEHNO3							1
MW-303	Aqueous	-06E	06/20/19 12:10 PM	1LHDPEHNO3	1	1					06
MW-303	Aqueous	-06F	06/20/19 12:10 PM	1LHDPEHNO3							1
MW4-1	Aqueous	-07E	06/20/19 09:05 AM	1LHDPEHNO3	1	1					07
MW4-1	Aqueous	-07F	06/20/19 09:05 AM	1LHDPEHNO3							1
MW4-2A	Aqueous	-08E	06/20/19 10:05 AM	1LHDPEHNO3	1	1					08
MW4-2A	Aqueous	-08F	06/20/19 10:05 AM	1LHDPEHNO3							1
MW4-2	Aqueous	-09E	06/20/19 11:35 AM	1LHDPEHNO3	1	1					09
MW4-2	Aqueous	-09F	06/20/19 11:35 AM	1LHDPEHNO3							1

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

Amb

	Date/Time		Date/Time
Relinquished by:	6/21/19 1900	Received by: Carol Kemp	6/25/19 11:00
Relinquished by:		Received by:	

1112597

CHAIN-OF-CUSTODY RECORD

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

Work Order: 1906231

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

21-Jun-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests: Ra-228 E904.0	Ra-226 M7500 Ra B M				
MW-6R	Aqueous	-10E	06/20/19 12:45 PM	1LHDPEHNO3	1	1				10
MW-6R	Aqueous	-10F	06/20/19 12:45 PM	1LHDPEHNO3						1
MW-6RB	Aqueous	-11E	06/20/19 01:35 PM	1LHDPEHNO3	1	1				11
MW-6RB	Aqueous	-11F	06/20/19 01:35 PM	1LHDPEHNO3						

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

Amb

	Date/Time		Date/Time
Relinquished by:	6/21/19 1700	Received by: Carol Kemp	6/25/19 11:00
Relinquished by:		Received by:	

120

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

SDG#:	1112597
Client: OHLRRTC	Temperature: Amb
Cooler Received/Opened On: 6/25/19	
Received By: Carol Kemp	
Signature: Carol Kemp	

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?			
If Applicable			
VOA Zero headspace?		✓	
Preservation Correct / Checked?			

February 28, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 1906277

RE: Copano GW Sampling - 2Q19

Dear Kevin Dworsky:

DHL Analytical, Inc. received 5 sample(s) on 6/26/2019 for the analyses presented in the following report.

REVISION#1: This revision consists of adding Dissolved Uranium to the list of test parameters for all samples as per the client. Please replace the original report with this revised report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

CHAIN-OF-CUSTODY

№ 83320

CLIENT: Golder Associates Inc.
ADDRESS: 620 E. Airline Victoria, TX 77901
PHONE: 361-573-6442 FAX/E-MAIL: Kevin_Dworsky@golder.com
DATA REPORTED TO: Greg Logan, Kevin Dworsky, Sergio Ruiz
ADDITIONAL REPORT COPIES TO: Matt Wickham

DATE: 6/25/19 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1906277
PROJECT LOCATION OR NAME: Copano GW sampling-2Q19
CLENT PROJECT #: 181113O9-2003 COLLECTOR: Caitlin Carter

Authorize 5% surcharge for TRRP Report? ☑ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
MW-4	01	6/25/19	13:41	W	P	6		X				See Attached paper for analysis
MW-9	02		14:56			4		X				
MW3-7B	03		10:43			4		X				
MW3-7	04		11:37			4		X				
MW4-7	05		12:38			4		X				

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ ___ ☐ | RCRA ☐ TX11 ☐ ___ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ___ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Caitlin Carter	6/25/19 5:30pm	FEDEX
FEDEX	6/26/19 0920	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return 3

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 25.0 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1

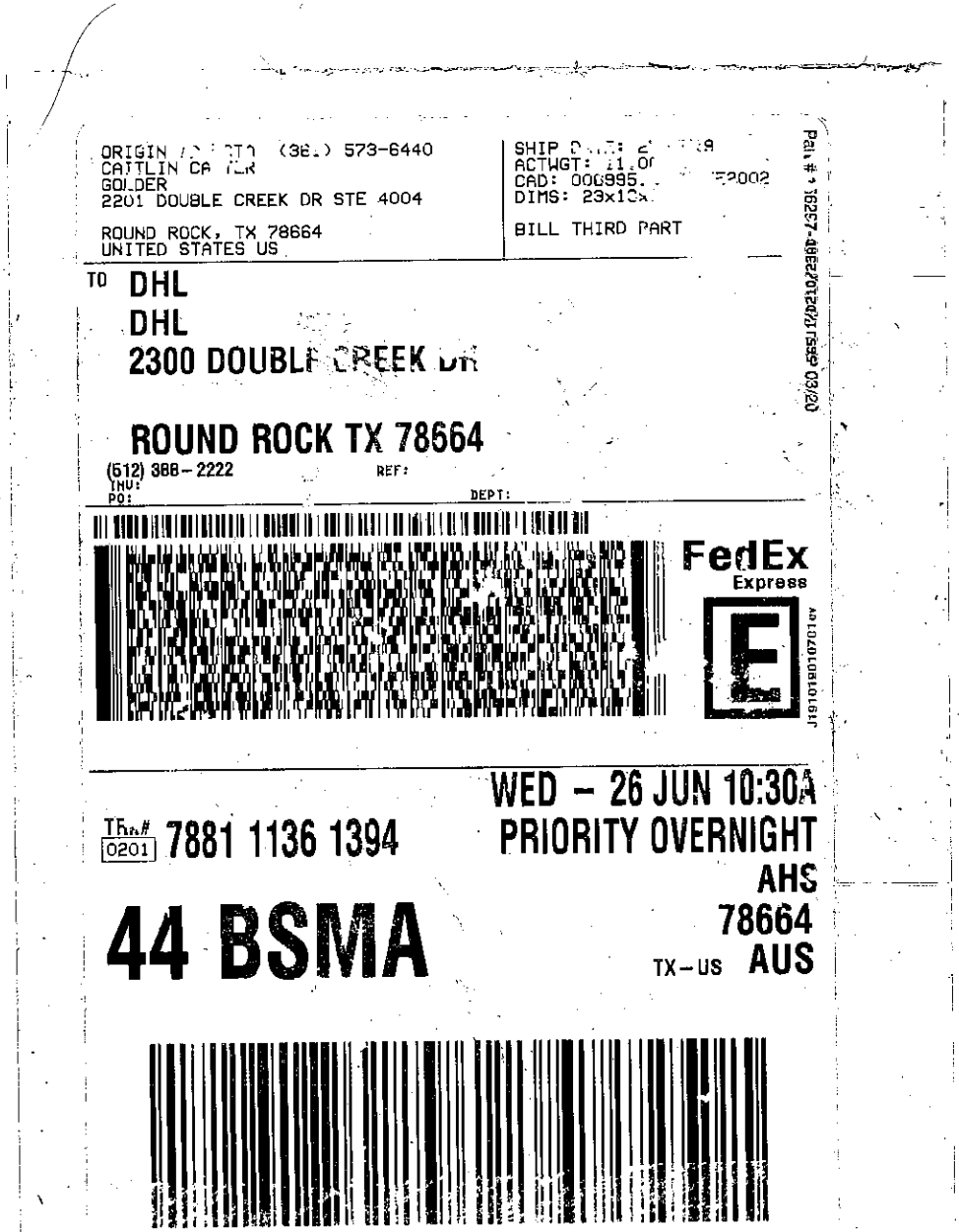
TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate	E300	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate	E300	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:

1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium

2) From time of sample collection



ORIGIN ID: RDU (919) 573-6440
CAITLIN CARTER
GOLDER
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 25JUN19
ACTWGT: 11.0 LB
CAD: 0009955[illegible]2002
DIMS: 23x12x[illegible]

BILL THIRD PART

TO DHL
DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-2222 REF:
INV:
PO: DEPT:

FedEx Express

TRK# 0201 7881 1136 1394

WED - 26 JUN 10:30A
PRIORITY OVERNIGHT

44 BSMA

AHS
78664
TX-US AUS

Ref # 162257-4852701202/1559 03/20

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder

Date Received: 6/26/2019

Work Order Number 1906277

Received by CC

Checklist completed by: _____ 6/26/2019
Signature | Date

Reviewed by CC 6/26/2019
Initials | Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	25.0 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW Sampling – 2Q19	**LRC Date:** 7/29/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1906277
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?		**X**			**R5-04**
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?		**X**			**R5-05**
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW Sampling – 2Q19	**LRC Date:** 7/29/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1906277
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	**X**				
		2) Were percent RSDs or correlation coefficient criteria met?	**X**				
		3) Was the number of standards recommended in the method used for all analytes?	**X**				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	**X**				
		5) Are ICAL data available for all instruments used?	**X**				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	**X**				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	**X**				
		2) Were percent differences for each analyte within the method-required QC limits?		**X**			**S2-02**
		3) Was the ICAL curve verified for each analyte?	**X**				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	**X**				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	**X**				
		2) Were ion abundance data within the method-required QC limits?	**X**				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?		**X**			**S4-01**
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	**X**				
		2) Were data associated with manual integrations flagged on the raw data?	**X**				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			**X**		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			**X**		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	**X**				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	**X**				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	**X**				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	**X**				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	**X**				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	**X**				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	**X**				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	**X**				
		2) Is documentation of the analyst's competency up-to-date and on file?	**X**				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	**X**				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

02/28/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *28-Feb-20*

CLIENT: Golder
Project: Copano GW Sampling - 2Q19
Lab Order: 1906277

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis (total & dissolved)
Method SW6020A - Uranium in Water Analysis (this parameter is not NELACP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 6/26/19. A total of 5 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R5-04

For Total Metals analysis performed on 7/2/19 Nickel was detected below the reporting limit in the method blank (MB-91562).

Exception Report R5-05

For Total Metals analysis (batch 91562) all samples may be biased high for Nickel. No further corrective actions were taken.

Exception Report R7-03

For Total Metals analysis performed on 7/2/19 (batch 91562) the matrix spike and matrix spike duplicate recoveries were out of control limits for a total of four analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Exception Report R10-01

For Metals analysis the dissolved Aluminum and/or Vanadium results were slightly higher than the total Aluminum and/or Vanadium results for all samples. In addition, the Dissolved Uranium results were slightly higher than the Total Uranium results for samples MW3-7B and MW4-7 . These are within the acceptable variation limits. No further corrective actions were taken.

Exception Report S2-02

CLIENT:	Golder
Project:	Copano GW Sampling - 2Q19
Lab Order:	1906277

CASE NARRATIVE

For Total Metals analysis performed on 7/2/19 LCVL5-190702 was above control limits for Sodium. This is flagged accordingly in the QC summary report. The associated CCV5-190702 was within control limits for this analyte. No further corrective actions were taken.

Exception Report S4-01

For Total Metals analysis samples MW-4 and MW3-7 had low responses for the internal standards Bismuth and Indium. This was due to matrix interference. The associated analytes (Antimony & Lead) may be biased high. No further corrective actions were taken.

For Total Metals analysis samples MW-9, MW3-7B and MW4-7 had low responses for the internal standard Bismuth. This was due to matrix interference. The associated analyte (Lead) may be biased high. No further corrective actions were taken.

For Dissolved Metals analysis all samples had low responses for the internal standard Bismuth. This was due to matrix interference. The associated analyte (Lead) may be biased high. No further corrective actions were taken.

For Uranium in Water analysis all samples had low responses for the internal standard Bismuth. This was due to matrix interference. The associated analyte (Uranium) may be biased high. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *29-Jul-19*

CLIENT: Golder
Project: Copano GW Sampling - 2Q19
Lab Order: 1906277

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1906277-01	MW-4		06/25/19 01:41 PM	6/26/2019
1906277-02	MW-9		06/25/19 02:56 PM	6/26/2019
1906277-03	MW3-7B		06/25/19 10:43 AM	6/26/2019
1906277-04	MW3-7		06/25/19 11:37 AM	6/26/2019
1906277-05	MW4-7		06/25/19 12:38 PM	6/26/2019

Lab Order: 1906277
Client: Golder
Project: Copano GW Sampling - 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906277-01A	MW-4	06/25/19 01:41 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW-4	06/25/19 01:41 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW-4	06/25/19 01:41 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW-4	06/25/19 01:41 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW-4	06/25/19 01:41 PM	Aqueous	SW7470A	Mercury Aq Prep	06/27/19 09:11 AM	91538
1906277-01B	MW-4	06/25/19 01:41 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/28/19 02:33 PM	91572
	MW-4	06/25/19 01:41 PM	Aqueous	SW7470A	Mercury Aq Prep	07/02/19 08:33 AM	91605
1906277-02A	MW-9	06/25/19 02:56 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW-9	06/25/19 02:56 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW-9	06/25/19 02:56 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW-9	06/25/19 02:56 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW-9	06/25/19 02:56 PM	Aqueous	SW7470A	Mercury Aq Prep	06/27/19 09:11 AM	91538
1906277-02B	MW-9	06/25/19 02:56 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/28/19 02:33 PM	91572
	MW-9	06/25/19 02:56 PM	Aqueous	SW7470A	Mercury Aq Prep	07/02/19 08:33 AM	91605
1906277-03A	MW3-7B	06/25/19 10:43 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW3-7B	06/25/19 10:43 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW3-7B	06/25/19 10:43 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW3-7B	06/25/19 10:43 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW3-7B	06/25/19 10:43 AM	Aqueous	SW7470A	Mercury Aq Prep	06/27/19 09:11 AM	91538
1906277-03B	MW3-7B	06/25/19 10:43 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/28/19 02:33 PM	91572
	MW3-7B	06/25/19 10:43 AM	Aqueous	SW7470A	Mercury Aq Prep	07/02/19 08:33 AM	91605
1906277-04A	MW3-7	06/25/19 11:37 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW3-7	06/25/19 11:37 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW3-7	06/25/19 11:37 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW3-7	06/25/19 11:37 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW3-7	06/25/19 11:37 AM	Aqueous	SW7470A	Mercury Aq Prep	06/27/19 09:11 AM	91538
1906277-04B	MW3-7	06/25/19 11:37 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/28/19 02:33 PM	91572
	MW3-7	06/25/19 11:37 AM	Aqueous	SW7470A	Mercury Aq Prep	07/02/19 08:33 AM	91605

Lab Order: 1906277
Client: Golder
Project: Copano GW Sampling - 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906277-05A	MW4-7	06/25/19 12:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW4-7	06/25/19 12:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW4-7	06/25/19 12:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW4-7	06/25/19 12:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/28/19 08:31 AM	91562
	MW4-7	06/25/19 12:38 PM	Aqueous	SW7470A	Mercury Aq Prep	06/27/19 09:11 AM	91538
1906277-05B	MW4-7	06/25/19 12:38 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/28/19 02:33 PM	91572
	MW4-7	06/25/19 12:38 PM	Aqueous	SW7470A	Mercury Aq Prep	07/02/19 08:33 AM	91605

Lab Order: 1906277
Client: Golder
Project: Copano GW Sampling - 2Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906277-01A	MW-4	Aqueous	SW7470A	Mercury Total: Aqueous	91538	1	06/27/19 03:02 PM	CETAC2_HG_190627B
	MW-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	1	07/02/19 03:11 PM	ICP-MS4_190702A
	MW-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	1000	07/05/19 10:53 AM	ICP-MS4_190705A
	MW-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	100	07/05/19 11:57 AM	ICP-MS4_190705A
	MW-4	Aqueous	SW6020A	Uranium in Water by ICPMS	91562	1	07/02/19 03:11 PM	ICP-MS4_190702B
1906277-01B	MW-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91605	1	07/03/19 11:59 AM	CETAC2_HG_190703D
	MW-4	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91572	1	07/01/19 01:11 PM	ICP-MS4_190701B
1906277-02A	MW-9	Aqueous	SW7470A	Mercury Total: Aqueous	91538	1	06/27/19 03:05 PM	CETAC2_HG_190627B
	MW-9	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	100	07/05/19 11:59 AM	ICP-MS4_190705A
	MW-9	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	1	07/02/19 03:13 PM	ICP-MS4_190702A
	MW-9	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	1000	07/05/19 10:55 AM	ICP-MS4_190705A
	MW-9	Aqueous	SW6020A	Uranium in Water by ICPMS	91562	1	07/02/19 03:13 PM	ICP-MS4_190702B
1906277-02B	MW-9	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91605	1	07/03/19 12:01 PM	CETAC2_HG_190703D
	MW-9	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91572	1	07/01/19 01:13 PM	ICP-MS4_190701B
1906277-03A	MW3-7B	Aqueous	SW7470A	Mercury Total: Aqueous	91538	1	06/27/19 03:07 PM	CETAC2_HG_190627B
	MW3-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	100	07/05/19 12:01 PM	ICP-MS4_190705A
	MW3-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	1	07/02/19 03:15 PM	ICP-MS4_190702A
	MW3-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	1000	07/05/19 10:57 AM	ICP-MS4_190705A
	MW3-7B	Aqueous	SW6020A	Uranium in Water by ICPMS	91562	1	07/02/19 03:15 PM	ICP-MS4_190702B
1906277-03B	MW3-7B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91605	1	07/03/19 12:03 PM	CETAC2_HG_190703D
	MW3-7B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91572	1	07/01/19 01:15 PM	ICP-MS4_190701B
1906277-04A	MW3-7	Aqueous	SW7470A	Mercury Total: Aqueous	91538	1	06/27/19 03:09 PM	CETAC2_HG_190627B
	MW3-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	1	07/02/19 03:17 PM	ICP-MS4_190702A
	MW3-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	1000	07/05/19 10:59 AM	ICP-MS4_190705A
	MW3-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	100	07/05/19 12:03 PM	ICP-MS4_190705A

Lab Order: 1906277
Client: Golder
Project: Copano GW Sampling - 2Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906277-04A	MW3-7	Aqueous	SW6020A	Uranium in Water by ICPMS	91562	1	07/02/19 03:17 PM	ICP-MS4_190702B
1906277-04B	MW3-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91605	1	07/03/19 12:05 PM	CETAC2_HG_190703D
	MW3-7	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91572	1	07/01/19 01:17 PM	ICP-MS4_190701B
1906277-05A	MW4-7	Aqueous	SW7470A	Mercury Total: Aqueous	91538	1	06/27/19 03:11 PM	CETAC2_HG_190627B
	MW4-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	1	07/02/19 03:19 PM	ICP-MS4_190702A
	MW4-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	1000	07/05/19 11:01 AM	ICP-MS4_190705A
	MW4-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91562	100	07/05/19 12:05 PM	ICP-MS4_190705A
	MW4-7	Aqueous	SW6020A	Uranium in Water by ICPMS	91562	1	07/02/19 03:19 PM	ICP-MS4_190702B
1906277-05B	MW4-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91605	1	07/03/19 12:08 PM	CETAC2_HG_190703D
	MW4-7	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	91572	1	07/01/19 01:19 PM	ICP-MS4_190701B

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-4
Project:	Copano GW Sampling - 2Q19	**Lab ID:**	1906277-01
Project No:	18111309-2003	**Collection Date:**	06/25/19 01:41 PM
Lab Order:	1906277	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0261	0.0100	0.0300	J	mg/L	1	07/01/19 01:11 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/01/19 01:11 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	07/01/19 01:11 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/01/19 01:11 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	07/01/19 01:11 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	07/01/19 01:11 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/01/19 01:11 PM
Dissolved Vanadium	<0.000500	0.000500	0.00100		mg/L	1	07/01/19 01:11 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0178	0.0100	0.0300	J	mg/L	1	07/02/19 03:11 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/02/19 03:11 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	07/02/19 03:11 PM
Calcium	1060	10.0	30.0		mg/L	100	07/05/19 11:57 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/02/19 03:11 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	07/02/19 03:11 PM
Magnesium	2140	10.0	30.0		mg/L	100	07/05/19 11:57 AM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	07/02/19 03:11 PM
Potassium	68.4	10.0	30.0		mg/L	100	07/05/19 11:57 AM
Sodium	11800	100	300		mg/L	1000	07/05/19 10:53 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/02/19 03:11 PM
Vanadium	<0.000500	0.000500	0.00100		mg/L	1	07/02/19 03:11 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	07/03/19 11:59 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/27/19 03:02 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.116	0.00300	0.0100	N	mg/L	1	07/02/19 03:11 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.115	0.00300	0.0100	N	mg/L	1	07/01/19 01:11 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-9
Project:	Copano GW Sampling - 2Q19	**Lab ID:**	1906277-02
Project No:	18111309-2003	**Collection Date:**	06/25/19 02:56 PM
Lab Order:	1906277	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0217	0.0100	0.0300	J	mg/L	1	07/01/19 01:13 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/01/19 01:13 PM
Dissolved Arsenic	0.00394	0.00200	0.00500	J	mg/L	1	07/01/19 01:13 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/01/19 01:13 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	07/01/19 01:13 PM
Dissolved Nickel	0.0168	0.00300	0.0100		mg/L	1	07/01/19 01:13 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/01/19 01:13 PM
Dissolved Vanadium	0.0202	0.000500	0.00100		mg/L	1	07/01/19 01:13 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0171	0.0100	0.0300	J	mg/L	1	07/02/19 03:13 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/02/19 03:13 PM
Arsenic	0.00464	0.00200	0.00500	J	mg/L	1	07/02/19 03:13 PM
Calcium	1070	10.0	30.0		mg/L	100	07/05/19 11:59 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/02/19 03:13 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	07/02/19 03:13 PM
Magnesium	719	10.0	30.0		mg/L	100	07/05/19 11:59 AM
Nickel	0.0175	0.00300	0.0100		mg/L	1	07/02/19 03:13 PM
Potassium	29.6	10.0	30.0	J	mg/L	100	07/05/19 11:59 AM
Sodium	4660	100	300		mg/L	1000	07/05/19 10:55 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/02/19 03:13 PM
Vanadium	0.0184	0.000500	0.00100		mg/L	1	07/02/19 03:13 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	07/03/19 12:01 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/27/19 03:05 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0255	0.00300	0.0100	N	mg/L	1	07/02/19 03:13 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0249	0.00300	0.0100	N	mg/L	1	07/01/19 01:13 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7B
Project:	Copano GW Sampling - 2Q19	**Lab ID:**	1906277-03
Project No:	18111309-2003	**Collection Date:**	06/25/19 10:43 AM
Lab Order:	1906277	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0346	0.0100	0.0300		mg/L	1	07/01/19 01:15 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/01/19 01:15 PM
Dissolved Arsenic	0.00676	0.00200	0.00500		mg/L	1	07/01/19 01:15 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/01/19 01:15 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	07/01/19 01:15 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	07/01/19 01:15 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/01/19 01:15 PM
Dissolved Vanadium	0.00104	0.000500	0.00100		mg/L	1	07/01/19 01:15 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0248	0.0100	0.0300	J	mg/L	1	07/02/19 03:15 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/02/19 03:15 PM
Arsenic	0.00766	0.00200	0.00500		mg/L	1	07/02/19 03:15 PM
Calcium	1250	10.0	30.0		mg/L	100	07/05/19 12:01 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/02/19 03:15 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	07/02/19 03:15 PM
Magnesium	1590	10.0	30.0		mg/L	100	07/05/19 12:01 PM
Nickel	0.00368	0.00300	0.0100	J	mg/L	1	07/02/19 03:15 PM
Potassium	71.7	10.0	30.0		mg/L	100	07/05/19 12:01 PM
Sodium	11700	100	300		mg/L	1000	07/05/19 10:57 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/02/19 03:15 PM
Vanadium	0.000918	0.000500	0.00100	J	mg/L	1	07/02/19 03:15 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	07/03/19 12:03 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/27/19 03:07 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0613	0.00300	0.0100	N	mg/L	1	07/02/19 03:15 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0653	0.00300	0.0100	N	mg/L	1	07/01/19 01:15 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7
Project:	Copano GW Sampling - 2Q19	**Lab ID:**	1906277-04
Project No:	18111309-2003	**Collection Date:**	06/25/19 11:37 AM
Lab Order:	1906277	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0453	0.0100	0.0300		mg/L	1	07/01/19 01:17 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/01/19 01:17 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	07/01/19 01:17 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/01/19 01:17 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	07/01/19 01:17 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	07/01/19 01:17 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/01/19 01:17 PM
Dissolved Vanadium	0.00350	0.000500	0.00100		mg/L	1	07/01/19 01:17 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0179	0.0100	0.0300	J	mg/L	1	07/02/19 03:17 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/02/19 03:17 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	07/02/19 03:17 PM
Calcium	1190	10.0	30.0		mg/L	100	07/05/19 12:03 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/02/19 03:17 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	07/02/19 03:17 PM
Magnesium	1650	10.0	30.0		mg/L	100	07/05/19 12:03 PM
Nickel	0.00328	0.00300	0.0100	J	mg/L	1	07/02/19 03:17 PM
Potassium	51.4	10.0	30.0		mg/L	100	07/05/19 12:03 PM
Sodium	12100	100	300		mg/L	1000	07/05/19 10:59 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/02/19 03:17 PM
Vanadium	0.00297	0.000500	0.00100		mg/L	1	07/02/19 03:17 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	07/03/19 12:05 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/27/19 03:09 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.131	0.00300	0.0100	N	mg/L	1	07/02/19 03:17 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.131	0.00300	0.0100	N	mg/L	1	07/01/19 01:17 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7
Project:	Copano GW Sampling - 2Q19	**Lab ID:**	1906277-05
Project No:	18111309-2003	**Collection Date:**	06/25/19 12:38 PM
Lab Order:	1906277	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0375	0.0100	0.0300		mg/L	1	07/01/19 01:19 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/01/19 01:19 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	07/01/19 01:19 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/01/19 01:19 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	07/01/19 01:19 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	07/01/19 01:19 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/01/19 01:19 PM
Dissolved Vanadium	0.00103	0.000500	0.00100		mg/L	1	07/01/19 01:19 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0276	0.0100	0.0300	J	mg/L	1	07/02/19 03:19 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/02/19 03:19 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	07/02/19 03:19 PM
Calcium	790	10.0	30.0		mg/L	100	07/05/19 12:05 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/02/19 03:19 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	07/02/19 03:19 PM
Magnesium	879	10.0	30.0		mg/L	100	07/05/19 12:05 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	07/02/19 03:19 PM
Potassium	50.2	10.0	30.0		mg/L	100	07/05/19 12:05 PM
Sodium	7750	100	300		mg/L	1000	07/05/19 11:01 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/02/19 03:19 PM
Vanadium	0.000972	0.000500	0.00100	J	mg/L	1	07/02/19 03:19 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	07/03/19 12:08 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/27/19 03:11 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0630	0.00300	0.0100	N	mg/L	1	07/02/19 03:19 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0653	0.00300	0.0100	N	mg/L	1	07/01/19 01:19 PM

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CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190611B

Sample ID: **DCS-91284** Batch ID: **91284** TestNo: **SW7470A** Units: **mg/L**
SampType: **DCS** Run ID: **CETAC2_HG_190611B** Analysis Date: **6/11/2019 5:01:26 PM** Prep Date: **6/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000206	0.000200	0.000200	0	103	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190627B

The QC data in batch 91538 applies to the following samples: 1906277-01A, 1906277-02A, 1906277-03A, 1906277-04A, 1906277-05A

Sample ID: **MB-91538**	Batch ID: **91538**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_190627B**	Analysis Date: **6/27/2019 2:33:28 PM**	Prep Date: **6/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91538**	Batch ID: **91538**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_190627B**	Analysis Date: **6/27/2019 2:37:59 PM**	Prep Date: **6/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00209	0.000200	0.00200	0	104	85	115			

Sample ID: **LCSD-91538**	Batch ID: **91538**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_190627B**	Analysis Date: **6/27/2019 2:40:16 PM**	Prep Date: **6/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00209	0.000200	0.00200	0	104	85	115	0	15	

Sample ID: **1906193-01B MS**	Batch ID: **91538**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_190627B**	Analysis Date: **6/27/2019 2:44:47 PM**	Prep Date: **6/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0102	0.00100	0.0100	0	103	80	120			

Sample ID: **1906193-01B MSD**	Batch ID: **91538**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_190627B**	Analysis Date: **6/27/2019 2:47:03 PM**	Prep Date: **6/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0110	0.00100	0.0100	0	110	80	120	6.60	15	

Sample ID: **1906193-01B SD**	Batch ID: **91538**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_190627B**	Analysis Date: **6/27/2019 2:49:19 PM**	Prep Date: **6/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **1906193-01B PDS**	Batch ID: **91538**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_190627B**	Analysis Date: **6/27/2019 2:51:35 PM**	Prep Date: **6/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0128	0.00100	0.0125	0	102	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190627B

Sample ID: **ICV-190627**	Batch ID: **R104824**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190627B**	Analysis Date: **6/27/2019 2:28:54 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00426	0.000200	0.00400	0	106	90	110			

Sample ID: **CCV1-190627**	Batch ID: **R104824**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190627B**	Analysis Date: **6/27/2019 3:14:16 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190703D

The QC data in batch 91605 applies to the following samples: 1906277-01B, 1906277-02B, 1906277-03B, 1906277-04B, 1906277-05B

Sample ID: **MB-91605**	Batch ID: **91605**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_190703D**	Analysis Date: **7/3/2019 11:31:56 AM**	Prep Date: **7/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91605**	Batch ID: **91605**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_190703D**	Analysis Date: **7/3/2019 11:36:28 AM**	Prep Date: **7/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00205	0.000200	0.00200	0	103	85	115			

Sample ID: **LCSD-91605**	Batch ID: **91605**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_190703D**	Analysis Date: **7/3/2019 11:38:44 AM**	Prep Date: **7/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00209	0.000200	0.00200	0	104	85	115	1.93	15	

Sample ID: **1906271-01A SD**	Batch ID: **91605**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_190703D**	Analysis Date: **7/3/2019 11:54:35 AM**	Prep Date: **7/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **1906271-01A PDS**	Batch ID: **91605**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_190703D**	Analysis Date: **7/3/2019 11:56:51 AM**	Prep Date: **7/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0121	0.00100	0.0125	0	96.4	85	115			

Sample ID: **1906271-01A MS**	Batch ID: **91605**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_190703D**	Analysis Date: **7/3/2019 12:55:52 PM**	Prep Date: **7/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0102	0.00100	0.0100	0	102	80	120			

Sample ID: **1906271-01A MSD**	Batch ID: **91605**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_190703D**	Analysis Date: **7/3/2019 12:58:08 PM**	Prep Date: **7/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0102	0.00100	0.0100	0	102	80	120	0.491	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190703D

Sample ID: **ICV-190703**	Batch ID: **R104926**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190703D**	Analysis Date: **7/3/2019 11:27:22 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00427	0.000200	0.00400	0	107	90	110			

Sample ID: **CCV1-190703**	Batch ID: **R104926**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190703D**	Analysis Date: **7/3/2019 12:12:45 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00209	0.000200	0.00200	0	104	90	110			

Sample ID: **CCV2-190703**	Batch ID: **R104926**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190703D**	Analysis Date: **7/3/2019 12:37:48 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00208	0.000200	0.00200	0	104	90	110			

Sample ID: **CCV3-190703**	Batch ID: **R104926**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190703D**	Analysis Date: **7/3/2019 1:00:26 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00205	0.000200	0.00200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

Sample ID: **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:24:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0353	0.0300	0.0300	0	118	70	130	0	0	
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	
Magnesium	0.323	0.300	0.300	0	108	70	130	0	0	
Potassium	0.303	0.300	0.300	0	101	70	130	0	0	
Sodium	0.300	0.300	0.300	0	100	70	130	0	0	

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:27:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00522	0.00500	0.00500	0	104	70	130	0	0	
Chromium	0.00523	0.00500	0.00500	0	105	70	130	0	0	
Nickel	0.00557	0.0100	0.00500	0	111	70	130	0	0	

Sample ID: **DCS1-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:34:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.000904	0.00250	0.00100	0	90.4	70	130	0	0	
Lead	0.000475	0.00100	0.000500	0	95.0	70	130	0	0	
Thallium	0.000471	0.00150	0.000500	0	94.2	70	130	0	0	
Vanadium	0.000464	0.00100	0.000500	0	92.8	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_190621C**

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**		
SampType: **DCS**	Run ID: **ICP-MS4_190621C**	Analysis Date: **6/21/2019 1:27:00 PM**	Prep Date: **6/20/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00462	0.0100	0.00500	0	92.5	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190701B

The QC data in batch 91572 applies to the following samples: 1906277-01B, 1906277-02B, 1906277-03B, 1906277-04B, 1906277-05B

Sample ID: **MB-91572** Batch ID: **91572** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 12:53:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-91572** Batch ID: **91572** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 12:55:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.14	0.0300	5.00	0	103	80	120			
Antimony	0.199	0.00250	0.200	0	99.5	80	120			
Arsenic	0.206	0.00500	0.200	0	103	80	120			
Chromium	0.208	0.00500	0.200	0	104	80	120			
Lead	0.198	0.00100	0.200	0	98.9	80	120			
Nickel	0.214	0.0100	0.200	0	107	80	120			
Thallium	0.205	0.00150	0.200	0	102	80	120			
Vanadium	0.206	0.00100	0.200	0	103	80	120			

Sample ID: **LCSD-91572** Batch ID: **91572** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 12:57:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.10	0.0300	5.00	0	102	80	120	0.770	15	
Antimony	0.198	0.00250	0.200	0	99.1	80	120	0.352	15	
Arsenic	0.207	0.00500	0.200	0	104	80	120	0.460	15	
Chromium	0.206	0.00500	0.200	0	103	80	120	1.17	15	
Lead	0.199	0.00100	0.200	0	99.7	80	120	0.875	15	
Nickel	0.216	0.0100	0.200	0	108	80	120	1.03	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	1.56	15	
Vanadium	0.205	0.00100	0.200	0	102	80	120	0.762	15	

Sample ID: **1906289-02H SD** Batch ID: **91572** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 1:03:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0167				0	10	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190701B

Sample ID: **1906289-02H SD** Batch ID: **91572** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 1:03:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0.00105				0	10	
Nickel	<0.0150	0.0500	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	0.00474	0.00500	0	0.00428				10.4	10	

Sample ID: **1906289-02H PDS** Batch ID: **91572** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 1:21:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.88	0.0300	5.00	0.0167	97.3	80	120			
Antimony	0.183	0.00250	0.200	0	91.4	80	120			
Arsenic	0.207	0.00500	0.200	0	103	80	120			
Chromium	0.175	0.00500	0.200	0	87.7	80	120			
Lead	0.197	0.00100	0.200	0.00105	97.8	80	120			
Nickel	0.188	0.0100	0.200	0	93.8	80	120			
Thallium	0.204	0.00150	0.200	0	102	80	120			
Vanadium	0.186	0.00100	0.200	0.00428	90.9	80	120			

Sample ID: **1906289-02H MS** Batch ID: **91572** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 1:23:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.23	0.0300	5.00	0.0167	104	80	120			
Antimony	0.187	0.00250	0.200	0	93.4	80	120			
Arsenic	0.217	0.00500	0.200	0	108	80	120			
Chromium	0.178	0.00500	0.200	0	88.9	80	120			
Lead	0.203	0.00100	0.200	0.00105	101	80	120			
Nickel	0.188	0.0100	0.200	0	94.1	80	120			
Thallium	0.205	0.00150	0.200	0	103	80	120			
Vanadium	0.192	0.00100	0.200	0.00428	93.6	80	120			

Sample ID: **1906289-02H MSD** Batch ID: **91572** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 1:25:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.19	0.0300	5.00	0.0167	103	80	120	0.875	15	
Antimony	0.187	0.00250	0.200	0	93.4	80	120	0.029	15	
Arsenic	0.223	0.00500	0.200	0	111	80	120	2.62	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190701B

Sample ID: **1906289-02H MSD** Batch ID: **91572** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 1:25:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.178	0.00500	0.200	0	88.8	80	120	0.179	15	
Lead	0.205	0.00100	0.200	0.00105	102	80	120	1.14	15	
Nickel	0.195	0.0100	0.200	0	97.6	80	120	3.63	15	
Thallium	0.209	0.00150	0.200	0	105	80	120	2.01	15	
Vanadium	0.191	0.00100	0.200	0.00428	93.3	80	120	0.327	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190701B

Sample ID: **ICV-190701** Batch ID: **R104875** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 10:52:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.36	0.0300	2.50	0	94.5	90	110			
Antimony	0.0994	0.00250	0.100	0	99.4	90	110			
Arsenic	0.104	0.00500	0.100	0	104	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Lead	0.100	0.00100	0.100	0	100	90	110			
Nickel	0.109	0.0100	0.100	0	109	90	110			
Thallium	0.0986	0.00150	0.100	0	98.6	90	110			
Vanadium	0.102	0.00100	0.100	0	102	90	110			

Sample ID: **LCVL-190701** Batch ID: **R104875** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 10:59:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0976	0.0300	0.100	0	97.6	70	130			
Antimony	0.00192	0.00250	0.00200	0	96.0	70	130			
Arsenic	0.00505	0.00500	0.00500	0	101	70	130			
Chromium	0.00500	0.00500	0.00500	0	100	70	130			
Lead	0.000926	0.00100	0.00100	0	92.6	70	130			
Nickel	0.00525	0.0100	0.00500	0	105	70	130			
Thallium	0.000910	0.00150	0.00100	0	91.0	70	130			
Vanadium	0.00102	0.00100	0.00100	0	102	70	130			

Sample ID: **CCV2-190701** Batch ID: **R104875** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 12:18:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.10	0.0300	5.00	0	102	90	110			
Antimony	0.198	0.00250	0.200	0	99.0	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Lead	0.198	0.00100	0.200	0	99.0	90	110			
Nickel	0.211	0.0100	0.200	0	106	90	110			
Thallium	0.200	0.00150	0.200	0	99.9	90	110			
Vanadium	0.206	0.00100	0.200	0	103	90	110			

Sample ID: **LCVL2-190701** Batch ID: **R104875** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 12:28:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0983	0.0300	0.100	0	98.3	70	130			
Antimony	0.00193	0.00250	0.00200	0	96.6	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190701B

Sample ID: **LCVL2-190701** Batch ID: **R104875** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 12:28:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00484	0.00500	0.00500	0	96.7	70	130			
Chromium	0.00502	0.00500	0.00500	0	100	70	130			
Lead	0.000907	0.00100	0.00100	0	90.7	70	130			
Nickel	0.00511	0.0100	0.00500	0	102	70	130			
Thallium	0.000904	0.00150	0.00100	0	90.4	70	130			
Vanadium	0.00102	0.00100	0.00100	0	102	70	130			

Sample ID: **CCV3-190701** Batch ID: **R104875** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 1:26:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.18	0.0300	5.00	0	104	90	110			
Antimony	0.187	0.00250	0.200	0	93.6	90	110			
Arsenic	0.194	0.00500	0.200	0	96.8	90	110			
Chromium	0.193	0.00500	0.200	0	96.7	90	110			
Lead	0.197	0.00100	0.200	0	98.4	90	110			
Nickel	0.203	0.0100	0.200	0	101	90	110			
Thallium	0.196	0.00150	0.200	0	97.8	90	110			
Vanadium	0.193	0.00100	0.200	0	96.4	90	110			

Sample ID: **LCVL3-190701** Batch ID: **R104875** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190701B** Analysis Date: **7/1/2019 1:47:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0982	0.0300	0.100	0	98.2	70	130			
Antimony	0.00170	0.00250	0.00200	0	85.0	70	130			
Arsenic	0.00483	0.00500	0.00500	0	96.6	70	130			
Chromium	0.00479	0.00500	0.00500	0	95.8	70	130			
Lead	0.000860	0.00100	0.00100	0	86.0	70	130			
Nickel	0.00495	0.0100	0.00500	0	99.0	70	130			
Thallium	0.000864	0.00150	0.00100	0	86.4	70	130			
Vanadium	0.00111	0.00100	0.00100	0	111	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190701D

The QC data in batch 91572 applies to the following samples: 1906277-01B, 1906277-02B, 1906277-03B, 1906277-04B, 1906277-05B

Sample ID: **MB-91572**	Batch ID: **91572**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 12:53:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-91572**	Batch ID: **91572**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 12:55:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0	101	80	120			N

Sample ID: **LCSD-91572**	Batch ID: **91572**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 12:57:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.198	0.0100	0.200	0	99.1	80	120	1.64	15	N

Sample ID: **1906289-02H SD**	Batch ID: **91572**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 1:03:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.0150	0.0500	0	0.0131				0	20	N

Sample ID: **1906289-02H PDS**	Batch ID: **91572**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 1:21:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.221	0.0100	0.200	0.0131	104	75	125			N

Sample ID: **1906289-02H MS**	Batch ID: **91572**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 1:23:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.224	0.0100	0.200	0.0131	106	75	125			N

Sample ID: **1906289-02H MSD**	Batch ID: **91572**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 1:25:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.227	0.0100	0.200	0.0131	107	75	125	1.12	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190701D

Sample ID: **ICV-190701**	Batch ID: **R109108**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 10:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0978	0.0100	0.100	0	97.8	90	110			N

Sample ID: **LCVL-190701**	Batch ID: **R109108**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 10:59:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00433	0.0100	0.00500	0	86.7	80	120			N

Sample ID: **CCV2-190701**	Batch ID: **R109108**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 12:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.198	0.0100	0.200	0	98.8	90	110			N

Sample ID: **LCVL2-190701**	Batch ID: **R109108**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 12:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00427	0.0100	0.00500	0	85.4	80	120			N

Sample ID: **CCV3-190701**	Batch ID: **R109108**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 1:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.191	0.0100	0.200	0	95.4	90	110			N

Sample ID: **LCVL3-190701**	Batch ID: **R109108**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190701D**	Analysis Date: **7/1/2019 1:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00413	0.0100	0.00500	0	82.7	80	120			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_190702A**

The QC data in batch 91562 applies to the following samples: 1906277-01A, 1906277-02A, 1906277-03A, 1906277-04A, 1906277-05A

Sample ID: **MB-91562** Batch ID: **91562** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190702A** Analysis Date: **7/2/2019 2:59:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	0.00377	0.0100								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-91562** Batch ID: **91562** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190702A** Analysis Date: **7/2/2019 3:01:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0	99.7	80	120			
Antimony	0.192	0.00250	0.200	0	96.0	80	120			
Arsenic	0.200	0.00500	0.200	0	99.8	80	120			
Calcium	4.74	0.300	5.00	0	94.8	80	120			
Chromium	0.200	0.00500	0.200	0	100	80	120			
Lead	0.200	0.00100	0.200	0	100	80	120			
Magnesium	4.90	0.300	5.00	0	98.0	80	120			
Nickel	0.197	0.0100	0.200	0	98.4	80	120			
Potassium	5.03	0.300	5.00	0	101	80	120			
Sodium	4.97	0.300	5.00	0	99.4	80	120			
Thallium	0.206	0.00150	0.200	0	103	80	120			
Vanadium	0.197	0.00100	0.200	0	98.5	80	120			

Sample ID: **LCSD-91562** Batch ID: **91562** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190702A** Analysis Date: **7/2/2019 3:03:00 PM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.16	0.0300	5.00	0	103	80	120	3.45	15	
Antimony	0.201	0.00250	0.200	0	100	80	120	4.47	15	
Arsenic	0.205	0.00500	0.200	0	102	80	120	2.66	15	
Calcium	4.96	0.300	5.00	0	99.3	80	120	4.60	15	
Chromium	0.209	0.00500	0.200	0	104	80	120	4.02	15	
Lead	0.207	0.00100	0.200	0	104	80	120	3.36	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190702A

Sample ID: **LCSD-91562**	Batch ID: **91562**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_190702A**	Analysis Date: **7/2/2019 3:03:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	5.17	0.300	5.00	0	103	80	120	5.39	15	
Nickel	0.201	0.0100	0.200	0	100	80	120	2.09	15	
Potassium	5.21	0.300	5.00	0	104	80	120	3.55	15	
Sodium	5.19	0.300	5.00	0	104	80	120	4.38	15	
Thallium	0.208	0.00150	0.200	0	104	80	120	0.983	15	
Vanadium	0.205	0.00100	0.200	0	102	80	120	3.85	15	

Sample ID: **1906300-04A SD**	Batch ID: **91562**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190702A**	Analysis Date: **7/2/2019 3:09:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0127				0	10	
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Nickel	<0.0150	0.0500	0	0.00555				0	10	
Potassium	20.9	1.50	0	21.3				1.72	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	<0.00250	0.00500	0	0				0	10	

Sample ID: **1906300-04A PDS**	Batch ID: **91562**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190702A**	Analysis Date: **7/2/2019 3:48:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.72	0.0300	5.00	0.0127	94.2	80	120			
Antimony	0.183	0.00250	0.200	0	91.7	80	120			
Arsenic	0.194	0.00500	0.200	0	97.2	80	120			
Chromium	0.190	0.00500	0.200	0	95.1	80	120			
Lead	0.198	0.00100	0.200	0	99.1	80	120			
Nickel	0.181	0.0100	0.200	0.00555	87.7	80	120			
Potassium	25.4	0.300	5.00	21.3	81.3	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			
Vanadium	0.191	0.00100	0.200	0	95.5	80	120			

Sample ID: **1906300-04A MS**	Batch ID: **91562**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190702A**	Analysis Date: **7/2/2019 3:50:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.03	0.0300	5.00	0.0127	100	80	120			
Antimony	0.191	0.00250	0.200	0	95.6	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190702A

Sample ID: **1906300-04A MS**	Batch ID: **91562**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190702A**	Analysis Date: **7/2/2019 3:50:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.199	0.00500	0.200	0	99.7	80	120			
Calcium	87.7	0.300	5.00	84.0	75.2	80	120			S
Chromium	0.188	0.00500	0.200	0	94.0	80	120			
Lead	0.201	0.00100	0.200	0	100	80	120			
Magnesium	40.2	0.300	5.00	37.6	52.2	80	120			S
Nickel	0.182	0.0100	0.200	0.00555	88.1	80	120			
Potassium	26.2	0.300	5.00	21.3	97.3	80	120			
Sodium	76.2	0.300	5.00	75.7	10.5	80	120			S
Thallium	0.203	0.00150	0.200	0	101	80	120			
Vanadium	0.194	0.00100	0.200	0	96.8	80	120			

Sample ID: **1906300-04A MSD**	Batch ID: **91562**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190702A**	Analysis Date: **7/2/2019 3:52:00 PM**	Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.78	0.0300	5.00	0.0127	95.4	80	120	5.17	15	
Antimony	0.187	0.00250	0.200	0	93.7	80	120	2.01	15	
Arsenic	0.194	0.00500	0.200	0	97.1	80	120	2.60	15	
Calcium	84.2	0.300	5.00	84.0	3.76	80	120	4.16	15	S
Chromium	0.182	0.00500	0.200	0	91.0	80	120	3.28	15	
Lead	0.197	0.00100	0.200	0	98.5	80	120	1.96	15	
Magnesium	38.2	0.300	5.00	37.6	12.2	80	120	5.11	15	S
Nickel	0.176	0.0100	0.200	0.00555	85.2	80	120	3.24	15	
Potassium	25.0	0.300	5.00	21.3	74.2	80	120	4.50	15	S
Sodium	71.8	0.300	5.00	75.7	-78.3	80	120	6.00	15	S
Thallium	0.198	0.00150	0.200	0	98.9	80	120	2.36	15	
Vanadium	0.187	0.00100	0.200	0	93.3	80	120	3.63	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190702A

Sample ID: **ICV-190702**	Batch ID: **R104907**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190702A**	Analysis Date: **7/2/2019 10:53:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.26	0.0300	2.50	0	90.5	90	110			
Antimony	0.0970	0.00250	0.100	0	97.0	90	110			
Arsenic	0.104	0.00500	0.100	0	104	90	110			
Calcium	2.54	0.300	2.50	0	101	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Magnesium	2.54	0.300	2.50	0	102	90	110			
Nickel	0.103	0.0100	0.100	0	103	90	110			
Potassium	2.56	0.300	2.50	0	102	90	110			
Sodium	2.69	0.300	2.50	0	108	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			
Vanadium	0.0998	0.00100	0.100	0	99.8	90	110			

Sample ID: **LCVL-190702**	Batch ID: **R104907**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190702A**	Analysis Date: **7/2/2019 11:18:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0936	0.0300	0.100	0	93.6	70	130			
Antimony	0.00177	0.00250	0.00200	0	88.4	70	130			
Arsenic	0.00504	0.00500	0.00500	0	101	70	130			
Calcium	0.0966	0.300	0.100	0	96.6	70	130			
Chromium	0.00509	0.00500	0.00500	0	102	70	130			
Lead	0.000916	0.00100	0.00100	0	91.6	70	130			
Magnesium	0.0966	0.300	0.100	0	96.6	70	130			
Nickel	0.00500	0.0100	0.00500	0	100	70	130			
Potassium	0.0974	0.300	0.100	0	97.4	70	130			
Sodium	0.102	0.300	0.100	0	102	70	130			
Thallium	0.000909	0.00150	0.00100	0	90.9	70	130			
Vanadium	0.000975	0.00100	0.00100	0	97.5	70	130			

Sample ID: **CCV4-190702**	Batch ID: **R104907**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190702A**	Analysis Date: **7/2/2019 2:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.96	0.0300	5.00	0	99.2	90	110			
Antimony	0.194	0.00250	0.200	0	96.9	90	110			
Arsenic	0.201	0.00500	0.200	0	101	90	110			
Calcium	4.85	0.300	5.00	0	97.0	90	110			
Chromium	0.203	0.00500	0.200	0	102	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Magnesium	4.96	0.300	5.00	0	99.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190702A

Sample ID: **CCV4-190702**	Batch ID: **R104907**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190702A**	Analysis Date: **7/2/2019 2:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.194	0.0100	0.200	0	96.9	90	110			
Potassium	5.01	0.300	5.00	0	100	90	110			
Sodium	5.06	0.300	5.00	0	101	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			
Vanadium	0.201	0.00100	0.200	0	101	90	110			

Sample ID: **LCVL4-190702**	Batch ID: **R104907**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190702A**	Analysis Date: **7/2/2019 2:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0933	0.0300	0.100	0	93.3	70	130			
Antimony	0.00173	0.00250	0.00200	0	86.6	70	130			
Arsenic	0.00483	0.00500	0.00500	0	96.6	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00479	0.00500	0.00500	0	95.8	70	130			
Lead	0.000892	0.00100	0.00100	0	89.2	70	130			
Magnesium	0.0991	0.300	0.100	0	99.1	70	130			
Nickel	0.00463	0.0100	0.00500	0	92.7	70	130			
Potassium	0.0897	0.300	0.100	0	89.7	70	130			
Sodium	0.124	0.300	0.100	0	124	70	130			
Thallium	0.000873	0.00150	0.00100	0	87.3	70	130			
Vanadium	0.000995	0.00100	0.00100	0	99.5	70	130			

Sample ID: **CCV5-190702**	Batch ID: **R104907**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190702A**	Analysis Date: **7/2/2019 4:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.04	0.0300	5.00	0	101	90	110			
Antimony	0.188	0.00250	0.200	0	94.1	90	110			
Arsenic	0.200	0.00500	0.200	0	100	90	110			
Calcium	4.65	0.300	5.00	0	93.0	90	110			
Chromium	0.194	0.00500	0.200	0	97.1	90	110			
Lead	0.199	0.00100	0.200	0	99.7	90	110			
Magnesium	4.75	0.300	5.00	0	95.0	90	110			
Nickel	0.188	0.0100	0.200	0	94.2	90	110			
Potassium	4.99	0.300	5.00	0	99.8	90	110			
Sodium	4.80	0.300	5.00	0	96.0	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			
Vanadium	0.194	0.00100	0.200	0	96.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190702A

Sample ID: **LCVL5-190702** Batch ID: **R104907** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190702A** Analysis Date: **7/2/2019 4:06:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0968	0.0300	0.100	0	96.8	70	130			
Antimony	0.00169	0.00250	0.00200	0	84.7	70	130			
Arsenic	0.00483	0.00500	0.00500	0	96.6	70	130			
Calcium	0.0955	0.300	0.100	0	95.5	70	130			
Chromium	0.00471	0.00500	0.00500	0	94.3	70	130			
Lead	0.000890	0.00100	0.00100	0	89.0	70	130			
Magnesium	0.0927	0.300	0.100	0	92.7	70	130			
Nickel	0.00447	0.0100	0.00500	0	89.4	70	130			
Potassium	0.0935	0.300	0.100	0	93.5	70	130			
Sodium	0.194	0.300	0.100	0	194	70	130			S
Thallium	0.000897	0.00150	0.00100	0	89.7	70	130			
Vanadium	0.00103	0.00100	0.00100	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190702B

The QC data in batch 91562 applies to the following samples: 1906277-01A, 1906277-02A, 1906277-03A, 1906277-04A, 1906277-05A

Sample ID: **MB-91562**	Batch ID: **91562**		TestNo: **SW6020B**				Units: **mg/L**				
SampType: **MBLK**	Run ID: **ICP-MS4_190702B**		Analysis Date: **7/2/2019 2:59:00 PM**				Prep Date: **6/28/2019**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Uranium	<0.00300	0.0100								N	
Sample ID: **LCS-91562**	Batch ID: **91562**		TestNo: **SW6020B**				Units: **mg/L**				
SampType: **LCS**	Run ID: **ICP-MS4_190702B**		Analysis Date: **7/2/2019 3:01:00 PM**				Prep Date: **6/28/2019**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Uranium	0.202	0.0100	0.200	0	101	80	120			N	
Sample ID: **LCSD-91562**	Batch ID: **91562**		TestNo: **SW6020B**				Units: **mg/L**				
SampType: **LCSD**	Run ID: **ICP-MS4_190702B**		Analysis Date: **7/2/2019 3:03:00 PM**				Prep Date: **6/28/2019**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Uranium	0.208	0.0100	0.200	0	104	80	120	2.91	25	N	
Sample ID: **1906300-04A SD**	Batch ID: **91562**		TestNo: **SW6020B**				Units: **mg/L**				
SampType: **SD**	Run ID: **ICP-MS4_190702B**		Analysis Date: **7/2/2019 3:09:00 PM**				Prep Date: **6/28/2019**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Uranium	<0.0150	0.0500	0	0				0	10	N	
Sample ID: **1906300-04A PDS**	Batch ID: **91562**		TestNo: **SW6020B**				Units: **mg/L**				
SampType: **PDS**	Run ID: **ICP-MS4_190702B**		Analysis Date: **7/2/2019 3:48:00 PM**				Prep Date: **6/28/2019**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Uranium	0.207	0.0100	0.200	0	104	80	120			N	
Sample ID: **1906300-04A MS**	Batch ID: **91562**		TestNo: **SW6020B**				Units: **mg/L**				
SampType: **MS**	Run ID: **ICP-MS4_190702B**		Analysis Date: **7/2/2019 3:50:00 PM**				Prep Date: **6/28/2019**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Uranium	0.210	0.0100	0.200	0	105	80	120			N	
Sample ID: **1906300-04A MSD**	Batch ID: **91562**		TestNo: **SW6020B**				Units: **mg/L**				
SampType: **MSD**	Run ID: **ICP-MS4_190702B**		Analysis Date: **7/2/2019 3:52:00 PM**				Prep Date: **6/28/2019**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Uranium	0.202	0.0100	0.200	0	101	80	120	3.55	25	N	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190702B

Sample ID: **ICV-190702**	Batch ID: **R104910**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190702B**	Analysis Date: **7/2/2019 10:53:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.101	0.0100	0.100	0	101	90	110			N

Sample ID: **LCVL-190702**	Batch ID: **R104910**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190702B**	Analysis Date: **7/2/2019 11:18:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00443	0.0100	0.00500	0	88.7	70	130			N

Sample ID: **CCV4-190702**	Batch ID: **R104910**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190702B**	Analysis Date: **7/2/2019 2:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.204	0.0100	0.200	0	102	90	110			N

Sample ID: **LCVL4-190702**	Batch ID: **R104910**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190702B**	Analysis Date: **7/2/2019 2:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00438	0.0100	0.00500	0	87.5	70	130			N

Sample ID: **CCV5-190702**	Batch ID: **R104910**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190702B**	Analysis Date: **7/2/2019 4:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0	100	90	110			N

Sample ID: **LCVL5-190702**	Batch ID: **R104910**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190702B**	Analysis Date: **7/2/2019 4:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00438	0.0100	0.00500	0	87.7	70	130			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190705A

The QC data in batch 91562 applies to the following samples: 1906277-01A, 1906277-02A, 1906277-03A, 1906277-04A, 1906277-05A

Sample ID: **1906300-04A SD** Batch ID: **91562** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190705A** Analysis Date: **7/5/2019 10:51:00 AM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	95.9	15.0	0	92.8				3.22	10	
Magnesium	39.4	15.0	0	39.0				1.03	10	
Sodium	79.7	15.0	0	80.7				1.33	10	

Sample ID: **1906300-04A PDS** Batch ID: **91562** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190705A** Analysis Date: **7/5/2019 11:11:00 AM** Prep Date: **6/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	150	3.00	50.0	92.8	115	80	120			
Magnesium	89.9	3.00	50.0	39.0	102	80	120			
Sodium	133	3.00	50.0	80.7	104	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190705A

Sample ID: **ICV-190705**	Batch ID: **R104973**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190705A**	Analysis Date: **7/5/2019 10:26:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.68	0.300	2.50	0	107	90	110			
Magnesium	2.55	0.300	2.50	0	102	90	110			
Potassium	2.55	0.300	2.50	0	102	90	110			
Sodium	2.64	0.300	2.50	0	106	90	110			

Sample ID: **LCVL-190705**	Batch ID: **R104973**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190705A**	Analysis Date: **7/5/2019 10:30:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.106	0.300	0.100	0	106	70	130			
Magnesium	0.104	0.300	0.100	0	104	70	130			
Potassium	0.103	0.300	0.100	0	103	70	130			
Sodium	0.104	0.300	0.100	0	104	70	130			

Sample ID: **CCV1-190705**	Batch ID: **R104973**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190705A**	Analysis Date: **7/5/2019 11:25:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.04	0.300	5.00	0	101	90	110			
Magnesium	5.05	0.300	5.00	0	101	90	110			
Potassium	4.97	0.300	5.00	0	99.4	90	110			
Sodium	5.03	0.300	5.00	0	101	90	110			

Sample ID: **LCVL1-190705**	Batch ID: **R104973**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190705A**	Analysis Date: **7/5/2019 11:39:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.107	0.300	0.100	0	107	70	130			
Magnesium	0.105	0.300	0.100	0	105	70	130			
Potassium	0.103	0.300	0.100	0	103	70	130			
Sodium	0.105	0.300	0.100	0	105	70	130			

Sample ID: **CCV2-190705**	Batch ID: **R104973**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190705A**	Analysis Date: **7/5/2019 12:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.05	0.300	5.00	0	101	90	110			
Magnesium	5.20	0.300	5.00	0	104	90	110			
Potassium	5.04	0.300	5.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190705A

Sample ID: **LCVL2-190705** Batch ID: **R104973** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190705A** Analysis Date: **7/5/2019 12:27:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.106	0.300	0.100	0	106	70	130			
Magnesium	0.101	0.300	0.100	0	101	70	130			
Potassium	0.0958	0.300	0.100	0	95.8	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906277
Project: Copano GW Sampling - 2Q19

MQL SUMMARY REPORT

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

July 26, 2019

DHL Analytical, Inc.

Sample Delivery Group:	L1114580
Samples Received:	07/01/2019
Project Number:	1906277
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

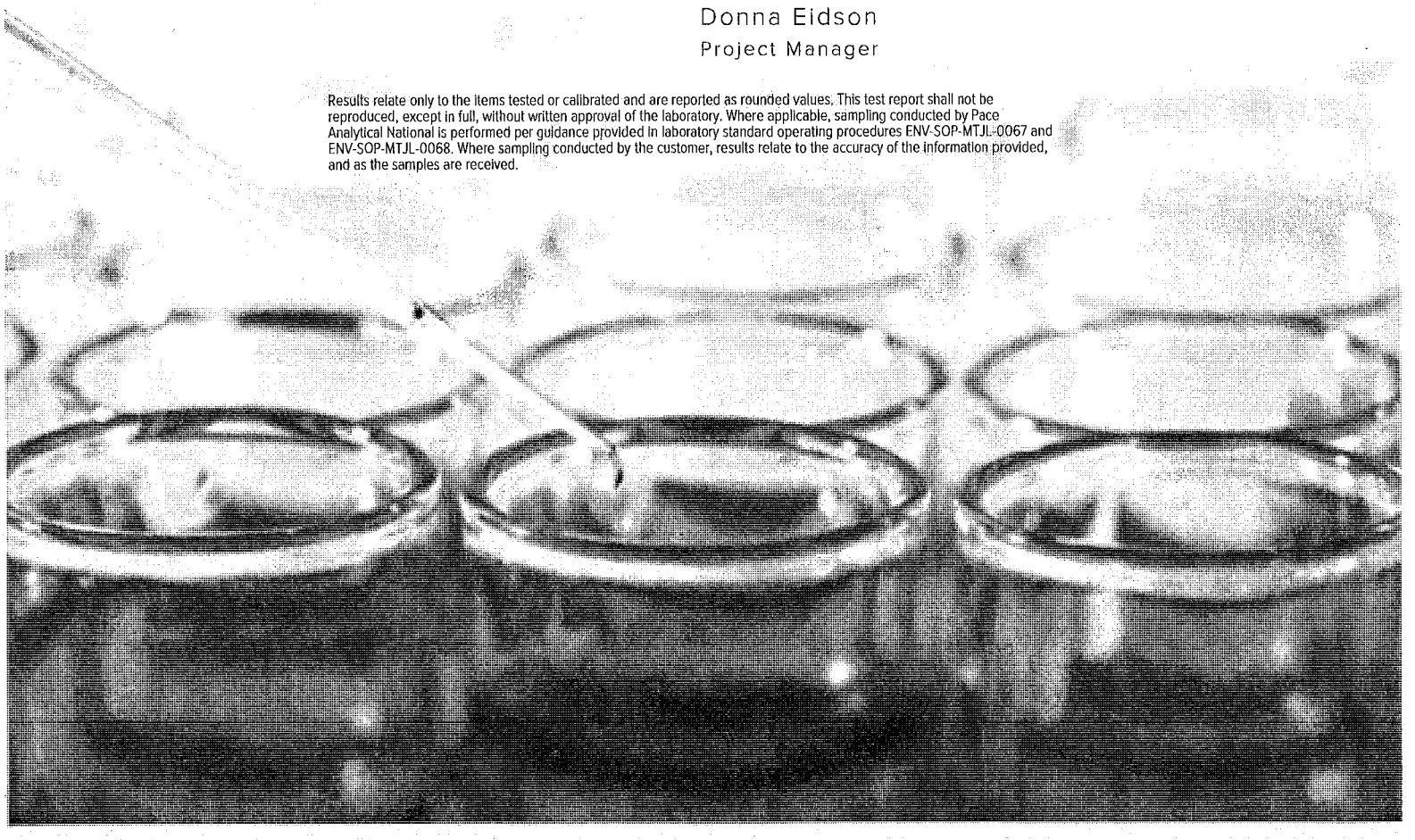


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ONE LAB. NATIONWIDE.

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MW-4 L1114580-01 Non-Potable Water

Collected by | Collected date/time 06/25/19 13:41 | Received date/time 07/01/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1309567	1	07/11/19 09:21	07/17/19 11:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1311348	1	07/15/19 11:58	07/17/19 18:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1311348	1	07/15/19 11:58	07/17/19 18:15	RGT	Mt. Juliet, TN

MW-9 L1114580-02 Non-Potable Water

Collected by | Collected date/time 06/25/19 14:56 | Received date/time 07/01/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1309567	1	07/11/19 09:21	07/17/19 11:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1311348	1	07/15/19 11:58	07/17/19 18:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1311348	1	07/15/19 11:58	07/17/19 18:15	RGT	Mt. Juliet, TN

MW3-7B L1114580-03 Non-Potable Water

Collected by | Collected date/time 06/25/19 10:43 | Received date/time 07/01/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1309567	1	07/11/19 09:21	07/17/19 11:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1311348	1	07/15/19 11:58	07/17/19 18:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1311348	1	07/15/19 11:58	07/17/19 18:15	RGT	Mt. Juliet, TN

MW3-7 L1114580-04 Non-Potable Water

Collected by | Collected date/time 06/25/19 11:37 | Received date/time 07/01/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1309567	1	07/11/19 09:21	07/17/19 14:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1311348	1	07/15/19 11:58	07/17/19 18:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1311348	1	07/15/19 11:58	07/17/19 18:15	RGT	Mt. Juliet, TN

MW-4-7 L1114580-05 Non-Potable Water

Collected by | Collected date/time 06/25/19 12:38 | Received date/time 07/01/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1309567	1	07/11/19 09:21	07/17/19 14:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1311348	1	07/15/19 11:58	07/17/19 18:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1311348	1	07/15/19 11:58	07/17/19 18:15	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.624		0.452	0.785	07/17/2019 11:30	WG1309567
(T) Barium	*113*			*62.0-143*	*07/17/2019 11:30*	WG1309567
(T) Yttrium	*100*			*79.0-136*	*07/17/2019 11:30*	WG1309567

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA_t pCi/l	Analysis Date date / time	Batch
Combined Radium	1.31		0.765	0.989	07/17/2019 18:15	WG1311348

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.683		0.313	0.204	07/17/2019 18:15	WG1311348
(T) Barium-133	*100*			*30.0-143*	*07/17/2019 18:15*	WG1311348

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	0.516		0.378	0.706	07/17/2019 11:30	WG1309567
(T) Barium	*112*			*62.0-143*	*07/17/2019 11:30*	WG1309567
(T) Yttrium	*97.7*			*79.0-136*	*07/17/2019 11:30*	WG1309567

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	0.750		0.619	1.03	07/17/2019 18:15	WG1311348

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.233		0.241	0.32	07/17/2019 18:15	WG1311348
(T) Barium-133	*96.4*			*30.0-143*	*07/17/2019 18:15*	WG1311348

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	13.5		0.589	0.84	07/17/2019 11:30	WG1309567
(T) Barium	*112*			*62.0-143*	*07/17/2019 11:30*	WG1309567
(T) Yttrium	*97.6*			*79.0-136*	*07/17/2019 11:30*	WG1309567

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	15.5		1.12	1.04	07/17/2019 18:15	WG1311348

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	2.05		0.526	0.2	07/17/2019 18:15	WG1311348
(T) Barium-133	*103*			*30.0-143*	*07/17/2019 18:15*	WG1311348

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.35		0.435	0.638	07/17/2019 14:30	WG1309567
(T) Barium	*106*			*62.0-143*	*07/17/2019 14:30*	WG1309567
(T) Yttrium	*90.9*			*79.0-136*	*07/17/2019 14:30*	WG1309567

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.61		0.949	1.41	07/17/2019 18:15	WG1311348

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.261		0.514	0.767	07/17/2019 18:15	WG1311348
(T) Barium-133	*42.8*			*30.0-143*	*07/17/2019 18:15*	WG1311348

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	3.53		0.435	0.55	07/17/2019 14:30	WG1309567
(T) Barium	*115*			*62.0-143*	*07/17/2019 14:30*	WG1309567
(T) Yttrium	*92.5*			*79.0-136*	*07/17/2019 14:30*	WG1309567

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.83		0.809	1.07	07/17/2019 18:15	WG1311348

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.302		0.374	0.515	07/17/2019 18:15	WG1311348
(T) Barium-133	*36.0*			*30.0-143*	*07/17/2019 18:15*	WG1311348

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3431948-1 07/17/19 11:30

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.124		0.434
(T) Barium	*117*		
(T) Yttrium	*93.1*		

L1115565-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1115565-01 07/17/19 14:30 • (DUP) R3431948-5 07/17/19 11:30

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.0528	0.534	1	164	0.934		20	3
(T) Barium	*106*	*109*						
(T) Yttrium	*97.2*	*96.4*						

Laboratory Control Sample (LCS)

(LCS) R3431948-2 07/17/19 11:30

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.40	108	80.0-120	
(T) Barium			*118*		
(T) Yttrium			*98.8*		

L1113460-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1113460-01 07/17/19 11:30 • (MS) R3431948-3 07/17/19 11:30 • (MSD) R3431948-4 07/17/19 11:30

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	7.14	-0.245	8.40	8.44	118	118	1	70.0-130			0.499		20
(T) Barium		*119*			*113*	*119*							
(T) Yttrium		*98.3*			*90.2*	*93.0*							

Method Blank (MB)

(MB) R3434000-1 07/17/19 18:15

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	-0.00817		0.0452
(T) Barium-133	*81.4*		

L1114580-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1114580-05 07/17/19 18:15 • (DUP) R3434000-5 07/17/19 18:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.302	0.523	1	53.4	0.434		20	3
(T) Barium-133	*36.0*	*78.5*						

Laboratory Control Sample (LCS)

(LCS) R3434000-2 07/17/19 18:15

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	4.52	90.0	80.0-120	
(T) Barium-133			*82.6*		

L1114580-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1114580-03 07/17/19 18:15 • (MS) R3434000-3 07/17/19 18:15 • (MSD) R3434000-4 07/17/19 18:15

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	2.05	20.4	18.0	91.5	79.4	1	75.0-125			12.7		20
(T) Barium-133		*103*			*84.8*	*92.4*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

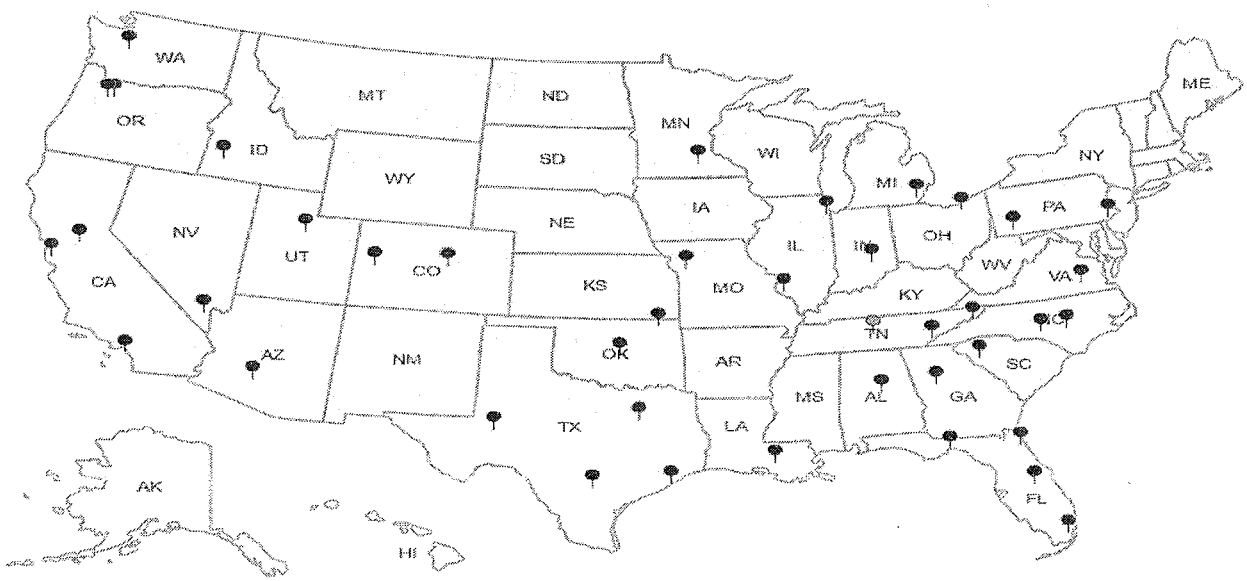
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client:	DHLARTY	SDG#:	L1114580
Cooler Received/Opened On:	7/1/19	Temperature:	Amb
Received By:	~~[illegible]~~ Adam Burg		
Signature:			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*
Work Order: 1906277

CHAIN-OF-CUSTODY RECORD

B088

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

L1114520

26-Jun-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra-228 E904.0	Ra-226 M7500 Ra B M	Requested Tests			
MW-4	Aqueous	-01C	06/25/19 01:41 PM	1LHDPEHNO3	1					-01
MW-4	Aqueous	-01D	06/25/19 01:41 PM	1LHDPEHNO3		1				-01
MW-9	Aqueous	-02C	06/25/19 02:56 PM	1LHDPEHNO3	1					-02
MW-9	Aqueous	-02D	06/25/19 02:56 PM	1LHDPEHNO3		1				-02
MW3-7B	Aqueous	-03C	06/25/19 10:43 AM	1LHDPEHNO3	1					-03
MW3-7B	Aqueous	-03D	06/25/19 10:43 AM	1LHDPEHNO3		1				-03
MW3-7	Aqueous	-04C	06/25/19 11:37 AM	1LHDPEHNO3	1					-04
MW3-7	Aqueous	-04D	06/25/19 11:37 AM	1LHDPEHNO3		1				-04
MW4-7	Aqueous	-05C	06/25/19 12:38 PM	1LHDPEHNO3	1					-05
MW4-7	Aqueous	-05D	06/25/19 12:38 PM	1LHDPEHNO3		1				-05

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		6/27/19 1700	Received by:		7/1/19 8:45
Relinquished by:			Received by:		

62

February 21, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 1907312

RE: Copano 2Q19 GW

Dear Kevin Dworsky:

DHL Analytical, Inc. received 1 sample(s) on 7/25/2019 for the analyses presented in the following report.

Revision Number 1 for Work Order 1907312: This revision consists of adding Dissolved Uranium to the report, per the client's request. Please replace the original Data Report with this revision.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

CHAIN-OF-CUSTODY

№ 83684

CLIENT: Golder Associates
ADDRESS: 620 E Airline Victoria, TX 77901
PHONE: 361-573-6442 FAX/E-MAIL: Kevin_Dworsky@golder.com
DATA REPORTED TO: Kevin Dworsky, Sergio Ruiz,
ADDITIONAL REPORT COPIES TO: Greg Logan, Caitlin Carter

DATE: 7/24/19 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1907312
PROJECT LOCATION OR NAME: Cepano 2Q19 GW
CLENT PROJECT #: 19125525 COLLECTOR: Caitlin Carter

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	FIELD NOTES
MW4-7A	01	7/24/19	15:02	W	P	4		X				See attached

RELINQUISHED BY: (Signature) Caitlin Carter — DATE/TIME 7/24/19 17:30 — RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx — DATE/TIME 7/25/19 0941 — RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) — DATE/TIME — RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 25.6°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

MW4-7A

TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1] – 500 mL w/ nitric unfiltered	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Dissolved Metals[1] – 250 mL w/ nitric .45µ filter	SW6020A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Metals.
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Dissolved Mercury	SW7470A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Mercury.
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226 – 1 L w/ nitric unfiltered	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228 – 1 L w/ nitric unfiltered	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:

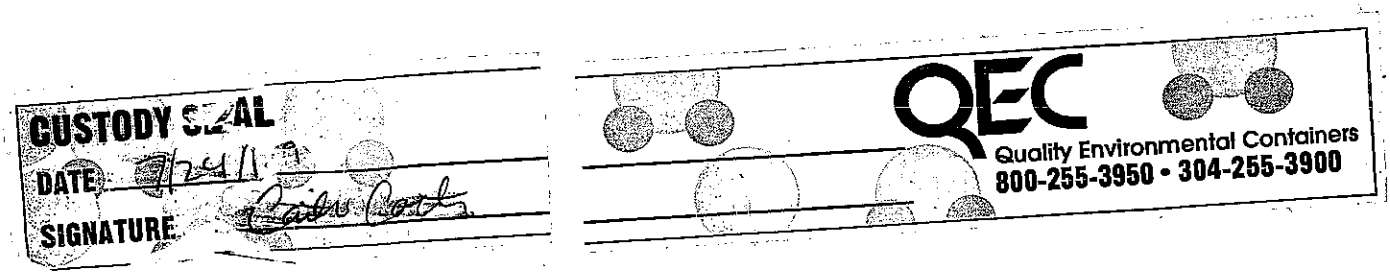
1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium

2) From time of sample collection



After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.



DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **7/25/2019**

Work Order Number **1907312** Received by **EL**

Checklist completed by: _____ 7/25/2019 Reviewed by JO 7/25/2019
Signature | Date | Initials | Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**25.6** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano 2Q19	**LRC Date:** 8/21/2019
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 1907312**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?			**X**		
		2) Were analytical duplicates analyzed at the appropriate frequency?			**X**		
		3) Were RPDs or relative standard deviations within the laboratory QC limits?			**X**		
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano 2Q19	**LRC Date:** 8/21/2019
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 1907312**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?		X			**S2-02**
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?		X			**S4-01**
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28, 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

02/24/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *21-Feb-20*

CLIENT: Golder
Project: Copano 2Q19 GW
Lab Order: 1907312

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Total and Dissolved Metals Analysis
Method SW7470A - Total and Dissolved Mercury Analysis
Method SW6020A - Total and Dissolved Uranium in Water Analysis (this parameter is not NELACP certified)
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 7/25/2019. A total of 1 sample was received and analyzed. The sample arrived in good condition and was properly packaged.

Exception Report R7-03

For Total Metals Analysis, for Batch 91962, the recoveries of two analytes for the Matrix Spike and Matrix Spike Duplicate (1907288-22 MS/MSD) were outside of the method control limits. These are flagged accordingly in the QC Summary Report. The reference sample selected for the Batch QC was not form this workorder. No further corrective actions were taken.

Exception Report R10-01

For Total and Dissolved Metals Analysis, the result of Dissolved Aluminum for Sample MW4-7A was slightly greater than the result of Total Aluminum. acceptable analytical variation limits. No further corrective action was taken.

Exception Report S2-02

For Total Metals Analysis, performed on 7/29/2019 and 7/31/2019, one analyte for each of the Low Level Calibration Verification(s) (LCVL1-190729/LCVL1-190731) was outside of the method control limits. These are flagged accordingly in the QC Summary Report. These analytes were within the method control limits for the remaining bracketing QC. No further corrective action was taken.

Exception Report S4-01

For Dissolved Metals Analysis, the response factor of Internal Standard Bismuth for Sample MW4-7A was below the method control limits. The affected analytes, Lead and Thallium, were nondetect in this sample. No further corrective action was taken.

CLIENT:	Golder
Project:	Copano 2Q19 GW
Lab Order:	1907312

CASE NARRATIVE

Exception Report S9-01

For Total Metals Analysis, for Batch 91962, the recovery of Sodium for the Post Digestion Spike (1907288-22 PDS) was slightly above the method control limits. This is flagged accordingly in the QC Summary Report. This analyte was within method control limits in the associated Serial Dilution. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *21-Aug-19*

CLIENT: Golder
Project: Copano 2Q19
Lab Order: 1907312

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1907312-01	MW4-7A		07/24/19 03:02 PM	7/25/2019

Lab Order: 1907312
Client: Golder
Project: Copano 2Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1907312-01A	MW4-7A	07/24/19 03:02 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/19 08:22 AM	91962
	MW4-7A	07/24/19 03:02 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/19 08:22 AM	91962
	MW4-7A	07/24/19 03:02 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/19 08:22 AM	91962
	MW4-7A	07/24/19 03:02 PM	Aqueous	SW7470A	Mercury Aq Prep	07/26/19 12:16 PM	91976
1907312-01B	MW4-7A	07/24/19 03:02 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	07/29/19 12:55 PM	92013
	MW4-7A	07/24/19 03:02 PM	Aqueous	SW7470A	Mercury Aq Prep	07/26/19 12:16 PM	91976

Lab Order: 1907312
Client: Golder
Project: Copano 2Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1907312-01A	MW4-7A	Aqueous	SW7470A	Mercury Total: Aqueous	91976	1	07/29/19 10:01 AM	CETAC2_HG_190729C
	MW4-7A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91962	10	07/31/19 11:31 AM	ICP-MS5_190731A
	MW4-7A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91962	500	07/31/19 11:29 AM	ICP-MS5_190731A
	MW4-7A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91962	1	07/29/19 04:55 PM	ICP-MS5_190729A
	MW4-7A	Aqueous	SW6020A	Uranium in Water by ICPMS	91962	1	07/29/19 04:55 PM	ICP-MS5_190729C
1907312-01B	MW4-7A	Aqueous	SW7470A	Mercury (0.45µ Filtered)	91976	1	07/29/19 10:08 AM	CETAC2_HG_190729D
	MW4-7A	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92013	1	07/30/19 04:26 PM	ICP-MS4_190730B

DHL Analytical, Inc.

Date: *21-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7A
Project:	Copano 2Q19 GW	**Lab ID:**	1907312-01
Project No:	19125525	**Collection Date:**	07/24/19 03:02 PM
Lab Order:	1907312	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.297	0.0100	0.0300		mg/L	1	07/30/19 04:26 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/30/19 04:26 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	07/30/19 04:26 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/30/19 04:26 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	07/30/19 04:26 PM
Dissolved Nickel	0.00405	0.00300	0.0100	J	mg/L	1	07/30/19 04:26 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/30/19 04:26 PM
Dissolved Vanadium	0.00235	0.000500	0.00100		mg/L	1	07/30/19 04:26 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.232	0.0100	0.0300		mg/L	1	07/29/19 04:55 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/29/19 04:55 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	07/29/19 04:55 PM
Calcium	519	50.0	150		mg/L	500	07/31/19 11:29 AM
Chromium	0.00292	0.00200	0.00500	J	mg/L	1	07/29/19 04:55 PM
Lead	0.000422	0.000300	0.00100	J	mg/L	1	07/29/19 04:55 PM
Magnesium	859	50.0	150		mg/L	500	07/31/19 11:29 AM
Nickel	0.00461	0.00300	0.0100	J	mg/L	1	07/29/19 04:55 PM
Potassium	62.5	1.00	3.00		mg/L	10	07/31/19 11:31 AM
Sodium	8360	50.0	150		mg/L	500	07/31/19 11:29 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/29/19 04:55 PM
Vanadium	0.00288	0.000500	0.00100		mg/L	1	07/29/19 04:55 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	07/29/19 10:08 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	07/29/19 10:01 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.103	0.00300	0.0100	N	mg/L	1	07/29/19 04:55 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.101	0.00300	0.0100	N	mg/L	1	07/30/19 04:26 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190611B

Sample ID: **DCS-91284**	Batch ID: **91284**	TestNo: **SW7470A**	Units: **mg/L**		
SampType: **DCS**	Run ID: **CETAC2_HG_190611B**	Analysis Date: **6/11/2019 5:01:26 PM**	Prep Date: **6/11/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000206	0.000200	0.000200	0	103	82	119	0	0	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190729C

The QC data in batch 91976 applies to the following samples: 1907312-01A, 1907312-01B

Sample ID: **MB-91976**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_190729C**	Analysis Date: **7/29/2019 9:23:12 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91976**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_190729C**	Analysis Date: **7/29/2019 9:27:44 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00196	0.000200	0.00200	0	98.0	85	115			

Sample ID: **LCSD-91976**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_190729C**	Analysis Date: **7/29/2019 9:30:00 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00195	0.000200	0.00200	0	97.5	85	115	0.512	15	

Sample ID: **1907297-02C MS**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_190729C**	Analysis Date: **7/29/2019 9:43:36 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00985	0.00100	0.0100	0	98.5	80	120			

Sample ID: **1907297-02C MSD**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_190729C**	Analysis Date: **7/29/2019 9:45:52 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0102	0.00100	0.0100	0	102	80	120	3.49	15	

Sample ID: **1907297-02C SD**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_190729C**	Analysis Date: **7/29/2019 9:48:07 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **1907297-02C PDS**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_190729C**	Analysis Date: **7/29/2019 9:50:23 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0122	0.00100	0.0125	0	97.6	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190729C

Sample ID: **ICV-190729**	Batch ID: **R105379**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190729C**	Analysis Date: **7/29/2019 9:18:38 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00390	0.000200	0.00400	0	97.5	90	110			

Sample ID: **CCV1-190729**	Batch ID: **R105379**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190729C**	Analysis Date: **7/29/2019 10:04:02 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190729D

The QC data in batch 91976 applies to the following samples: 1907312-01A, 1907312-01B

Sample ID: **MB-91976**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_190729D**	Analysis Date: **7/29/2019 9:23:12 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-91976**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_190729D**	Analysis Date: **7/29/2019 9:27:44 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00196	0.000200	0.00200	0	98.0	85	115			

Sample ID: **LCSD-91976**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_190729D**	Analysis Date: **7/29/2019 9:30:00 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00195	0.000200	0.00200	0	97.5	85	115	0.512	15	

Sample ID: **1907297-02C MS**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_190729D**	Analysis Date: **7/29/2019 9:43:36 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00985	0.00100	0.0100	0	98.5	80	120			

Sample ID: **1907297-02C MSD**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_190729D**	Analysis Date: **7/29/2019 9:45:52 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0102	0.00100	0.0100	0	102	80	120	3.49	15	

Sample ID: **1907297-02C SD**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_190729D**	Analysis Date: **7/29/2019 9:48:07 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **1907297-02C PDS**	Batch ID: **91976**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_190729D**	Analysis Date: **7/29/2019 9:50:23 AM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0122	0.00100	0.0125	0	97.6	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190729D

Sample ID: **ICV-190729**	Batch ID: **R105380**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190729D**	Analysis Date: **7/29/2019 9:18:38 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00390	0.000200	0.00400	0	97.5	90	110			

Sample ID: **CCV1-190729**	Batch ID: **R105380**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190729D**	Analysis Date: **7/29/2019 10:04:02 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	90	110			

Sample ID: **CCV2-190729**	Batch ID: **R105380**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190729D**	Analysis Date: **7/29/2019 10:35:55 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

Sample ID: **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:24:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0353	0.0300	0.0300	0	118	70	130	0	0	

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:27:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00522	0.00500	0.00500	0	104	70	130	0	0	
Chromium	0.00523	0.00500	0.00500	0	105	70	130	0	0	
Nickel	0.00557	0.0100	0.00500	0	111	70	130	0	0	

Sample ID: **DCS1-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:34:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.000904	0.00250	0.00100	0	90.4	70	130	0	0	
Lead	0.000475	0.00100	0.000500	0	95.0	70	130	0	0	
Thallium	0.000471	0.00150	0.000500	0	94.2	70	130	0	0	
Vanadium	0.000464	0.00100	0.000500	0	92.8	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_190730B**

The QC data in batch 92013 applies to the following samples: 1907312-01B

Sample ID: **MB-92013** Batch ID: **92013** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190730B** Analysis Date: **7/30/2019 4:14:00 PM** Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-92013** Batch ID: **92013** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190730B** Analysis Date: **7/30/2019 4:16:00 PM** Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.93	0.0300	5.00	0	98.6	80	120			
Antimony	0.201	0.00250	0.200	0	101	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Chromium	0.210	0.00500	0.200	0	105	80	120			
Lead	0.194	0.00100	0.200	0	97.0	80	120			
Nickel	0.220	0.0100	0.200	0	110	80	120			
Thallium	0.204	0.00150	0.200	0	102	80	120			
Vanadium	0.206	0.00100	0.200	0	103	80	120			

Sample ID: **LCSD-92013** Batch ID: **92013** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190730B** Analysis Date: **7/30/2019 4:18:00 PM** Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.00	0.0300	5.00	0	100	80	120	1.50	15	
Antimony	0.205	0.00250	0.200	0	102	80	120	1.74	15	
Arsenic	0.209	0.00500	0.200	0	105	80	120	2.62	15	
Chromium	0.214	0.00500	0.200	0	107	80	120	1.92	15	
Lead	0.200	0.00100	0.200	0	100	80	120	3.22	15	
Nickel	0.223	0.0100	0.200	0	111	80	120	1.15	15	
Thallium	0.207	0.00150	0.200	0	104	80	120	1.49	15	
Vanadium	0.209	0.00100	0.200	0	104	80	120	1.27	15	

Sample ID: **1907353-01B SD** Batch ID: **92013** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190730B** Analysis Date: **7/30/2019 4:24:00 PM** Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0				0	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190730B

Sample ID: **1907353-01B SD**	Batch ID: **92013**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190730B**	Analysis Date: **7/30/2019 4:24:00 PM**	Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0.00106				0	10	
Nickel	<0.0150	0.0500	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	<0.00250	0.00500	0	0				0	10	

Sample ID: **1907353-01B PDS**	Batch ID: **92013**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190730B**	Analysis Date: **7/30/2019 4:43:00 PM**	Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.46	0.0300	5.00	0	89.2	80	120			
Antimony	0.196	0.00250	0.200	0	97.8	80	120			
Arsenic	0.200	0.00500	0.200	0	100	80	120			
Chromium	0.195	0.00500	0.200	0	97.4	80	120			
Lead	0.188	0.00100	0.200	0.00106	93.7	80	120			
Nickel	0.202	0.0100	0.200	0	101	80	120			
Thallium	0.197	0.00150	0.200	0	98.4	80	120			
Vanadium	0.195	0.00100	0.200	0	97.5	80	120			

Sample ID: **1907353-01B MS**	Batch ID: **92013**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190730B**	Analysis Date: **7/30/2019 4:45:00 PM**	Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.75	0.0300	5.00	0	95.0	80	120			
Antimony	0.193	0.00250	0.200	0	96.5	80	120			
Arsenic	0.206	0.00500	0.200	0	103	80	120			
Chromium	0.195	0.00500	0.200	0	97.4	80	120			
Lead	0.195	0.00100	0.200	0.00106	96.8	80	120			
Nickel	0.203	0.0100	0.200	0	102	80	120			
Thallium	0.204	0.00150	0.200	0	102	80	120			
Vanadium	0.198	0.00100	0.200	0	99.0	80	120			

Sample ID: **1907353-01B MSD**	Batch ID: **92013**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190730B**	Analysis Date: **7/30/2019 4:47:00 PM**	Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.80	0.0300	5.00	0	95.9	80	120	0.951	15	
Antimony	0.196	0.00250	0.200	0	97.9	80	120	1.46	15	
Arsenic	0.210	0.00500	0.200	0	105	80	120	2.07	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190730B

Sample ID: **1907353-01B MSD** Batch ID: **92013** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190730B** Analysis Date: **7/30/2019 4:47:00 PM** Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.198	0.00500	0.200	0	98.8	80	120	1.40	15	
Lead	0.199	0.00100	0.200	0.00106	99.1	80	120	2.25	15	
Nickel	0.205	0.0100	0.200	0	102	80	120	0.822	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	0.739	15	
Vanadium	0.201	0.00100	0.200	0	101	80	120	1.77	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190730B

Sample ID: **ICV-190730** Batch ID: **R105427** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_190730B** Analysis Date: **7/30/2019 12:17:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.35	0.0300	2.50	0	93.9	90	110			
Antimony	0.0994	0.00250	0.100	0	99.4	90	110			
Arsenic	0.0997	0.00500	0.100	0	99.7	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Lead	0.0972	0.00100	0.100	0	97.2	90	110			
Nickel	0.109	0.0100	0.100	0	109	90	110			
Thallium	0.0982	0.00150	0.100	0	98.2	90	110			
Vanadium	0.102	0.00100	0.100	0	102	90	110			

Sample ID: **LCVL-190730** Batch ID: **R105427** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190730B** Analysis Date: **7/30/2019 12:21:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.106	0.0300	0.100	0	106	70	130			
Antimony	0.00210	0.00250	0.00200	0	105	70	130			
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Chromium	0.00534	0.00500	0.00500	0	107	70	130			
Lead	0.000974	0.00100	0.00100	0	97.4	70	130			
Nickel	0.00551	0.0100	0.00500	0	110	70	130			
Thallium	0.000966	0.00150	0.00100	0	96.6	70	130			
Vanadium	0.00101	0.00100	0.00100	0	101	70	130			

Sample ID: **CCV6-190730** Batch ID: **R105427** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190730B** Analysis Date: **7/30/2019 4:03:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.85	0.0300	5.00	0	96.9	90	110			
Antimony	0.204	0.00250	0.200	0	102	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Chromium	0.207	0.00500	0.200	0	104	90	110			
Lead	0.197	0.00100	0.200	0	98.3	90	110			
Nickel	0.217	0.0100	0.200	0	109	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			
Vanadium	0.205	0.00100	0.200	0	102	90	110			

Sample ID: **LCVL6-190730** Batch ID: **R105427** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190730B** Analysis Date: **7/30/2019 4:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.100	0.0300	0.100	0	100	70	130			
Antimony	0.00202	0.00250	0.00200	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190730B

Sample ID: **LCVL6-190730** Batch ID: **R105427** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190730B** Analysis Date: **7/30/2019 4:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00521	0.00500	0.00500	0	104	70	130			
Chromium	0.00538	0.00500	0.00500	0	108	70	130			
Lead	0.000911	0.00100	0.00100	0	91.1	70	130			
Nickel	0.00558	0.0100	0.00500	0	112	70	130			
Thallium	0.000927	0.00150	0.00100	0	92.7	70	130			
Vanadium	0.00106	0.00100	0.00100	0	106	70	130			

Sample ID: **CCV7-190730** Batch ID: **R105427** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190730B** Analysis Date: **7/30/2019 4:49:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.90	0.0300	5.00	0	98.0	90	110			
Antimony	0.200	0.00250	0.200	0	100	90	110			
Arsenic	0.201	0.00500	0.200	0	100	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Lead	0.194	0.00100	0.200	0	97.2	90	110			
Nickel	0.214	0.0100	0.200	0	107	90	110			
Thallium	0.203	0.00150	0.200	0	101	90	110			
Vanadium	0.202	0.00100	0.200	0	101	90	110			

Sample ID: **LCVL7-190730** Batch ID: **R105427** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190730B** Analysis Date: **7/30/2019 4:56:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	70	130			
Antimony	0.00205	0.00250	0.00200	0	102	70	130			
Arsenic	0.00529	0.00500	0.00500	0	106	70	130			
Chromium	0.00531	0.00500	0.00500	0	106	70	130			
Lead	0.000899	0.00100	0.00100	0	89.9	70	130			
Nickel	0.00550	0.0100	0.00500	0	110	70	130			
Thallium	0.000927	0.00150	0.00100	0	92.7	70	130			
Vanadium	0.00104	0.00100	0.00100	0	104	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_190730C**

The QC data in batch 92013 applies to the following samples: 1907312-01B

Sample ID: **MB-92013**	Batch ID: **92013**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 4:14:00 PM**	Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-92013**	Batch ID: **92013**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 4:16:00 PM**	Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.203	0.0100	0.200	0	102	80	120			N

Sample ID: **LCSD-92013**	Batch ID: **92013**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 4:18:00 PM**	Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	104	80	120	1.77	15	N

Sample ID: **1907353-01B SD**	Batch ID: **92013**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 4:24:00 PM**	Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.0150	0.0500	0	0				0	20	N

Sample ID: **1907353-01B PDS**	Batch ID: **92013**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 4:43:00 PM**	Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	104	75	125			N

Sample ID: **1907353-01B MS**	Batch ID: **92013**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 4:45:00 PM**	Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.210	0.0100	0.200	0	105	75	125			N

Sample ID: **1907353-01B MSD**	Batch ID: **92013**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 4:47:00 PM**	Prep Date: **7/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.216	0.0100	0.200	0	108	75	125	2.61	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190730C

Sample ID: **ICV-190730**	Batch ID: **R109099**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 12:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0944	0.0100	0.100	0	94.4	90	110			N

Sample ID: **LCVL-190730**	Batch ID: **R109099**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 12:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00461	0.0100	0.00500	0	92.2	80	120			N

Sample ID: **CCV6-190730**	Batch ID: **R109099**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 4:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.203	0.0100	0.200	0	101	90	110			N

Sample ID: **LCVL6-190730**	Batch ID: **R109099**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 4:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00445	0.0100	0.00500	0	89.0	80	120			N

Sample ID: **CCV7-190730**	Batch ID: **R109099**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 4:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.205	0.0100	0.200	0	103	90	110			N

Sample ID: **LCVL7-190730**	Batch ID: **R109099**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190730C**	Analysis Date: **7/30/2019 4:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00446	0.0100	0.00500	0	89.1	80	120			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621A

Sample ID: **DCS1-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:12:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00103	0.00250	0.00100	0	103	70	130	0	0	
Lead	0.000545	0.00100	0.000500	0	109	70	130	0	0	
Thallium	0.000527	0.00150	0.000500	0	105	70	130	0	0	
Vanadium	0.000614	0.00100	0.000500	0	123	70	130	0	0	

Sample ID: **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:14:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0383	0.0300	0.0300	0	128	70	130	0	0	
Calcium	0.305	0.300	0.300	0	102	70	130	0	0	
Magnesium	0.315	0.300	0.300	0	105	70	130	0	0	
Potassium	0.319	0.300	0.300	0	106	70	130	0	0	
Sodium	0.295	0.300	0.300	0	98.4	70	130	0	0	

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:16:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00512	0.00500	0.00500	0	102	70	130	0	0	
Chromium	0.00500	0.00500	0.00500	0	100	70	130	0	0	
Nickel	0.00513	0.0100	0.00500	0	103	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621D

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 11:16:00 AM**		Prep Date: **6/20/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00501	0.0100	0.00500	0	100	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190729A**

The QC data in batch 91962 applies to the following samples: 1907312-01A

Sample ID: **MB-91962** Batch ID: **91962** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190729A** Analysis Date: **7/29/2019 3:40:00 PM** Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-91962** Batch ID: **91962** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190729A** Analysis Date: **7/29/2019 3:43:00 PM** Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.06	0.0300	5.00	0	101	80	120			
Antimony	0.201	0.00250	0.200	0	101	80	120			
Arsenic	0.205	0.00500	0.200	0	103	80	120			
Calcium	4.92	0.300	5.00	0	98.4	80	120			
Chromium	0.197	0.00500	0.200	0	98.6	80	120			
Lead	0.198	0.00100	0.200	0	99.1	80	120			
Magnesium	5.00	0.300	5.00	0	100	80	120			
Nickel	0.209	0.0100	0.200	0	104	80	120			
Potassium	4.88	0.300	5.00	0	97.5	80	120			
Sodium	4.94	0.300	5.00	0	98.8	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			
Vanadium	0.198	0.00100	0.200	0	99.1	80	120			

Sample ID: **LCSD-91962** Batch ID: **91962** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190729A** Analysis Date: **7/29/2019 3:45:00 PM** Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.06	0.0300	5.00	0	101	80	120	0.038	15	
Antimony	0.205	0.00250	0.200	0	103	80	120	2.00	15	
Arsenic	0.205	0.00500	0.200	0	103	80	120	0.093	15	
Calcium	5.05	0.300	5.00	0	101	80	120	2.71	15	
Chromium	0.199	0.00500	0.200	0	99.4	80	120	0.827	15	
Lead	0.199	0.00100	0.200	0	99.7	80	120	0.548	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190729A

Sample ID: **LCSD-91962**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190729A**	Analysis Date: **7/29/2019 3:45:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	5.06	0.300	5.00	0	101	80	120	1.11	15	
Nickel	0.209	0.0100	0.200	0	104	80	120	0.092	15	
Potassium	4.94	0.300	5.00	0	98.8	80	120	1.30	15	
Sodium	4.97	0.300	5.00	0	99.5	80	120	0.647	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	0.229	15	
Vanadium	0.201	0.00100	0.200	0	100	80	120	1.12	15	

Sample ID: **1907288-22C SD**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190729A**	Analysis Date: **7/29/2019 3:52:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0154				0	10	
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00285				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Nickel	<0.0150	0.0500	0	0.00717				0	10	
Potassium	7.52	1.50	0	7.49				0.364	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	0.0492	0.00500	0	0.0494				0.355	10	

Sample ID: **1907288-22C PDS**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190729A**	Analysis Date: **7/29/2019 4:14:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.93	0.0300	5.00	0.0154	98.4	80	120			
Antimony	0.214	0.00250	0.200	0	107	80	120			
Arsenic	0.194	0.00500	0.200	0.00285	95.5	80	120			
Chromium	0.200	0.00500	0.200	0	100	80	120			
Lead	0.199	0.00100	0.200	0	99.6	80	120			
Nickel	0.198	0.0100	0.200	0.00717	95.7	80	120			
Potassium	11.9	0.300	5.00	7.49	88.5	80	120			
Thallium	0.206	0.00150	0.200	0	103	80	120			
Vanadium	0.250	0.00100	0.200	0.0494	101	80	120			

Sample ID: **1907288-22C MS**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190729A**	Analysis Date: **7/29/2019 4:16:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.09	0.0300	5.00	0.0154	101	80	120			
Antimony	0.207	0.00250	0.200	0	104	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190729A

Sample ID: **1907288-22C MS**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190729A**	Analysis Date: **7/29/2019 4:16:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.197	0.00500	0.200	0.00285	97.2	80	120			
Calcium	237	0.300	5.00	238	-15.3	80	120			S
Chromium	0.196	0.00500	0.200	0	98.2	80	120			
Lead	0.201	0.00100	0.200	0	101	80	120			
Magnesium	92.1	0.300	5.00	87.6	90.0	80	120			
Nickel	0.198	0.0100	0.200	0.00717	95.4	80	120			
Potassium	12.3	0.300	5.00	7.49	95.7	80	120			
Sodium	314	0.300	5.00	308	121	80	120			S
Thallium	0.206	0.00150	0.200	0	103	80	120			
Vanadium	0.251	0.00100	0.200	0.0494	101	80	120			

Sample ID: **1907288-22C MSD**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190729A**	Analysis Date: **7/29/2019 4:18:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.12	0.0300	5.00	0.0154	102	80	120	0.665	15	
Antimony	0.209	0.00250	0.200	0	105	80	120	0.926	15	
Arsenic	0.198	0.00500	0.200	0.00285	97.6	80	120	0.431	15	
Calcium	241	0.300	5.00	238	57.6	80	120	1.52	15	S
Chromium	0.197	0.00500	0.200	0	98.4	80	120	0.174	15	
Lead	0.202	0.00100	0.200	0	101	80	120	0.331	15	
Magnesium	93.5	0.300	5.00	87.6	118	80	120	1.48	15	
Nickel	0.198	0.0100	0.200	0.00717	95.2	80	120	0.109	15	
Potassium	12.4	0.300	5.00	7.49	98.7	80	120	1.21	15	
Sodium	318	0.300	5.00	308	201	80	120	1.26	15	S
Thallium	0.208	0.00150	0.200	0	104	80	120	0.690	15	
Vanadium	0.252	0.00100	0.200	0.0494	101	80	120	0.713	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190729A

Sample ID: **ICV-190729** Batch ID: **R105400** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_190729A** Analysis Date: **7/29/2019 3:25:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.42	0.0300	2.50	0	96.9	90	110			
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.0985	0.00500	0.100	0	98.5	90	110			
Calcium	2.59	0.300	2.50	0	104	90	110			
Chromium	0.0993	0.00500	0.100	0	99.3	90	110			
Lead	0.0982	0.00100	0.100	0	98.2	90	110			
Magnesium	2.46	0.300	2.50	0	98.5	90	110			
Nickel	0.102	0.0100	0.100	0	102	90	110			
Potassium	2.49	0.300	2.50	0	99.7	90	110			
Sodium	2.51	0.300	2.50	0	100	90	110			
Thallium	0.100	0.00150	0.100	0	100	90	110			
Vanadium	0.0988	0.00100	0.100	0	98.8	90	110			

Sample ID: **LCVL-190729** Batch ID: **R105400** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190729A** Analysis Date: **7/29/2019 3:33:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.106	0.0300	0.100	0	106	70	130			
Antimony	0.00205	0.00250	0.00200	0	102	70	130			
Arsenic	0.00491	0.00500	0.00500	0	98.1	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00491	0.00500	0.00500	0	98.2	70	130			
Lead	0.000993	0.00100	0.00100	0	99.3	70	130			
Magnesium	0.101	0.300	0.100	0	101	70	130			
Nickel	0.00503	0.0100	0.00500	0	101	70	130			
Potassium	0.0908	0.300	0.100	0	90.8	70	130			
Sodium	0.0927	0.300	0.100	0	92.7	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			
Vanadium	0.00106	0.00100	0.00100	0	106	70	130			

Sample ID: **CCV1-190729** Batch ID: **R105400** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190729A** Analysis Date: **7/29/2019 4:20:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0	103	90	110			
Antimony	0.213	0.00250	0.200	0	107	90	110			
Arsenic	0.197	0.00500	0.200	0	98.4	90	110			
Calcium	5.08	0.300	5.00	0	102	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Lead	0.203	0.00100	0.200	0	102	90	110			
Magnesium	5.19	0.300	5.00	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190729A

Sample ID: **CCV1-190729** Batch ID: **R105400** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190729A** Analysis Date: **7/29/2019 4:20:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.204	0.0100	0.200	0	102	90	110			
Potassium	4.90	0.300	5.00	0	98.0	90	110			
Sodium	5.40	0.300	5.00	0	108	90	110			
Thallium	0.207	0.00150	0.200	0	103	90	110			
Vanadium	0.206	0.00100	0.200	0	103	90	110			

Sample ID: **LCVL1-190729** Batch ID: **R105400** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190729A** Analysis Date: **7/29/2019 4:25:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	70	130			
Antimony	0.00210	0.00250	0.00200	0	105	70	130			
Arsenic	0.00475	0.00500	0.00500	0	95.1	70	130			
Calcium	0.0845	0.300	0.100	0	84.5	70	130			
Chromium	0.00500	0.00500	0.00500	0	100	70	130			
Lead	0.000985	0.00100	0.00100	0	98.5	70	130			
Magnesium	0.101	0.300	0.100	0	101	70	130			
Nickel	0.00516	0.0100	0.00500	0	103	70	130			
Potassium	0.0863	0.300	0.100	0	86.3	70	130			
Sodium	0.247	0.300	0.100	0	247	70	130			S
Thallium	0.000983	0.00150	0.00100	0	98.3	70	130			
Vanadium	0.00114	0.00100	0.00100	0	114	70	130			

Sample ID: **CCV2-190729** Batch ID: **R105400** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190729A** Analysis Date: **7/29/2019 4:57:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.29	0.0300	5.00	0	106	90	110			
Antimony	0.204	0.00250	0.200	0	102	90	110			
Arsenic	0.189	0.00500	0.200	0	94.5	90	110			
Chromium	0.186	0.00500	0.200	0	92.9	90	110			
Lead	0.198	0.00100	0.200	0	99.2	90	110			
Nickel	0.189	0.0100	0.200	0	94.5	90	110			
Thallium	0.203	0.00150	0.200	0	101	90	110			
Vanadium	0.192	0.00100	0.200	0	95.8	90	110			

Sample ID: **LCVL2-190729** Batch ID: **R105400** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190729A** Analysis Date: **7/29/2019 5:12:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.117	0.0300	0.100	0	117	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190729A

Sample ID: **LCVL2-190729** Batch ID: **R105400** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190729A** Analysis Date: **7/29/2019 5:12:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00217	0.00250	0.00200	0	109	70	130			
Arsenic	0.00516	0.00500	0.00500	0	103	70	130			
Chromium	0.00510	0.00500	0.00500	0	102	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Nickel	0.00543	0.0100	0.00500	0	109	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			
Vanadium	0.00120	0.00100	0.00100	0	120	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190729C**

The QC data in batch 91962 applies to the following samples: 1907312-01A

Sample ID: **MB-91962**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 3:40:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-91962**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 3:43:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	98.0	80	120			N

Sample ID: **LCSD-91962**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 3:45:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.197	0.0100	0.200	0	98.7	80	120	0.763	25	N

Sample ID: **1907288-22C SD**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 3:52:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.0150	0.0500	0	0.0145				0	10	N

Sample ID: **1907288-22C PDS**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 4:14:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.220	0.0100	0.200	0.0145	103	80	120			N

Sample ID: **1907288-22C MS**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 4:16:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.219	0.0100	0.200	0.0145	102	80	120			N

Sample ID: **1907288-22C MSD**	Batch ID: **91962**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 4:18:00 PM**	Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.221	0.0100	0.200	0.0145	103	80	120	1.06	25	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190729C

Sample ID: **ICV-190729**	Batch ID: **R105426**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 3:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0956	0.0100	0.100	0	95.6	90	110			N

Sample ID: **LCVL-190729**	Batch ID: **R105426**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 3:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00482	0.0100	0.00500	0	96.5	70	130			N

Sample ID: **CCV1-190729**	Batch ID: **R105426**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 4:20:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.200	0.0100	0.200	0	100	90	110			N

Sample ID: **LCVL1-190729**	Batch ID: **R105426**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 4:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00487	0.0100	0.00500	0	97.3	70	130			N

Sample ID: **CCV2-190729**	Batch ID: **R105426**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 4:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.185	0.0100	0.200	0	92.4	90	110			N

Sample ID: **LCVL2-190729**	Batch ID: **R105426**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190729C**	Analysis Date: **7/29/2019 5:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00504	0.0100	0.00500	0	101	70	130			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190731A**

The QC data in batch 91962 applies to the following samples: 1907312-01A

Sample ID: **1907288-22C SD** Batch ID: **91962** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190731A** Analysis Date: **7/31/2019 11:26:00 AM** Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	233	75.0	0	227				2.51	10	
Magnesium	85.1	75.0	0	82.2				3.38	10	
Sodium	288	75.0	0	280				2.86	10	

Sample ID: **1907288-22C PDS** Batch ID: **91962** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190731A** Analysis Date: **7/31/2019 11:35:00 AM** Prep Date: **7/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	495	15.0	250	227	107	80	120			
Magnesium	329	15.0	250	82.2	98.7	80	120			
Sodium	593	15.0	250	280	125	80	120			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19 GW

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190731A

Sample ID: **ICV-190731** Batch ID: **R105453** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_190731A** Analysis Date: **7/31/2019 11:08:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.55	0.300	2.50	0	102	90	110			
Magnesium	2.42	0.300	2.50	0	97.0	90	110			
Potassium	2.37	0.300	2.50	0	95.0	90	110			
Sodium	2.42	0.300	2.50	0	97.0	90	110			

Sample ID: **LCVL-190731** Batch ID: **R105453** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190731A** Analysis Date: **7/31/2019 11:17:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0873	0.300	0.100	0	87.3	70	130			
Magnesium	0.101	0.300	0.100	0	101	70	130			
Potassium	0.0807	0.300	0.100	0	80.7	70	130			
Sodium	0.0855	0.300	0.100	0	85.5	70	130			

Sample ID: **CCV1-190731** Batch ID: **R105453** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190731A** Analysis Date: **7/31/2019 11:49:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.83	0.300	5.00	0	96.7	90	110			
Magnesium	4.91	0.300	5.00	0	98.1	90	110			
Potassium	4.61	0.300	5.00	0	92.1	90	110			
Sodium	4.76	0.300	5.00	0	95.1	90	110			

Sample ID: **LCVL1-190731** Batch ID: **R105453** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190731A** Analysis Date: **7/31/2019 12:01:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0893	0.300	0.100	0	89.3	70	130			
Magnesium	0.0964	0.300	0.100	0	96.4	70	130			
Potassium	0.0531	0.300	0.100	0	53.1	70	130			S
Sodium	0.0789	0.300	0.100	0	78.9	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907312
Project: Copano 2Q19

MQL SUMMARY REPORT

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 14, 2019

DHL Analytical, Inc.

Sample Delivery Group:	L1124140
Samples Received:	07/30/2019
Project Number:	1907312
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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Tc: Table of Contents 2

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	Collected by	Collected date/time	Received date/time
MW4-7A L1124140-01 Non-Potable Water		07/24/19 15:02	07/30/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1323649	1	08/06/19 13:31	08/12/19 12:25	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1323021	1	08/07/19 15:11	08/12/19 12:25	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1323021	1	08/07/19 15:11	08/09/19 06:54	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	5.10		0.576	0.469	08/12/2019 12:25	WG1323649
(T) Barium	*81.2*			*62.0-143*	*08/12/2019 12:25*	WG1323649
(T) Yttrium	*117*			*79.0-136*	*08/12/2019 12:25*	WG1323649

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	7.35		1.20	0.727	08/12/2019 12:25	WG1323021

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	2.25		0.628	0.258	08/09/2019 06:54	WG1323021
(T) Barium-133	*71.2*			*30.0-143*	*08/09/2019 06:54*	WG1323021

Method Blank (MB)

(MB) R3439859-1 08/12/19 12:25

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-228	0.485		0.337
(T) Barium	*75.0*		
(T) Yttrium	*107*		

L1117712-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1117712-01 08/12/19 12:25 • (DUP) R3439859-4 08/12/19 12:25

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-228	5.61	5.17	1	8.13	0.353		20	3
(T) Barium	*91.4*	*89.8*						
(T) Yttrium	*117*	*111*						

Laboratory Control Sample (LCS)

(LCS) R3439859-2 08/12/19 12:25

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-228	5.00	5.01	100	80.0-120	
(T) Barium			*98.8*		
(T) Yttrium			*111*		

L1124357-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1124357-01 08/12/19 12:25 • (MS) R3439859-3 08/12/19 12:25

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	pCi/l	pCi/l	pCi/l	%		%	
Radium-228	10.0	0.826	9.27	84.5	1	70.0-130	
(T) Barium		*94.5*		*95.4*			
(T) Yttrium		*115*		*119*			

Method Blank (MB)

(MB) R3439593-4 08/09/19 12:18

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	-0.00191		0.0359
(T) Barium-133	*90.7*		

L1124140-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1124140-01 08/09/19 06:54 • (DUP) R3439593-3 08/09/19 06:54

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	2.25	1.40	1	46.5	1.06		20	3
(T) Barium-133	*71.2*	*77.3*						

Laboratory Control Sample (LCS)

(LCS) R3439593-1 08/09/19 06:54

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	4.88	97.3	80.0-120	
(T) Barium-133			*85.5*		

L1124140-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1124140-01 08/09/19 06:54 • (MS) R3439593-2 08/09/19 06:54

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	pCi/l	pCi/l	pCi/l	%		%	
Radium-226	20.1	2.25	20.8	92.4	1	75.0-125	
(T) Barium-133		*71.2*		*70.1*			

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

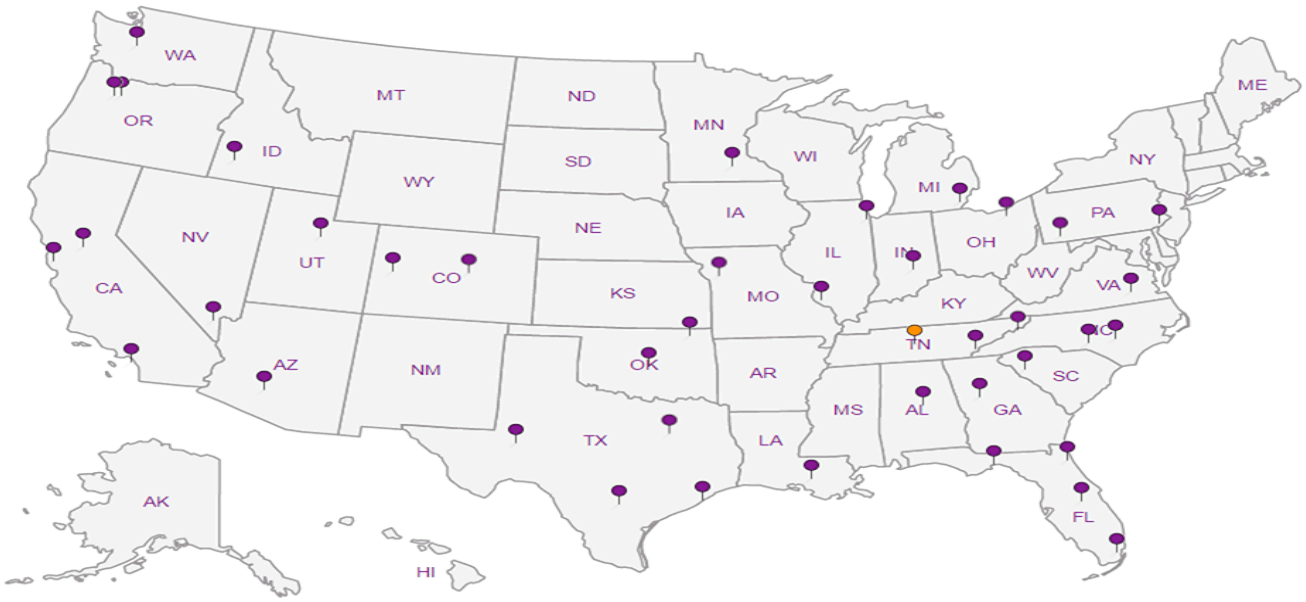
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1907312

J229

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

1124140

25-Jul-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra 228 E904.0	Ra 226 M7500 Ra B M	Requested Tests				
MW4-7A	Aqueous	-01C	07/24/19 03:02 PM	1LHDPEHNO3	1						-01
MW4-7A	Aqueous	-01D	07/24/19 03:02 PM	1LHDPEHNO3		1					-02

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time		Date/Time
Relinquished by:			**Received by:**	Jordan Harris
Relinquished by:			**Received by:**	7/30/19 8:45

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRTX	SDG#:	124140
Cooler Received/Opened On: 7/30/19	Temperature:	
Received by: Jordan Harris		
Signature: JA		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓	✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

February 28, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 1909142

RE: Copano GW Sampling 3Q19

Dear Kevin Dworsky:

DHL Analytical, Inc. received 8 sample(s) on 9/18/2019 for the analyses presented in the following report.

REVISION#1: This revision consists of adding Dissolved Uranium to the list of test parameters for all samples as per the client. Please replace the original report with this revised report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 85936

CHAIN-OF-CUSTODY

CLIENT: Golder
ADDRESS: 620 E. Airline Victoria, TX 77901
PHONE: 361-573-6442 FAX/E-MAIL:
DATA REPORTED TO: Kevin Dworsky, Matt Wickham
ADDITIONAL REPORT COPIES TO: Greg Logan, Richard Unwin

DATE: 9/17/19 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1909142
PROJECT LOCATION OR NAME: Copano 3Q19
CLENT PROJECT #: 19125525 COLLECTOR: Richard Unwin

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☒ NaOH ☐	ICE	UNPRESERVED
MW4-7A	01	9/17/19	13:20	W	P	6		✓	✓	✓	✓
MW4-7B	02	9/17/19	14:15	↓	↓	↓		↓	↓	↓	↓
MW4-2	03	9/17/19	16:15								
MW4-2A	04	9/17/19	16:48								
MW3-7B	05	9/17/19	14:30								
MW3-7	06	9/17/19	15:15								
MW3-1	07	9/17/19	16:05								
MW-101	08	9/17/19	16:15								

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

FIELD NOTES

See Attached Document

RELINQUISHED BY: (Signature) DATE/TIME 9/17/19 18:00 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) DATE/TIME 9/18/19 0945 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 5.8/2.9 °C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☑ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate	E300	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate	E300	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:

1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium

2) From time of sample collection

Dissolved Metals Also

ORIGIN ID:CRPA (999) 999-9999
GOLDER

620 E AIRLINE RD

VICTORIA, TX 77901
UNITED STATES US

SHIP DATE: 17SEP19
ACTWGT: 49.70 LB
CAD: 6993941/SSFE2021
DIMS: 23x14x14 IN

BILL THIRD PARTY

Part # 156026-XXXXXX-XXXXXX 05/20

TO

DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

J1920100824010

2 of 2
MPS# 0263 7898 7793 1169
Mstr# 7898 7798 1158

0201

WED - 18 SEP 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**

ORIGIN ID:CRPA (999) 999-9999
GOLOER

620 E AIRLINE RD

VICTORIA, TX 77901
UNITED STATES US

SHIP DATE: 17SEP19
ACTWGT: 50.00 LB
CAD: 6993941/SSFE2021
DIMS: 23x14x14 IN

BILL THIRD PARTY

Part # 156297-435 THU DOM EXP 05/20

TO

DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx
Express

1 of 2

TRK# 7898 7793 1158
D201

WED - 18 SEP 10:30A
PRIORITY OVERNIGHT

MASTER

44 BSMA

78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 9/18/2019

Work Order Number 1909142 | Received by JW

Checklist completed by: _____ 9/18/2019 (Signature / Date) | Reviewed by DL 9/18/2019 (Initials / Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	5.8 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW Sampling 3Q19	**LRC Date:** 10/17/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1909142
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?		**X**			**R7-04**
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?		**X**			**R8-03**
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW Sampling 3Q19	**LRC Date:** 10/17/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1909142
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?		X			**S2-02**
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?		X			**S4-01**
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

02/28/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *28-Feb-20*

CLIENT: Golder
Project: Copano GW Sampling 3Q19
Lab Order: 1909142

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis (total & dissolved)
Method SW6020A - Uranium in Water Analysis (this parameter is not NELACP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis

Exception Report R1-01

The samples were received and log-in performed on 9/18/19. A total of 8 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03 & R7-04

For Anions analysis performed on 9/18/19 and 9/19/19 (batches 92819 & 92851) the matrix spikes and matrix spike duplicate recoveries (1909128-02 MS/MSD & 1909148-06MS/MSD) were below control limits Sulfate or Chloride. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Dissolved Metals analysis performed on 9/23/19 (batch 92871) the matrix spike and matrix spike duplicate recoveries were slightly below control limits for Nickel. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate (batch 92871) was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Total Metals analysis performed on 9/20/19 (batch 92841) the matrix spike and matrix spike duplicate recoveries were out of control limits for a total of seven analytes. In addition, the matrix spike and matrix spike duplicate had the RPD slightly above control limits for Antimony. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate (batch 92841) was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Exception Report R8-03

For TDS analysis performed on 9/20/19 the sample and sample duplicate (1909142-04 & 1909142-04-DUP) had the RPD slightly above control limits. This is flagged accordingyl in the QC summary report.

The other sample and sample duplicate (1909142-04 & 1909142-05-DUP) was within control limits. No further corrrective actions were taken.

Exception Report R10-01

For Total and Dissolved Metals analysis the dissolved results were slightly higher than the total results for samples MW4-7B, MW4-2, MW3-7B, MW3-7, MW3-1 and MW-101. In addition, the Dissolved Uranium result was slightly higher than the Total Uranium result for sample MW4-7A. These are within the acceptable variation limits. No further corrective actions were taken.

For Anions analysis seven samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride).

Exception Report S2-02

For Total Metals analysis performed on 9/20/19 and 9/26/19 LCVL5-190920 and LCVL3-190926 were out of control limits for Potassium or Nickel. These are flagged accordingly in the QC summary report. The associated CCVs were within control limits for these analytes. No further corrective actions were taken.

Exception Report S4-01

For Dissolved Metals analysis all samples had low responses for the internal standard Bismuth. This was due to matrix interference. The associated analytes (Lead & Thallium) may be biased high. No further corrective actions were taken.

For Dissolved Metals analysis (batch 92871) the matrix spike duplicate and PDS had low responses for the internal standard Bismuth. This was due to matrix interference. The associated analytes (Lead & Thallium) were within control limits. No further corrective actions were taken.

For Uranium analysis all samples had low responses for the internal standard Bismuth. This was due to matrix interference. The associated analyte (Uranium) may be biased high. No further corrective actions were taken.

Exception Report S9-01

For Dissolved Metals analysis performed on 9/23/19 (batch 92871) the PDS recovery was below control limits for Nickel. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

For Dissolved Metals analysis performed on 9/23/19 (batch 92871) the RPD for the serial dilution was above control limits for Vanadium. This is flagged accordingly. The PDS was within control limits for

this analyte. No further corrective actions were taken.

For Total and Dissolved Mercury analyses performed on 9/25/19 and 9/30/19 (batches 92890, 92880 & 92988) the PDS recoveries were below control limits. This was due to matrix effect. These are flagged accordingly. The serial dilutions were within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *17-Oct-19*

CLIENT: Golder
Project: Copano GW Sampling 3Q19
Lab Order: 1909142

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1909142-01	MW4-7A		09/17/19 01:20 PM	9/18/2019
1909142-02	MW4-7B		09/17/19 02:15 PM	9/18/2019
1909142-03	MW4-2		09/17/19 03:15 PM	9/18/2019
1909142-04	MW4-2A		09/17/19 03:48 PM	9/18/2019
1909142-05	MW3-7B		09/17/19 02:30 PM	9/18/2019
1909142-06	MW3-7		09/17/19 03:15 PM	9/18/2019
1909142-07	MW3-1		09/17/19 04:05 PM	9/18/2019
1909142-08	MW-101		09/17/19 04:15 PM	9/18/2019

Lab Order: 1909142
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909142-01A	MW4-7A	09/17/19 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-7A	09/17/19 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-7A	09/17/19 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-7A	09/17/19 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-7A	09/17/19 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-7A	09/17/19 01:20 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 09:06 AM	92880
	MW4-7A	09/17/19 01:20 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 09:06 AM	92880
1909142-01B	MW4-7A	09/17/19 01:20 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW4-7A	09/17/19 01:20 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909142-01C	MW4-7A	09/17/19 01:20 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909142-01D	MW4-7A	09/17/19 01:20 PM	Aqueous	M2320 B	Alkalinity Preparation	09/20/19 08:52 AM	92863
	MW4-7A	09/17/19 01:20 PM	Aqueous	E300	Anion Preparation	09/18/19 10:22 AM	92819
	MW4-7A	09/17/19 01:20 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-7A	09/17/19 01:20 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-7A	09/17/19 01:20 PM	Aqueous	M2540C	TDS Preparation	09/19/19 11:56 AM	92852
1909142-02A	MW4-7B	09/17/19 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-7B	09/17/19 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-7B	09/17/19 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-7B	09/17/19 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-7B	09/17/19 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-7B	09/17/19 02:15 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 09:06 AM	92880
1909142-02B	MW4-7B	09/17/19 02:15 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW4-7B	09/17/19 02:15 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909142-02C	MW4-7B	09/17/19 02:15 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909142-02D	MW4-7B	09/17/19 02:15 PM	Aqueous	M2320 B	Alkalinity Preparation	09/20/19 08:52 AM	92863
	MW4-7B	09/17/19 02:15 PM	Aqueous	E300	Anion Preparation	09/18/19 10:22 AM	92819
	MW4-7B	09/17/19 02:15 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-7B	09/17/19 02:15 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851

Lab Order: 1909142
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909142-02D	MW4-7B	09/17/19 02:15 PM	Aqueous	M2540C	TDS Preparation	09/19/19 11:56 AM	92852
1909142-03A	MW4-2	09/17/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-2	09/17/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-2	09/17/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-2	09/17/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-2	09/17/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-2	09/17/19 03:15 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 09:06 AM	92880
1909142-03B	MW4-2	09/17/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW4-2	09/17/19 03:15 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909142-03C	MW4-2	09/17/19 03:15 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909142-03D	MW4-2	09/17/19 03:15 PM	Aqueous	M2320 B	Alkalinity Preparation	09/20/19 08:52 AM	92863
	MW4-2	09/17/19 03:15 PM	Aqueous	E300	Anion Preparation	09/18/19 10:22 AM	92819
	MW4-2	09/17/19 03:15 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-2	09/17/19 03:15 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-2	09/17/19 03:15 PM	Aqueous	M2540C	TDS Preparation	09/19/19 11:56 AM	92852
1909142-04A	MW4-2A	09/17/19 03:48 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-2A	09/17/19 03:48 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-2A	09/17/19 03:48 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-2A	09/17/19 03:48 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-2A	09/17/19 03:48 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW4-2A	09/17/19 03:48 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 09:06 AM	92880
1909142-04B	MW4-2A	09/17/19 03:48 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW4-2A	09/17/19 03:48 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909142-04C	MW4-2A	09/17/19 03:48 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909142-04D	MW4-2A	09/17/19 03:48 PM	Aqueous	M2320 B	Alkalinity Preparation	09/20/19 08:52 AM	92863
	MW4-2A	09/17/19 03:48 PM	Aqueous	E300	Anion Preparation	09/18/19 10:22 AM	92819
	MW4-2A	09/17/19 03:48 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-2A	09/17/19 03:48 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851

Lab Order: 1909142
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909142-04D	MW4-2A	09/17/19 03:48 PM	Aqueous	M2540C	TDS Preparation	09/20/19 01:19 PM	92869
1909142-05A	MW3-7B	09/17/19 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-7B	09/17/19 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-7B	09/17/19 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-7B	09/17/19 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-7B	09/17/19 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-7B	09/17/19 02:30 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909142-05B	MW3-7B	09/17/19 02:30 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW3-7B	09/17/19 02:30 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909142-05C	MW3-7B	09/17/19 02:30 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909142-05D	MW3-7B	09/17/19 02:30 PM	Aqueous	M2320 B	Alkalinity Preparation	09/20/19 08:52 AM	92863
	MW3-7B	09/17/19 02:30 PM	Aqueous	E300	Anion Preparation	09/18/19 10:22 AM	92819
	MW3-7B	09/17/19 02:30 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-7B	09/17/19 02:30 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-7B	09/17/19 02:30 PM	Aqueous	M2540C	TDS Preparation	09/20/19 01:19 PM	92869
1909142-06A	MW3-7	09/17/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-7	09/17/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-7	09/17/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-7	09/17/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-7	09/17/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-7	09/17/19 03:15 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909142-06B	MW3-7	09/17/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW3-7	09/17/19 03:15 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909142-06C	MW3-7	09/17/19 03:15 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909142-06D	MW3-7	09/17/19 03:15 PM	Aqueous	M2320 B	Alkalinity Preparation	09/20/19 08:52 AM	92863
	MW3-7	09/17/19 03:15 PM	Aqueous	E300	Anion Preparation	09/18/19 10:22 AM	92819
	MW3-7	09/17/19 03:15 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-7	09/17/19 03:15 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851

Lab Order: 1909142
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909142-06D	MW3-7	09/17/19 03:15 PM	Aqueous	M2540C	TDS Preparation	09/20/19 01:19 PM	92869
1909142-07A	MW3-1	09/17/19 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-1	09/17/19 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-1	09/17/19 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-1	09/17/19 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-1	09/17/19 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW3-1	09/17/19 04:05 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909142-07B	MW3-1	09/17/19 04:05 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW3-1	09/17/19 04:05 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909142-07C	MW3-1	09/17/19 04:05 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909142-07D	MW3-1	09/17/19 04:05 PM	Aqueous	M2320 B	Alkalinity Preparation	09/20/19 08:52 AM	92863
	MW3-1	09/17/19 04:05 PM	Aqueous	E300	Anion Preparation	09/18/19 10:22 AM	92819
	MW3-1	09/17/19 04:05 PM	Aqueous	E300	Anion Preparation	09/23/19 11:06 AM	92893
	MW3-1	09/17/19 04:05 PM	Aqueous	E300	Anion Preparation	09/23/19 11:06 AM	92893
	MW3-1	09/17/19 04:05 PM	Aqueous	M2540C	TDS Preparation	09/20/19 01:19 PM	92869
1909142-08A	MW-101	09/17/19 04:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW-101	09/17/19 04:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW-101	09/17/19 04:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW-101	09/17/19 04:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW-101	09/17/19 04:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/19 09:57 AM	92841
	MW-101	09/17/19 04:15 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909142-08B	MW-101	09/17/19 04:15 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW-101	09/17/19 04:15 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909142-08C	MW-101	09/17/19 04:15 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909142-08D	MW-101	09/17/19 04:15 PM	Aqueous	M2320 B	Alkalinity Preparation	09/20/19 08:52 AM	92863
	MW-101	09/17/19 04:15 PM	Aqueous	E300	Anion Preparation	09/18/19 10:22 AM	92819
	MW-101	09/17/19 04:15 PM	Aqueous	E300	Anion Preparation	09/23/19 11:06 AM	92893
	MW-101	09/17/19 04:15 PM	Aqueous	E300	Anion Preparation	09/23/19 11:06 AM	92893

Lab Order: 1909142
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909142-08D	MW-101	09/17/19 04:15 PM	Aqueous	M2540C	TDS Preparation	09/20/19 01:19 PM	92869

Lab Order: 1909142
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909142-01A	MW4-7A	Aqueous	SW7470A	Mercury Total: Aqueous	92880	5	09/25/19 12:49 PM	CETAC2_HG_190925C
	MW4-7A	Aqueous	SW7470A	Mercury Total: Aqueous	92880	1	09/25/19 11:42 AM	CETAC2_HG_190925C
	MW4-7A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/26/19 02:02 PM	ICP-MS4_190926B
	MW4-7A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	500	09/20/19 03:36 PM	ICP-MS5_190920A
	MW4-7A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	10	09/20/19 05:13 PM	ICP-MS5_190920A
	MW4-7A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/20/19 06:25 PM	ICP-MS5_190920A
	MW4-7A	Aqueous	SW6020A	Uranium in Water by ICPMS	92841	1	09/26/19 02:02 PM	ICP-MS4_190926C
1909142-01B	MW4-7A	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 09:56 AM	CETAC2_HG_190930A
	MW4-7A	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 12:22 PM	ICP-MS4_190923A
1909142-01C	MW4-7A	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909142-01D	MW4-7A	Aqueous	M2320 B	Alkalinity	92863	1	09/20/19 10:42 AM	TITRATOR_190920B
	MW4-7A	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 11:51 AM	IC4_190919A
	MW4-7A	Aqueous	E300	Anions by IC method - Water	92819	10	09/18/19 02:01 PM	IC2_190918A
	MW4-7A	Aqueous	E300	Anions by IC method - Water	92851	1000	09/20/19 10:15 AM	IC4_190919A
	MW4-7A	Aqueous	M2540C	Total Dissolved Solids	92852	1	09/19/19 03:30 PM	WC_190919B
1909142-02A	MW4-7B	Aqueous	SW7470A	Mercury Total: Aqueous	92880	1	09/25/19 11:53 AM	CETAC2_HG_190925C
	MW4-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/26/19 02:08 PM	ICP-MS4_190926B
	MW4-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1000	09/20/19 03:38 PM	ICP-MS5_190920A
	MW4-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	10	09/20/19 05:16 PM	ICP-MS5_190920A
	MW4-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/20/19 06:28 PM	ICP-MS5_190920A
	MW4-7B	Aqueous	SW6020A	Uranium in Water by ICPMS	92841	1	09/26/19 02:08 PM	ICP-MS4_190926C
1909142-02B	MW4-7B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 09:59 AM	CETAC2_HG_190930A
	MW4-7B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 12:24 PM	ICP-MS4_190923A
1909142-02C	MW4-7B	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909142-02D	MW4-7B	Aqueous	M2320 B	Alkalinity	92863	1	09/20/19 11:23 AM	TITRATOR_190920B
	MW4-7B	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 12:07 PM	IC4_190919A

Lab Order: 1909142
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909142-02D	MW4-7B	Aqueous	E300	Anions by IC method - Water	92819	10	09/18/19 02:17 PM	IC2_190918A
	MW4-7B	Aqueous	E300	Anions by IC method - Water	92851	1000	09/20/19 10:31 AM	IC4_190919A
	MW4-7B	Aqueous	M2540C	Total Dissolved Solids	92852	1	09/19/19 03:30 PM	WC_190919B
1909142-03A	MW4-2	Aqueous	SW7470A	Mercury Total: Aqueous	92880	1	09/25/19 11:56 AM	CETAC2_HG_190925C
	MW4-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/26/19 02:14 PM	ICP-MS4_190926B
	MW4-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	500	09/20/19 03:41 PM	ICP-MS5_190920A
	MW4-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	10	09/20/19 05:18 PM	ICP-MS5_190920A
	MW4-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/20/19 06:30 PM	ICP-MS5_190920A
	MW4-2	Aqueous	SW6020A	Uranium in Water by ICPMS	92841	1	09/26/19 02:14 PM	ICP-MS4_190926C
1909142-03B	MW4-2	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:01 AM	CETAC2_HG_190930A
	MW4-2	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 12:26 PM	ICP-MS4_190923A
1909142-03C	MW4-2	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909142-03D	MW4-2	Aqueous	M2320 B	Alkalinity	92863	1	09/20/19 11:41 AM	TITRATOR_190920B
	MW4-2	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 12:23 PM	IC4_190919A
	MW4-2	Aqueous	E300	Anions by IC method - Water	92819	10	09/18/19 02:33 PM	IC2_190918A
	MW4-2	Aqueous	E300	Anions by IC method - Water	92851	1000	09/20/19 10:47 AM	IC4_190919A
	MW4-2	Aqueous	M2540C	Total Dissolved Solids	92852	1	09/19/19 03:30 PM	WC_190919B
1909142-04A	MW4-2A	Aqueous	SW7470A	Mercury Total: Aqueous	92880	1	09/25/19 11:58 AM	CETAC2_HG_190925C
	MW4-2A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/26/19 02:20 PM	ICP-MS4_190926B
	MW4-2A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	500	09/20/19 03:43 PM	ICP-MS5_190920A
	MW4-2A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	10	09/20/19 05:20 PM	ICP-MS5_190920A
	MW4-2A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/20/19 06:32 PM	ICP-MS5_190920A
	MW4-2A	Aqueous	SW6020A	Uranium in Water by ICPMS	92841	1	09/26/19 02:20 PM	ICP-MS4_190926C
1909142-04B	MW4-2A	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:03 AM	CETAC2_HG_190930A
	MW4-2A	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 12:28 PM	ICP-MS4_190923A
1909142-04C	MW4-2A	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A

Lab Order: 1909142
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909142-04D	MW4-2A	Aqueous	M2320 B	Alkalinity	92863	1	09/20/19 12:03 PM	TITRATOR_190920B
	MW4-2A	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 12:39 PM	IC4_190919A
	MW4-2A	Aqueous	E300	Anions by IC method - Water	92819	10	09/18/19 02:49 PM	IC2_190918A
	MW4-2A	Aqueous	E300	Anions by IC method - Water	92851	1000	09/20/19 11:03 AM	IC4_190919A
	MW4-2A	Aqueous	M2540C	Total Dissolved Solids	92869	1	09/20/19 04:30 PM	WC_190920E
1909142-05A	MW3-7B	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:23 PM	CETAC2_HG_190925C
	MW3-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/26/19 02:26 PM	ICP-MS4_190926B
	MW3-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1000	09/20/19 03:45 PM	ICP-MS5_190920A
	MW3-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	10	09/20/19 05:22 PM	ICP-MS5_190920A
	MW3-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/20/19 06:34 PM	ICP-MS5_190920A
	MW3-7B	Aqueous	SW6020A	Uranium in Water by ICPMS	92841	1	09/26/19 02:26 PM	ICP-MS4_190926C
1909142-05B	MW3-7B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:05 AM	CETAC2_HG_190930A
	MW3-7B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 12:30 PM	ICP-MS4_190923A
1909142-05C	MW3-7B	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909142-05D	MW3-7B	Aqueous	M2320 B	Alkalinity	92863	1	09/20/19 12:13 PM	TITRATOR_190920B
	MW3-7B	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 02:15 PM	IC4_190919A
	MW3-7B	Aqueous	E300	Anions by IC method - Water	92819	10	09/18/19 11:08 PM	IC2_190918A
	MW3-7B	Aqueous	E300	Anions by IC method - Water	92851	1000	09/20/19 11:19 AM	IC4_190919A
	MW3-7B	Aqueous	M2540C	Total Dissolved Solids	92869	1	09/20/19 04:30 PM	WC_190920E
1909142-06A	MW3-7	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:25 PM	CETAC2_HG_190925C
	MW3-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/26/19 02:32 PM	ICP-MS4_190926B
	MW3-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1000	09/20/19 03:47 PM	ICP-MS5_190920A
	MW3-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	10	09/20/19 05:25 PM	ICP-MS5_190920A
	MW3-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/20/19 06:36 PM	ICP-MS5_190920A
	MW3-7	Aqueous	SW6020A	Uranium in Water by ICPMS	92841	1	09/26/19 02:32 PM	ICP-MS4_190926C
1909142-06B	MW3-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:08 AM	CETAC2_HG_190930A

Lab Order: 1909142
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909142-06B	MW3-7	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 12:32 PM	ICP-MS4_190923A
1909142-06C	MW3-7	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909142-06D	MW3-7	Aqueous	M2320 B	Alkalinity	92863	1	09/20/19 12:33 PM	TITRATOR_190920B
	MW3-7	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 02:31 PM	IC4_190919A
	MW3-7	Aqueous	E300	Anions by IC method - Water	92819	10	09/18/19 11:24 PM	IC2_190918A
	MW3-7	Aqueous	E300	Anions by IC method - Water	92851	1000	09/20/19 11:35 AM	IC4_190919A
	MW3-7	Aqueous	M2540C	Total Dissolved Solids	92869	1	09/20/19 04:30 PM	WC_190920E
1909142-07A	MW3-1	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:27 PM	CETAC2_HG_190925C
	MW3-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/26/19 02:38 PM	ICP-MS4_190926B
	MW3-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	500	09/20/19 03:50 PM	ICP-MS5_190920A
	MW3-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	5	09/20/19 05:47 PM	ICP-MS5_190920A
	MW3-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/20/19 06:39 PM	ICP-MS5_190920A
	MW3-1	Aqueous	SW6020A	Uranium in Water by ICPMS	92841	1	09/26/19 02:38 PM	ICP-MS4_190926C
1909142-07B	MW3-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:10 AM	CETAC2_HG_190930A
	MW3-1	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 12:34 PM	ICP-MS4_190923A
1909142-07C	MW3-1	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909142-07D	MW3-1	Aqueous	M2320 B	Alkalinity	92863	1	09/20/19 12:50 PM	TITRATOR_190920B
	MW3-1	Aqueous	E300	Anions by IC method - Water	92893	100	09/23/19 06:57 PM	IC2_190923A
	MW3-1	Aqueous	E300	Anions by IC method - Water	92819	10	09/18/19 11:40 PM	IC2_190918A
	MW3-1	Aqueous	E300	Anions by IC method - Water	92893	1000	09/23/19 06:25 PM	IC2_190923A
	MW3-1	Aqueous	M2540C	Total Dissolved Solids	92869	1	09/20/19 04:30 PM	WC_190920E
1909142-08A	MW-101	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:29 PM	CETAC2_HG_190925C
	MW-101	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/26/19 02:44 PM	ICP-MS4_190926B
	MW-101	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	500	09/20/19 03:52 PM	ICP-MS5_190920A
	MW-101	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	10	09/20/19 05:49 PM	ICP-MS5_190920A
	MW-101	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92841	1	09/20/19 06:41 PM	ICP-MS5_190920A

Lab Order: 1909142
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909142-08A	MW-101	Aqueous	SW6020A	Uranium in Water by ICPMS	92841	1	09/26/19 02:44 PM	ICP-MS4_190926C
1909142-08B	MW-101	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:12 AM	CETAC2_HG_190930A
	MW-101	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 12:36 PM	ICP-MS4_190923A
1909142-08C	MW-101	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909142-08D	MW-101	Aqueous	M2320 B	Alkalinity	92863	1	09/20/19 01:07 PM	TITRATOR_190920B
	MW-101	Aqueous	E300	Anions by IC method - Water	92819	10	09/18/19 11:56 PM	IC2_190918A
	MW-101	Aqueous	E300	Anions by IC method - Water	92893	1000	09/23/19 06:41 PM	IC2_190923A
	MW-101	Aqueous	E300	Anions by IC method - Water	92893	100	09/23/19 07:13 PM	IC2_190923A
	MW-101	Aqueous	M2540C	Total Dissolved Solids	92869	1	09/20/19 04:30 PM	WC_190920E

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7A
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-01
Project No:	19125525	**Collection Date:**	09/17/19 01:20 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0353	0.0100	0.0300		mg/L	1	09/23/19 12:22 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 12:22 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:22 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:22 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 12:22 PM
Dissolved Nickel	0.00337	0.00300	0.0100	J	mg/L	1	09/23/19 12:22 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 12:22 PM
Dissolved Vanadium	0.00272	0.000500	0.00100		mg/L	1	09/23/19 12:22 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.397	0.0100	0.0300		mg/L	1	09/20/19 06:25 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/20/19 06:25 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/20/19 06:25 PM
Calcium	481	50.0	150		mg/L	500	09/20/19 03:36 PM
Chromium	0.00309	0.00200	0.00500	J	mg/L	1	09/26/19 02:02 PM
Lead	0.000411	0.000300	0.00100	J	mg/L	1	09/20/19 06:25 PM
Magnesium	843	50.0	150		mg/L	500	09/20/19 03:36 PM
Nickel	0.00378	0.00300	0.0100	J	mg/L	1	09/20/19 06:25 PM
Potassium	65.1	1.00	3.00		mg/L	10	09/20/19 05:13 PM
Sodium	8170	50.0	150		mg/L	500	09/20/19 03:36 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/20/19 06:25 PM
Vanadium	0.00330	0.000500	0.00100		mg/L	1	09/20/19 06:25 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 09:56 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 11:42 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.101	0.00300	0.0100	N	mg/L	1	09/26/19 02:02 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.105	0.00300	0.0100	N	mg/L	1	09/23/19 12:22 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	15000	300	1000		mg/L	1000	09/20/19 10:15 AM
Fluoride	1.50	1.00	4.00	J	mg/L	10	09/18/19 02:01 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/18/19 02:01 PM
Sulfate	2260	100	300		mg/L	100	09/20/19 11:51 AM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7A
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-01
Project No:	19125525	**Collection Date:**	09/17/19 01:20 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	330	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 10:42 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 10:42 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 10:42 AM
Alkalinity, Total (As CaCO3)	330	20.0	20.0		mg/L @ pH 4.54	1	09/20/19 10:42 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	28300	1000	1000		mg/L	1	09/19/19 03:30 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-02
Project No:	19125525	**Collection Date:**	09/17/19 02:15 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0109	0.0100	0.0300	J	mg/L	1	09/23/19 12:24 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 12:24 PM
Dissolved Arsenic	0.00252	0.00200	0.00500	J	mg/L	1	09/23/19 12:24 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:24 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 12:24 PM
Dissolved Nickel	0.00527	0.00300	0.0100	J	mg/L	1	09/23/19 12:24 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 12:24 PM
Dissolved Vanadium	0.00441	0.000500	0.00100		mg/L	1	09/23/19 12:24 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0323	0.0100	0.0300		mg/L	1	09/20/19 06:28 PM
Antimony	0.000838	0.000800	0.00250	J	mg/L	1	09/20/19 06:28 PM
Arsenic	0.00224	0.00200	0.00500	J	mg/L	1	09/20/19 06:28 PM
Calcium	1250	100	300		mg/L	1000	09/20/19 03:38 PM
Chromium	0.00205	0.00200	0.00500	J	mg/L	1	09/26/19 02:08 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/20/19 06:28 PM
Magnesium	1840	100	300		mg/L	1000	09/20/19 03:38 PM
Nickel	0.00610	0.00300	0.0100	J	mg/L	1	09/20/19 06:28 PM
Potassium	106	1.00	3.00		mg/L	10	09/20/19 05:16 PM
Sodium	12700	100	300		mg/L	1000	09/20/19 03:38 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/20/19 06:28 PM
Vanadium	0.00443	0.000500	0.00100		mg/L	1	09/20/19 06:28 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 09:59 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 11:53 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0618	0.00300	0.0100	N	mg/L	1	09/26/19 02:08 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0615	0.00300	0.0100	N	mg/L	1	09/23/19 12:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	24800	300	1000		mg/L	1000	09/20/19 10:31 AM
Fluoride	1.41	1.00	4.00	J	mg/L	10	09/18/19 02:17 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/18/19 02:17 PM
Sulfate	4130	100	300		mg/L	100	09/20/19 12:07 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-02
Project No:	19125525	**Collection Date:**	09/17/19 02:15 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	250	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 11:23 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 11:23 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 11:23 AM
Alkalinity, Total (As CaCO3)	250	20.0	20.0		mg/L @ pH 4.54	1	09/20/19 11:23 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	46200	1000	1000		mg/L	1	09/19/19 03:30 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-03
Project No:	19125525	**Collection Date:**	09/17/19 03:15 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	09/23/19 12:26 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 12:26 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:26 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:26 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 12:26 PM
Dissolved Nickel	0.00496	0.00300	0.0100	J	mg/L	1	09/23/19 12:26 PM
Dissolved Thallium	0.000743	0.000500	0.00150	J	mg/L	1	09/23/19 12:26 PM
Dissolved Vanadium	0.00410	0.000500	0.00100		mg/L	1	09/23/19 12:26 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0205	0.0100	0.0300	J	mg/L	1	09/20/19 06:30 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/20/19 06:30 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/20/19 06:30 PM
Calcium	1160	50.0	150		mg/L	500	09/20/19 03:41 PM
Chromium	0.00220	0.00200	0.00500	J	mg/L	1	09/26/19 02:14 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/20/19 06:30 PM
Magnesium	1670	50.0	150		mg/L	500	09/20/19 03:41 PM
Nickel	0.00628	0.00300	0.0100	J	mg/L	1	09/20/19 06:30 PM
Potassium	86.1	1.00	3.00		mg/L	10	09/20/19 05:18 PM
Sodium	11700	50.0	150		mg/L	500	09/20/19 03:41 PM
Thallium	0.000712	0.000500	0.00150	J	mg/L	1	09/20/19 06:30 PM
Vanadium	0.00395	0.000500	0.00100		mg/L	1	09/20/19 06:30 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:01 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 11:56 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.112	0.00300	0.0100	N	mg/L	1	09/26/19 02:14 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.111	0.00300	0.0100	N	mg/L	1	09/23/19 12:26 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	23000	300	1000		mg/L	1000	09/20/19 10:47 AM
Fluoride	1.20	1.00	4.00	J	mg/L	10	09/18/19 02:33 PM
Nitrate-N	2.10	1.00	5.00	J	mg/L	10	09/18/19 02:33 PM
Sulfate	5100	100	300		mg/L	100	09/20/19 12:23 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-03
Project No:	19125525	**Collection Date:**	09/17/19 03:15 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	230	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 11:41 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 11:41 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 11:41 AM
Alkalinity, Total (As CaCO3)	230	20.0	20.0		mg/L @ pH 4.54	1	09/20/19 11:41 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	1.10	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	45200	1000	1000		mg/L	1	09/19/19 03:30 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2A
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-04
Project No:	19125525	**Collection Date:**	09/17/19 03:48 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0178	0.0100	0.0300	J	mg/L	1	09/23/19 12:28 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 12:28 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:28 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:28 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 12:28 PM
Dissolved Nickel	0.00889	0.00300	0.0100	J	mg/L	1	09/23/19 12:28 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 12:28 PM
Dissolved Vanadium	0.00900	0.000500	0.00100		mg/L	1	09/23/19 12:28 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.137	0.0100	0.0300		mg/L	1	09/20/19 06:32 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/20/19 06:32 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/20/19 06:32 PM
Calcium	1060	50.0	150		mg/L	500	09/20/19 03:43 PM
Chromium	0.00879	0.00200	0.00500		mg/L	1	09/26/19 02:20 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/20/19 06:32 PM
Magnesium	1100	50.0	150		mg/L	500	09/20/19 03:43 PM
Nickel	0.0115	0.00300	0.0100		mg/L	1	09/20/19 06:32 PM
Potassium	56.4	1.00	3.00		mg/L	10	09/20/19 05:20 PM
Sodium	7890	50.0	150		mg/L	500	09/20/19 03:43 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/20/19 06:32 PM
Vanadium	0.00910	0.000500	0.00100		mg/L	1	09/20/19 06:32 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:03 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 11:58 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0962	0.00300	0.0100	N	mg/L	1	09/26/19 02:20 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0927	0.00300	0.0100	N	mg/L	1	09/23/19 12:28 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	15900	300	1000		mg/L	1000	09/20/19 11:03 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/18/19 02:49 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/18/19 02:49 PM
Sulfate	3950	100	300		mg/L	100	09/20/19 12:39 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2A
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-04
Project No:	19125525	**Collection Date:**	09/17/19 03:48 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	292	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 12:03 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 12:03 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 12:03 PM
Alkalinity, Total (As CaCO3)	292	20.0	20.0		mg/L @ pH 4.54	1	09/20/19 12:03 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.953	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	30900	1000	1000		mg/L	1	09/20/19 04:30 PM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-05
Project No:	19125525	**Collection Date:**	09/17/19 02:30 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0111	0.0100	0.0300	J	mg/L	1	09/23/19 12:30 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 12:30 PM
Dissolved Arsenic	0.00757	0.00200	0.00500		mg/L	1	09/23/19 12:30 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:30 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 12:30 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/23/19 12:30 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 12:30 PM
Dissolved Vanadium	0.000934	0.000500	0.00100	J	mg/L	1	09/23/19 12:30 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0255	0.0100	0.0300	J	mg/L	1	09/20/19 06:34 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/20/19 06:34 PM
Arsenic	0.00652	0.00200	0.00500		mg/L	1	09/20/19 06:34 PM
Calcium	1080	100	300		mg/L	1000	09/20/19 03:45 PM
Chromium	0.00238	0.00200	0.00500	J	mg/L	1	09/26/19 02:26 PM
Lead	0.000357	0.000300	0.00100	J	mg/L	1	09/20/19 06:34 PM
Magnesium	1460	100	300		mg/L	1000	09/20/19 03:45 PM
Nickel	0.00850	0.00300	0.0100	J	mg/L	1	09/20/19 06:34 PM
Potassium	79.2	1.00	3.00		mg/L	10	09/20/19 05:22 PM
Sodium	11500	100	300		mg/L	1000	09/20/19 03:45 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/20/19 06:34 PM
Vanadium	0.000647	0.000500	0.00100	J	mg/L	1	09/20/19 06:34 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:05 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:23 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0592	0.00300	0.0100	N	mg/L	1	09/26/19 02:26 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0568	0.00300	0.0100	N	mg/L	1	09/23/19 12:30 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21300	300	1000		mg/L	1000	09/20/19 11:19 AM
Fluoride	1.32	1.00	4.00	J	mg/L	10	09/18/19 11:08 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/18/19 11:08 PM
Sulfate	4140	100	300		mg/L	100	09/20/19 02:15 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-05
Project No:	19125525	**Collection Date:**	09/17/19 02:30 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	134	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 12:13 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 12:13 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 12:13 PM
Alkalinity, Total (As CaCO3)	134	20.0	20.0		mg/L @ pH 4.54	1	09/20/19 12:13 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.700	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	41700	1000	1000		mg/L	1	09/20/19 04:30 PM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-06
Project No:	19125525	**Collection Date:**	09/17/19 03:15 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	09/23/19 12:32 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 12:32 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:32 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:32 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 12:32 PM
Dissolved Nickel	0.00308	0.00300	0.0100	J	mg/L	1	09/23/19 12:32 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 12:32 PM
Dissolved Vanadium	0.00421	0.000500	0.00100		mg/L	1	09/23/19 12:32 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0163	0.0100	0.0300	J	mg/L	1	09/20/19 06:36 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/20/19 06:36 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/20/19 06:36 PM
Calcium	1040	100	300		mg/L	1000	09/20/19 03:47 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/26/19 02:32 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/20/19 06:36 PM
Magnesium	1500	100	300		mg/L	1000	09/20/19 03:47 PM
Nickel	0.00306	0.00300	0.0100	J	mg/L	1	09/20/19 06:36 PM
Potassium	54.1	1.00	3.00		mg/L	10	09/20/19 05:25 PM
Sodium	11900	100	300		mg/L	1000	09/20/19 03:47 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/20/19 06:36 PM
Vanadium	0.00372	0.000500	0.00100		mg/L	1	09/20/19 06:36 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:08 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:25 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.132	0.00300	0.0100	N	mg/L	1	09/26/19 02:32 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.128	0.00300	0.0100	N	mg/L	1	09/23/19 12:32 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21900	300	1000		mg/L	1000	09/20/19 11:35 AM
Fluoride	4.26	1.00	4.00		mg/L	10	09/18/19 11:24 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/18/19 11:24 PM
Sulfate	5510	100	300		mg/L	100	09/20/19 02:31 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-06
Project No:	19125525	**Collection Date:**	09/17/19 03:15 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	263	10.0	20.0		mg/L @ pH 4.53	1	09/20/19 12:33 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/20/19 12:33 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/20/19 12:33 PM
Alkalinity, Total (As CaCO3)	263	20.0	20.0		mg/L @ pH 4.53	1	09/20/19 12:33 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.240	0.100	0.250	J	mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	42900	1000	1000		mg/L	1	09/20/19 04:30 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-1
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-07
Project No:	19125525	**Collection Date:**	09/17/19 04:05 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	09/23/19 12:34 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 12:34 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:34 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:34 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 12:34 PM
Dissolved Nickel	0.00584	0.00300	0.0100	J	mg/L	1	09/23/19 12:34 PM
Dissolved Thallium	0.000538	0.000500	0.00150	J	mg/L	1	09/23/19 12:34 PM
Dissolved Vanadium	0.00164	0.000500	0.00100		mg/L	1	09/23/19 12:34 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0124	0.0100	0.0300	J	mg/L	1	09/20/19 06:39 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/20/19 06:39 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/20/19 06:39 PM
Calcium	1020	50.0	150		mg/L	500	09/20/19 03:50 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/26/19 02:38 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/20/19 06:39 PM
Magnesium	1280	50.0	150		mg/L	500	09/20/19 03:50 PM
Nickel	0.00627	0.00300	0.0100	J	mg/L	1	09/20/19 06:39 PM
Potassium	40.9	0.500	1.50		mg/L	5	09/20/19 05:47 PM
Sodium	9790	50.0	150		mg/L	500	09/20/19 03:50 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/20/19 06:39 PM
Vanadium	0.00115	0.000500	0.00100		mg/L	1	09/20/19 06:39 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:10 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:27 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.115	0.00300	0.0100	N	mg/L	1	09/26/19 02:38 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.114	0.00300	0.0100	N	mg/L	1	09/23/19 12:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	19900	300	1000		mg/L	1000	09/23/19 06:25 PM
Fluoride	3.97	1.00	4.00	J	mg/L	10	09/18/19 11:40 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/18/19 11:40 PM
Sulfate	4620	100	300		mg/L	100	09/23/19 06:57 PM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-1
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-07
Project No:	19125525	**Collection Date:**	09/17/19 04:05 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	223	10.0	20.0		mg/L @ pH 4.53	1	09/20/19 12:50 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/20/19 12:50 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/20/19 12:50 PM
Alkalinity, Total (As CaCO3)	223	20.0	20.0		mg/L @ pH 4.53	1	09/20/19 12:50 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	43300	1000	1000		mg/L	1	09/20/19 04:30 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-101
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-08
Project No:	19125525	**Collection Date:**	09/17/19 04:15 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	09/23/19 12:36 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 12:36 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:36 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:36 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 12:36 PM
Dissolved Nickel	0.00650	0.00300	0.0100	J	mg/L	1	09/23/19 12:36 PM
Dissolved Thallium	0.000525	0.000500	0.00150	J	mg/L	1	09/23/19 12:36 PM
Dissolved Vanadium	0.00167	0.000500	0.00100		mg/L	1	09/23/19 12:36 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0115	0.0100	0.0300	J	mg/L	1	09/20/19 06:41 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/20/19 06:41 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/20/19 06:41 PM
Calcium	1020	50.0	150		mg/L	500	09/20/19 03:52 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/26/19 02:44 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/20/19 06:41 PM
Magnesium	1280	50.0	150		mg/L	500	09/20/19 03:52 PM
Nickel	0.00615	0.00300	0.0100	J	mg/L	1	09/20/19 06:41 PM
Potassium	41.9	1.00	3.00		mg/L	10	09/20/19 05:49 PM
Sodium	9810	50.0	150		mg/L	500	09/20/19 03:52 PM
Thallium	0.000517	0.000500	0.00150	J	mg/L	1	09/20/19 06:41 PM
Vanadium	0.00122	0.000500	0.00100		mg/L	1	09/20/19 06:41 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:12 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:29 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.116	0.00300	0.0100	N	mg/L	1	09/26/19 02:44 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.112	0.00300	0.0100	N	mg/L	1	09/23/19 12:36 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	20000	300	1000		mg/L	1000	09/23/19 06:41 PM
Fluoride	1.53	1.00	4.00	J	mg/L	10	09/18/19 11:56 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/18/19 11:56 PM
Sulfate	4660	100	300		mg/L	100	09/23/19 07:13 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-101
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909142-08
Project No:	19125525	**Collection Date:**	09/17/19 04:15 PM
Lab Order:	1909142	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	226	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 01:07 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 01:07 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/20/19 01:07 PM
Alkalinity, Total (As CaCO3)	226	20.0	20.0		mg/L @ pH 4.54	1	09/20/19 01:07 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	36600	1000	1000		mg/L	1	09/20/19 04:30 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190916A

Sample ID: **DCS-92776** Batch ID: **92776** TestNo: **SW7470A** Units: **mg/L**
SampType: **DCS** Run ID: **CETAC2_HG_190916A** Analysis Date: **9/16/2019 12:35:58 PM** Prep Date: **9/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000183	0.000200	0.000200	0	91.5	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190925C

The QC data in batch 92880 applies to the following samples: 1909142-01A, 1909142-02A, 1909142-03A, 1909142-04A

Sample ID: **MB-92880**	Batch ID: **92880**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **MBLK**	Run ID: **CETAC2_HG_190925C**			Analysis Date: **9/25/2019 11:35:43 AM**				Prep Date: **9/23/2019**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	<0.0000800	0.000200									

Sample ID: **LCS-92880**	Batch ID: **92880**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **LCS**	Run ID: **CETAC2_HG_190925C**			Analysis Date: **9/25/2019 11:37:59 AM**				Prep Date: **9/23/2019**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	0.00207	0.000200	0.00200	0	104	85	115				

Sample ID: **LCSD-92880**	Batch ID: **92880**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **LCSD**	Run ID: **CETAC2_HG_190925C**			Analysis Date: **9/25/2019 11:40:15 AM**				Prep Date: **9/23/2019**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	0.00209	0.000200	0.00200	0	104	85	115	0.962	15		

Sample ID: **1909142-01A SD**	Batch ID: **92880**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **SD**	Run ID: **CETAC2_HG_190925C**			Analysis Date: **9/25/2019 11:49:19 AM**				Prep Date: **9/23/2019**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.000400	0.00100	0	0				0	10		

Sample ID: **1909142-01A PDS**	Batch ID: **92880**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **PDS**	Run ID: **CETAC2_HG_190925C**			Analysis Date: **9/25/2019 11:51:35 AM**				Prep Date: **9/23/2019**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.000730	0.000200	0.00250	0	29.2	85	115			S	

Sample ID: **1909142-01A MS**	Batch ID: **92880**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **MS**	Run ID: **CETAC2_HG_190925C**			Analysis Date: **9/25/2019 12:51:52 PM**				Prep Date: **9/23/2019**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00190	0.00100	0.00200	0	95.2	80	120				

Sample ID: **1909142-01A MSD**	Batch ID: **92880**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **MSD**	Run ID: **CETAC2_HG_190925C**			Analysis Date: **9/25/2019 12:54:09 PM**				Prep Date: **9/23/2019**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00184	0.00100	0.00200	0	92.2	80	120	3.20	15		

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190925C

The QC data in batch 92890 applies to the following samples: 1909142-05A, 1909142-06A, 1909142-07A, 1909142-08A

Sample ID: **MB-92890**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 1:16:14 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-92890**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 1:18:30 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00203	0.000200	0.00200	0	102	85	115			

Sample ID: **LCSD-92890**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 1:20:46 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.000200	0.00200	0	102	85	115	0.491	15	

Sample ID: **1909161-11A SD**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:06:47 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1909161-11A PDS**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:09:03 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00102	0.000200	0.00250	0	40.8	85	115			S

Sample ID: **1909161-11A MS**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:29:35 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00200	0.00100	0.00200	0	99.8	80	120			

Sample ID: **1909161-11A MSD**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:31:52 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.00100	0.00200	0	102	80	120	2.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Sample ID: **ICV-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 9:27:41 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00390	0.000200	0.00400	0	97.5	90	110			

Sample ID: **CCV2-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 10:40:24 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV3-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 12:17:42 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00205	0.000200	0.00200	0	103	90	110			

Sample ID: **CCV4-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 12:45:01 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Sample ID: **CCV5-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 1:43:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV6-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:20:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV7-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:34:10 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00203	0.000200	0.00200	0	102	90	110			

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190930A

The QC data in batch 92988 applies to the following samples: 1909142-01B, 1909142-02B, 1909142-03B, 1909142-04B, 1909142-05B, 1909142-06B, 1909142-07B, 1909142-08B

Sample ID: **MB-92988** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 9:50:01 AM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-92988** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 9:52:17 AM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00206	0.000200	0.00200	0	103	85	115			

Sample ID: **LCSD-92988** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 9:54:33 AM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00208	0.000200	0.00200	0	104	85	115	0.966	15	

Sample ID: **1909161-11B SD** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 10:49:02 AM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1909161-11B PDS** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 10:51:18 AM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000910	0.000200	0.00250	0	36.4	85	115			S

Sample ID: **1909161-11B MS** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 12:03:23 PM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00206	0.00100	0.00200	0	103	80	120			

Sample ID: **1909161-11B MSD** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 12:05:40 PM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.00100	0.00200	0	102	80	120	1.22	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190930A

Sample ID: **ICV-190930**	Batch ID: **R106626**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190930A**	Analysis Date: **9/30/2019 9:45:27 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00391	0.000200	0.00400	0	97.8	90	110			

Sample ID: **CCV1-190930**	Batch ID: **R106626**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190930A**	Analysis Date: **9/30/2019 10:19:30 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Sample ID: **CCV2-190930**	Batch ID: **R106626**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190930A**	Analysis Date: **9/30/2019 10:55:53 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00205	0.000200	0.00200	0	103	90	110			

Sample ID: **CCV3-190930**	Batch ID: **R106626**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190930A**	Analysis Date: **9/30/2019 12:07:58 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

Sample ID: **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:24:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0353	0.0300	0.0300	0	118	70	130	0	0	
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	
Magnesium	0.323	0.300	0.300	0	108	70	130	0	0	
Potassium	0.303	0.300	0.300	0	101	70	130	0	0	

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:27:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00522	0.00500	0.00500	0	104	70	130	0	0	
Chromium	0.00523	0.00500	0.00500	0	105	70	130	0	0	
Nickel	0.00557	0.0100	0.00500	0	111	70	130	0	0	

Sample ID: **DCS1-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:34:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.000904	0.00250	0.00100	0	90.4	70	130	0	0	
Lead	0.000475	0.00100	0.000500	0	95.0	70	130	0	0	
Thallium	0.000471	0.00150	0.000500	0	94.2	70	130	0	0	
Vanadium	0.000464	0.00100	0.000500	0	92.8	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621C

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**		
SampType: **DCS**	Run ID: **ICP-MS4_190621C**	Analysis Date: **6/21/2019 1:27:00 PM**	Prep Date: **6/20/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00462	0.0100	0.00500	0	92.5	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923A

The QC data in batch 92871 applies to the following samples: 1909142-01B, 1909142-02B, 1909142-03B, 1909142-04B, 1909142-05B, 1909142-06B, 1909142-07B, 1909142-08B

Sample ID: **MB-92871** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:10:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-92871** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:12:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0	99.7	80	120			
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Chromium	0.217	0.00500	0.200	0	108	80	120			
Lead	0.202	0.00100	0.200	0	101	80	120			
Nickel	0.208	0.0100	0.200	0	104	80	120			
Thallium	0.206	0.00150	0.200	0	103	80	120			
Vanadium	0.209	0.00100	0.200	0	105	80	120			

Sample ID: **LCSD-92871** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:14:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.96	0.0300	5.00	0	99.1	80	120	0.542	15	
Antimony	0.204	0.00250	0.200	0	102	80	120	0.833	15	
Arsenic	0.202	0.00500	0.200	0	101	80	120	0.769	15	
Chromium	0.214	0.00500	0.200	0	107	80	120	1.47	15	
Lead	0.206	0.00100	0.200	0	103	80	120	2.36	15	
Nickel	0.210	0.0100	0.200	0	105	80	120	0.986	15	
Thallium	0.205	0.00150	0.200	0	103	80	120	0.206	15	
Vanadium	0.206	0.00100	0.200	0	103	80	120	1.36	15	

Sample ID: **1909161-11B SD** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:20:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923A

Sample ID: **1909161-11B SD** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:20:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0169				0	10	
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0.000650				0	10	
Nickel	<0.0150	0.0500	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	0.00299	0.00500	0	0.00192				43.3	10	R

Sample ID: **1909161-11B PDS** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:40:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.65	0.0300	5.00	0.0169	92.7	80	120			
Antimony	0.178	0.00250	0.200	0	88.9	80	120			
Arsenic	0.171	0.00500	0.200	0	85.5	80	120			
Chromium	0.160	0.00500	0.200	0	80.0	80	120			
Lead	0.206	0.00100	0.200	0.000650	103	80	120			
Nickel	0.135	0.0100	0.200	0	67.5	80	120			S
Thallium	0.214	0.00150	0.200	0	107	80	120			
Vanadium	0.172	0.00100	0.200	0.00192	85.0	80	120			

Sample ID: **1909161-11B MS** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:42:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.93	0.0300	5.00	0.0169	98.3	80	120			
Antimony	0.183	0.00250	0.200	0	91.3	80	120			
Arsenic	0.188	0.00500	0.200	0	93.8	80	120			
Chromium	0.160	0.00500	0.200	0	80.0	80	120			
Lead	0.215	0.00100	0.200	0.000650	107	80	120			
Nickel	0.142	0.0100	0.200	0	71.1	80	120			S
Thallium	0.223	0.00150	0.200	0	111	80	120			
Vanadium	0.173	0.00100	0.200	0.00192	85.5	80	120			

Sample ID: **1909161-11B MSD** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:44:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.97	0.0300	5.00	0.0169	99.0	80	120	0.730	15	
Antimony	0.182	0.00250	0.200	0	91.0	80	120	0.280	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923A

Sample ID: **1909161-11B MSD** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:44:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.192	0.00500	0.200	0	96.2	80	120	2.53	15	
Chromium	0.163	0.00500	0.200	0	81.4	80	120	1.79	15	
Lead	0.216	0.00100	0.200	0.000650	108	80	120	0.468	15	
Nickel	0.147	0.0100	0.200	0	73.5	80	120	3.33	15	S
Thallium	0.224	0.00150	0.200	0	112	80	120	0.546	15	
Vanadium	0.175	0.00100	0.200	0.00192	86.6	80	120	1.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923A

Sample ID: **ICV-190923** Batch ID: **R106510** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 11:39:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.44	0.0300	2.50	0	97.5	90	110			
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Chromium	0.109	0.00500	0.100	0	109	90	110			
Lead	0.0995	0.00100	0.100	0	99.5	90	110			
Nickel	0.108	0.0100	0.100	0	108	90	110			
Thallium	0.0995	0.00150	0.100	0	99.5	90	110			
Vanadium	0.104	0.00100	0.100	0	104	90	110			

Sample ID: **LCVL-190923** Batch ID: **R106510** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 11:45:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.101	0.0300	0.100	0	101	70	130			
Antimony	0.00206	0.00250	0.00200	0	103	70	130			
Arsenic	0.00526	0.00500	0.00500	0	105	70	130			
Chromium	0.00537	0.00500	0.00500	0	107	70	130			
Lead	0.000980	0.00100	0.00100	0	98.0	70	130			
Nickel	0.00542	0.0100	0.00500	0	108	70	130			
Thallium	0.000965	0.00150	0.00100	0	96.5	70	130			
Vanadium	0.00110	0.00100	0.00100	0	110	70	130			

Sample ID: **CCV1-190923** Batch ID: **R106510** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 1:21:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.97	0.0300	5.00	0	99.5	90	110			
Antimony	0.196	0.00250	0.200	0	98.2	90	110			
Arsenic	0.195	0.00500	0.200	0	97.5	90	110			
Chromium	0.201	0.00500	0.200	0	100	90	110			
Lead	0.198	0.00100	0.200	0	98.8	90	110			
Nickel	0.189	0.0100	0.200	0	94.3	90	110			
Thallium	0.198	0.00150	0.200	0	99.0	90	110			
Vanadium	0.197	0.00100	0.200	0	98.5	90	110			

Sample ID: **LCVL1-190923** Batch ID: **R106510** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 1:43:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	70	130			
Antimony	0.00205	0.00250	0.00200	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923A

Sample ID: **LCVL1-190923** Batch ID: **R106510** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 1:43:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00512	0.00500	0.00500	0	102	70	130			
Chromium	0.00519	0.00500	0.00500	0	104	70	130			
Lead	0.000928	0.00100	0.00100	0	92.8	70	130			
Nickel	0.00615	0.0100	0.00500	0	123	70	130			
Thallium	0.000931	0.00150	0.00100	0	93.1	70	130			
Vanadium	0.00125	0.00100	0.00100	0	125	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923B

The QC data in batch 92871 applies to the following samples: 1909142-01B, 1909142-02B, 1909142-03B, 1909142-04B, 1909142-05B, 1909142-06B, 1909142-07B, 1909142-08B

Sample ID: **MB-92871**	Batch ID: **92871**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 12:10:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-92871**	Batch ID: **92871**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 12:12:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0	97.4	80	120			N

Sample ID: **LCSD-92871**	Batch ID: **92871**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 12:14:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.191	0.0100	0.200	0	95.7	80	120	1.73	15	N

Sample ID: **1909161-11B SD**	Batch ID: **92871**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 12:20:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.128	0.0500	0	0.132				3.38	20	N

Sample ID: **1909161-11B PDS**	Batch ID: **92871**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 12:40:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.323	0.0100	0.200	0.132	95.6	75	125			N

Sample ID: **1909161-11B MS**	Batch ID: **92871**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 12:42:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.334	0.0100	0.200	0.132	101	75	125			N

Sample ID: **1909161-11B MSD**	Batch ID: **92871**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 12:44:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.335	0.0100	0.200	0.132	101	75	125	0.254	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923B

Sample ID: **ICV-190923**	Batch ID: **R109097**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 11:39:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0951	0.0100	0.100	0	95.1	90	110			N

Sample ID: **LCVL-190923**	Batch ID: **R109097**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 11:45:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00459	0.0100	0.00500	0	91.7	80	120			N

Sample ID: **CCV1-190923**	Batch ID: **R109097**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 1:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.188	0.0100	0.200	0	93.9	90	110			N

Sample ID: **LCVL1-190923**	Batch ID: **R109097**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 1:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00443	0.0100	0.00500	0	88.6	80	120			N

Sample ID: **CCV2-190923**	Batch ID: **R109097**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.184	0.0100	0.200	0	92.2	90	110			N

Sample ID: **LCVL2-190923**	Batch ID: **R109097**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 2:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00440	0.0100	0.00500	0	88.0	80	120			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_190926B**

The QC data in batch 92841 applies to the following samples: 1909142-01A, 1909142-02A, 1909142-03A, 1909142-04A, 1909142-05A, 1909142-06A, 1909142-07A, 1909142-08A

Sample ID: **1909141-02A SD** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190926B** Analysis Date: **9/26/2019 2:00:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<2.50	7.50	0	0				0	10	
Antimony	<0.200	0.625	0	0				0	10	
Arsenic	<0.500	1.25	0	0				0	10	
Calcium	<25.0	75.0	0	18.4				0	10	
Chromium	<0.500	1.25	0	0				0	10	
Lead	<0.0750	0.250	0	0				0	10	
Magnesium	<25.0	75.0	0	0				0	10	
Nickel	<0.750	2.50	0	0				0	10	
Potassium	<25.0	75.0	0	0				0	10	
Thallium	<0.125	0.375	0	0				0	10	
Vanadium	<0.125	0.250	0	0				0	10	

Sample ID: **1909141-02A PDS** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190926B** Analysis Date: **9/26/2019 2:50:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	245	1.50	250	0	98.1	80	120			
Antimony	9.66	0.125	10.0	0	96.6	80	120			
Arsenic	9.82	0.250	10.0	0	98.2	80	120			
Calcium	274	15.0	250	18.4	102	80	120			
Chromium	9.86	0.250	10.0	0	98.6	80	120			
Lead	9.86	0.0500	10.0	0	98.6	80	120			
Magnesium	246	15.0	250	0	98.4	80	120			
Nickel	10.0	0.500	10.0	0	100	80	120			
Potassium	256	15.0	250	0	103	80	120			
Thallium	9.77	0.0750	10.0	0	97.7	80	120			
Vanadium	9.67	0.0500	10.0	0	96.7	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190926B

Sample ID: **ICV-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 11:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.41	0.0300	2.50	0	96.3	90	110			
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Calcium	2.63	0.300	2.50	0	105	90	110			
Chromium	0.106	0.00500	0.100	0	106	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Magnesium	2.54	0.300	2.50	0	101	90	110			
Nickel	0.108	0.0100	0.100	0	108	90	110			
Potassium	2.55	0.300	2.50	0	102	90	110			
Thallium	0.0999	0.00150	0.100	0	99.9	90	110			
Vanadium	0.101	0.00100	0.100	0	101	90	110			

Sample ID: **LCVL-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 12:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	70	130			
Antimony	0.00210	0.00250	0.00200	0	105	70	130			
Arsenic	0.00549	0.00500	0.00500	0	110	70	130			
Calcium	0.108	0.300	0.100	0	108	70	130			
Chromium	0.00510	0.00500	0.00500	0	102	70	130			
Lead	0.000984	0.00100	0.00100	0	98.4	70	130			
Magnesium	0.0983	0.300	0.100	0	98.3	70	130			
Nickel	0.00470	0.0100	0.00500	0	94.0	70	130			
Potassium	0.103	0.300	0.100	0	103	70	130			
Thallium	0.000952	0.00150	0.00100	0	95.2	70	130			
Vanadium	0.00101	0.00100	0.00100	0	101	70	130			

Sample ID: **CCV2-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 1:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.08	0.0300	5.00	0	102	90	110			
Antimony	0.203	0.00250	0.200	0	101	90	110			
Arsenic	0.211	0.00500	0.200	0	105	90	110			
Calcium	5.19	0.300	5.00	0	104	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Lead	0.211	0.00100	0.200	0	105	90	110			
Magnesium	5.10	0.300	5.00	0	102	90	110			
Nickel	0.219	0.0100	0.200	0	109	90	110			
Potassium	5.17	0.300	5.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190926B

Sample ID: **CCV2-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 1:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.207	0.00150	0.200	0	104	90	110			
Vanadium	0.206	0.00100	0.200	0	103	90	110			

Sample ID: **LCVL2-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 1:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	70	130			
Antimony	0.00207	0.00250	0.00200	0	103	70	130			
Arsenic	0.00533	0.00500	0.00500	0	107	70	130			
Calcium	0.115	0.300	0.100	0	115	70	130			
Chromium	0.00522	0.00500	0.00500	0	104	70	130			
Lead	0.000992	0.00100	0.00100	0	99.2	70	130			
Magnesium	0.0968	0.300	0.100	0	96.8	70	130			
Nickel	0.00442	0.0100	0.00500	0	88.4	70	130			
Potassium	0.104	0.300	0.100	0	104	70	130			
Thallium	0.000972	0.00150	0.00100	0	97.2	70	130			
Vanadium	0.00102	0.00100	0.00100	0	102	70	130			

Sample ID: **CCV3-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 3:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.11	0.0300	5.00	0	102	90	110			
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Calcium	5.12	0.300	5.00	0	102	90	110			
Chromium	0.203	0.00500	0.200	0	102	90	110			
Lead	0.201	0.00100	0.200	0	100	90	110			
Magnesium	5.00	0.300	5.00	0	99.9	90	110			
Nickel	0.200	0.0100	0.200	0	100	90	110			
Potassium	5.21	0.300	5.00	0	104	90	110			
Thallium	0.199	0.00150	0.200	0	99.7	90	110			
Vanadium	0.200	0.00100	0.200	0	99.9	90	110			

Sample ID: **LCVL3-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 3:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.100	0.0300	0.100	0	100	70	130			
Antimony	0.00196	0.00250	0.00200	0	98.0	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190926B

Sample ID: **LCVL3-190926** Batch ID: **R106594** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190926B** Analysis Date: **9/26/2019 3:33:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00510	0.00500	0.00500	0	102	70	130			
Calcium	0.0950	0.300	0.100	0	95.0	70	130			
Chromium	0.00503	0.00500	0.00500	0	101	70	130			
Lead	0.000933	0.00100	0.00100	0	93.3	70	130			
Magnesium	0.102	0.300	0.100	0	102	70	130			
Nickel	0.00336	0.0100	0.00500	0	67.3	70	130			S
Potassium	0.115	0.300	0.100	0	115	70	130			
Thallium	0.000915	0.00150	0.00100	0	91.5	70	130			
Vanadium	0.00118	0.00100	0.00100	0	118	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190926C

The QC data in batch 92841 applies to the following samples: 1909142-01A, 1909142-02A, 1909142-03A, 1909142-04A, 1909142-05A, 1909142-06A, 1909142-07A, 1909142-08A

Sample ID: **MB-92841** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190926C** Analysis Date: **9/26/2019 1:46:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-92841** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190926C** Analysis Date: **9/26/2019 1:48:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0	97.3	80	120			N

Sample ID: **LCSD-92841** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190926C** Analysis Date: **9/26/2019 1:50:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	98.1	80	120	0.869	25	N

Sample ID: **1909141-02A SD** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190926C** Analysis Date: **9/26/2019 2:00:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.750	2.50	0	0				0	10	N

Sample ID: **1909141-02A PDS** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190926C** Analysis Date: **9/26/2019 2:50:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	9.47	0.500	10.0	0	94.7	80	120			N

Sample ID: **1909141-02A MS** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_190926C** Analysis Date: **9/26/2019 2:56:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.182	0.500	0.200	0	90.8	80	120			N

Sample ID: **1909141-02A MSD** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190926C** Analysis Date: **9/26/2019 2:58:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.182	0.500	0.200	0	91.2	80	120	0.357	25	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190926C

Sample ID: **ICV-190926**	Batch ID: **R106595**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190926C**	Analysis Date: **9/26/2019 11:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0949	0.0100	0.100	0	94.9	90	110			N

Sample ID: **LCVL-190926**	Batch ID: **R106595**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190926C**	Analysis Date: **9/26/2019 12:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00448	0.0100	0.00500	0	89.5	70	130			N

Sample ID: **CCV2-190926**	Batch ID: **R106595**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190926C**	Analysis Date: **9/26/2019 1:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.199	0.0100	0.200	0	99.5	90	110			N

Sample ID: **LCVL2-190926**	Batch ID: **R106595**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190926C**	Analysis Date: **9/26/2019 1:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00457	0.0100	0.00500	0	91.5	70	130			N

Sample ID: **CCV3-190926**	Batch ID: **R106595**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190926C**	Analysis Date: **9/26/2019 3:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0	96.6	90	110			N

Sample ID: **LCVL3-190926**	Batch ID: **R106595**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190926C**	Analysis Date: **9/26/2019 3:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00437	0.0100	0.00500	0	87.4	70	130			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621A

Sample ID: **DCS1-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:12:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00103	0.00250	0.00100	0	103	70	130	0	0	
Lead	0.000545	0.00100	0.000500	0	109	70	130	0	0	
Thallium	0.000527	0.00150	0.000500	0	105	70	130	0	0	
Vanadium	0.000614	0.00100	0.000500	0	123	70	130	0	0	

Sample ID: **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:14:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0383	0.0300	0.0300	0	128	70	130	0	0	
Calcium	0.305	0.300	0.300	0	102	70	130	0	0	
Magnesium	0.315	0.300	0.300	0	105	70	130	0	0	
Potassium	0.319	0.300	0.300	0	106	70	130	0	0	
Sodium	0.295	0.300	0.300	0	98.4	70	130	0	0	

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:16:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00512	0.00500	0.00500	0	102	70	130	0	0	
Chromium	0.00500	0.00500	0.00500	0	100	70	130	0	0	
Nickel	0.00513	0.0100	0.00500	0	103	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190920A**

The QC data in batch 92841 applies to the following samples: 1909142-01A, 1909142-02A, 1909142-03A, 1909142-04A, 1909142-05A, 1909142-06A, 1909142-07A, 1909142-08A

Sample ID: **MB-92841** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190920A** Analysis Date: **9/20/2019 3:23:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-92841** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190920A** Analysis Date: **9/20/2019 3:25:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.12	0.0300	5.00	0	102	80	120			
Antimony	0.204	0.00250	0.200	0	102	80	120			
Arsenic	0.205	0.00500	0.200	0	103	80	120			
Calcium	4.78	0.300	5.00	0	95.6	80	120			
Chromium	0.193	0.00500	0.200	0	96.3	80	120			
Lead	0.196	0.00100	0.200	0	98.2	80	120			
Magnesium	5.01	0.300	5.00	0	100	80	120			
Nickel	0.205	0.0100	0.200	0	102	80	120			
Potassium	5.09	0.300	5.00	0	102	80	120			
Sodium	4.93	0.300	5.00	0	98.5	80	120			
Thallium	0.197	0.00150	0.200	0	98.6	80	120			
Vanadium	0.194	0.00100	0.200	0	96.9	80	120			

Sample ID: **LCSD-92841** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190920A** Analysis Date: **9/20/2019 3:27:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.06	0.0300	5.00	0	101	80	120	1.13	15	
Antimony	0.204	0.00250	0.200	0	102	80	120	0.305	15	
Arsenic	0.203	0.00500	0.200	0	101	80	120	1.34	15	
Calcium	4.72	0.300	5.00	0	94.4	80	120	1.28	15	
Chromium	0.192	0.00500	0.200	0	96.1	80	120	0.177	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190920A

Sample ID: **LCSD-92841**	Batch ID: **92841**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 3:27:00 PM**	Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.200	0.00100	0.200	0	100	80	120	1.78	15	
Magnesium	4.96	0.300	5.00	0	99.2	80	120	1.09	15	
Nickel	0.204	0.0100	0.200	0	102	80	120	0.288	15	
Potassium	5.01	0.300	5.00	0	100	80	120	1.62	15	
Sodium	4.89	0.300	5.00	0	97.7	80	120	0.803	15	
Thallium	0.200	0.00150	0.200	0	99.8	80	120	1.20	15	
Vanadium	0.193	0.00100	0.200	0	96.5	80	120	0.453	15	

Sample ID: **1909141-02A SD**	Batch ID: **92841**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 3:34:00 PM**	Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	824	150	0	846				2.62	10	

Sample ID: **1909141-02A PDS**	Batch ID: **92841**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 3:56:00 PM**	Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	1390	30.0	500	846	108	80	120			

Sample ID: **1909141-02A MS**	Batch ID: **92841**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 3:58:00 PM**	Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.65	3.00	5.00	0	113	80	120			
Antimony	0.264	0.250	0.200	0	132	80	120			S
Arsenic	0.210	0.500	0.200	0	105	80	120			
Calcium	22.7	30.0	5.00	16.6	121	80	120			S
Chromium	0.200	0.500	0.200	0	100	80	120			
Lead	0.208	0.100	0.200	0	104	80	120			
Magnesium	<10.0	30.0	5.00	0	0	80	120			S
Nickel	<0.300	1.00	0.200	0	0	80	120			S
Potassium	<10.0	30.0	5.00	0	0	80	120			S
Sodium	833	30.0	5.00	846	-252	80	120			S
Thallium	0.213	0.150	0.200	0	106	80	120			
Vanadium	0.197	0.100	0.200	0	98.6	80	120			

Sample ID: **1909141-02A MSD**	Batch ID: **92841**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 4:01:00 PM**	Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190920A

Sample ID: **1909141-02A MSD** Batch ID: **92841** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190920A** Analysis Date: **9/20/2019 4:01:00 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.57	3.00	5.00	0	111	80	120	1.41	15	
Antimony	0.216	0.250	0.200	0	108	80	120	19.9	15	R
Arsenic	0.202	0.500	0.200	0	101	80	120	3.54	15	
Calcium	21.1	30.0	5.00	16.6	90.8	80	120	7.00	15	
Chromium	<0.200	0.500	0.200	0	0	80	120	0	15	S
Lead	0.202	0.100	0.200	0	101	80	120	2.78	15	
Magnesium	<10.0	30.0	5.00	0	0	80	120	0	15	S
Nickel	<0.300	1.00	0.200	0	0	80	120	0	15	S
Potassium	<10.0	30.0	5.00	0	0	80	120	0	15	S
Sodium	844	30.0	5.00	846	-25.1	80	120	1.35	15	S
Thallium	0.202	0.150	0.200	0	101	80	120	5.01	15	
Vanadium	0.191	0.100	0.200	0	95.4	80	120	3.40	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190920A

Sample ID: **ICV-190920** Batch ID: **R106484** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_190920A** Analysis Date: **9/20/2019 3:02:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.48	0.0300	2.50	0	99.4	90	110			
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.0997	0.00500	0.100	0	99.7	90	110			
Calcium	2.42	0.300	2.50	0	96.7	90	110			
Chromium	0.0984	0.00500	0.100	0	98.4	90	110			
Lead	0.0988	0.00100	0.100	0	98.8	90	110			
Magnesium	2.46	0.300	2.50	0	98.5	90	110			
Nickel	0.104	0.0100	0.100	0	104	90	110			
Potassium	2.54	0.300	2.50	0	101	90	110			
Sodium	2.48	0.300	2.50	0	99.3	90	110			
Thallium	0.0989	0.00150	0.100	0	98.9	90	110			
Vanadium	0.0970	0.00100	0.100	0	97.0	90	110			

Sample ID: **LCVL-190920** Batch ID: **R106484** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190920A** Analysis Date: **9/20/2019 3:06:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.105	0.0300	0.100	0	105	70	130			
Antimony	0.00217	0.00250	0.00200	0	108	70	130			
Arsenic	0.00526	0.00500	0.00500	0	105	70	130			
Calcium	0.0967	0.300	0.100	0	96.7	70	130			
Chromium	0.00489	0.00500	0.00500	0	97.8	70	130			
Lead	0.000981	0.00100	0.00100	0	98.1	70	130			
Magnesium	0.0998	0.300	0.100	0	99.8	70	130			
Nickel	0.00533	0.0100	0.00500	0	107	70	130			
Potassium	0.0967	0.300	0.100	0	96.7	70	130			
Sodium	0.0985	0.300	0.100	0	98.5	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			
Vanadium	0.000840	0.00100	0.00100	0	84.0	70	130			

Sample ID: **CCV1-190920** Batch ID: **R106484** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190920A** Analysis Date: **9/20/2019 4:03:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.10	0.0300	5.00	0	102	90	110			
Antimony	0.196	0.00250	0.200	0	97.9	90	110			
Arsenic	0.201	0.00500	0.200	0	100	90	110			
Calcium	4.73	0.300	5.00	0	94.6	90	110			
Chromium	0.189	0.00500	0.200	0	94.4	90	110			
Lead	0.194	0.00100	0.200	0	97.1	90	110			
Magnesium	4.92	0.300	5.00	0	98.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190920A

Sample ID: **CCV1-190920**	Batch ID: **R106484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 4:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.204	0.0100	0.200	0	102	90	110			
Potassium	4.95	0.300	5.00	0	99.0	90	110			
Sodium	4.85	0.300	5.00	0	97.0	90	110			
Thallium	0.194	0.00150	0.200	0	97.0	90	110			
Vanadium	0.189	0.00100	0.200	0	94.5	90	110			

Sample ID: **LCVL1-190920**	Batch ID: **R106484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 4:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.109	0.0300	0.100	0	109	70	130			
Antimony	0.00214	0.00250	0.00200	0	107	70	130			
Arsenic	0.00509	0.00500	0.00500	0	102	70	130			
Calcium	0.0986	0.300	0.100	0	98.6	70	130			
Chromium	0.00483	0.00500	0.00500	0	96.6	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Magnesium	0.102	0.300	0.100	0	102	70	130			
Nickel	0.00528	0.0100	0.00500	0	106	70	130			
Potassium	0.0730	0.300	0.100	0	73.0	70	130			
Sodium	0.0971	0.300	0.100	0	97.1	70	130			
Thallium	0.00107	0.00150	0.00100	0	107	70	130			
Vanadium	0.000872	0.00100	0.00100	0	87.2	70	130			

Sample ID: **CCV2-190920**	Batch ID: **R106484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 4:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	5.01	0.300	5.00	0	100	90	110			

Sample ID: **LCVL2-190920**	Batch ID: **R106484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 4:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.0917	0.300	0.100	0	91.7	70	130			

Sample ID: **CCV3-190920**	Batch ID: **R106484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 5:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	5.00	0.300	5.00	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190920A

Sample ID: **LCVL3-190920**	Batch ID: **R106484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 5:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.0822	0.300	0.100	0	82.2	70	130			

Sample ID: **CCV4-190920**	Batch ID: **R106484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 6:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.23	0.0300	5.00	0	105	90	110			
Antimony	0.199	0.00250	0.200	0	99.6	90	110			
Arsenic	0.204	0.00500	0.200	0	102	90	110			
Lead	0.192	0.00100	0.200	0	96.1	90	110			
Nickel	0.200	0.0100	0.200	0	99.9	90	110			
Potassium	5.08	0.300	5.00	0	102	90	110			
Thallium	0.191	0.00150	0.200	0	95.5	90	110			
Vanadium	0.191	0.00100	0.200	0	95.3	90	110			

Sample ID: **LCVL4-190920**	Batch ID: **R106484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 6:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.112	0.0300	0.100	0	112	70	130			
Antimony	0.00210	0.00250	0.00200	0	105	70	130			
Arsenic	0.00527	0.00500	0.00500	0	105	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Nickel	0.00503	0.0100	0.00500	0	101	70	130			
Potassium	0.0968	0.300	0.100	0	96.8	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			
Vanadium	0.00116	0.00100	0.00100	0	116	70	130			

Sample ID: **CCV5-190920**	Batch ID: **R106484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190920A**	Analysis Date: **9/20/2019 6:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.08	0.0300	5.00	0	102	90	110			
Antimony	0.199	0.00250	0.200	0	99.3	90	110			
Arsenic	0.198	0.00500	0.200	0	99.0	90	110			
Lead	0.190	0.00100	0.200	0	95.0	90	110			
Nickel	0.184	0.0100	0.200	0	92.1	90	110			
Potassium	5.39	0.300	5.00	0	108	90	110			
Thallium	0.190	0.00150	0.200	0	95.2	90	110			
Vanadium	0.180	0.00100	0.200	0	90.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190920A

Sample ID: **LCVL5-190920** Batch ID: **R106484** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190920A** Analysis Date: **9/20/2019 6:59:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.105	0.0300	0.100	0	105	70	130			
Antimony	0.00201	0.00250	0.00200	0	101	70	130			
Arsenic	0.00496	0.00500	0.00500	0	99.2	70	130			
Lead	0.00101	0.00100	0.00100	0	101	70	130			
Nickel	0.00481	0.0100	0.00500	0	96.2	70	130			
Potassium	0.140	0.300	0.100	0	140	70	130			S
Thallium	0.000993	0.00150	0.00100	0	99.3	70	130			
Vanadium	0.00113	0.00100	0.00100	0	113	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190828A

Sample ID: **DCS2-92594** Batch ID: **92594** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_190828A** Analysis Date: **8/28/2019 2:22:32 PM** Prep Date: **8/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.544	1.00	0.5000	0	109	65	135	0	0	
Fluoride	0.255	0.400	0.2000	0	128	65	135	0	0	
Nitrate-N	0.277	0.0500	0.2500	0	111	60	140	0	0	
Sulfate	1.72	3.00	1.500	0	115	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190918A

The QC data in batch 92819 applies to the following samples: 1909142-01D, 1909142-02D, 1909142-03D, 1909142-04D, 1909142-05D, 1909142-06D, 1909142-07D, 1909142-08D

Sample ID: **MB-92819** Batch ID: **92819** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_190918A** Analysis Date: **9/18/2019 11:14:26 AM** Prep Date: **9/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-92819** Batch ID: **92819** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_190918A** Analysis Date: **9/18/2019 11:30:26 AM** Prep Date: **9/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.04	0.400	4.000	0	101	90	110			
Nitrate-N	5.25	0.500	5.000	0	105	90	110			
Sulfate	31.8	3.00	30.00	0	106	90	110			

Sample ID: **LCSD-92819** Batch ID: **92819** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_190918A** Analysis Date: **9/18/2019 11:46:26 AM** Prep Date: **9/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110	0.246	20	
Fluoride	4.06	0.400	4.000	0	101	90	110	0.395	20	
Nitrate-N	5.27	0.500	5.000	0	105	90	110	0.492	20	
Sulfate	31.9	3.00	30.00	0	106	90	110	0.283	20	

Sample ID: **1909128-01BMS** Batch ID: **92819** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_190918A** Analysis Date: **9/18/2019 7:40:44 PM** Prep Date: **9/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2360	100	2000	247.9	105	90	110			
Fluoride	2130	40.0	2000	0	106	90	110			
Nitrate-N	472	50.0	451.6	0	104	90	110			
Sulfate	7030	300	2000	4987	102	90	110			

Sample ID: **1909128-01BMSD** Batch ID: **92819** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_190918A** Analysis Date: **9/18/2019 7:56:44 PM** Prep Date: **9/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2340	100	2000	247.9	105	90	110	0.442	20	
Fluoride	2130	40.0	2000	0	106	90	110	0.015	20	
Nitrate-N	468	50.0	451.6	0	104	90	110	0.820	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190918A

Sample ID: **1909128-01BMSD**	Batch ID: **92819**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_190918A**	Analysis Date: **9/18/2019 7:56:44 PM**	Prep Date: **9/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	7010	300	2000	4987	101	90	110	0.199	20	

Sample ID: **1909128-02BMS**	Batch ID: **92819**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_190918A**	Analysis Date: **9/18/2019 8:28:44 PM**	Prep Date: **9/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	328	10.0	200.0	117.3	105	90	110			
Fluoride	215	4.00	200.0	1.914	107	90	110			
Nitrate-N	52.5	5.00	45.16	5.534	104	90	110			
Sulfate	1900	30.0	200.0	1778	58.7	90	110			S

Sample ID: **1909128-02BMSD**	Batch ID: **92819**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_190918A**	Analysis Date: **9/18/2019 8:44:44 PM**	Prep Date: **9/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	328	10.0	200.0	117.3	105	90	110	0.049	20	
Fluoride	215	4.00	200.0	1.914	107	90	110	0.077	20	
Nitrate-N	52.7	5.00	45.16	5.534	104	90	110	0.332	20	
Sulfate	1900	30.0	200.0	1778	61.0	90	110	0.240	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190918A

Sample ID: **ICV-190918**	Batch ID: **R106437**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190918A**	Analysis Date: **9/18/2019 10:42:26 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.7	1.00	25.00	0	107	90	110			
Fluoride	10.6	0.400	10.00	0	106	90	110			
Nitrate-N	13.5	0.500	12.50	0	108	90	110			
Sulfate	82.4	3.00	75.00	0	110	90	110			

Sample ID: **CCV1-190918**	Batch ID: **R106437**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190918A**	Analysis Date: **9/18/2019 4:57:35 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.7	1.00	10.00	0	107	90	110			
Fluoride	4.17	0.400	4.000	0	104	90	110			
Nitrate-N	5.26	0.500	5.000	0	105	90	110			
Sulfate	32.3	3.00	30.00	0	108	90	110			

Sample ID: **CCV2-190918**	Batch ID: **R106437**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190918A**	Analysis Date: **9/18/2019 10:20:43 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.7	1.00	10.00	0	107	90	110			
Fluoride	4.23	0.400	4.000	0	106	90	110			
Nitrate-N	5.39	0.500	5.000	0	108	90	110			
Sulfate	32.7	3.00	30.00	0	109	90	110			

Sample ID: **CCV3-190918**	Batch ID: **R106437**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190918A**	Analysis Date: **9/19/2019 9:43:33 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.09	0.400	4.000	0	102	90	110			
Nitrate-N	5.32	0.500	5.000	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190923A

The QC data in batch 92893 applies to the following samples: 1909142-07D, 1909142-08D

Sample ID: **MB-92893** Batch ID: **92893** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_190923A** Analysis Date: **9/23/2019 12:19:13 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Sulfate	<1.00	3.00								

Sample ID: **LCS-92893** Batch ID: **92893** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_190923A** Analysis Date: **9/23/2019 12:35:13 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Sulfate	31.8	3.00	30.00	0	106	90	110			

Sample ID: **LCSD-92893** Batch ID: **92893** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_190923A** Analysis Date: **9/23/2019 12:51:13 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110	0.604	20	
Sulfate	31.9	3.00	30.00	0	106	90	110	0.353	20	

Sample ID: **1909163-01AMS** Batch ID: **92893** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_190923A** Analysis Date: **9/23/2019 8:17:27 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	308	10.0	200.0	90.02	109	90	110			
Sulfate	249	30.0	200.0	31.56	109	90	110			

Sample ID: **1909163-01AMSD** Batch ID: **92893** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_190923A** Analysis Date: **9/23/2019 8:33:27 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	304	10.0	200.0	90.02	107	90	110	1.27	20	
Sulfate	246	30.0	200.0	31.56	107	90	110	1.57	20	

Sample ID: **1909163-02AMS** Batch ID: **92893** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_190923A** Analysis Date: **9/23/2019 9:05:27 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	340	10.0	200.0	134.2	103	90	110			
Sulfate	235	30.0	200.0	28.09	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190923A

Sample ID: **1909163-02AMSD** Batch ID: **92893** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_190923A** Analysis Date: **9/23/2019 9:21:27 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	345	10.0	200.0	134.2	105	90	110	1.44	20	
Sulfate	239	30.0	200.0	28.09	105	90	110	1.39	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190923A

Sample ID: **ICV-190923**	Batch ID: **R106519**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190923A**	Analysis Date: **9/23/2019 11:47:13 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	27.3	1.00	25.00	0	109	90	110			
Sulfate	82.5	3.00	75.00	0	110	90	110			

Sample ID: **CCV1-190923**	Batch ID: **R106519**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190923A**	Analysis Date: **9/23/2019 5:53:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Sample ID: **CCV2-190923**	Batch ID: **R106519**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190923A**	Analysis Date: **9/23/2019 10:25:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.7	1.00	10.00	0	107	90	110			
Sulfate	32.4	3.00	30.00	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190904A

Sample ID: **DCS2-92650** Batch ID: **92650** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC4_190904A** Analysis Date: **9/4/2019 11:15:50 AM** Prep Date: **9/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.504	1.00	0.5000	0	101	65	135	0	0	
Sulfate	1.71	3.00	1.500	0	114	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190919A

The QC data in batch 92851 applies to the following samples: 1909142-01D, 1909142-02D, 1909142-03D, 1909142-04D, 1909142-05D, 1909142-06D

Sample ID: **MB-92851** Batch ID: **92851** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_190919A** Analysis Date: **9/19/2019 12:02:02 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Sulfate	<1.00	3.00								

Sample ID: **LCS-92851** Batch ID: **92851** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_190919A** Analysis Date: **9/19/2019 12:18:02 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.68	1.00	10.00	0	96.8	90	110			
Sulfate	29.0	3.00	30.00	0	96.8	90	110			

Sample ID: **LCSD-92851** Batch ID: **92851** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_190919A** Analysis Date: **9/19/2019 12:34:02 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.66	1.00	10.00	0	96.6	90	110	0.137	20	
Sulfate	29.2	3.00	30.00	0	97.3	90	110	0.515	20	

Sample ID: **1909161-11DMS** Batch ID: **92851** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_190919A** Analysis Date: **9/20/2019 1:27:55 AM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	35600	1000	20000	17060	92.8	90	110			
Sulfate	23100	3000	20000	3782	96.7	90	110			

Sample ID: **1909161-11DMSD** Batch ID: **92851** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_190919A** Analysis Date: **9/20/2019 1:43:55 AM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	35500	1000	20000	17060	92.1	90	110	0.416	20	
Sulfate	22800	3000	20000	3782	94.9	90	110	1.60	20	

Sample ID: **1909148-06CMS** Batch ID: **92851** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_190919A** Analysis Date: **9/20/2019 8:23:55 AM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	467	10.0	200.0	288.3	89.4	90	110			S
Sulfate	229	30.0	200.0	36.64	96.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190919A

Sample ID: **1909148-06CMSD** Batch ID: **92851** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_190919A** Analysis Date: **9/20/2019 8:39:55 AM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	465	10.0	200.0	288.3	88.2	90	110	0.538	20	S
Sulfate	225	30.0	200.0	36.64	94.0	90	110	1.89	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190919A

Sample ID: **ICV-190919**	Batch ID: **R106466**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_190919A**	Analysis Date: **9/19/2019 9:36:13 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.6	1.00	25.00	0	98.4	90	110			
Sulfate	74.4	3.00	75.00	0	99.2	90	110			

Sample ID: **CCV1-190919**	Batch ID: **R106466**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919A**	Analysis Date: **9/19/2019 8:39:55 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.76	1.00	10.00	0	97.6	90	110			
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Sample ID: **CCV2-190919**	Batch ID: **R106466**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919A**	Analysis Date: **9/20/2019 12:39:55 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.69	1.00	10.00	0	96.9	90	110			
Sulfate	29.4	3.00	30.00	0	98.0	90	110			

Sample ID: **CCV3-190919**	Batch ID: **R106466**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919A**	Analysis Date: **9/20/2019 5:11:55 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.70	1.00	10.00	0	97.0	90	110			
Sulfate	29.5	3.00	30.00	0	98.2	90	110			

Sample ID: **CCV4-190919**	Batch ID: **R106466**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919A**	Analysis Date: **9/20/2019 9:43:55 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.86	1.00	10.00	0	98.6	90	110			
Sulfate	29.8	3.00	30.00	0	99.4	90	110			

Sample ID: **CCV5-190919**	Batch ID: **R106466**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919A**	Analysis Date: **9/20/2019 1:43:55 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.83	1.00	10.00	0	98.3	90	110			
Sulfate	29.7	3.00	30.00	0	99.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190919A

Sample ID: **CCV6-190919** Batch ID: **R106466** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC4_190919A** Analysis Date: **9/20/2019 3:51:55 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	30.0	3.00	30.00	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190920B

The QC data in batch 92863 applies to the following samples: 1909142-01D, 1909142-02D, 1909142-03D, 1909142-04D, 1909142-05D, 1909142-06D, 1909142-07D, 1909142-08D

Sample ID: **MB-92863** Batch ID: **92863** TestNo: **M2320 B** Units: **mg/L @ pH 4.17**
SampType: **MBLK** Run ID: **TITRATOR_190920B** Analysis Date: **9/20/2019 10:02:00 AM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-92863** Batch ID: **92863** TestNo: **M2320 B** Units: **mg/L @ pH 4.27**
SampType: **LCS** Run ID: **TITRATOR_190920B** Analysis Date: **9/20/2019 10:06:00 AM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	51.0	20.0	50.00	0	102	74	129			

Sample ID: **1909142-01D-DUP** Batch ID: **92863** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_190920B** Analysis Date: **9/20/2019 11:04:00 AM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	322	20.0	0	329.5				2.27	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	322	20.0	0	329.5				2.27	20	

Sample ID: **1909158-01C-DUP** Batch ID: **92863** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_190920B** Analysis Date: **9/20/2019 2:25:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	634	20.0	0	638.5				0.676	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	634	20.0	0	638.5				0.676	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190920B

Sample ID: **ICV-190920**	Batch ID: **R106516**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.3**
SampType: **ICV**	Run ID: **TITRATOR_190920B**	Analysis Date: **9/20/2019 9:54:00 AM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	5.68	20.0	0							
Alkalinity, Carbonate (As CaCO3)	94.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.9	20.0	100.0	0	99.9	98	102			

Sample ID: **CCV1-190920**	Batch ID: **R106516**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.41**
SampType: **CCV**	Run ID: **TITRATOR_190920B**	Analysis Date: **9/20/2019 1:49:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	34.9	20.0	0							
Alkalinity, Carbonate (As CaCO3)	64.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.9	20.0	100.0	0	98.9	90	110			

Sample ID: **CCV2-190920**	Batch ID: **R106516**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.49**
SampType: **CCV**	Run ID: **TITRATOR_190920B**	Analysis Date: **9/20/2019 5:04:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	48.4	20.0	0							
Alkalinity, Carbonate (As CaCO3)	49.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	97.5	20.0	100.0	0	97.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190830A

Sample ID: **DCS-92622**	Batch ID: **92622**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **DCS**	Run ID: **WC_190830A**	Analysis Date: **8/30/2019 12:30:00 PM**	Prep Date: **8/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.0759	0.250	0.1000	0	75.9	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190919B

The QC data in batch 92852 applies to the following samples: 1909142-01D, 1909142-02D, 1909142-03D

Sample ID: **MB-92852**	Batch ID: **92852**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_190919B**	Analysis Date: **9/19/2019 3:30:00 PM**	Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-92852**	Batch ID: **92852**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_190919B**	Analysis Date: **9/19/2019 3:30:00 PM**	Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	764	10.0	745.6	0	102	90	113			

Sample ID: **1909141-02C-DUP**	Batch ID: **92852**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190919B**	Analysis Date: **9/19/2019 3:30:00 PM**	Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2490	50.0	0	2505				0.802	5	

Sample ID: **1909141-04C-DUP**	Batch ID: **92852**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190919B**	Analysis Date: **9/19/2019 3:30:00 PM**	Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1660	50.0	0	1680				1.20	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190920E

The QC data in batch 92869 applies to the following samples: 1909142-04D, 1909142-05D, 1909142-06D, 1909142-07D, 1909142-08D

Sample ID: **MB-92869**	Batch ID: **92869**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_190920E**	Analysis Date: **9/20/2019 4:30:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-92869**	Batch ID: **92869**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_190920E**	Analysis Date: **9/20/2019 4:30:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	762	10.0	745.6	0	102	90	113			

Sample ID: **1909142-04D-DUP**	Batch ID: **92869**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190920E**	Analysis Date: **9/20/2019 4:30:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	34100	1000	0	30900				9.85	5	R

Sample ID: **1909142-05D-DUP**	Batch ID: **92869**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190920E**	Analysis Date: **9/20/2019 4:30:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	40300	1000	0	41700				3.41	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190927A

The QC data in batch 92953 applies to the following samples: 1909142-01C, 1909142-02C, 1909142-03C, 1909142-04C, 1909142-05C, 1909142-06C, 1909142-07C, 1909142-08C

Sample ID: **MB-92953**	Batch ID: **92953**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_190927A**	Analysis Date: **9/27/2019 5:00:00 PM**	Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-92953**	Batch ID: **92953**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_190927A**	Analysis Date: **9/27/2019 5:00:00 PM**	Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.44	0.250	5.000	0	88.8	80	120			

Sample ID: **1909142-02CMS**	Batch ID: **92953**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_190927A**	Analysis Date: **9/27/2019 5:00:00 PM**	Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.45	0.250	5.000	0	89.0	80	120			

Sample ID: **1909142-02CMSD**	Batch ID: **92953**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_190927A**	Analysis Date: **9/27/2019 5:00:00 PM**	Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.08	0.250	5.000	0	81.6	80	120	8.68	25	

Sample ID: **1909161-11CMS**	Batch ID: **92953**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_190927A**	Analysis Date: **9/27/2019 5:00:00 PM**	Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.84	0.250	5.000	0	117	80	120			

Sample ID: **1909161-11CMSD**	Batch ID: **92953**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_190927A**	Analysis Date: **9/27/2019 5:00:00 PM**	Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.10	0.250	5.000	0	102	80	120	13.5	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190927A

Sample ID: **ICV-190927**	Batch ID: **R106617**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_190927A**	Analysis Date: **9/27/2019 5:00:00 PM**	Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.79	0.250	2.500	0	112	80	120			

Sample ID: **CCV1-190927**	Batch ID: **R106617**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_190927A**	Analysis Date: **9/27/2019 5:00:00 PM**	Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.38	0.250	5.000	0	87.6	80	120			

Sample ID: **CCV2-190927**	Batch ID: **R106617**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_190927A**	Analysis Date: **9/27/2019 5:00:00 PM**	Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.79	0.250	5.000	0	116	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909142
Project: Copano GW Sampling 3Q19

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.1**	**g/L @ pH 4.1**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 16, 2019

DHL Analytical, Inc.

Sample Delivery Group:	L1142542
Samples Received:	09/24/2019
Project Number:	1909142
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

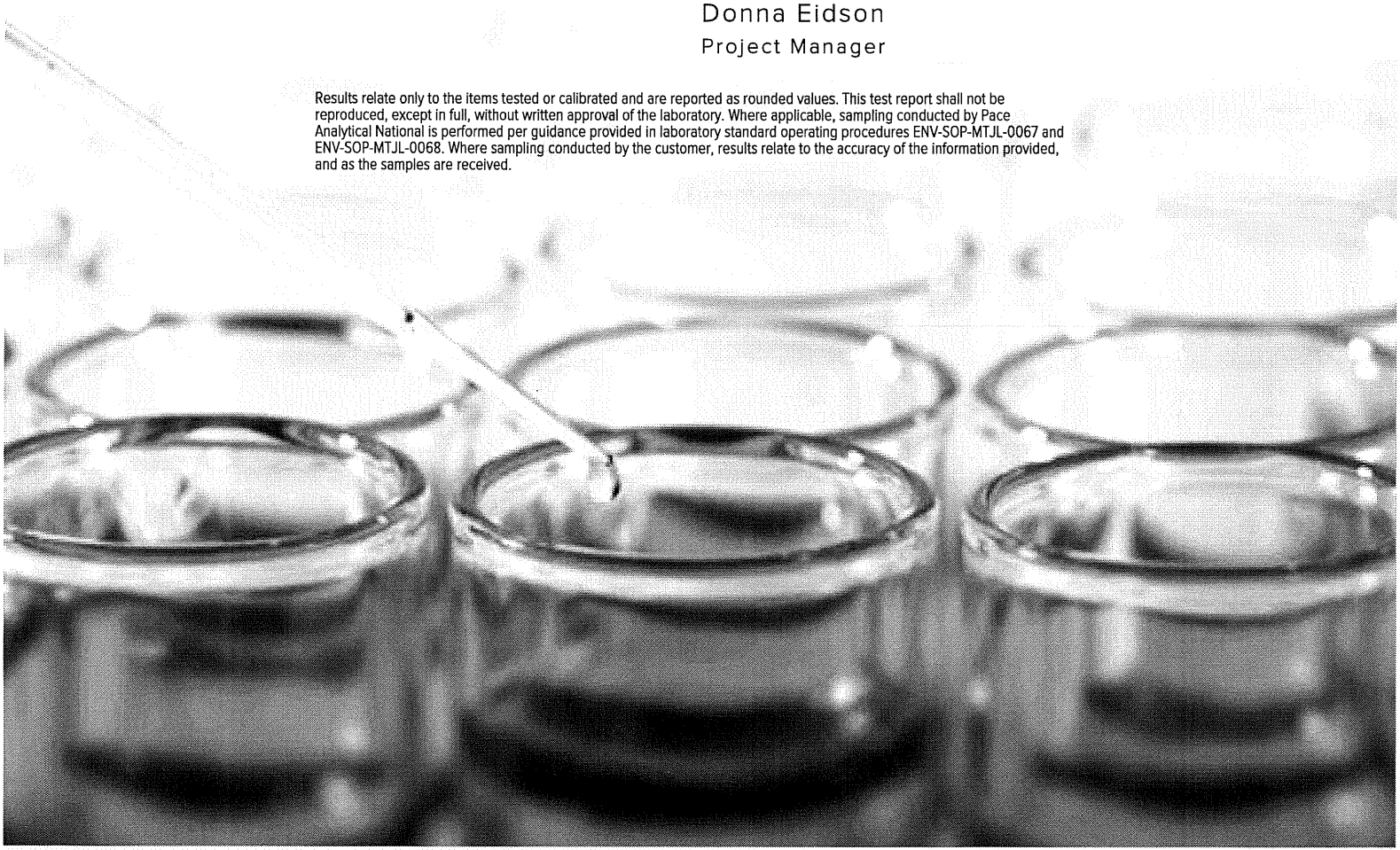


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MW4-7A L1142542-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/17/19 13:20	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1356726	1	10/03/19 12:39	10/11/19 09:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN

NW4-7B L1142542-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/17/19 14:15	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1356726	1	10/03/19 12:39	10/11/19 09:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN

MW4-2 L1142542-03 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/17/19 15:15	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1356726	1	10/03/19 12:39	10/11/19 13:25	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN

MW4-2A L1142542-04 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/17/19 15:48	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1356726	1	10/03/19 12:39	10/11/19 13:25	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN

NW3-7B L1142542-05 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/17/19 14:30	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1356726	1	10/03/19 12:39	10/11/19 13:25	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN

MW3-7 L1142542-06 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/17/19 15:15	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1356726	1	10/03/19 12:39	10/11/19 13:25	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN

MW3-1 L1142542-07 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/17/19 16:05	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1356726	1	10/03/19 12:39	10/11/19 13:25	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN

MW-101 L1142542-08 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/17/19 16:15	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1356726	1	10/03/19 12:39	10/11/19 13:25	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1359888	1	10/10/19 09:46	10/11/19 13:34	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	5.05		0.627	0.808	10/11/2019 09:15	WG1356726
(T) Barium	*109*			*62.0-143*	*10/11/2019 09:15*	WG1356726
(T) Yttrium	*109*			*79.0-136*	*10/11/2019 09:15*	WG1356726

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	6.76		1.12	1.04	10/11/2019 13:34	WG1359888

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.70		0.492	0.234	10/11/2019 13:34	WG1359888
(T) Barium-133	*80.5*			*30.0-143*	*10/11/2019 13:34*	WG1359888

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	18.1		0.794	0.85	10/11/2019 09:15	WG1356726
(T) Barium	*111*			*62.0-143*	*10/11/2019 09:15*	WG1356726
(T) Yttrium	*113*			*79.0-136*	*10/11/2019 09:15*	WG1356726

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	22.5		1.52	1.18	10/11/2019 13:34	WG1359888

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	4.35		0.727	0.327	10/11/2019 13:34	WG1359888
(T) Barium-133	*90.8*			*30.0-143*	*10/11/2019 13:34*	WG1359888

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.312		0.567	1.04	10/11/2019 13:25	WG1356726
(T) Barium	*81.5*			*62.0-143*	*10/11/2019 13:25*	WG1356726
(T) Yttrium	*117*			*79.0-136*	*10/11/2019 13:25*	WG1356726

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.408		0.715	1.27	10/11/2019 13:34	WG1359888

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0958		0.148	0.231	10/11/2019 13:34	WG1359888
(T) Barium-133	*86.8*			*30.0-143*	*10/11/2019 13:34*	WG1359888

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.0235		0.497	0.967	10/11/2019 13:25	WG1356726
(T) Barium	*80.2*			*62.0-143*	*10/11/2019 13:25*	WG1356726
(T) Yttrium	*113*			*79.0-136*	*10/11/2019 13:25*	WG1356726

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.703		0.847	1.34	10/11/2019 13:34	WG1359888

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.679		0.350	0.369	10/11/2019 13:34	WG1359888
(T) Barium-133	*88.3*			*30.0-143*	*10/11/2019 13:34*	WG1359888

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.564		0.618	0.881	10/11/2019 13:25	WG1356726
(T) Barium	*120*			*62.0-143*	*10/11/2019 13:25*	WG1356726
(T) Yttrium	*106*			*79.0-136*	*10/11/2019 13:25*	WG1356726

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.21		1.10	1.11	10/11/2019 13:34	WG1359888

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.65		0.482	0.232	10/11/2019 13:34	WG1359888
(T) Barium-133	*91.7*			*30.0-143*	*10/11/2019 13:34*	WG1359888

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.687		0.610	0.976	10/11/2019 13:25	WG1356726
(T) Barium	*118*			*62.0-143*	*10/11/2019 13:25*	WG1356726
(T) Yttrium	*106*			*79.0-136*	*10/11/2019 13:25*	WG1356726

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.183		0.780	1.15	10/11/2019 13:34	WG1359888

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.183		0.170	0.176	10/11/2019 13:34	WG1359888
(T) Barium-133	*83.3*			*30.0-143*	*10/11/2019 13:34*	WG1359888

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.351		0.601	1.09	10/11/2019 13:25	WG1356726
(T) Barium	*103*			*62.0-143*	*10/11/2019 13:25*	WG1356726
(T) Yttrium	*109*			*79.0-136*	*10/11/2019 13:25*	WG1356726

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.198		0.795	1.33	10/11/2019 13:34	WG1359888

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.198		0.194	0.237	10/11/2019 13:34	WG1359888
(T) Barium-133	*88.5*			*30.0-143*	*10/11/2019 13:34*	WG1359888

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.105		0.561	0.97	10/11/2019 13:25	WG1356726
(T) Barium	*115*			*62.0-143*	*10/11/2019 13:25*	WG1356726
(T) Yttrium	*113*			*79.0-136*	*10/11/2019 13:25*	WG1356726

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.564		0.911	1.38	10/11/2019 13:34	WG1359888

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.459		0.350	0.406	10/11/2019 13:34	WG1359888
(T) Barium-133	*83.8*			*30.0-143*	*10/11/2019 13:34*	WG1359888

Method Blank (MB)

(MB) R3461483-1 10/11/19 09:15

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-228	0.00912		0.420
(T) Barium	*116*		
(T) Yttrium	*111*		

L1141862-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1141862-01 10/11/19 09:15 • (DUP) R3461483-5 10/11/19 09:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-228	-0.271	0.575	1	200	1.14		20	3
(T) Barium	*110*	*114*						
(T) Yttrium	*117*	*106*						

Laboratory Control Sample (LCS)

(LCS) R3461483-2 10/11/19 09:15

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-228	5.00	5.48	110	80.0-120	
(T) Barium			*104*		
(T) Yttrium			*118*		

L1141583-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1141583-01 10/11/19 09:15 • (MS) R3461483-3 10/11/19 09:15 • (MSD) R3461483-4 10/11/19 09:15

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-228	10.0	0.805	10.3	10.9	94.8	101	1	70.0-130			5.95		20
(T) Barium		*114*			*113*	*113*							
(T) Yttrium		*112*			*108*	*114*							

Method Blank (MB)

(MB) R3461539-1 10/11/19 13:34

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	-0.00681		0.0360
(T) Barium-133	*83.0*		

L1142542-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1142542-07 10/11/19 13:34 • (DUP) R3461539-5 10/11/19 13:34

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.198	0.193	1	2.46	0.0157		20	3
(T) Barium-133	*88.5*	*84.2*						

Laboratory Control Sample (LCS)

(LCS) R3461539-2 10/11/19 13:34

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	4.81	95.8	80.0-120	
(T) Barium-133			*105*		

L1142542-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1142542-05 10/11/19 13:34 • (MS) R3461539-3 10/11/19 13:34 • (MSD) R3461539-4 10/11/19 13:34

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	1.65	19.0	22.4	86.3	103	1	75.0-125			16.2		20
(T) Barium-133		*91.7*			*83.9*	*87.8*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client:	DHLRTX	SDG#:	1142542
Cooler Received/Opened On:	9/24/19	Temperature:	Amb
Received By:	Hailey Melson		
Signature:	Hailey Mel		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

1182542

Work Order: 1909142

H024

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

18-Sep-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra228 E904.0	Ra226 M7500 Ra B M	Requested Tests			
MW4-7A	Aqueous	-01E	09/17/19 01:20 PM	1LHDPEHNO3	1					-01
MW4-7A	Aqueous	-01F	09/17/19 01:20 PM	1LHDPEHNO3		1				
MW4-7B	Aqueous	-02E	09/17/19 02:15 PM	1LHDPEHNO3	1					02
MW4-7B	Aqueous	-02F	09/17/19 02:15 PM	1LHDPEHNO3		1				
MW4-2	Aqueous	-03E	09/17/19 03:15 PM	1LHDPEHNO3	1					03
MW4-2	Aqueous	-03F	09/17/19 03:15 PM	1LHDPEHNO3		1				
MW4-2A	Aqueous	-04E	09/17/19 03:48 PM	1LHDPEHNO3	1					04
MW4-2A	Aqueous	-04F	09/17/19 03:48 PM	1LHDPEHNO3		1				
MW3-7B	Aqueous	-05E	09/17/19 02:30 PM	1LHDPEHNO3	1					05
MW3-7B	Aqueous	-05F	09/17/19 02:30 PM	1LHDPEHNO3		1				
MW3-7	Aqueous	-06E	09/17/19 03:15 PM	1LHDPEHNO3	1					06
MW3-7	Aqueous	-06F	09/17/19 03:15 PM	1LHDPEHNO3		1				
MW3-1	Aqueous	-07E	09/17/19 04:05 PM	1LHDPEHNO3	1					07
MW3-1	Aqueous	-07F	09/17/19 04:05 PM	1LHDPEHNO3		1				
MW-101	Aqueous	-08E	09/17/19 04:15 PM	1LHDPEHNO3	1					08
MW-101	Aqueous	-08F	09/17/19 04:15 PM	1LHDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

Amb 450

RAD SCREEN: <0.5 mR/hr

		Date/Time			Date/Time
Relinquished by:		9/20/19 1700	Received by:	Hailey Mc	9/24/19 10:00
Relinquished by:			Received by:		

February 26, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 1909176

RE: Copano GW Sampling 3Q19

Dear Kevin Dworsky:

DHL Analytical, Inc. received 16 sample(s) on 9/20/2019 for the analyses presented in the following report.

REVISION#1: This revision consists of adding Dissolved Uranium to the list of test parameters for all samples as per the client. Please replace the original report with this revised report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 85939

CHAIN-OF-CUSTODY

CLIENT: Golder Associates Inc.
ADDRESS: 620 E Airline Victoria, TX 77901
PHONE: 361-~~972~~ 573-6442 FAX/E-MAIL: kevin_dworsky@golder.com
DATA REPORTED TO: Kevin Dworsky, Matt W, Greg Logan
ADDITIONAL REPORT COPIES TO: Caitlin Carter

DATE: 9/19/19 PAGE 1 OF 2
PO #: DHL WORK ORDER #: 1909176
PROJECT LOCATION OR NAME: Copano GW Sampling 3Q19
CLENT PROJECT #: 19125525 COLLECTOR: Caitlin C, Greg L

Authorize 5% surcharge for TRRP Report? ☑ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☒ NaOH ☐	ICE	UNPRESERVED
MW-4	01	9/19/19	10:18	W	P	6		X	X		X
MW-5B	02		11:03								
MW-5	03		11:37								
MW-303	04		11:42								
MW-8	05		12:31								
MW-9	06		13:14								
MW-6RB	07		14:08								
MW-10	08		14:45								
~~MW~~-DB-5	09		10:25								
MW-3RB	10		11:05								
MW-3R	11		11:35								
MW-1	12		12:25								
MW-7B	13		13:05								
MW-7	14		13:35								
MW-11B	15	↓	14:20	↓	↓	↓		↓	↓		↓

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ ____ ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHR ☐ M ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ____ ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

FIELD NOTES: See attached

RELINQUISHED BY: (Signature) Caitlin Carter DATE/TIME 9/19/19 17:15 RECEIVED BY: (Signature) FEDEX
RELINQUISHED BY: (Signature) FEDEX DATE/TIME 9/20/19 0930 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

3

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ ____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.1/1.3/1.3/1.1°C THERM #: 18
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☑ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 85657

CHAIN-OF-CUSTODY

CLIENT: Golder Associates Inc. DATE: 9/19/19 PAGE 2 OF 2
ADDRESS: Victoria, TX PO #: DHL WORK ORDER #: 1909176
PHONE: 361-573-6442 FAX/E-MAIL: Kevin_Dworsky@golder.com PROJECT LOCATION OR NAME: Copano 3Q19
DATA REPORTED TO: Kevin D, Matt W, Greg L CLENT PROJECT #: 1912525 COLLECTOR: CC, GL
ADDITIONAL REPORT COPIES TO: Caitlin C

Authorize 5% surcharge for TRRP Report? ☑ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☒ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ T PHOS, AMMONIA ☐ | 8321 HERB ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☒ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
MW-11	16	9/19/19	14:50	W	P	6		X	X		X	See attached

RELINQUISHED BY: (Signature) Cait Cato — DATE/TIME 9/19/19 17:15 — RECEIVED BY: (Signature) FEDEX
RELINQUISHED BY: (Signature) FEDEX — DATE/TIME 9/20/19 0930 — RECEIVED BY: (Signature) [signature]
RELINQUISHED BY: (Signature) — DATE/TIME — RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.1/1.8/1.3/1.1 C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY ☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate	E300	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate	E300	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:
1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium
2) From time of sample collection

Total + Dissolved Metals

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 9/20/2019

Work Order Number 1909176 | Received by JW

Checklist completed by: [signature] Signature | 9/20/2019 Date | Reviewed by [initials] Initials | 9/20/2019 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.1 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted Golder | Date contacted: 9/20/19 | Person contacted ~~Kevin D.~~ Grey L. (EL 9/20/19)

Contacted by: Eric L. | Regarding: Sample ID.

Comments: Sample "MW-3R" on CoC labeled "MW-6R" on bottles.

Corrective Action Per Grey, use "MW-3R" for sample.

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW Sampling 3Q19	**LRC Date:** 10/22/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1909176
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?		X			**R5-04**
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?	X				**R5-05**
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW Sampling 3Q19	**LRC Date:** 10/22/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1909176
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?		X			**S2-02**
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?		X			**S2-04**
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?		X			**S4-01**
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

02/26/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis (total & dissolved)
Method SW6020A - Uranium in Water Analysis (this parameter is not NELACP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 9/20/19. A total of 16 samples were received. For further login notes please refer to the Sample Receipt Checklist. The samples arrived in good condition and were properly packaged.

Exception Report R5-04

For Total Metals analysis performed on 9/26/19 (batch 92877) Sodium was detected below the reporting limit in the method blank (MB-92877).

Exception Report R5-05

For Total Metals analysis (batch 92877) all samples were detected greater than 10 times the amount in the blank for Sodium. No further corrective actions were taken.

Exception Report R7-03

For Total Metals analysis performed on 9/25/19 and 9/26/19 (batch 92877) the matrix spike and matrix spike duplicate recoveries were out of control limits for four analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Anions analysis performed on 9/9/19/19, 9/20/19 and 10/7/19 (batches 92867, 92866 & 93118) the matrix spikes and/or matrix spike duplicate recoveries (1909176-08 MS/MSD, 1909173-01 MS, 1909173-02 MS & 1910054-02 MS/MSD) were out of control limits for a total of three analytes.

These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate (batch 92867 1909176-08 MS/MSD) was from this work order. The samples selected for the matrix spikes and matrix spike duplicates (batches 92866 & 93118 1909173-02 MS, 1909173-01 MS & 1910054-02 MS/MSD) were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Ammonia analysis performed on 9/30/19 the matrix spike and matrix spike duplicate recoveries (1909176-13 MS/MSD) were below control limits. This was due to matrix effect. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits. No further corrective actions were taken.

Exception Report R10-01

For Total and Dissolved Metals analysis some dissolved results were slightly higher than the total results for thirteen samples. In addition, the Dissolved Uranium results were slightly higher than the Total Uranium results for twelve samples. These are within the acceptable variation limits. No further corrective actions were taken.

For Anions analysis all samples (except for sample MW-10) were diluted prior to analysis due to the nature of the samples (concentration of Chloride).

For Anions analysis sample MW-10 was diluted prior to analysis due to the nature of the sample (concentration of Chloride & Sulfate).

Exception Report S2-02

For Total Metals analysis performed on 9/26/19 three LCVLs were above control limits for Sodium. These are flagged accordingly in the QC summary report. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

Exception Report S2-04

For Total Metals analysis performed on 9/26/19 Sodium was detected in CCB4-190926 and CCB5-190926. All associated samples were detected greater than 10 times the amount in the CCBs. No further corrective actions were taken.

Exception Report S4-01

For Dissolved Metals analysis fourteen samples had low responses for the internal standard Bismuth. This was due to matrix interference. The associated analytes (Lead & Thallium) may be biased high. No further corrective actions were taken.

Exception Report S9-01

For Total and Dissolved Mercury analyses performed on 9/25/19 and 10/1/19 (batches 92890 & 93029) the PDS recoveries were below control limits. This was due to matrix effect. These are flagged accordingly in the QC summary report. The serial dilutions were within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *22-Oct-19*

CLIENT: Golder
Project: Copano GW Sampling 3Q19
Lab Order: 1909176

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1909176-01	MW-4		09/19/19 10:18 AM	9/20/2019
1909176-02	MW-5B		09/19/19 11:03 AM	9/20/2019
1909176-03	MW-5		09/19/19 11:37 AM	9/20/2019
1909176-04	MW-303		09/19/19 11:42 AM	9/20/2019
1909176-05	MW-8		09/19/19 12:31 PM	9/20/2019
1909176-06	MW-9		09/19/19 01:14 PM	9/20/2019
1909176-07	MW-6RB		09/19/19 02:00 PM	9/20/2019
1909176-08	MW-10		09/19/19 02:45 PM	9/20/2019
1909176-09	DB-5		09/19/19 10:25 AM	9/20/2019
1909176-10	MW-3RB		09/19/19 11:05 AM	9/20/2019
1909176-11	MW-3R		09/19/19 11:35 AM	9/20/2019
1909176-12	MW-1		09/19/19 12:25 PM	9/20/2019
1909176-13	MW-7B		09/19/19 01:05 PM	9/20/2019
1909176-14	MW-7		09/19/19 01:35 PM	9/20/2019
1909176-15	MW-11B		09/19/19 02:20 PM	9/20/2019
1909176-16	MW-11		09/19/19 02:50 PM	9/20/2019

Lab Order: 1909176
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909176-01A	MW-4	09/19/19 10:18 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-4	09/19/19 10:18 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-4	09/19/19 10:18 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-4	09/19/19 10:18 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-4	09/19/19 10:18 AM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909176-01B	MW-4	09/19/19 10:18 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-4	09/19/19 10:18 AM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-01C	MW-4	09/19/19 10:18 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-01D	MW-4	09/19/19 10:18 AM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-4	09/19/19 10:18 AM	Aqueous	E300	Anion Preparation	10/07/19 09:08 AM	93118
	MW-4	09/19/19 10:18 AM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-4	09/19/19 10:18 AM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-4	09/19/19 10:18 AM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-4	09/19/19 10:18 AM	Aqueous	M2540C	TDS Preparation	09/24/19 04:33 PM	92921
1909176-02A	MW-5B	09/19/19 11:03 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-5B	09/19/19 11:03 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-5B	09/19/19 11:03 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-5B	09/19/19 11:03 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-5B	09/19/19 11:03 AM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909176-02B	MW-5B	09/19/19 11:03 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-5B	09/19/19 11:03 AM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-02C	MW-5B	09/19/19 11:03 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-02D	MW-5B	09/19/19 11:03 AM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-5B	09/19/19 11:03 AM	Aqueous	E300	Anion Preparation	10/07/19 09:08 AM	93118
	MW-5B	09/19/19 11:03 AM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-5B	09/19/19 11:03 AM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-5B	09/19/19 11:03 AM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-5B	09/19/19 11:03 AM	Aqueous	M2540C	TDS Preparation	09/24/19 04:33 PM	92921

Lab Order: 1909176
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909176-03A	MW-5	09/19/19 11:37 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-5	09/19/19 11:37 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-5	09/19/19 11:37 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-5	09/19/19 11:37 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-5	09/19/19 11:37 AM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909176-03B	MW-5	09/19/19 11:37 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-5	09/19/19 11:37 AM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-03C	MW-5	09/19/19 11:37 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-03D	MW-5	09/19/19 11:37 AM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-5	09/19/19 11:37 AM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-5	09/19/19 11:37 AM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-5	09/19/19 11:37 AM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-5	09/19/19 11:37 AM	Aqueous	E300	Anion Preparation	10/07/19 09:08 AM	93118
	MW-5	09/19/19 11:37 AM	Aqueous	M2540C	TDS Preparation	09/24/19 04:33 PM	92921
1909176-04A	MW-303	09/19/19 11:42 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-303	09/19/19 11:42 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-303	09/19/19 11:42 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-303	09/19/19 11:42 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-303	09/19/19 11:42 AM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-04B	MW-303	09/19/19 11:42 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-303	09/19/19 11:42 AM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-04C	MW-303	09/19/19 11:42 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-04D	MW-303	09/19/19 11:42 AM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-303	09/19/19 11:42 AM	Aqueous	E300	Anion Preparation	10/07/19 09:08 AM	93118
	MW-303	09/19/19 11:42 AM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-303	09/19/19 11:42 AM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-303	09/19/19 11:42 AM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-303	09/19/19 11:42 AM	Aqueous	M2540C	TDS Preparation	09/24/19 04:33 PM	92921

Lab Order: 1909176
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909176-05A	MW-8	09/19/19 12:31 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-8	09/19/19 12:31 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-8	09/19/19 12:31 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-8	09/19/19 12:31 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-8	09/19/19 12:31 PM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-05B	MW-8	09/19/19 12:31 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-8	09/19/19 12:31 PM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-05C	MW-8	09/19/19 12:31 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-05D	MW-8	09/19/19 12:31 PM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-8	09/19/19 12:31 PM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-8	09/19/19 12:31 PM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-8	09/19/19 12:31 PM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-8	09/19/19 12:31 PM	Aqueous	E300	Anion Preparation	10/07/19 09:08 AM	93118
	MW-8	09/19/19 12:31 PM	Aqueous	M2540C	TDS Preparation	09/24/19 04:33 PM	92921
1909176-06A	MW-9	09/19/19 01:14 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-9	09/19/19 01:14 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-9	09/19/19 01:14 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-9	09/19/19 01:14 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-9	09/19/19 01:14 PM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-06B	MW-9	09/19/19 01:14 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-9	09/19/19 01:14 PM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-06C	MW-9	09/19/19 01:14 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-06D	MW-9	09/19/19 01:14 PM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-9	09/19/19 01:14 PM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-9	09/19/19 01:14 PM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-9	09/19/19 01:14 PM	Aqueous	E300	Anion Preparation	10/07/19 09:08 AM	93118
	MW-9	09/19/19 01:14 PM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-9	09/19/19 01:14 PM	Aqueous	M2540C	TDS Preparation	09/24/19 04:33 PM	92921

Lab Order: 1909176
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909176-07A	MW-6RB	09/19/19 02:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-6RB	09/19/19 02:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-6RB	09/19/19 02:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-6RB	09/19/19 02:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-6RB	09/19/19 02:00 PM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-07B	MW-6RB	09/19/19 02:00 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-6RB	09/19/19 02:00 PM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-07C	MW-6RB	09/19/19 02:00 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-07D	MW-6RB	09/19/19 02:00 PM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-6RB	09/19/19 02:00 PM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-6RB	09/19/19 02:00 PM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-6RB	09/19/19 02:00 PM	Aqueous	E300	Anion Preparation	09/20/19 10:34 AM	92866
	MW-6RB	09/19/19 02:00 PM	Aqueous	E300	Anion Preparation	10/07/19 09:08 AM	93118
	MW-6RB	09/19/19 02:00 PM	Aqueous	M2540C	TDS Preparation	09/24/19 04:33 PM	92921
1909176-08A	MW-10	09/19/19 02:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-10	09/19/19 02:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-10	09/19/19 02:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-10	09/19/19 02:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-10	09/19/19 02:45 PM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-08B	MW-10	09/19/19 02:45 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-10	09/19/19 02:45 PM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-08C	MW-10	09/19/19 02:45 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-08D	MW-10	09/19/19 02:45 PM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-10	09/19/19 02:45 PM	Aqueous	E300	Anion Preparation	10/07/19 09:08 AM	93118
	MW-10	09/19/19 02:45 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-10	09/19/19 02:45 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-10	09/19/19 02:45 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-10	09/19/19 02:45 PM	Aqueous	M2540C	TDS Preparation	09/24/19 04:33 PM	92921

Lab Order: 1909176
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909176-09A	DB-5	09/19/19 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	DB-5	09/19/19 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	DB-5	09/19/19 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	DB-5	09/19/19 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	DB-5	09/19/19 10:25 AM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-09B	DB-5	09/19/19 10:25 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	DB-5	09/19/19 10:25 AM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-09C	DB-5	09/19/19 10:25 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-09D	DB-5	09/19/19 10:25 AM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	DB-5	09/19/19 10:25 AM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	DB-5	09/19/19 10:25 AM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	DB-5	09/19/19 10:25 AM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	DB-5	09/19/19 10:25 AM	Aqueous	M2540C	TDS Preparation	09/24/19 04:33 PM	92921
1909176-10A	MW-3RB	09/19/19 11:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-3RB	09/19/19 11:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-3RB	09/19/19 11:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-3RB	09/19/19 11:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-3RB	09/19/19 11:05 AM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-10B	MW-3RB	09/19/19 11:05 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-3RB	09/19/19 11:05 AM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-10C	MW-3RB	09/19/19 11:05 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-10D	MW-3RB	09/19/19 11:05 AM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-3RB	09/19/19 11:05 AM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-3RB	09/19/19 11:05 AM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-3RB	09/19/19 11:05 AM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-3RB	09/19/19 11:05 AM	Aqueous	M2540C	TDS Preparation	09/25/19 03:00 PM	92938
1909176-11A	MW-3R	09/19/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-3R	09/19/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877

Lab Order: 1909176
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909176-11A	MW-3R	09/19/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-3R	09/19/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-3R	09/19/19 11:35 AM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-11B	MW-3R	09/19/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-3R	09/19/19 11:35 AM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-11C	MW-3R	09/19/19 11:35 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-11D	MW-3R	09/19/19 11:35 AM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-3R	09/19/19 11:35 AM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-3R	09/19/19 11:35 AM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-3R	09/19/19 11:35 AM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-3R	09/19/19 11:35 AM	Aqueous	M2540C	TDS Preparation	09/25/19 03:00 PM	92938
1909176-12A	MW-1	09/19/19 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-1	09/19/19 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-1	09/19/19 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-1	09/19/19 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-1	09/19/19 12:25 PM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-12B	MW-1	09/19/19 12:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-1	09/19/19 12:25 PM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-12C	MW-1	09/19/19 12:25 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-12D	MW-1	09/19/19 12:25 PM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-1	09/19/19 12:25 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-1	09/19/19 12:25 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-1	09/19/19 12:25 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-1	09/19/19 12:25 PM	Aqueous	M2540C	TDS Preparation	09/25/19 03:00 PM	92938
1909176-13A	MW-7B	09/19/19 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-7B	09/19/19 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-7B	09/19/19 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-7B	09/19/19 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877

Lab Order: 1909176
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909176-13A	MW-7B	09/19/19 01:05 PM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-13B	MW-7B	09/19/19 01:05 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-7B	09/19/19 01:05 PM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-13C	MW-7B	09/19/19 01:05 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-13D	MW-7B	09/19/19 01:05 PM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-7B	09/19/19 01:05 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-7B	09/19/19 01:05 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-7B	09/19/19 01:05 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-7B	09/19/19 01:05 PM	Aqueous	M2540C	TDS Preparation	09/25/19 03:00 PM	92938
1909176-14A	MW-7	09/19/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-7	09/19/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-7	09/19/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-7	09/19/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-7	09/19/19 01:35 PM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-14B	MW-7	09/19/19 01:35 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-7	09/19/19 01:35 PM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-14C	MW-7	09/19/19 01:35 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-14D	MW-7	09/19/19 01:35 PM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-7	09/19/19 01:35 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-7	09/19/19 01:35 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-7	09/19/19 01:35 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-7	09/19/19 01:35 PM	Aqueous	M2540C	TDS Preparation	09/25/19 03:00 PM	92938
1909176-15A	MW-11B	09/19/19 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-11B	09/19/19 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-11B	09/19/19 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-11B	09/19/19 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-11B	09/19/19 02:20 PM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-15B	MW-11B	09/19/19 02:20 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892

Lab Order: 1909176
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909176-15B	MW-11B	09/19/19 02:20 PM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-15C	MW-11B	09/19/19 02:20 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-15D	MW-11B	09/19/19 02:20 PM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-11B	09/19/19 02:20 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-11B	09/19/19 02:20 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-11B	09/19/19 02:20 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-11B	09/19/19 02:20 PM	Aqueous	M2540C	TDS Preparation	09/25/19 03:00 PM	92938
1909176-16A	MW-11	09/19/19 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-11	09/19/19 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-11	09/19/19 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-11	09/19/19 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:25 AM	92877
	MW-11	09/19/19 02:50 PM	Aqueous	SW7470A	Mercury Aq Prep	09/24/19 01:49 PM	92918
1909176-16B	MW-11	09/19/19 02:50 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:56 AM	92892
	MW-11	09/19/19 02:50 PM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909176-16C	MW-11	09/19/19 02:50 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909176-16D	MW-11	09/19/19 02:50 PM	Aqueous	M2320 B	Alkalinity Preparation	09/24/19 09:39 AM	92913
	MW-11	09/19/19 02:50 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-11	09/19/19 02:50 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-11	09/19/19 02:50 PM	Aqueous	E300	Anion Preparation	09/20/19 10:35 AM	92867
	MW-11	09/19/19 02:50 PM	Aqueous	E300	Anion Preparation	10/07/19 09:08 AM	93118
	MW-11	09/19/19 02:50 PM	Aqueous	M2540C	TDS Preparation	09/25/19 03:00 PM	92938

Lab Order: 1909176
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909176-01A	MW-4	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 02:15 PM	CETAC2_HG_190925C
	MW-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	500	09/26/19 04:46 PM	ICP-MS4_190926B
	MW-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	50	09/26/19 06:01 PM	ICP-MS4_190926B
	MW-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 12:43 PM	ICP-MS5_190925A
	MW-4	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 12:43 PM	ICP-MS5_190925B
1909176-01B	MW-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 02:50 PM	CETAC2_HG_191001C
	MW-4	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 01:29 PM	ICP-MS4_190924C
1909176-01C	MW-4	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-01D	MW-4	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 10:46 AM	TITRATOR_190924A
	MW-4	Aqueous	E300	Anions by IC method - Water	92866	100	09/20/19 11:48 PM	IC2_190920B
	MW-4	Aqueous	E300	Anions by IC method - Water	93118	1000	10/07/19 03:39 PM	IC2_191007A
	MW-4	Aqueous	E300	Anions by IC method - Water	92866	1000	09/20/19 09:56 PM	IC2_190920B
	MW-4	Aqueous	E300	Anions by IC method - Water	92866	10	09/20/19 03:48 PM	IC2_190920B
	MW-4	Aqueous	M2540C	Total Dissolved Solids	92921	1	09/25/19 05:15 PM	WC_190925B
1909176-02A	MW-5B	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 02:18 PM	CETAC2_HG_190925C
	MW-5B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	500	09/26/19 04:42 PM	ICP-MS4_190926B
	MW-5B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 05:55 PM	ICP-MS4_190926B
	MW-5B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 12:39 PM	ICP-MS5_190925A
	MW-5B	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 12:39 PM	ICP-MS5_190925B
1909176-02B	MW-5B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:01 PM	CETAC2_HG_191001C
	MW-5B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 01:31 PM	ICP-MS4_190924C
1909176-02C	MW-5B	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-02D	MW-5B	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 11:28 AM	TITRATOR_190924A
	MW-5B	Aqueous	E300	Anions by IC method - Water	92866	100	09/21/19 12:04 AM	IC2_190920B
	MW-5B	Aqueous	E300	Anions by IC method - Water	93118	1000	10/07/19 03:55 PM	IC2_191007A
	MW-5B	Aqueous	E300	Anions by IC method - Water	92866	1000	09/20/19 10:12 PM	IC2_190920B

Lab Order: 1909176
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909176-02D	MW-5B	Aqueous	E300	Anions by IC method - Water	92866	10	09/20/19 04:04 PM	IC2_190920B
	MW-5B	Aqueous	M2540C	Total Dissolved Solids	92921	1	09/25/19 05:15 PM	WC_190925B
1909176-03A	MW-5	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 02:25 PM	CETAC2_HG_190925C
	MW-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1000	09/26/19 04:48 PM	ICP-MS4_190926B
	MW-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	100	09/26/19 06:05 PM	ICP-MS4_190926B
	MW-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 12:46 PM	ICP-MS5_190925A
	MW-5	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 12:46 PM	ICP-MS5_190925B
1909176-03B	MW-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:04 PM	CETAC2_HG_191001C
	MW-5	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 01:33 PM	ICP-MS4_190924C
1909176-03C	MW-5	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-03D	MW-5	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 12:03 PM	TITRATOR_190924A
	MW-5	Aqueous	E300	Anions by IC method - Water	92866	1000	09/20/19 10:28 PM	IC2_190920B
	MW-5	Aqueous	E300	Anions by IC method - Water	92866	100	09/21/19 12:20 AM	IC2_190920B
	MW-5	Aqueous	E300	Anions by IC method - Water	92866	10	09/20/19 07:16 PM	IC2_190920B
	MW-5	Aqueous	E300	Anions by IC method - Water	93118	1000	10/07/19 04:11 PM	IC2_191007A
	MW-5	Aqueous	M2540C	Total Dissolved Solids	92921	1	09/25/19 05:15 PM	WC_190925B
1909176-04A	MW-303	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 09:43 AM	CETAC2_HG_190925A
	MW-303	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	500	09/26/19 04:50 PM	ICP-MS4_190926B
	MW-303	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 06:09 PM	ICP-MS4_190926B
	MW-303	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 12:48 PM	ICP-MS5_190925A
	MW-303	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 12:48 PM	ICP-MS5_190925B
1909176-04B	MW-303	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:06 PM	CETAC2_HG_191001C
	MW-303	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 01:35 PM	ICP-MS4_190924C
1909176-04C	MW-303	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-04D	MW-303	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 12:38 PM	TITRATOR_190924A
	MW-303	Aqueous	E300	Anions by IC method - Water	92866	100	09/21/19 01:56 AM	IC2_190920B

Lab Order: 1909176
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909176-04D	MW-303	Aqueous	E300	Anions by IC method - Water	93118	1000	10/07/19 04:27 PM	IC2_191007A
	MW-303	Aqueous	E300	Anions by IC method - Water	92866	1000	09/20/19 10:44 PM	IC2_190920B
	MW-303	Aqueous	E300	Anions by IC method - Water	92866	10	09/20/19 07:32 PM	IC2_190920B
	MW-303	Aqueous	M2540C	Total Dissolved Solids	92921	1	09/25/19 05:15 PM	WC_190925B
1909176-05A	MW-8	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 09:45 AM	CETAC2_HG_190925A
	MW-8	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	500	09/26/19 04:52 PM	ICP-MS4_190926B
	MW-8	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 06:13 PM	ICP-MS4_190926B
	MW-8	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 12:50 PM	ICP-MS5_190925A
	MW-8	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 12:50 PM	ICP-MS5_190925B
1909176-05B	MW-8	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:08 PM	CETAC2_HG_191001C
	MW-8	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 01:37 PM	ICP-MS4_190924C
1909176-05C	MW-8	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-05D	MW-8	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 01:06 PM	TITRATOR_190924A
	MW-8	Aqueous	E300	Anions by IC method - Water	92866	1000	09/20/19 11:00 PM	IC2_190920B
	MW-8	Aqueous	E300	Anions by IC method - Water	92866	100	09/21/19 02:12 AM	IC2_190920B
	MW-8	Aqueous	E300	Anions by IC method - Water	92866	10	09/20/19 07:48 PM	IC2_190920B
	MW-8	Aqueous	E300	Anions by IC method - Water	93118	1000	10/07/19 04:43 PM	IC2_191007A
	MW-8	Aqueous	M2540C	Total Dissolved Solids	92921	1	09/25/19 05:15 PM	WC_190925B
1909176-06A	MW-9	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 09:48 AM	CETAC2_HG_190925A
	MW-9	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	500	09/26/19 04:54 PM	ICP-MS4_190926B
	MW-9	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 06:17 PM	ICP-MS4_190926B
	MW-9	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 12:52 PM	ICP-MS5_190925A
	MW-9	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 12:52 PM	ICP-MS5_190925B
1909176-06B	MW-9	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:10 PM	CETAC2_HG_191001C
	MW-9	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 01:39 PM	ICP-MS4_190924C
1909176-06C	MW-9	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909176-06D	MW-9	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 01:34 PM	TITRATOR_190924A
	MW-9	Aqueous	E300	Anions by IC method - Water	92866	10	09/20/19 08:04 PM	IC2_190920B
	MW-9	Aqueous	E300	Anions by IC method - Water	93118	1000	10/07/19 04:59 PM	IC2_191007A
	MW-9	Aqueous	E300	Anions by IC method - Water	92866	1000	09/20/19 11:16 PM	IC2_190920B
	MW-9	Aqueous	E300	Anions by IC method - Water	92866	100	09/21/19 02:28 AM	IC2_190920B
	MW-9	Aqueous	M2540C	Total Dissolved Solids	92921	1	09/25/19 05:15 PM	WC_190925B
1909176-07A	MW-6RB	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 09:50 AM	CETAC2_HG_190925A
	MW-6RB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	500	09/26/19 04:56 PM	ICP-MS4_190926B
	MW-6RB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 06:21 PM	ICP-MS4_190926B
	MW-6RB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 12:54 PM	ICP-MS5_190925A
	MW-6RB	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 12:54 PM	ICP-MS5_190925B
1909176-07B	MW-6RB	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:13 PM	CETAC2_HG_191001C
	MW-6RB	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 01:41 PM	ICP-MS4_190924C
1909176-07C	MW-6RB	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-07D	MW-6RB	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 01:55 PM	TITRATOR_190924A
	MW-6RB	Aqueous	E300	Anions by IC method - Water	92866	10	09/20/19 08:20 PM	IC2_190920B
	MW-6RB	Aqueous	E300	Anions by IC method - Water	93118	1000	10/07/19 05:15 PM	IC2_191007A
	MW-6RB	Aqueous	E300	Anions by IC method - Water	92866	1000	09/20/19 11:32 PM	IC2_190920B
	MW-6RB	Aqueous	E300	Anions by IC method - Water	92866	100	09/21/19 02:44 AM	IC2_190920B
	MW-6RB	Aqueous	M2540C	Total Dissolved Solids	92921	1	09/25/19 05:15 PM	WC_190925B
1909176-08A	MW-10	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 09:52 AM	CETAC2_HG_190925A
	MW-10	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	500	09/26/19 04:58 PM	ICP-MS4_190926B
	MW-10	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 06:25 PM	ICP-MS4_190926B
	MW-10	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 12:57 PM	ICP-MS5_190925A
	MW-10	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 12:57 PM	ICP-MS5_190925B
1909176-08B	MW-10	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:15 PM	CETAC2_HG_191001C

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Client: Golder
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909176-08B	MW-10	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 01:43 PM	ICP-MS4_190924C
1909176-08C	MW-10	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-08D	MW-10	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 02:30 PM	TITRATOR_190924A
	MW-10	Aqueous	E300	Anions by IC method - Water	92867	5	09/20/19 06:05 PM	IC4_190919B
	MW-10	Aqueous	E300	Anions by IC method - Water	93118	1000	10/07/19 05:31 PM	IC2_191007A
	MW-10	Aqueous	E300	Anions by IC method - Water	92867	100	09/21/19 12:13 AM	IC4_190919B
	MW-10	Aqueous	E300	Anions by IC method - Water	92867	1000	09/20/19 05:17 PM	IC4_190919B
	MW-10	Aqueous	M2540C	Total Dissolved Solids	92921	1	09/25/19 05:15 PM	WC_190925B
1909176-09A	DB-5	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 09:54 AM	CETAC2_HG_190925A
	DB-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	500	09/26/19 05:01 PM	ICP-MS4_190926B
	DB-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 06:29 PM	ICP-MS4_190926B
	DB-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 12:59 PM	ICP-MS5_190925A
	DB-5	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 12:59 PM	ICP-MS5_190925B
1909176-09B	DB-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:17 PM	CETAC2_HG_191001C
	DB-5	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 01:45 PM	ICP-MS4_190924C
1909176-09C	DB-5	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-09D	DB-5	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 02:55 PM	TITRATOR_190924A
	DB-5	Aqueous	E300	Anions by IC method - Water	92867	100	09/21/19 02:05 AM	IC4_190919B
	DB-5	Aqueous	E300	Anions by IC method - Water	92867	10	09/20/19 06:21 PM	IC4_190919B
	DB-5	Aqueous	E300	Anions by IC method - Water	92867	1000	09/20/19 10:05 PM	IC4_190919B
	DB-5	Aqueous	M2540C	Total Dissolved Solids	92921	1	09/25/19 05:15 PM	WC_190925B
1909176-10A	MW-3RB	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 09:57 AM	CETAC2_HG_190925A
	MW-3RB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1000	09/26/19 05:03 PM	ICP-MS4_190926B
	MW-3RB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 06:33 PM	ICP-MS4_190926B
	MW-3RB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 01:01 PM	ICP-MS5_190925A
	MW-3RB	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 01:01 PM	ICP-MS5_190925B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909176-10B	MW-3RB	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:24 PM	CETAC2_HG_191001C
	MW-3RB	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 02:12 PM	ICP-MS4_190924C
1909176-10C	MW-3RB	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-10D	MW-3RB	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 03:19 PM	TITRATOR_190924A
	MW-3RB	Aqueous	E300	Anions by IC method - Water	92867	10	09/20/19 06:37 PM	IC4_190919B
	MW-3RB	Aqueous	E300	Anions by IC method - Water	92867	100	09/21/19 02:21 AM	IC4_190919B
	MW-3RB	Aqueous	E300	Anions by IC method - Water	92867	1000	09/20/19 10:21 PM	IC4_190919B
	MW-3RB	Aqueous	M2540C	Total Dissolved Solids	92938	1	09/25/19 03:45 PM	WC_190925C
1909176-11A	MW-3R	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 09:59 AM	CETAC2_HG_190925A
	MW-3R	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1000	09/26/19 03:54 PM	ICP-MS4_190926B
	MW-3R	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 05:19 PM	ICP-MS4_190926B
	MW-3R	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 02:15 PM	ICP-MS5_190925A
	MW-3R	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 02:15 PM	ICP-MS5_190925B
1909176-11B	MW-3R	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:26 PM	CETAC2_HG_191001C
	MW-3R	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 02:14 PM	ICP-MS4_190924C
1909176-11C	MW-3R	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-11D	MW-3R	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 03:37 PM	TITRATOR_190924A
	MW-3R	Aqueous	E300	Anions by IC method - Water	92867	10	09/20/19 06:53 PM	IC4_190919B
	MW-3R	Aqueous	E300	Anions by IC method - Water	92867	1000	09/20/19 10:37 PM	IC4_190919B
	MW-3R	Aqueous	E300	Anions by IC method - Water	92867	100	09/21/19 02:37 AM	IC4_190919B
	MW-3R	Aqueous	M2540C	Total Dissolved Solids	92938	1	09/25/19 03:45 PM	WC_190925C
1909176-12A	MW-1	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 10:01 AM	CETAC2_HG_190925A
	MW-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	500	09/26/19 03:56 PM	ICP-MS4_190926B
	MW-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 05:23 PM	ICP-MS4_190926B
	MW-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 02:17 PM	ICP-MS5_190925A
	MW-1	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 02:17 PM	ICP-MS5_190925B

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Client: Golder
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909176-12B	MW-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:29 PM	CETAC2_HG_191001C
	MW-1	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 02:16 PM	ICP-MS4_190924C
1909176-12C	MW-1	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-12D	MW-1	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 04:18 PM	TITRATOR_190924A
	MW-1	Aqueous	E300	Anions by IC method - Water	92867	1000	09/20/19 10:53 PM	IC4_190919B
	MW-1	Aqueous	E300	Anions by IC method - Water	92867	100	09/21/19 02:53 AM	IC4_190919B
	MW-1	Aqueous	E300	Anions by IC method - Water	92867	10	09/20/19 07:09 PM	IC4_190919B
	MW-1	Aqueous	M2540C	Total Dissolved Solids	92938	1	09/25/19 03:45 PM	WC_190925C
1909176-13A	MW-7B	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 10:08 AM	CETAC2_HG_190925A
	MW-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1000	09/26/19 03:58 PM	ICP-MS4_190926B
	MW-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 05:27 PM	ICP-MS4_190926B
	MW-7B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 02:20 PM	ICP-MS5_190925A
	MW-7B	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 02:20 PM	ICP-MS5_190925B
1909176-13B	MW-7B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:31 PM	CETAC2_HG_191001C
	MW-7B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 02:18 PM	ICP-MS4_190924C
1909176-13C	MW-7B	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-13D	MW-7B	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 04:36 PM	TITRATOR_190924A
	MW-7B	Aqueous	E300	Anions by IC method - Water	92867	1000	09/20/19 11:09 PM	IC4_190919B
	MW-7B	Aqueous	E300	Anions by IC method - Water	92867	100	09/21/19 03:09 AM	IC4_190919B
	MW-7B	Aqueous	E300	Anions by IC method - Water	92867	10	09/20/19 07:25 PM	IC4_190919B
	MW-7B	Aqueous	M2540C	Total Dissolved Solids	92938	1	09/25/19 03:45 PM	WC_190925C
1909176-14A	MW-7	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 10:10 AM	CETAC2_HG_190925A
	MW-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1000	09/26/19 04:00 PM	ICP-MS4_190926B
	MW-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 05:31 PM	ICP-MS4_190926B
	MW-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 02:22 PM	ICP-MS5_190925A
	MW-7	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 02:22 PM	ICP-MS5_190925B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909176-14B	MW-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:33 PM	CETAC2_HG_191001C
	MW-7	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 02:20 PM	ICP-MS4_190924C
1909176-14C	MW-7	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-14D	MW-7	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 04:51 PM	TITRATOR_190924A
	MW-7	Aqueous	E300	Anions by IC method - Water	92867	100	09/21/19 03:25 AM	IC4_190919B
	MW-7	Aqueous	E300	Anions by IC method - Water	92867	10	09/20/19 07:41 PM	IC4_190919B
	MW-7	Aqueous	E300	Anions by IC method - Water	92867	1000	09/20/19 11:25 PM	IC4_190919B
	MW-7	Aqueous	M2540C	Total Dissolved Solids	92938	1	09/25/19 03:45 PM	WC_190925C
1909176-15A	MW-11B	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 10:13 AM	CETAC2_HG_190925A
	MW-11B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	500	09/26/19 04:02 PM	ICP-MS4_190926B
	MW-11B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	10	09/26/19 05:35 PM	ICP-MS4_190926B
	MW-11B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 02:24 PM	ICP-MS5_190925A
	MW-11B	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 02:24 PM	ICP-MS5_190925B
1909176-15B	MW-11B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:35 PM	CETAC2_HG_191001C
	MW-11B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 02:22 PM	ICP-MS4_190924C
1909176-15C	MW-11B	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-15D	MW-11B	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 05:13 PM	TITRATOR_190924A
	MW-11B	Aqueous	E300	Anions by IC method - Water	92867	10	09/20/19 07:57 PM	IC4_190919B
	MW-11B	Aqueous	E300	Anions by IC method - Water	92867	1000	09/20/19 11:41 PM	IC4_190919B
	MW-11B	Aqueous	E300	Anions by IC method - Water	92867	100	09/21/19 03:41 AM	IC4_190919B
	MW-11B	Aqueous	M2540C	Total Dissolved Solids	92938	1	09/25/19 03:45 PM	WC_190925C
1909176-16A	MW-11	Aqueous	SW7470A	Mercury Total: Aqueous	92918	1	09/25/19 10:15 AM	CETAC2_HG_190925A
	MW-11	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	50	09/26/19 05:39 PM	ICP-MS4_190926B
	MW-11	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	1	09/25/19 02:26 PM	ICP-MS5_190925A
	MW-11	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92877	500	09/26/19 04:04 PM	ICP-MS4_190926B
	MW-11	Aqueous	SW6020A	Uranium in Water by ICPMS	92877	1	09/25/19 02:26 PM	ICP-MS5_190925B

Lab Order: 1909176
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909176-16B	MW-11	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 03:38 PM	CETAC2_HG_191001C
	MW-11	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92892	1	09/24/19 02:24 PM	ICP-MS4_190924C
1909176-16C	MW-11	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909176-16D	MW-11	Aqueous	M2320 B	Alkalinity	92913	1	09/24/19 06:11 PM	TITRATOR_190924A
	MW-11	Aqueous	E300	Anions by IC method - Water	93118	1000	10/07/19 05:47 PM	IC2_191007A
	MW-11	Aqueous	E300	Anions by IC method - Water	92867	5	09/20/19 08:13 PM	IC4_190919B
	MW-11	Aqueous	E300	Anions by IC method - Water	92867	1000	09/20/19 11:57 PM	IC4_190919B
	MW-11	Aqueous	E300	Anions by IC method - Water	92867	100	09/21/19 03:57 AM	IC4_190919B
	MW-11	Aqueous	M2540C	Total Dissolved Solids	92938	1	09/25/19 03:45 PM	WC_190925C

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-4
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-01
Project No:	19125525	**Collection Date:**	09/19/19 10:18 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0107	0.0100	0.0300	J	mg/L	1	09/24/19 01:29 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 01:29 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 01:29 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 01:29 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 01:29 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/24/19 01:29 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 01:29 PM
Dissolved Vanadium	<0.000500	0.000500	0.00100		mg/L	1	09/24/19 01:29 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0160	0.0100	0.0300	J	mg/L	1	09/25/19 12:43 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 12:43 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 12:43 PM
Calcium	1010	50.0	150		mg/L	500	09/26/19 04:46 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 12:43 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 12:43 PM
Magnesium	1970	50.0	150		mg/L	500	09/26/19 04:46 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/25/19 12:43 PM
Potassium	70.0	5.00	15.0		mg/L	50	09/26/19 06:01 PM
Sodium	11200	50.0	150		mg/L	500	09/26/19 04:46 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 12:43 PM
Vanadium	<0.000500	0.000500	0.00100		mg/L	1	09/25/19 12:43 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 02:50 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 02:15 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.123	0.00300	0.0100	N	mg/L	1	09/25/19 12:43 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.124	0.00300	0.0100	N	mg/L	1	09/24/19 01:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	23600	300	1000		mg/L	1000	09/20/19 09:56 PM
Fluoride	3.88	1.00	4.00	J	mg/L	10	09/20/19 03:48 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 03:48 PM
Sulfate	7030	100	300		mg/L	100	09/20/19 11:48 PM

Qualifiers:

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N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-4
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-01
Project No:	19125525	**Collection Date:**	09/19/19 10:18 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	293	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 10:46 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 10:46 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 10:46 AM
Alkalinity, Total (As CaCO3)	293	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 10:46 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.759	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	44800	1000	1000		mg/L	1	09/25/19 05:15 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-02
Project No:	19125525	**Collection Date:**	09/19/19 11:03 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0137	0.0100	0.0300	J	mg/L	1	09/24/19 01:31 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 01:31 PM
Dissolved Arsenic	0.00427	0.00200	0.00500	J	mg/L	1	09/24/19 01:31 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 01:31 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 01:31 PM
Dissolved Nickel	0.00751	0.00300	0.0100	J	mg/L	1	09/24/19 01:31 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 01:31 PM
Dissolved Vanadium	0.000962	0.000500	0.00100	J	mg/L	1	09/24/19 01:31 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0547	0.0100	0.0300		mg/L	1	09/25/19 12:39 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 12:39 PM
Arsenic	0.00382	0.00200	0.00500	J	mg/L	1	09/25/19 12:39 PM
Calcium	961	50.0	150		mg/L	500	09/26/19 04:42 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 12:39 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 12:39 PM
Magnesium	870	50.0	150		mg/L	500	09/26/19 04:42 PM
Nickel	0.00796	0.00300	0.0100	J	mg/L	1	09/25/19 12:39 PM
Potassium	58.8	1.00	3.00		mg/L	10	09/26/19 05:55 PM
Sodium	5500	50.0	150		mg/L	500	09/26/19 04:42 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 12:39 PM
Vanadium	0.00133	0.000500	0.00100		mg/L	1	09/25/19 12:39 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:01 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 02:18 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0531	0.00300	0.0100	N	mg/L	1	09/25/19 12:39 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0528	0.00300	0.0100	N	mg/L	1	09/24/19 01:31 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	10200	300	1000		mg/L	1000	10/07/19 03:55 PM
Fluoride	1.96	1.00	4.00	J	mg/L	10	09/20/19 04:04 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 04:04 PM
Sulfate	2180	100	300		mg/L	100	09/21/19 12:04 AM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-02
Project No:	19125525	**Collection Date:**	09/19/19 11:03 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	291	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 11:28 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 11:28 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 11:28 AM
Alkalinity, Total (As CaCO3)	291	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 11:28 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	23000	1000	1000		mg/L	1	09/25/19 05:15 PM

Qualifiers:

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DF- Dilution Factor
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-03
Project No:	19125525	**Collection Date:**	09/19/19 11:37 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0102	0.0100	0.0300	J	mg/L	1	09/24/19 01:33 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 01:33 PM
Dissolved Arsenic	0.00300	0.00200	0.00500	J	mg/L	1	09/24/19 01:33 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 01:33 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 01:33 PM
Dissolved Nickel	0.0163	0.00300	0.0100		mg/L	1	09/24/19 01:33 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 01:33 PM
Dissolved Vanadium	0.00974	0.000500	0.00100		mg/L	1	09/24/19 01:33 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	<0.0100	0.0100	0.0300		mg/L	1	09/25/19 12:46 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 12:46 PM
Arsenic	0.00262	0.00200	0.00500	J	mg/L	1	09/25/19 12:46 PM
Calcium	951	100	300		mg/L	1000	09/26/19 04:48 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 12:46 PM
Lead	0.000476	0.000300	0.00100	J	mg/L	1	09/25/19 12:46 PM
Magnesium	1140	100	300		mg/L	1000	09/26/19 04:48 PM
Nickel	0.0155	0.00300	0.0100		mg/L	1	09/25/19 12:46 PM
Potassium	53.1	10.0	30.0		mg/L	100	09/26/19 06:05 PM
Sodium	6860	100	300		mg/L	1000	09/26/19 04:48 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 12:46 PM
Vanadium	0.00972	0.000500	0.00100		mg/L	1	09/25/19 12:46 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:04 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 02:25 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.104	0.00300	0.0100	N	mg/L	1	09/25/19 12:46 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.104	0.00300	0.0100	N	mg/L	1	09/24/19 01:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	14500	300	1000		mg/L	1000	09/20/19 10:28 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/20/19 07:16 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 07:16 PM
Sulfate	3610	100	300		mg/L	100	09/21/19 12:20 AM

Qualifiers:

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-03
Project No:	19125525	**Collection Date:**	09/19/19 11:37 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	525	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 12:03 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 12:03 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 12:03 PM
Alkalinity, Total (As CaCO3)	525	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 12:03 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	29100	1000	1000		mg/L	1	09/25/19 05:15 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-303
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-04
Project No:	19125525	**Collection Date:**	09/19/19 11:42 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0113	0.0100	0.0300	J	mg/L	1	09/24/19 01:35 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 01:35 PM
Dissolved Arsenic	0.00290	0.00200	0.00500	J	mg/L	1	09/24/19 01:35 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 01:35 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 01:35 PM
Dissolved Nickel	0.0162	0.00300	0.0100		mg/L	1	09/24/19 01:35 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 01:35 PM
Dissolved Vanadium	0.00977	0.000500	0.00100		mg/L	1	09/24/19 01:35 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0102	0.0100	0.0300	J	mg/L	1	09/25/19 12:48 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 12:48 PM
Arsenic	0.00253	0.00200	0.00500	J	mg/L	1	09/25/19 12:48 PM
Calcium	943	50.0	150		mg/L	500	09/26/19 04:50 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 12:48 PM
Lead	0.000463	0.000300	0.00100	J	mg/L	1	09/25/19 12:48 PM
Magnesium	1120	50.0	150		mg/L	500	09/26/19 04:50 PM
Nickel	0.0154	0.00300	0.0100		mg/L	1	09/25/19 12:48 PM
Potassium	50.3	1.00	3.00		mg/L	10	09/26/19 06:09 PM
Sodium	6730	50.0	150		mg/L	500	09/26/19 04:50 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 12:48 PM
Vanadium	0.00965	0.000500	0.00100		mg/L	1	09/25/19 12:48 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:06 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 09:43 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.104	0.00300	0.0100	N	mg/L	1	09/25/19 12:48 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.105	0.00300	0.0100	N	mg/L	1	09/24/19 01:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	15200	300	1000		mg/L	1000	09/20/19 10:44 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/20/19 07:32 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 07:32 PM
Sulfate	3630	100	300		mg/L	100	09/21/19 01:56 AM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-303
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-04
Project No:	19125525	**Collection Date:**	09/19/19 11:42 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	524	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 12:38 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 12:38 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 12:38 PM
Alkalinity, Total (As CaCO3)	524	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 12:38 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	27500	1000	1000		mg/L	1	09/25/19 05:15 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-8
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-05
Project No:	19125525	**Collection Date:**	09/19/19 12:31 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0109	0.0100	0.0300	J	mg/L	1	09/24/19 01:37 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 01:37 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 01:37 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 01:37 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 01:37 PM
Dissolved Nickel	0.0151	0.00300	0.0100		mg/L	1	09/24/19 01:37 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 01:37 PM
Dissolved Vanadium	0.00316	0.000500	0.00100		mg/L	1	09/24/19 01:37 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0157	0.0100	0.0300	J	mg/L	1	09/25/19 12:50 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 12:50 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 12:50 PM
Calcium	906	50.0	150		mg/L	500	09/26/19 04:52 PM
Chromium	0.00279	0.00200	0.00500	J	mg/L	1	09/25/19 12:50 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 12:50 PM
Magnesium	760	50.0	150		mg/L	500	09/26/19 04:52 PM
Nickel	0.0173	0.00300	0.0100		mg/L	1	09/25/19 12:50 PM
Potassium	26.1	1.00	3.00		mg/L	10	09/26/19 06:13 PM
Sodium	6670	50.0	150		mg/L	500	09/26/19 04:52 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 12:50 PM
Vanadium	0.00320	0.000500	0.00100		mg/L	1	09/25/19 12:50 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:08 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 09:45 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.250	0.00300	0.0100	N	mg/L	1	09/25/19 12:50 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.255	0.00300	0.0100	N	mg/L	1	09/24/19 01:37 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	12600	300	1000		mg/L	1000	09/20/19 11:00 PM
Fluoride	1.04	1.00	4.00	J	mg/L	10	09/20/19 07:48 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 07:48 PM
Sulfate	4800	100	300		mg/L	100	09/21/19 02:12 AM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-8
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-05
Project No:	19125525	**Collection Date:**	09/19/19 12:31 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	423	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 01:06 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 01:06 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 01:06 PM
Alkalinity, Total (As CaCO3)	423	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 01:06 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	26100	1000	1000		mg/L	1	09/25/19 05:15 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-9
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-06
Project No:	19125525	**Collection Date:**	09/19/19 01:14 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	09/24/19 01:39 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 01:39 PM
Dissolved Arsenic	0.00520	0.00200	0.00500		mg/L	1	09/24/19 01:39 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 01:39 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 01:39 PM
Dissolved Nickel	0.0284	0.00300	0.0100		mg/L	1	09/24/19 01:39 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 01:39 PM
Dissolved Vanadium	0.0219	0.000500	0.00100		mg/L	1	09/24/19 01:39 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	<0.0100	0.0100	0.0300		mg/L	1	09/25/19 12:52 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 12:52 PM
Arsenic	0.00464	0.00200	0.00500	J	mg/L	1	09/25/19 12:52 PM
Calcium	1060	50.0	150		mg/L	500	09/26/19 04:54 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 12:52 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 12:52 PM
Magnesium	679	50.0	150		mg/L	500	09/26/19 04:54 PM
Nickel	0.0277	0.00300	0.0100		mg/L	1	09/25/19 12:52 PM
Potassium	29.8	1.00	3.00		mg/L	10	09/26/19 06:17 PM
Sodium	4590	50.0	150		mg/L	500	09/26/19 04:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 12:52 PM
Vanadium	0.0213	0.000500	0.00100		mg/L	1	09/25/19 12:52 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:10 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 09:48 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0246	0.00300	0.0100	N	mg/L	1	09/25/19 12:52 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0257	0.00300	0.0100	N	mg/L	1	09/24/19 01:39 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	11700	300	1000		mg/L	1000	09/20/19 11:16 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/20/19 08:04 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 08:04 PM
Sulfate	1420	10.0	30.0		mg/L	10	09/20/19 08:04 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-9
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-06
Project No:	19125525	**Collection Date:**	09/19/19 01:14 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	402	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 01:34 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 01:34 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 01:34 PM
Alkalinity, Total (As CaCO3)	402	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 01:34 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	18700	1000	1000		mg/L	1	09/25/19 05:15 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6RB
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-07
Project No:	19125525	**Collection Date:**	09/19/19 02:00 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0191	0.0100	0.0300	J	mg/L	1	09/24/19 01:41 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 01:41 PM
Dissolved Arsenic	0.00302	0.00200	0.00500	J	mg/L	1	09/24/19 01:41 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 01:41 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 01:41 PM
Dissolved Nickel	0.0137	0.00300	0.0100		mg/L	1	09/24/19 01:41 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 01:41 PM
Dissolved Vanadium	0.00302	0.000500	0.00100		mg/L	1	09/24/19 01:41 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0294	0.0100	0.0300	J	mg/L	1	09/25/19 12:54 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 12:54 PM
Arsenic	0.00276	0.00200	0.00500	J	mg/L	1	09/25/19 12:54 PM
Calcium	617	50.0	150		mg/L	500	09/26/19 04:56 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 12:54 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 12:54 PM
Magnesium	609	50.0	150		mg/L	500	09/26/19 04:56 PM
Nickel	0.0133	0.00300	0.0100		mg/L	1	09/25/19 12:54 PM
Potassium	36.7	1.00	3.00		mg/L	10	09/26/19 06:21 PM
Sodium	5880	50.0	150		mg/L	500	09/26/19 04:56 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 12:54 PM
Vanadium	0.00326	0.000500	0.00100		mg/L	1	09/25/19 12:54 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:13 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 09:50 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0829	0.00300	0.0100	N	mg/L	1	09/25/19 12:54 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0860	0.00300	0.0100	N	mg/L	1	09/24/19 01:41 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	11200	300	1000		mg/L	1000	09/20/19 11:32 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/20/19 08:20 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 08:20 PM
Sulfate	2740	100	300		mg/L	100	09/21/19 02:44 AM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6RB
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-07
Project No:	19125525	**Collection Date:**	09/19/19 02:00 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	315	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 01:55 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 01:55 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 01:55 PM
Alkalinity, Total (As CaCO3)	315	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 01:55 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	22300	1000	1000		mg/L	1	09/25/19 05:15 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-10
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-08
Project No:	19125525	**Collection Date:**	09/19/19 02:45 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	09/24/19 01:43 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 01:43 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 01:43 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 01:43 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 01:43 PM
Dissolved Nickel	0.0281	0.00300	0.0100		mg/L	1	09/24/19 01:43 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 01:43 PM
Dissolved Vanadium	0.00637	0.000500	0.00100		mg/L	1	09/24/19 01:43 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	<0.0100	0.0100	0.0300		mg/L	1	09/25/19 12:57 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 12:57 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 12:57 PM
Calcium	638	50.0	150		mg/L	500	09/26/19 04:58 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 12:57 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 12:57 PM
Magnesium	648	50.0	150		mg/L	500	09/26/19 04:58 PM
Nickel	0.0268	0.00300	0.0100		mg/L	1	09/25/19 12:57 PM
Potassium	18.4	1.00	3.00		mg/L	10	09/26/19 06:25 PM
Sodium	5380	50.0	150		mg/L	500	09/26/19 04:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 12:57 PM
Vanadium	0.00590	0.000500	0.00100		mg/L	1	09/25/19 12:57 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:15 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 09:52 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.148	0.00300	0.0100	N	mg/L	1	09/25/19 12:57 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.148	0.00300	0.0100	N	mg/L	1	09/24/19 01:43 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	10700	300	1000		mg/L	1000	10/07/19 05:31 PM
Fluoride	1.04	0.500	2.00	J	mg/L	5	09/20/19 06:05 PM
Nitrate-N	<0.500	0.500	2.50		mg/L	5	09/20/19 06:05 PM
Sulfate	3660	1000	3000		mg/L	1000	09/20/19 05:17 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-10
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-08
Project No:	19125525	**Collection Date:**	09/19/19 02:45 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	543	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 02:30 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 02:30 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 02:30 PM
Alkalinity, Total (As CaCO3)	543	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 02:30 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	20200	1000	1000		mg/L	1	09/25/19 05:15 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	DB-5
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-09
Project No:	19125525	**Collection Date:**	09/19/19 10:25 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0227	0.0100	0.0300	J	mg/L	1	09/24/19 01:45 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 01:45 PM
Dissolved Arsenic	0.00641	0.00200	0.00500		mg/L	1	09/24/19 01:45 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 01:45 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 01:45 PM
Dissolved Nickel	0.00786	0.00300	0.0100	J	mg/L	1	09/24/19 01:45 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 01:45 PM
Dissolved Vanadium	0.00834	0.000500	0.00100		mg/L	1	09/24/19 01:45 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0458	0.0100	0.0300		mg/L	1	09/25/19 12:59 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 12:59 PM
Arsenic	0.00592	0.00200	0.00500		mg/L	1	09/25/19 12:59 PM
Calcium	720	50.0	150		mg/L	500	09/26/19 05:01 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 12:59 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 12:59 PM
Magnesium	941	50.0	150		mg/L	500	09/26/19 05:01 PM
Nickel	0.00730	0.00300	0.0100	J	mg/L	1	09/25/19 12:59 PM
Potassium	54.4	1.00	3.00		mg/L	10	09/26/19 06:29 PM
Sodium	8070	50.0	150		mg/L	500	09/26/19 05:01 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 12:59 PM
Vanadium	0.00891	0.000500	0.00100		mg/L	1	09/25/19 12:59 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:17 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 09:54 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0898	0.00300	0.0100	N	mg/L	1	09/25/19 12:59 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0947	0.00300	0.0100	N	mg/L	1	09/24/19 01:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	15100	300	1000		mg/L	1000	09/20/19 10:05 PM
Fluoride	1.45	1.00	4.00	J	mg/L	10	09/20/19 06:21 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 06:21 PM
Sulfate	3040	100	300		mg/L	100	09/21/19 02:05 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	DB-5
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-09
Project No:	19125525	**Collection Date:**	09/19/19 10:25 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	372	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 02:55 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 02:55 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 02:55 PM
Alkalinity, Total (As CaCO3)	372	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 02:55 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.227	0.100	0.250	J	mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	29700	1000	1000		mg/L	1	09/25/19 05:15 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3RB
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-10
Project No:	19125525	**Collection Date:**	09/19/19 11:05 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0137	0.0100	0.0300	J	mg/L	1	09/24/19 02:12 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 02:12 PM
Dissolved Arsenic	0.00539	0.00200	0.00500		mg/L	1	09/24/19 02:12 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 02:12 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 02:12 PM
Dissolved Nickel	0.00404	0.00300	0.0100	J	mg/L	1	09/24/19 02:12 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 02:12 PM
Dissolved Vanadium	0.00873	0.000500	0.00100		mg/L	1	09/24/19 02:12 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.128	0.0100	0.0300		mg/L	1	09/25/19 01:01 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 01:01 PM
Arsenic	0.00466	0.00200	0.00500	J	mg/L	1	09/25/19 01:01 PM
Calcium	1160	100	300		mg/L	1000	09/26/19 05:03 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 01:01 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 01:01 PM
Magnesium	1560	100	300		mg/L	1000	09/26/19 05:03 PM
Nickel	0.00403	0.00300	0.0100	J	mg/L	1	09/25/19 01:01 PM
Potassium	80.3	1.00	3.00		mg/L	10	09/26/19 06:33 PM
Sodium	12400	100	300		mg/L	1000	09/26/19 05:03 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 01:01 PM
Vanadium	0.0123	0.000500	0.00100		mg/L	1	09/25/19 01:01 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:24 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 09:57 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.107	0.00300	0.0100	N	mg/L	1	09/25/19 01:01 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.115	0.00300	0.0100	N	mg/L	1	09/24/19 02:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21400	300	1000		mg/L	1000	09/20/19 10:21 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/20/19 06:37 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 06:37 PM
Sulfate	5900	100	300		mg/L	100	09/21/19 02:21 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3RB
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-10
Project No:	19125525	**Collection Date:**	09/19/19 11:05 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	244	10.0	20.0		mg/L @ pH 4.53	1	09/24/19 03:19 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/24/19 03:19 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/24/19 03:19 PM
Alkalinity, Total (As CaCO3)	244	20.0	20.0		mg/L @ pH 4.53	1	09/24/19 03:19 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	47800	1000	1000		mg/L	1	09/25/19 03:45 PM

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3R
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-11
Project No:	19125525	**Collection Date:**	09/19/19 11:35 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0112	0.0100	0.0300	J	mg/L	1	09/24/19 02:14 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 02:14 PM
Dissolved Arsenic	0.00456	0.00200	0.00500	J	mg/L	1	09/24/19 02:14 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 02:14 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 02:14 PM
Dissolved Nickel	0.00420	0.00300	0.0100	J	mg/L	1	09/24/19 02:14 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 02:14 PM
Dissolved Vanadium	0.0167	0.000500	0.00100		mg/L	1	09/24/19 02:14 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0112	0.0100	0.0300	J	mg/L	1	09/25/19 02:15 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 02:15 PM
Arsenic	0.00380	0.00200	0.00500	J	mg/L	1	09/25/19 02:15 PM
Calcium	1240	100	300		mg/L	1000	09/26/19 03:54 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 02:15 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 02:15 PM
Magnesium	1610	100	300		mg/L	1000	09/26/19 03:54 PM
Nickel	0.00376	0.00300	0.0100	J	mg/L	1	09/25/19 02:15 PM
Potassium	81.9	1.00	3.00		mg/L	10	09/26/19 05:19 PM
Sodium	12700	100	300		mg/L	1000	09/26/19 03:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 02:15 PM
Vanadium	0.0174	0.000500	0.00100		mg/L	1	09/25/19 02:15 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:26 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	0.000132	0.0000800	0.000200	J	mg/L	1	09/25/19 09:59 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.115	0.00300	0.0100	N	mg/L	1	09/25/19 02:15 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.120	0.00300	0.0100	N	mg/L	1	09/24/19 02:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	22300	300	1000		mg/L	1000	09/20/19 10:37 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/20/19 06:53 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 06:53 PM
Sulfate	5600	100	300		mg/L	100	09/21/19 02:37 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3R
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-11
Project No:	19125525	**Collection Date:**	09/19/19 11:35 AM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	240	10.0	20.0		mg/L @ pH 4.53	1	09/24/19 03:37 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/24/19 03:37 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/24/19 03:37 PM
Alkalinity, Total (As CaCO3)	240	20.0	20.0		mg/L @ pH 4.53	1	09/24/19 03:37 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	47400	1000	1000		mg/L	1	09/25/19 03:45 PM

Qualifiers:

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DF- Dilution Factor
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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-1
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-12
Project No:	19125525	**Collection Date:**	09/19/19 12:25 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0161	0.0100	0.0300	J	mg/L	1	09/24/19 02:16 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 02:16 PM
Dissolved Arsenic	0.00454	0.00200	0.00500	J	mg/L	1	09/24/19 02:16 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 02:16 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 02:16 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/24/19 02:16 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 02:16 PM
Dissolved Vanadium	0.00146	0.000500	0.00100		mg/L	1	09/24/19 02:16 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0502	0.0100	0.0300		mg/L	1	09/25/19 02:17 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 02:17 PM
Arsenic	0.00578	0.00200	0.00500		mg/L	1	09/25/19 02:17 PM
Calcium	829	50.0	150		mg/L	500	09/26/19 03:56 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 02:17 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 02:17 PM
Magnesium	1220	50.0	150		mg/L	500	09/26/19 03:56 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/25/19 02:17 PM
Potassium	54.7	1.00	3.00		mg/L	10	09/26/19 05:23 PM
Sodium	10100	50.0	150		mg/L	500	09/26/19 03:56 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 02:17 PM
Vanadium	0.00155	0.000500	0.00100		mg/L	1	09/25/19 02:17 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:29 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 10:01 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0158	0.00300	0.0100	N	mg/L	1	09/25/19 02:17 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0146	0.00300	0.0100	N	mg/L	1	09/24/19 02:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	18600	300	1000		mg/L	1000	09/20/19 10:53 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/20/19 07:09 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 07:09 PM
Sulfate	2220	100	300		mg/L	100	09/21/19 02:53 AM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-1
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-12
Project No:	19125525	**Collection Date:**	09/19/19 12:25 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	337	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 04:18 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 04:18 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 04:18 PM
Alkalinity, Total (As CaCO3)	337	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 04:18 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	2.23	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	36900	1000	1000		mg/L	1	09/25/19 03:45 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-13
Project No:	19125525	**Collection Date:**	09/19/19 01:05 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0159	0.0100	0.0300	J	mg/L	1	09/24/19 02:18 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 02:18 PM
Dissolved Arsenic	0.00465	0.00200	0.00500	J	mg/L	1	09/24/19 02:18 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 02:18 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 02:18 PM
Dissolved Nickel	0.00973	0.00300	0.0100	J	mg/L	1	09/24/19 02:18 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 02:18 PM
Dissolved Vanadium	0.00398	0.000500	0.00100		mg/L	1	09/24/19 02:18 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0297	0.0100	0.0300	J	mg/L	1	09/25/19 02:20 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 02:20 PM
Arsenic	0.00350	0.00200	0.00500	J	mg/L	1	09/25/19 02:20 PM
Calcium	1500	100	300		mg/L	1000	09/26/19 03:58 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 02:20 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 02:20 PM
Magnesium	1810	100	300		mg/L	1000	09/26/19 03:58 PM
Nickel	0.00784	0.00300	0.0100	J	mg/L	1	09/25/19 02:20 PM
Potassium	86.4	1.00	3.00		mg/L	10	09/26/19 05:27 PM
Sodium	14200	100	300		mg/L	1000	09/26/19 03:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 02:20 PM
Vanadium	0.00522	0.000500	0.00100		mg/L	1	09/25/19 02:20 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:31 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 10:08 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0903	0.00300	0.0100	N	mg/L	1	09/25/19 02:20 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0993	0.00300	0.0100	N	mg/L	1	09/24/19 02:18 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	27600	300	1000		mg/L	1000	09/20/19 11:09 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/20/19 07:25 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 07:25 PM
Sulfate	4110	100	300		mg/L	100	09/21/19 03:09 AM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-13
Project No:	19125525	**Collection Date:**	09/19/19 01:05 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	234	10.0	20.0		mg/L @ pH 4.53	1	09/24/19 04:36 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/24/19 04:36 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/24/19 04:36 PM
Alkalinity, Total (As CaCO3)	234	20.0	20.0		mg/L @ pH 4.53	1	09/24/19 04:36 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	52800	1000	1000		mg/L	1	09/25/19 03:45 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-14
Project No:	19125525	**Collection Date:**	09/19/19 01:35 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0145	0.0100	0.0300	J	mg/L	1	09/24/19 02:20 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 02:20 PM
Dissolved Arsenic	0.00411	0.00200	0.00500	J	mg/L	1	09/24/19 02:20 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 02:20 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 02:20 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/24/19 02:20 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 02:20 PM
Dissolved Vanadium	0.000579	0.000500	0.00100	J	mg/L	1	09/24/19 02:20 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0135	0.0100	0.0300	J	mg/L	1	09/25/19 02:22 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 02:22 PM
Arsenic	0.00341	0.00200	0.00500	J	mg/L	1	09/25/19 02:22 PM
Calcium	1090	100	300		mg/L	1000	09/26/19 04:00 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 02:22 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 02:22 PM
Magnesium	1190	100	300		mg/L	1000	09/26/19 04:00 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/25/19 02:22 PM
Potassium	50.3	1.00	3.00		mg/L	10	09/26/19 05:31 PM
Sodium	11400	100	300		mg/L	1000	09/26/19 04:00 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 02:22 PM
Vanadium	<0.000500	0.000500	0.00100		mg/L	1	09/25/19 02:22 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:33 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 10:10 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0791	0.00300	0.0100	N	mg/L	1	09/25/19 02:22 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0829	0.00300	0.0100	N	mg/L	1	09/24/19 02:20 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	19700	300	1000		mg/L	1000	09/20/19 11:25 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/20/19 07:41 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 07:41 PM
Sulfate	3420	100	300		mg/L	100	09/21/19 03:25 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-14
Project No:	19125525	**Collection Date:**	09/19/19 01:35 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	206	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 04:51 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 04:51 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 04:51 PM
Alkalinity, Total (As CaCO3)	206	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 04:51 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.115	0.100	0.250	J	mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	40000	1000	1000		mg/L	1	09/25/19 03:45 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-15
Project No:	19125525	**Collection Date:**	09/19/19 02:20 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0224	0.0100	0.0300	J	mg/L	1	09/24/19 02:22 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 02:22 PM
Dissolved Arsenic	0.00340	0.00200	0.00500	J	mg/L	1	09/24/19 02:22 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 02:22 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 02:22 PM
Dissolved Nickel	0.00563	0.00300	0.0100	J	mg/L	1	09/24/19 02:22 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 02:22 PM
Dissolved Vanadium	0.00462	0.000500	0.00100		mg/L	1	09/24/19 02:22 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0161	0.0100	0.0300	J	mg/L	1	09/25/19 02:24 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 02:24 PM
Arsenic	0.00282	0.00200	0.00500	J	mg/L	1	09/25/19 02:24 PM
Calcium	650	50.0	150		mg/L	500	09/26/19 04:02 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 02:24 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 02:24 PM
Magnesium	871	50.0	150		mg/L	500	09/26/19 04:02 PM
Nickel	0.00481	0.00300	0.0100	J	mg/L	1	09/25/19 02:24 PM
Potassium	43.5	1.00	3.00		mg/L	10	09/26/19 05:35 PM
Sodium	5490	50.0	150		mg/L	500	09/26/19 04:02 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 02:24 PM
Vanadium	0.00544	0.000500	0.00100		mg/L	1	09/25/19 02:24 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:35 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 10:13 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0825	0.00300	0.0100	N	mg/L	1	09/25/19 02:24 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0878	0.00300	0.0100	N	mg/L	1	09/24/19 02:22 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	10300	300	1000		mg/L	1000	09/20/19 11:41 PM
Fluoride	1.73	1.00	4.00	J	mg/L	10	09/20/19 07:57 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 07:57 PM
Sulfate	2250	100	300		mg/L	100	09/21/19 03:41 AM

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-15
Project No:	19125525	**Collection Date:**	09/19/19 02:20 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	330	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 05:13 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 05:13 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 05:13 PM
Alkalinity, Total (As CaCO3)	330	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 05:13 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	22100	1000	1000		mg/L	1	09/25/19 03:45 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-16
Project No:	19125525	**Collection Date:**	09/19/19 02:50 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0207	0.0100	0.0300	J	mg/L	1	09/24/19 02:24 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 02:24 PM
Dissolved Arsenic	0.00257	0.00200	0.00500	J	mg/L	1	09/24/19 02:24 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 02:24 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 02:24 PM
Dissolved Nickel	0.0281	0.00300	0.0100		mg/L	1	09/24/19 02:24 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 02:24 PM
Dissolved Vanadium	0.0283	0.000500	0.00100		mg/L	1	09/24/19 02:24 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.138	0.0100	0.0300		mg/L	1	09/25/19 02:26 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 02:26 PM
Arsenic	0.00249	0.00200	0.00500	J	mg/L	1	09/25/19 02:26 PM
Calcium	353	5.00	15.0		mg/L	50	09/26/19 05:39 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 02:26 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 02:26 PM
Magnesium	571	5.00	15.0		mg/L	50	09/26/19 05:39 PM
Nickel	0.0256	0.00300	0.0100		mg/L	1	09/25/19 02:26 PM
Potassium	20.9	5.00	15.0		mg/L	50	09/26/19 05:39 PM
Sodium	5080	50.0	150		mg/L	500	09/26/19 04:04 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 02:26 PM
Vanadium	0.0270	0.000500	0.00100		mg/L	1	09/25/19 02:26 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 03:38 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 10:15 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0888	0.00300	0.0100	N	mg/L	1	09/25/19 02:26 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0935	0.00300	0.0100	N	mg/L	1	09/24/19 02:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	9210	300	1000		mg/L	1000	09/20/19 11:57 PM
Fluoride	1.67	0.500	2.00	J	mg/L	5	09/20/19 08:13 PM
Nitrate-N	<0.500	0.500	2.50		mg/L	5	09/20/19 08:13 PM
Sulfate	1750	100	300		mg/L	100	09/21/19 03:57 AM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909176-16
Project No:	19125525	**Collection Date:**	09/19/19 02:50 PM
Lab Order:	1909176	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **SNM**
Alkalinity, Bicarbonate (As CaCO3)	1030	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 06:11 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 06:11 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/24/19 06:11 PM
Alkalinity, Total (As CaCO3)	1030	20.0	20.0		mg/L @ pH 4.54	1	09/24/19 06:11 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	17400	200	200		mg/L	1	09/25/19 03:45 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190916A

Sample ID: **DCS-92776** Batch ID: **92776** TestNo: **SW7470A** Units: **mg/L**
SampType: **DCS** Run ID: **CETAC2_HG_190916A** Analysis Date: **9/16/2019 12:35:58 PM** Prep Date: **9/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000183	0.000200	0.000200	0	91.5	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190925A

The QC data in batch 92918 applies to the following samples: 1909176-04A, 1909176-05A, 1909176-06A, 1909176-07A, 1909176-08A, 1909176-09A, 1909176-10A, 1909176-11A, 1909176-12A, 1909176-13A, 1909176-14A, 1909176-15A, 1909176-16A

Sample ID: **MB-92918** Batch ID: **92918** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_190925A** Analysis Date: **9/25/2019 9:32:15 AM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-92918** Batch ID: **92918** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_190925A** Analysis Date: **9/25/2019 9:36:47 AM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00215	0.000200	0.00200	0	108	85	115			

Sample ID: **LCSD-92918** Batch ID: **92918** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_190925A** Analysis Date: **9/25/2019 9:39:03 AM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00207	0.000200	0.00200	0	104	85	115	3.79	15	

Sample ID: **1909189-01A MS** Batch ID: **92918** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_190925A** Analysis Date: **9/25/2019 10:26:43 AM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0107	0.00100	0.0100	0	107	80	120			

Sample ID: **1909189-01A MSD** Batch ID: **92918** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_190925A** Analysis Date: **9/25/2019 10:29:00 AM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0107	0.00100	0.0100	0	106	80	120	0.468	15	

Sample ID: **1909189-01A SD** Batch ID: **92918** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_190925A** Analysis Date: **9/25/2019 10:31:16 AM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **1909189-01A PDS** Batch ID: **92918** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_190925A** Analysis Date: **9/25/2019 10:33:32 AM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0120	0.00100	0.0125	0	95.6	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190925A

Sample ID: **ICV-190925**	Batch ID: **R106547**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190925A**	Analysis Date: **9/25/2019 9:27:41 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00390	0.000200	0.00400	0	97.5	90	110			

Sample ID: **CCV1-190925**	Batch ID: **R106547**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925A**	Analysis Date: **9/25/2019 10:04:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Sample ID: **CCV2-190925**	Batch ID: **R106547**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925A**	Analysis Date: **9/25/2019 10:40:24 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190925C

The QC data in batch 92890 applies to the following samples: 1909176-01A, 1909176-02A, 1909176-03A

Sample ID: **MB-92890**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 1:16:14 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-92890**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 1:18:30 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00203	0.000200	0.00200	0	102	85	115			

Sample ID: **LCSD-92890**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 1:20:46 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.000200	0.00200	0	102	85	115	0.491	15	

Sample ID: **1909161-11A SD**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:06:47 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1909161-11A PDS**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:09:03 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00102	0.000200	0.00250	0	40.8	85	115			S

Sample ID: **1909161-11A MS**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:29:35 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00200	0.00100	0.00200	0	99.8	80	120			

Sample ID: **1909161-11A MSD**	Batch ID: **92890**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:31:52 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.00100	0.00200	0	102	80	120	2.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190925C

Sample ID: **ICV-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 9:27:41 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00390	0.000200	0.00400	0	97.5	90	110			

Sample ID: **CCV4-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 12:45:01 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Sample ID: **CCV5-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 1:43:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV6-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:20:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV7-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:34:10 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191001C

The QC data in batch 93029 applies to the following samples: 1909176-01B , 1909176-02B, 1909176-03B, 1909176-04B, 1909176-05B, 1909176-06B, 1909176-07B, 1909176-08B, 1909176-09B, 1909176-10B, 1909176-11B, 1909176-12B, 1909176-13B, 1909176-14B, 1909176-15B, 1909176-16B

Sample ID: **MB-93029** Batch ID: **93029** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_191001C** Analysis Date: **10/1/2019 2:41:24 PM** Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-93029** Batch ID: **93029** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_191001C** Analysis Date: **10/1/2019 2:43:40 PM** Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00219	0.000200	0.00200	0	110	85	115			

Sample ID: **LCSD-93029** Batch ID: **93029** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_191001C** Analysis Date: **10/1/2019 2:45:56 PM** Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00209	0.000200	0.00200	0	104	85	115	4.67	15	

Sample ID: **1909176-01B SD** Batch ID: **93029** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_191001C** Analysis Date: **10/1/2019 2:57:15 PM** Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1909176-01B PDS** Batch ID: **93029** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_191001C** Analysis Date: **10/1/2019 2:59:31 PM** Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00125	0.000200	0.00250	0	50.0	85	115			S

Sample ID: **1909176-01B MS** Batch ID: **93029** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_191001C** Analysis Date: **10/1/2019 4:52:10 PM** Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00216	0.00100	0.00200	0	108	80	120			

Sample ID: **1909176-01B MSD** Batch ID: **93029** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_191001C** Analysis Date: **10/1/2019 4:54:26 PM** Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00222	0.00100	0.00200	0	111	80	120	2.75	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191001C

Sample ID: **ICV-191001**	Batch ID: **R106673**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 2:36:50 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00388	0.000200	0.00400	0	97.0	90	110			

Sample ID: **CCV1-191001**	Batch ID: **R106673**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 3:19:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV2-191001**	Batch ID: **R106673**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 3:52:21 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV3-191001**	Batch ID: **R106673**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 4:38:31 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID: **CCV4-191001**	Batch ID: **R106673**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 4:56:44 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00206	0.000200	0.00200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

Sample ID: **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:24:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0353	0.0300	0.0300	0	118	70	130	0	0	
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	
Magnesium	0.323	0.300	0.300	0	108	70	130	0	0	
Potassium	0.303	0.300	0.300	0	101	70	130	0	0	
Sodium	0.300	0.300	0.300	0	100	70	130	0	0	

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:27:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00522	0.00500	0.00500	0	104	70	130	0	0	
Chromium	0.00523	0.00500	0.00500	0	105	70	130	0	0	
Nickel	0.00557	0.0100	0.00500	0	111	70	130	0	0	

Sample ID: **DCS1-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:34:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.000904	0.00250	0.00100	0	90.4	70	130	0	0	
Lead	0.000475	0.00100	0.000500	0	95.0	70	130	0	0	
Thallium	0.000471	0.00150	0.000500	0	94.2	70	130	0	0	
Vanadium	0.000464	0.00100	0.000500	0	92.8	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_190924C**

The QC data in batch 92892 applies to the following samples: 1909176-01B, 1909176-02B, 1909176-03B, 1909176-04B, 1909176-05B, 1909176-06B, 1909176-07B, 1909176-08B, 1909176-09B, 1909176-10B, 1909176-11B, 1909176-12B, 1909176-13B, 1909176-14B, 1909176-15B, 1909176-16B

Sample ID: **MB-92892** Batch ID: **92892** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 1:17:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-92892** Batch ID: **92892** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 1:19:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.00	0.0300	5.00	0	99.9	80	120			
Antimony	0.201	0.00250	0.200	0	100	80	120			
Arsenic	0.205	0.00500	0.200	0	102	80	120			
Chromium	0.209	0.00500	0.200	0	104	80	120			
Lead	0.199	0.00100	0.200	0	99.7	80	120			
Nickel	0.209	0.0100	0.200	0	105	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			
Vanadium	0.205	0.00100	0.200	0	103	80	120			

Sample ID: **LCSD-92892** Batch ID: **92892** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 1:21:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.01	0.0300	5.00	0	100	80	120	0.301	15	
Antimony	0.199	0.00250	0.200	0	99.6	80	120	0.675	15	
Arsenic	0.205	0.00500	0.200	0	102	80	120	0.028	15	
Chromium	0.212	0.00500	0.200	0	106	80	120	1.48	15	
Lead	0.206	0.00100	0.200	0	103	80	120	3.43	15	
Nickel	0.210	0.0100	0.200	0	105	80	120	0.190	15	
Thallium	0.207	0.00150	0.200	0	103	80	120	3.21	15	
Vanadium	0.208	0.00100	0.200	0	104	80	120	1.26	15	

Sample ID: **1909175-04B SD** Batch ID: **92892** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 1:27:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190924C

Sample ID: **1909175-04B SD**	Batch ID: **92892**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190924C**	Analysis Date: **9/24/2019 1:27:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0290				0	10	
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00368				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Nickel	<0.0150	0.0500	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	<0.00250	0.00500	0	0.00169				0	10	

Sample ID: **1909175-04B PDS**	Batch ID: **92892**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190924C**	Analysis Date: **9/24/2019 1:47:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.89	0.0300	5.00	0.0290	97.2	80	120			
Antimony	0.194	0.00250	0.200	0	96.9	80	120			
Arsenic	0.205	0.00500	0.200	0.00368	101	80	120			
Chromium	0.194	0.00500	0.200	0	97.1	80	120			
Lead	0.203	0.00100	0.200	0	102	80	120			
Nickel	0.200	0.0100	0.200	0	100	80	120			
Thallium	0.204	0.00150	0.200	0	102	80	120			
Vanadium	0.197	0.00100	0.200	0.00169	97.6	80	120			

Sample ID: **1909175-04B MS**	Batch ID: **92892**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190924C**	Analysis Date: **9/24/2019 1:49:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.04	0.0300	5.00	0.0290	100	80	120			
Antimony	0.197	0.00250	0.200	0	98.3	80	120			
Arsenic	0.212	0.00500	0.200	0.00368	104	80	120			
Chromium	0.193	0.00500	0.200	0	96.3	80	120			
Lead	0.209	0.00100	0.200	0	104	80	120			
Nickel	0.199	0.0100	0.200	0	99.4	80	120			
Thallium	0.210	0.00150	0.200	0	105	80	120			
Vanadium	0.198	0.00100	0.200	0.00169	97.9	80	120			

Sample ID: **1909175-04B MSD**	Batch ID: **92892**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190924C**	Analysis Date: **9/24/2019 1:50:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.03	0.0300	5.00	0.0290	100	80	120	0.090	15	
Antimony	0.196	0.00250	0.200	0	98.2	80	120	0.074	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_190924C**

Sample ID: **1909175-04B MSD** Batch ID: **92892** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 1:50:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.210	0.00500	0.200	0.00368	103	80	120	0.849	15	
Chromium	0.195	0.00500	0.200	0	97.3	80	120	1.04	15	
Lead	0.207	0.00100	0.200	0	103	80	120	0.980	15	
Nickel	0.197	0.0100	0.200	0	98.6	80	120	0.863	15	
Thallium	0.208	0.00150	0.200	0	104	80	120	1.15	15	
Vanadium	0.198	0.00100	0.200	0.00169	98.2	80	120	0.286	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190924C

Sample ID: **ICV-190924** Batch ID: **R106535** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 11:11:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.44	0.0300	2.50	0	97.5	90	110			
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Nickel	0.108	0.0100	0.100	0	108	90	110			
Thallium	0.102	0.00150	0.100	0	102	90	110			
Vanadium	0.103	0.00100	0.100	0	103	90	110			

Sample ID: **LCVL-190924** Batch ID: **R106535** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 11:27:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.105	0.0300	0.100	0	105	70	130			
Antimony	0.00204	0.00250	0.00200	0	102	70	130			
Arsenic	0.00523	0.00500	0.00500	0	105	70	130			
Chromium	0.00535	0.00500	0.00500	0	107	70	130			
Lead	0.000955	0.00100	0.00100	0	95.5	70	130			
Nickel	0.00533	0.0100	0.00500	0	107	70	130			
Thallium	0.000922	0.00150	0.00100	0	92.2	70	130			
Vanadium	0.000846	0.00100	0.00100	0	84.6	70	130			

Sample ID: **CCV2-190924** Batch ID: **R106535** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 12:44:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.08	0.0300	5.00	0	102	90	110			
Antimony	0.198	0.00250	0.200	0	99.2	90	110			
Arsenic	0.200	0.00500	0.200	0	99.9	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Lead	0.199	0.00100	0.200	0	99.7	90	110			
Nickel	0.206	0.0100	0.200	0	103	90	110			
Thallium	0.197	0.00150	0.200	0	98.5	90	110			
Vanadium	0.204	0.00100	0.200	0	102	90	110			

Sample ID: **LCVL2-190924** Batch ID: **R106535** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 1:11:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.101	0.0300	0.100	0	101	70	130			
Antimony	0.00191	0.00250	0.00200	0	95.7	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190924C

Sample ID: **LCVL2-190924** Batch ID: **R106535** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 1:11:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00528	0.00500	0.00500	0	106	70	130			
Chromium	0.00521	0.00500	0.00500	0	104	70	130			
Lead	0.000928	0.00100	0.00100	0	92.8	70	130			
Nickel	0.00536	0.0100	0.00500	0	107	70	130			
Thallium	0.000914	0.00150	0.00100	0	91.4	70	130			
Vanadium	0.000767	0.00100	0.00100	0	76.7	70	130			

Sample ID: **CCV3-190924** Batch ID: **R106535** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 1:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.12	0.0300	5.00	0	102	90	110			
Antimony	0.192	0.00250	0.200	0	95.8	90	110			
Arsenic	0.201	0.00500	0.200	0	100	90	110			
Chromium	0.197	0.00500	0.200	0	98.3	90	110			
Lead	0.198	0.00100	0.200	0	99.1	90	110			
Nickel	0.203	0.0100	0.200	0	101	90	110			
Thallium	0.198	0.00150	0.200	0	98.8	90	110			
Vanadium	0.194	0.00100	0.200	0	96.8	90	110			

Sample ID: **LCVL3-190924** Batch ID: **R106535** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 2:07:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.108	0.0300	0.100	0	108	70	130			
Antimony	0.00202	0.00250	0.00200	0	101	70	130			
Arsenic	0.00521	0.00500	0.00500	0	104	70	130			
Chromium	0.00510	0.00500	0.00500	0	102	70	130			
Lead	0.000912	0.00100	0.00100	0	91.2	70	130			
Nickel	0.00515	0.0100	0.00500	0	103	70	130			
Thallium	0.000906	0.00150	0.00100	0	90.6	70	130			
Vanadium	0.000919	0.00100	0.00100	0	91.9	70	130			

Sample ID: **CCV4-190924** Batch ID: **R106535** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190924C** Analysis Date: **9/24/2019 2:40:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.08	0.0300	5.00	0	102	90	110			
Antimony	0.191	0.00250	0.200	0	95.4	90	110			
Arsenic	0.203	0.00500	0.200	0	101	90	110			
Chromium	0.196	0.00500	0.200	0	97.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190924C

Sample ID: **CCV4-190924**	Batch ID: **R106535**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190924C**	Analysis Date: **9/24/2019 2:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.198	0.00100	0.200	0	99.1	90	110			
Nickel	0.203	0.0100	0.200	0	101	90	110			
Thallium	0.197	0.00150	0.200	0	98.7	90	110			
Vanadium	0.193	0.00100	0.200	0	96.4	90	110			

Sample ID: **LCVL4-190924**	Batch ID: **R106535**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190924C**	Analysis Date: **9/24/2019 2:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.107	0.0300	0.100	0	107	70	130			
Antimony	0.00197	0.00250	0.00200	0	98.4	70	130			
Arsenic	0.00530	0.00500	0.00500	0	106	70	130			
Chromium	0.00490	0.00500	0.00500	0	98.1	70	130			
Lead	0.000896	0.00100	0.00100	0	89.6	70	130			
Nickel	0.00506	0.0100	0.00500	0	101	70	130			
Thallium	0.000894	0.00150	0.00100	0	89.4	70	130			
Vanadium	0.00106	0.00100	0.00100	0	106	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190924E

The QC data in batch 92892 applies to the following samples: 1909176-01B, 1909176-02B, 1909176-03B, 1909176-04B, 1909176-05B, 1909176-06B, 1909176-07B, 1909176-08B, 1909176-09B, 1909176-10B, 1909176-11B, 1909176-12B, 1909176-13B, 1909176-14B, 1909176-15B, 1909176-16B

Sample ID: **MB-92892** Batch ID: **92892** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190924E** Analysis Date: **9/24/2019 1:17:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-92892** Batch ID: **92892** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190924E** Analysis Date: **9/24/2019 1:19:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	98.2	80	120			N

Sample ID: **LCSD-92892** Batch ID: **92892** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190924E** Analysis Date: **9/24/2019 1:21:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.198	0.0100	0.200	0	99.0	80	120	0.895	15	N

Sample ID: **1909175-04B SD** Batch ID: **92892** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190924E** Analysis Date: **9/24/2019 1:27:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.0150	0.0500	0	0				0	20	N

Sample ID: **1909175-04B PDS** Batch ID: **92892** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190924E** Analysis Date: **9/24/2019 1:47:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	98.0	75	125			N

Sample ID: **1909175-04B MS** Batch ID: **92892** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_190924E** Analysis Date: **9/24/2019 1:49:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.205	0.0100	0.200	0	102	75	125			N

Sample ID: **1909175-04B MSD** Batch ID: **92892** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190924E** Analysis Date: **9/24/2019 1:50:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.200	0.0100	0.200	0	100	75	125	2.26	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190924E

Sample ID: **ICV-190924**	Batch ID: **R109096**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190924E**	Analysis Date: **9/24/2019 11:11:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0978	0.0100	0.100	0	97.8	90	110			N

Sample ID: **LCVL-190924**	Batch ID: **R109096**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190924E**	Analysis Date: **9/24/2019 11:27:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00451	0.0100	0.00500	0	90.2	80	120			N

Sample ID: **CCV2-190924**	Batch ID: **R109096**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190924E**	Analysis Date: **9/24/2019 12:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0	97.6	90	110			N

Sample ID: **LCVL2-190924**	Batch ID: **R109096**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190924E**	Analysis Date: **9/24/2019 1:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00446	0.0100	0.00500	0	89.1	80	120			N

Sample ID: **CCV3-190924**	Batch ID: **R109096**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190924E**	Analysis Date: **9/24/2019 1:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.189	0.0100	0.200	0	94.5	90	110			N

Sample ID: **LCVL3-190924**	Batch ID: **R109096**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190924E**	Analysis Date: **9/24/2019 2:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00433	0.0100	0.00500	0	86.5	80	120			N

Sample ID: **CCV4-190924**	Batch ID: **R109096**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190924E**	Analysis Date: **9/24/2019 2:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.191	0.0100	0.200	0	95.3	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190924E

Sample ID: **LCVL4-190924** Batch ID: **R109096** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190924E** Analysis Date: **9/24/2019 2:58:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00430	0.0100	0.00500	0	85.9	80	120			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190926B

The QC data in batch 92877 applies to the following samples: 1909176-01A, 1909176-02A, 1909176-03A, 1909176-04A, 1909176-05A, 1909176-06A, 1909176-07A, 1909176-08A, 1909176-09A, 1909176-10A, 1909176-11A, 1909176-12A, 1909176-13A, 1909176-14A, 1909176-15A, 1909176-16A

Sample ID: **MB-92877** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190926B** Analysis Date: **9/26/2019 4:34:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	<0.100	0.300								
Sodium	0.165	0.300								

Sample ID: **LCS-92877** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190926B** Analysis Date: **9/26/2019 4:36:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	5.18	0.300	5.00	0	104	80	120			
Sodium	5.08	0.300	5.00	0	102	80	120			

Sample ID: **LCSD-92877** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190926B** Analysis Date: **9/26/2019 4:38:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	5.15	0.300	5.00	0	103	80	120	0.644	15	
Sodium	5.03	0.300	5.00	0	101	80	120	0.972	15	

Sample ID: **1909176-02A SD** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190926B** Analysis Date: **9/26/2019 4:44:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1000	750	0	961				4.01	10	
Magnesium	861	750	0	870				1.01	10	
Sodium	5890	750	0	5500				6.90	10	

Sample ID: **1909176-02A PDS** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190926B** Analysis Date: **9/26/2019 5:05:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	3530	150	2500	961	103	80	120			
Magnesium	3220	150	2500	870	94.0	80	120			
Sodium	7830	150	2500	5500	93.2	80	120			

Sample ID: **1909176-02A MS** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_190926B** Analysis Date: **9/26/2019 5:07:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	76.6	150	5.00	68.1	168	80	120			S
Sodium	5630	150	5.00	5500	2590	80	120			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190926B

Sample ID: **1909176-02A MSD**	Batch ID: **92877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 5:09:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	75.9	150	5.00	68.1	154	80	120	0.917	15	S
Sodium	5620	150	5.00	5500	2450	80	120	0.131	15	S

Sample ID: **1909176-02A SD**	Batch ID: **92877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 5:59:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	60.5	15.0	0	58.8				2.76	10	

Sample ID: **1909176-02A PDS**	Batch ID: **92877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 6:37:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	109	3.00	50.0	58.8	99.7	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190926B

Sample ID: **ICV-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 11:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.63	0.300	2.50	0	105	90	110			
Magnesium	2.54	0.300	2.50	0	101	90	110			
Potassium	2.55	0.300	2.50	0	102	90	110			
Sodium	2.62	0.300	2.50	0	105	90	110			

Sample ID: **LCVL-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 12:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.108	0.300	0.100	0	108	70	130			
Magnesium	0.0983	0.300	0.100	0	98.3	70	130			
Potassium	0.103	0.300	0.100	0	103	70	130			
Sodium	0.116	0.300	0.100	0	116	70	130			

Sample ID: **CCV3-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 3:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.12	0.300	5.00	0	102	90	110			
Magnesium	5.00	0.300	5.00	0	99.9	90	110			
Sodium	5.38	0.300	5.00	0	108	90	110			

Sample ID: **LCVL3-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 3:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0950	0.300	0.100	0	95.0	70	130			
Magnesium	0.102	0.300	0.100	0	102	70	130			
Sodium	0.416	0.300	0.100	0	416	70	130			S

Sample ID: **CCV4-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 4:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.06	0.300	5.00	0	101	90	110			
Magnesium	4.95	0.300	5.00	0	99.0	90	110			
Sodium	5.03	0.300	5.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190926B

Sample ID: **LCVL4-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 4:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0997	0.300	0.100	0	99.7	70	130			
Magnesium	0.0925	0.300	0.100	0	92.5	70	130			
Sodium	0.279	0.300	0.100	0	279	70	130			S

Sample ID: **CCV5-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 5:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.11	0.300	5.00	0	102	90	110			
Magnesium	4.95	0.300	5.00	0	99.0	90	110			
Potassium	5.13	0.300	5.00	0	103	90	110			
Sodium	5.03	0.300	5.00	0	101	90	110			

Sample ID: **LCVL5-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 5:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0892	0.300	0.100	0	89.2	70	130			
Magnesium	0.0895	0.300	0.100	0	89.5	70	130			
Potassium	0.112	0.300	0.100	0	112	70	130			
Sodium	0.205	0.300	0.100	0	205	70	130			S

Sample ID: **CCV6-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 5:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.10	0.300	5.00	0	102	90	110			
Magnesium	4.99	0.300	5.00	0	99.7	90	110			
Potassium	5.19	0.300	5.00	0	104	90	110			

Sample ID: **LCVL6-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 5:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0953	0.300	0.100	0	95.3	70	130			
Magnesium	0.0916	0.300	0.100	0	91.6	70	130			
Potassium	0.115	0.300	0.100	0	115	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190926B

Sample ID: **CCV7-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 6:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	5.13	0.300	5.00	0	103	90	110			

Sample ID: **LCVL7-190926**	Batch ID: **R106594**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190926B**	Analysis Date: **9/26/2019 6:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.115	0.300	0.100	0	115	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621D

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 11:16:00 AM**		Prep Date: **6/20/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00501	0.0100	0.00500	0	100	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925A

The QC data in batch 92877 applies to the following samples: 1909176-01A, 1909176-02A, 1909176-03A, 1909176-04A, 1909176-05A, 1909176-06A, 1909176-07A, 1909176-08A, 1909176-09A, 1909176-10A, 1909176-11A, 1909176-12A, 1909176-13A, 1909176-14A, 1909176-15A, 1909176-16A

Sample ID: **MB-92877** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 12:30:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-92877** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 12:32:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.95	0.0300	5.00	0	99.0	80	120			
Antimony	0.200	0.00250	0.200	0	100	80	120			
Arsenic	0.202	0.00500	0.200	0	101	80	120			
Calcium	4.94	0.300	5.00	0	98.8	80	120			
Chromium	0.192	0.00500	0.200	0	96.1	80	120			
Lead	0.195	0.00100	0.200	0	97.5	80	120			
Magnesium	5.01	0.300	5.00	0	100	80	120			
Nickel	0.200	0.0100	0.200	0	100	80	120			
Thallium	0.193	0.00150	0.200	0	96.6	80	120			
Vanadium	0.191	0.00100	0.200	0	95.5	80	120			

Sample ID: **LCSD-92877** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 12:34:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.95	0.0300	5.00	0	99.0	80	120	0.004	15	
Antimony	0.201	0.00250	0.200	0	101	80	120	0.742	15	
Arsenic	0.204	0.00500	0.200	0	102	80	120	0.915	15	
Calcium	4.87	0.300	5.00	0	97.5	80	120	1.38	15	
Chromium	0.192	0.00500	0.200	0	96.2	80	120	0.110	15	
Lead	0.196	0.00100	0.200	0	98.2	80	120	0.718	15	
Magnesium	4.99	0.300	5.00	0	99.8	80	120	0.367	15	
Nickel	0.201	0.0100	0.200	0	101	80	120	0.377	15	
Thallium	0.195	0.00150	0.200	0	97.4	80	120	0.879	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925A

Sample ID: **LCSD-92877**	Batch ID: **92877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 12:34:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	0.190	0.00100	0.200	0	95.0	80	120	0.604	15	

Sample ID: **1909176-02A SD**	Batch ID: **92877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 12:41:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0544	0.150	0	0.0547				0.537	10	
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00382				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Nickel	<0.0150	0.0500	0	0.00796				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	<0.00250	0.00500	0	0.00133				0	10	

Sample ID: **1909176-02A PDS**	Batch ID: **92877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 1:03:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.78	0.0300	5.00	0.0547	94.5	80	120			
Antimony	0.192	0.00250	0.200	0	95.9	80	120			
Arsenic	0.189	0.00500	0.200	0.00382	92.4	80	120			
Chromium	0.166	0.00500	0.200	0	82.8	80	120			
Lead	0.192	0.00100	0.200	0	95.9	80	120			
Nickel	0.168	0.0100	0.200	0.00796	80.1	80	120			
Thallium	0.192	0.00150	0.200	0	96.1	80	120			
Vanadium	0.175	0.00100	0.200	0.00133	86.8	80	120			

Sample ID: **1909176-02A MS**	Batch ID: **92877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 1:05:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.99	0.0300	5.00	0.0547	98.7	80	120			
Antimony	0.195	0.00250	0.200	0	97.6	80	120			
Arsenic	0.197	0.00500	0.200	0.00382	96.5	80	120			
Calcium	1000	0.300	5.00	963	809	80	120			S
Chromium	0.166	0.00500	0.200	0	83.2	80	120			
Lead	0.195	0.00100	0.200	0	97.7	80	120			
Magnesium	835	0.300	5.00	847	-237	80	120			S
Nickel	0.171	0.0100	0.200	0.00796	81.6	80	120			
Thallium	0.196	0.00150	0.200	0	97.9	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925A

Sample ID: **1909176-02A MS**	Batch ID: **92877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 1:05:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	0.177	0.00100	0.200	0.00133	88.1	80	120			

Sample ID: **1909176-02A MSD**	Batch ID: **92877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 1:08:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.99	0.0300	5.00	0.0547	98.7	80	120	0.041	15	
Antimony	0.196	0.00250	0.200	0	98.1	80	120	0.603	15	
Arsenic	0.196	0.00500	0.200	0.00382	96.0	80	120	0.544	15	
Calcium	1000	0.300	5.00	963	817	80	120	0.042	15	S
Chromium	0.166	0.00500	0.200	0	83.2	80	120	0.012	15	
Lead	0.196	0.00100	0.200	0	98.1	80	120	0.409	15	
Magnesium	838	0.300	5.00	847	-186	80	120	0.306	15	S
Nickel	0.171	0.0100	0.200	0.00796	81.7	80	120	0.110	15	
Thallium	0.197	0.00150	0.200	0	98.6	80	120	0.683	15	
Vanadium	0.177	0.00100	0.200	0.00133	87.9	80	120	0.139	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925A

Sample ID: **ICV-190925** Batch ID: **R106568** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 11:52:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.44	0.0300	2.50	0	97.4	90	110			
Antimony	0.100	0.00250	0.100	0	100	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Chromium	0.100	0.00500	0.100	0	100	90	110			
Lead	0.0978	0.00100	0.100	0	97.8	90	110			
Nickel	0.103	0.0100	0.100	0	103	90	110			
Thallium	0.0966	0.00150	0.100	0	96.6	90	110			
Vanadium	0.0978	0.00100	0.100	0	97.8	90	110			

Sample ID: **LCVL-190925** Batch ID: **R106568** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 12:09:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.101	0.0300	0.100	0	101	70	130			
Antimony	0.00204	0.00250	0.00200	0	102	70	130			
Arsenic	0.00503	0.00500	0.00500	0	101	70	130			
Chromium	0.00471	0.00500	0.00500	0	94.1	70	130			
Lead	0.000956	0.00100	0.00100	0	95.6	70	130			
Nickel	0.00500	0.0100	0.00500	0	100	70	130			
Thallium	0.000971	0.00150	0.00100	0	97.1	70	130			
Vanadium	0.000841	0.00100	0.00100	0	84.1	70	130			

Sample ID: **CCV1-190925** Batch ID: **R106568** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 1:32:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.17	0.0300	5.00	0	103	90	110			
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Chromium	0.185	0.00500	0.200	0	92.7	90	110			
Lead	0.192	0.00100	0.200	0	96.0	90	110			
Nickel	0.196	0.0100	0.200	0	97.8	90	110			
Thallium	0.190	0.00150	0.200	0	95.1	90	110			
Vanadium	0.188	0.00100	0.200	0	94.0	90	110			

Sample ID: **LCVL1-190925** Batch ID: **R106568** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 1:49:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.107	0.0300	0.100	0	107	70	130			
Antimony	0.00192	0.00250	0.00200	0	96.0	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925A

Sample ID: **LCVL1-190925** Batch ID: **R106568** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 1:49:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00508	0.00500	0.00500	0	102	70	130			
Chromium	0.00460	0.00500	0.00500	0	92.0	70	130			
Lead	0.000962	0.00100	0.00100	0	96.2	70	130			
Nickel	0.00467	0.0100	0.00500	0	93.4	70	130			
Thallium	0.000928	0.00150	0.00100	0	92.8	70	130			
Vanadium	0.00126	0.00100	0.00100	0	126	70	130			

Sample ID: **CCV2-190925** Batch ID: **R106568** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 2:55:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0	103	90	110			
Antimony	0.204	0.00250	0.200	0	102	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Chromium	0.188	0.00500	0.200	0	94.1	90	110			
Lead	0.194	0.00100	0.200	0	97.1	90	110			
Nickel	0.197	0.0100	0.200	0	98.5	90	110			
Thallium	0.192	0.00150	0.200	0	96.1	90	110			
Vanadium	0.190	0.00100	0.200	0	95.2	90	110			

Sample ID: **LCVL2-190925** Batch ID: **R106568** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 3:16:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.105	0.0300	0.100	0	105	70	130			
Antimony	0.00200	0.00250	0.00200	0	100	70	130			
Arsenic	0.00512	0.00500	0.00500	0	102	70	130			
Chromium	0.00478	0.00500	0.00500	0	95.6	70	130			
Lead	0.000956	0.00100	0.00100	0	95.6	70	130			
Nickel	0.00500	0.0100	0.00500	0	100	70	130			
Thallium	0.000944	0.00150	0.00100	0	94.4	70	130			
Vanadium	0.00126	0.00100	0.00100	0	126	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925B

The QC data in batch 92877 applies to the following samples: 1909176-01A, 1909176-02A, 1909176-03A, 1909176-04A, 1909176-05A, 1909176-06A, 1909176-07A, 1909176-08A, 1909176-09A, 1909176-10A, 1909176-11A, 1909176-12A, 1909176-13A, 1909176-14A, 1909176-15A, 1909176-16A

Sample ID: **MB-92877** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190925B** Analysis Date: **9/25/2019 12:30:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-92877** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190925B** Analysis Date: **9/25/2019 12:32:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0	96.6	80	120			N

Sample ID: **LCSD-92877** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190925B** Analysis Date: **9/25/2019 12:34:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.194	0.0100	0.200	0	96.9	80	120	0.295	25	N

Sample ID: **1909176-02A SD** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190925B** Analysis Date: **9/25/2019 12:41:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0513	0.0500	0	0.0531				3.53	10	N

Sample ID: **1909176-02A PDS** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190925B** Analysis Date: **9/25/2019 1:03:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.241	0.0100	0.200	0.0531	94.1	80	120			N

Sample ID: **1909176-02A MS** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_190925B** Analysis Date: **9/25/2019 1:05:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.247	0.0100	0.200	0.0531	97.1	80	120			N

Sample ID: **1909176-02A MSD** Batch ID: **92877** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190925B** Analysis Date: **9/25/2019 1:08:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.250	0.0100	0.200	0.0531	98.3	80	120	0.946	25	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925B

Sample ID: **ICV-190925**	Batch ID: **R106569**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190925B**	Analysis Date: **9/25/2019 11:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0968	0.0100	0.100	0	96.8	90	110			N

Sample ID: **LCVL-190925**	Batch ID: **R106569**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190925B**	Analysis Date: **9/25/2019 12:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00483	0.0100	0.00500	0	96.6	70	130			N

Sample ID: **CCV1-190925**	Batch ID: **R106569**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190925B**	Analysis Date: **9/25/2019 1:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.184	0.0100	0.200	0	92.1	90	110			N

Sample ID: **LCVL1-190925**	Batch ID: **R106569**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190925B**	Analysis Date: **9/25/2019 1:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00461	0.0100	0.00500	0	92.2	70	130			N

Sample ID: **CCV2-190925**	Batch ID: **R106569**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190925B**	Analysis Date: **9/25/2019 2:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.187	0.0100	0.200	0	93.6	90	110			N

Sample ID: **LCVL2-190925**	Batch ID: **R106569**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190925B**	Analysis Date: **9/25/2019 3:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00465	0.0100	0.00500	0	93.0	70	130			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190926A

Sample ID: **DCS1-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_190926A**	Analysis Date: **9/26/2019 12:41:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00104	0.00250	0.00100	0	104	70	130	0	0	
Lead	0.000553	0.00100	0.000500	0	111	70	130	0	0	
Thallium	0.000516	0.00150	0.000500	0	103	70	130	0	0	
Vanadium	0.000478	0.00100	0.000500	0	95.6	70	130	0	0	

Sample ID: **DCS2-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_190926A**	Analysis Date: **9/26/2019 12:44:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0340	0.0300	0.0300	0	113	70	130	0	0	
Calcium	0.299	0.300	0.300	0	99.8	70	130	0	0	
Magnesium	0.322	0.300	0.300	0	107	70	130	0	0	
Potassium	0.291	0.300	0.300	0	96.9	70	130	0	0	

Sample ID: **DCS3-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_190926A**	Analysis Date: **9/26/2019 12:46:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00494	0.00500	0.00500	0	98.8	70	130	0	0	
Chromium	0.00521	0.00500	0.00500	0	104	70	130	0	0	
Nickel	0.00511	0.0100	0.00500	0	102	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190828A

Sample ID: **DCS2-92594** Batch ID: **92594** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_190828A** Analysis Date: **8/28/2019 2:22:32 PM** Prep Date: **8/28/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.544	1.00	0.5000	0	109	65	135	0	0	
Fluoride	0.255	0.400	0.2000	0	128	65	135	0	0	
Nitrate-N	0.277	0.0500	0.2500	0	111	60	140	0	0	
Sulfate	1.72	3.00	1.500	0	115	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190920B

The QC data in batch 92866 applies to the following samples: 1909176-01D, 1909176-02D, 1909176-03D, 1909176-04D, 1909176-05D, 1909176-06D, 1909176-07D

Sample ID: **1909173-02CMS** Batch ID: **92866** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_190920B** Analysis Date: **9/21/2019 3:16:33 AM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2240	100	2000	38.35	110	90	110			
Fluoride	2210	40.0	2000	0	111	90	110			S
Nitrate-N	479	50.0	451.6	0	106	90	110			
Sulfate	2160	300	2000	0	108	90	110			

Sample ID: **1909173-02CMSD** Batch ID: **92866** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_190920B** Analysis Date: **9/21/2019 3:32:33 AM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2230	100	2000	38.35	109	90	110	0.418	20	
Fluoride	2210	40.0	2000	0	110	90	110	0.138	20	
Nitrate-N	478	50.0	451.6	0	106	90	110	0.283	20	
Sulfate	2160	300	2000	0	108	90	110	0.004	20	

Sample ID: **1909173-01CMS** Batch ID: **92866** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_190920B** Analysis Date: **9/21/2019 4:04:33 AM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	300	10.0	200.0	73.72	113	90	110			S
Fluoride	226	4.00	200.0	2.317	112	90	110			S
Nitrate-N	50.3	5.00	45.16	1.720	108	90	110			
Sulfate	239	30.0	200.0	19.16	110	90	110			

Sample ID: **1909173-01CMSD** Batch ID: **92866** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_190920B** Analysis Date: **9/21/2019 4:20:33 AM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	293	10.0	200.0	73.72	110	90	110	2.32	20	
Fluoride	219	4.00	200.0	2.317	109	90	110	2.77	20	
Nitrate-N	49.0	5.00	45.16	1.720	105	90	110	2.66	20	
Sulfate	232	30.0	200.0	19.16	106	90	110	3.12	20	

Sample ID: **MB-92866** Batch ID: **92866** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_190920B** Analysis Date: **9/21/2019 10:12:33 AM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190920B

Sample ID: **MB-92866**	Batch ID: **92866**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC2_190920B**	Analysis Date: **9/21/2019 10:12:33 AM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<1.00	3.00								

Sample ID: **LCS-92866**	Batch ID: **92866**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC2_190920B**	Analysis Date: **9/21/2019 10:28:33 AM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.9	1.00	10.00	0	109	90	110			
Fluoride	4.27	0.400	4.000	0	107	90	110			
Nitrate-N	5.43	0.500	5.000	0	109	90	110			
Sulfate	32.8	3.00	30.00	0	109	90	110			

Sample ID: **LCSD-92866**	Batch ID: **92866**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC2_190920B**	Analysis Date: **9/21/2019 10:44:33 AM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.8	1.00	10.00	0	108	90	110	0.446	20	
Fluoride	4.28	0.400	4.000	0	107	90	110	0.192	20	
Nitrate-N	5.37	0.500	5.000	0	107	90	110	1.14	20	
Sulfate	33.1	3.00	30.00	0	110	90	110	0.957	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190920B

Sample ID: **ICV-190920**	Batch ID: **R106492**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190920B**	Analysis Date: **9/20/2019 8:53:03 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	27.3	1.00	25.00	0	109	90	110			
Fluoride	10.8	0.400	10.00	0	108	90	110			
Nitrate-N	13.6	0.500	12.50	0	109	90	110			
Sulfate	82.1	3.00	75.00	0	109	90	110			

Sample ID: **CCV1-190920**	Batch ID: **R106492**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190920B**	Analysis Date: **9/20/2019 12:01:36 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.7	1.00	10.00	0	107	90	110			
Nitrate-N	5.29	0.500	5.000	0	106	90	110			

Sample ID: **CCV2-190920**	Batch ID: **R106492**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190920B**	Analysis Date: **9/20/2019 5:24:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.21	0.400	4.000	0	105	90	110			
Nitrate-N	5.34	0.500	5.000	0	107	90	110			
Sulfate	32.4	3.00	30.00	0	108	90	110			

Sample ID: **CCV3-190920**	Batch ID: **R106492**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190920B**	Analysis Date: **9/20/2019 9:24:33 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	11.0	1.00	10.00	0	110	90	110			
Fluoride	4.24	0.400	4.000	0	106	90	110			
Nitrate-N	5.28	0.500	5.000	0	106	90	110			
Sulfate	32.7	3.00	30.00	0	109	90	110			

Sample ID: **CCV4-190920**	Batch ID: **R106492**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190920B**	Analysis Date: **9/21/2019 1:24:33 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.8	1.00	10.00	0	108	90	110			
Fluoride	4.25	0.400	4.000	0	106	90	110			
Nitrate-N	5.38	0.500	5.000	0	108	90	110			
Sulfate	32.4	3.00	30.00	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190920B

Sample ID: **CCV5-190920**	Batch ID: **R106492**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190920B**	Analysis Date: **9/21/2019 6:28:33 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.8	1.00	10.00	0	108	90	110			
Fluoride	4.29	0.400	4.000	0	107	90	110			
Nitrate-N	5.35	0.500	5.000	0	107	90	110			
Sulfate	32.9	3.00	30.00	0	110	90	110			

Sample ID: **CCV6-190920**	Batch ID: **R106492**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190920B**	Analysis Date: **9/21/2019 9:40:33 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.8	1.00	10.00	0	108	90	110			
Fluoride	4.27	0.400	4.000	0	107	90	110			
Nitrate-N	5.33	0.500	5.000	0	107	90	110			
Sulfate	32.6	3.00	30.00	0	109	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191007A

The QC data in batch 93118 applies to the following samples: 1909176-01D, 1909176-02D, 1909176-03D, 1909176-04D, 1909176-05D, 1909176-06D, 1909176-07D, 1909176-08D, 1909176-16D

Sample ID: **MB-93118** Batch ID: **93118** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_191007A** Analysis Date: **10/7/2019 10:22:54 AM** Prep Date: **10/7/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-93118** Batch ID: **93118** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_191007A** Analysis Date: **10/7/2019 10:38:54 AM** Prep Date: **10/7/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			

Sample ID: **LCSD-93118** Batch ID: **93118** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_191007A** Analysis Date: **10/7/2019 10:54:54 AM** Prep Date: **10/7/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110	0.293	20	

Sample ID: **1910054-01BMS** Batch ID: **93118** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_191007A** Analysis Date: **10/7/2019 6:03:15 PM** Prep Date: **10/7/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	290	10.0	200.0	76.39	107	90	110			

Sample ID: **1910054-01BMSD** Batch ID: **93118** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_191007A** Analysis Date: **10/7/2019 6:19:15 PM** Prep Date: **10/7/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	291	10.0	200.0	76.39	107	90	110	0.257	20	

Sample ID: **1910054-02BMS** Batch ID: **93118** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_191007A** Analysis Date: **10/7/2019 8:27:15 PM** Prep Date: **10/7/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	58.4	1.00	20.00	41.38	85.2	90	110			S

Sample ID: **1910054-02BMSD** Batch ID: **93118** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_191007A** Analysis Date: **10/7/2019 8:43:15 PM** Prep Date: **10/7/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	58.6	1.00	20.00	41.38	85.9	90	110	0.242	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191007A

Sample ID: **ICV-191007**	Batch ID: **R106790**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_191007A**	Analysis Date: **10/7/2019 9:50:54 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.9	1.00	25.00	0	104	90	110			

Sample ID: **CCV1-191007**	Batch ID: **R106790**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191007A**	Analysis Date: **10/7/2019 3:04:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			

Sample ID: **CCV2-191007**	Batch ID: **R106790**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191007A**	Analysis Date: **10/7/2019 7:23:15 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.8	1.00	10.00	0	108	90	110			

Sample ID: **CCV3-191007**	Batch ID: **R106790**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191007A**	Analysis Date: **10/7/2019 11:55:15 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.8	1.00	10.00	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190904A

Sample ID: **DCS2-92650** Batch ID: **92650** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC4_190904A** Analysis Date: **9/4/2019 11:15:50 AM** Prep Date: **9/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.504	1.00	0.5000	0	101	65	135	0	0	
Fluoride	0.235	0.400	0.2000	0	118	65	135	0	0	
Nitrate-N	0.223	0.0500	0.2500	0	89.1	60	140	0	0	
Sulfate	1.71	3.00	1.500	0	114	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190919B

The QC data in batch 92867 applies to the following samples: 1909176-08D, 1909176-09D, 1909176-10D, 1909176-11D, 1909176-12D, 1909176-13D, 1909176-14D, 1909176-15D, 1909176-16D

Sample ID: **MB-92867** Batch ID: **92867** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_190919B** Analysis Date: **9/20/2019 4:29:16 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-92867** Batch ID: **92867** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_190919B** Analysis Date: **9/20/2019 4:45:16 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.71	1.00	10.00	0	97.1	90	110			
Fluoride	4.17	0.400	4.000	0	104	90	110			
Nitrate-N	4.74	0.500	5.000	0	94.9	90	110			
Sulfate	29.2	3.00	30.00	0	97.2	90	110			

Sample ID: **LCSD-92867** Batch ID: **92867** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_190919B** Analysis Date: **9/20/2019 5:01:16 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.68	1.00	10.00	0	96.8	90	110	0.367	20	
Fluoride	4.18	0.400	4.000	0	105	90	110	0.240	20	
Nitrate-N	4.59	0.500	5.000	0	91.9	90	110	3.21	20	
Sulfate	29.2	3.00	30.00	0	97.5	90	110	0.257	20	

Sample ID: **1909176-08DMS** Batch ID: **92867** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_190919B** Analysis Date: **9/20/2019 5:33:16 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26500	1000	20000	11030	77.3	90	110			S
Fluoride	21400	400	20000	0	107	90	110			
Nitrate-N	4080	500	4516	0	90.3	90	110			
Sulfate	21600	3000	20000	3659	89.7	90	110			

Sample ID: **1909176-08DMSD** Batch ID: **92867** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_190919B** Analysis Date: **9/20/2019 5:49:16 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26300	1000	20000	11030	76.1	90	110	0.864	20	S
Fluoride	21300	400	20000	0	107	90	110	0.280	20	
Nitrate-N	4050	500	4516	0	89.8	90	110	0.587	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190919B

Sample ID: **1909176-08DMSD** Batch ID: **92867** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_190919B** Analysis Date: **9/20/2019 5:49:16 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	21300	3000	20000	3659	88.4	90	110	1.19	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190919B

Sample ID: **ICV-190919**	Batch ID: **R106490**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_190919B**	Analysis Date: **9/19/2019 9:36:13 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.6	1.00	25.00	0	98.4	90	110			
Fluoride	9.30	0.400	10.00	0	93.0	90	110			
Nitrate-N	12.1	0.500	12.50	0	97.1	90	110			
Sulfate	74.4	3.00	75.00	0	99.2	90	110			

Sample ID: **CCV6-190919**	Batch ID: **R106490**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919B**	Analysis Date: **9/20/2019 3:51:55 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.87	1.00	10.00	0	98.7	90	110			
Fluoride	4.23	0.400	4.000	0	106	90	110			
Nitrate-N	4.67	0.500	5.000	0	93.4	90	110			
Sulfate	30.0	3.00	30.00	0	100	90	110			

Sample ID: **CCV7-190919**	Batch ID: **R106490**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919B**	Analysis Date: **9/20/2019 9:33:16 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.98	1.00	10.00	0	99.8	90	110			
Fluoride	4.25	0.400	4.000	0	106	90	110			
Nitrate-N	4.69	0.500	5.000	0	93.7	90	110			
Sulfate	29.5	3.00	30.00	0	98.4	90	110			

Sample ID: **CCV8-190919**	Batch ID: **R106490**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919B**	Analysis Date: **9/21/2019 1:33:15 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.85	1.00	10.00	0	98.5	90	110			
Sulfate	29.6	3.00	30.00	0	98.6	90	110			

Sample ID: **CCV9-190919**	Batch ID: **R106490**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919B**	Analysis Date: **9/21/2019 5:01:15 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.6	3.00	30.00	0	98.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190924A

The QC data in batch 92913 applies to the following samples: 1909176-01D, 1909176-02D, 1909176-03D, 1909176-04D, 1909176-05D, 1909176-06D, 1909176-07D, 1909176-08D, 1909176-09D, 1909176-10D, 1909176-11D, 1909176-12D, 1909176-13D, 1909176-14D, 1909176-15D, 1909176-16D

Sample ID: **MB-92913** Batch ID: **92913** TestNo: **M2320 B** Units: **mg/L @ pH 4.41**
SampType: **MBLK** Run ID: **TITRATOR_190924A** Analysis Date: **9/24/2019 9:40:00 AM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-92913** Batch ID: **92913** TestNo: **M2320 B** Units: **mg/L @ pH 3.97**
SampType: **LCS** Run ID: **TITRATOR_190924A** Analysis Date: **9/24/2019 9:44:00 AM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.6	20.0	50.00	0	105	74	129			

Sample ID: **1909176-01D-DUP** Batch ID: **92913** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_190924A** Analysis Date: **9/24/2019 11:07:00 AM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	286	20.0	0	292.6				2.14	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	286	20.0	0	292.6				2.14	20	

Sample ID: **1909176-11D-DUP** Batch ID: **92913** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_190924A** Analysis Date: **9/24/2019 3:55:00 PM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	237	20.0	0	239.8				1.30	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	237	20.0	0	239.8				1.30	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190924A

Sample ID: **ICV-190924**	Batch ID: **R106558**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.28**
SampType: **ICV**	Run ID: **TITRATOR_190924A**	Analysis Date: **9/24/2019 9:38:00 AM**	Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	7.76	20.0	0							
Alkalinity, Carbonate (As CaCO3)	91.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.6	20.0	100.0	0	99.6	98	102			

Sample ID: **CCV1-190924**	Batch ID: **R106558**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.45**
SampType: **CCV**	Run ID: **TITRATOR_190924A**	Analysis Date: **9/24/2019 3:01:00 PM**	Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	41.6	20.0	0							
Alkalinity, Carbonate (As CaCO3)	57.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.6	20.0	100.0	0	98.6	90	110			

Sample ID: **CCV2-190924**	Batch ID: **R106558**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.46**
SampType: **CCV**	Run ID: **TITRATOR_190924A**	Analysis Date: **9/24/2019 6:17:00 PM**	Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	56.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	40.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	97.0	20.0	100.0	0	97.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190830A

Sample ID: **DCS-92622**	Batch ID: **92622**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **DCS**	Run ID: **WC_190830A**	Analysis Date: **8/30/2019 12:30:00 PM**	Prep Date: **8/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.0759	0.250	0.1000	0	75.9	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190925B

The QC data in batch 92921 applies to the following samples: 1909176-01D, 1909176-02D, 1909176-03D, 1909176-04D, 1909176-05D, 1909176-06D, 1909176-07D, 1909176-08D, 1909176-09D

Sample ID: **MB-92921**	Batch ID: **92921**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_190925B**	Analysis Date: **9/25/2019 5:15:00 PM**	Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-92921**	Batch ID: **92921**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_190925B**	Analysis Date: **9/25/2019 5:15:00 PM**	Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	702	10.0	745.6	0	94.2	90	113			

Sample ID: **1909173-03C-DUP**	Batch ID: **92921**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190925B**	Analysis Date: **9/25/2019 5:15:00 PM**	Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1090	50.0	0	1060				2.79	5	

Sample ID: **1909173-04C-DUP**	Batch ID: **92921**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190925B**	Analysis Date: **9/25/2019 5:15:00 PM**	Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1150	50.0	0	1165				1.73	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190925C

The QC data in batch 92938 applies to the following samples: 1909176-10D, 1909176-11D, 1909176-12D, 1909176-13D, 1909176-14D, 1909176-15D, 1909176-16D

Sample ID: **MB-92938**	Batch ID: **92938**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_190925C**	Analysis Date: **9/25/2019 3:45:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-92938**	Batch ID: **92938**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_190925C**	Analysis Date: **9/25/2019 3:45:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	762	10.0	745.6	0	102	90	113			

Sample ID: **1909176-10D-DUP**	Batch ID: **92938**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190925C**	Analysis Date: **9/25/2019 3:45:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	47000	1000	0	47800				1.69	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190930A

The QC data in batch 92999 applies to the following samples: 1909176-01C, 1909176-02C, 1909176-03C, 1909176-04C, 1909176-05C, 1909176-06C, 1909176-07C, 1909176-08C, 1909176-09C, 1909176-10C, 1909176-11C, 1909176-12C, 1909176-13C, 1909176-14C, 1909176-15C, 1909176-16C

Sample ID: **MB-92999** Batch ID: **92999** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_190930A** Analysis Date: **9/30/2019 2:30:00 PM** Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-92999** Batch ID: **92999** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **LCS** Run ID: **WC_190930A** Analysis Date: **9/30/2019 2:30:00 PM** Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.80	0.250	5.000	0	96.0	80	120			

Sample ID: **1909176-01CMS** Batch ID: **92999** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_190930A** Analysis Date: **9/30/2019 2:30:00 PM** Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.03	0.250	5.000	0.7590	85.4	80	120			

Sample ID: **1909176-01CMSD** Batch ID: **92999** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_190930A** Analysis Date: **9/30/2019 2:30:00 PM** Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.45	0.250	5.000	0.7590	93.8	80	120	8.02	25	

Sample ID: **1909176-13CMS** Batch ID: **92999** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_190930A** Analysis Date: **9/30/2019 2:30:00 PM** Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	3.39	0.250	5.000	0	67.8	80	120			S

Sample ID: **1909176-13CMSD** Batch ID: **92999** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_190930A** Analysis Date: **9/30/2019 2:30:00 PM** Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	3.37	0.250	5.000	0	67.4	80	120	0.592	25	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190930A

Sample ID: **ICV-190930**	Batch ID: **R106631**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_190930A**	Analysis Date: **9/30/2019 2:30:00 PM**	Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.65	0.250	2.500	0	106	80	120			

Sample ID: **CCV1-190930**	Batch ID: **R106631**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_190930A**	Analysis Date: **9/30/2019 2:30:00 PM**	Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.66	0.250	5.000	0	93.2	80	120			

Sample ID: **CCV2-190930**	Batch ID: **R106631**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_190930A**	Analysis Date: **9/30/2019 2:30:00 PM**	Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.19	0.250	5.000	0	83.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909176
Project: Copano GW Sampling 3Q19

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.4**	**g/L @ pH 4.4**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 22, 2019

DHL Analytical, Inc.

Sample Delivery Group:	L1142537
Samples Received:	09/24/2019
Project Number:	1909176
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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MW-4 L1142537-01 Non-Potable Water

Collected by | Collected date/time 09/19/19 10:18 | Received date/time 09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 09:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN

MW-5B L1142537-02 Non-Potable Water

Collected by | Collected date/time 09/19/19 11:03 | Received date/time 09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 09:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN

MW-5 L1142537-03 Non-Potable Water

Collected by | Collected date/time 09/19/19 11:37 | Received date/time 09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 09:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN

MW-303 L1142537-04 Non-Potable Water

Collected by | Collected date/time 09/19/19 11:42 | Received date/time 09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 09:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN

MW-8 L1142537-05 Non-Potable Water

Collected by | Collected date/time 09/19/19 12:31 | Received date/time 09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 09:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN

MW-9 L1142537-06 Non-Potable Water

Collected by | Collected date/time 09/19/19 13:14 | Received date/time 09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 09:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN

MW-6RB L1142537-07 Non-Potable Water

Collected by | Collected date/time 09/19/19 14:00 | Received date/time 09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 09:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN

MW-10 L1142537-08 Non-Potable Water

Collected by | Collected date/time 09/19/19 14:45 | Received date/time 09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 12:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN

DB-5 L1142537-09 Non-Potable Water

Collected by | Collected date/time 09/19/19 10:25 | Received date/time 09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 12:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN

MW-3RB L1142537-10 Non-Potable Water

Collected by | Collected date/time 09/19/19 11:05 | Received date/time 09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 12:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:26	RGT	Mt. Juliet, TN

MW-3R L1142537-11 Non-Potable Water

Collected by | Collected date/time 09/19/19 11:35 | Received date/time 09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 12:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:57	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:57	RGT	Mt. Juliet, TN

MW-1 L1142537-12 Non-Potable Water

Collected by | Collected date/time 09/19/19 12:25 | Received date/time 09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 12:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:57	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:57	RGT	Mt. Juliet, TN

MW-7B L1142537-13 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/19/19 13:05	09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 12:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:57	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:57	RGT	Mt. Juliet, TN

MW-7 L1142537-14 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/19/19 13:35	09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 12:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:57	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:57	RGT	Mt. Juliet, TN

MW-11B L1142537-15 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/19/19 14:20	09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 12:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:57	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:57	RGT	Mt. Juliet, TN

MW-11 L1142537-16 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/19/19 14:50	09/24/19 00:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1357552	1	10/07/19 10:04	10/09/19 12:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362475	1	10/14/19 08:59	10/15/19 12:57	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362475	1	10/14/19 08:59	10/15/19 12:57	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.62		0.420	0.647	10/09/2019 09:00	WG1357552
(T) Barium	*116*			*62.0-143*	*10/09/2019 09:00*	WG1357552
(T) Yttrium	*114*			*79.0-136*	*10/09/2019 09:00*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.05		0.718	0.949	10/15/2019 12:26	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.426		0.298	0.302	10/15/2019 12:26	WG1362475
(T) Barium-133	*80.2*			*30.0-143*	*10/15/2019 12:26*	WG1362475

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	8.18		0.542	0.666	10/09/2019 09:00	WG1357552
(T) Barium	*111*			*62.0-143*	*10/09/2019 09:00*	WG1357552
(T) Yttrium	*116*			*79.0-136*	*10/09/2019 09:00*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	10.5		1.13	0.971	10/15/2019 12:26	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	2.33		0.585	0.305	10/15/2019 12:26	WG1362475
(T) Barium-133	*89.7*			*30.0-143*	*10/15/2019 12:26*	WG1362475

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	3.11		0.508	0.765	10/09/2019 09:00	WG1357552
(T) Barium	*106*			*62.0-143*	*10/09/2019 09:00*	WG1357552
(T) Yttrium	*116*			*79.0-136*	*10/09/2019 09:00*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	4.18		0.962	1.04	10/15/2019 12:26	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.07		0.454	0.276	10/15/2019 12:26	WG1362475
(T) Barium-133	*73.8*			*30.0-143*	*10/15/2019 12:26*	WG1362475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	3.68		0.448	0.671	10/09/2019 09:00	WG1357552
(T) Barium	*110*			*62.0-143*	*10/09/2019 09:00*	WG1357552
(T) Yttrium	*114*			*79.0-136*	*10/09/2019 09:00*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	4.47		0.768	0.879	10/15/2019 12:26	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.786		0.320	0.208	10/15/2019 12:26	WG1362475
(T) Barium-133	*90.9*			*30.0-143*	*10/15/2019 12:26*	WG1362475

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.640		0.452	0.676	10/09/2019 09:00	WG1357552
(T) Barium	*119*			*62.0-143*	*10/09/2019 09:00*	WG1357552
(T) Yttrium	*118*			*79.0-136*	*10/09/2019 09:00*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.728		0.658	0.998	10/15/2019 12:26	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0874		0.206	0.322	10/15/2019 12:26	WG1362475
(T) Barium-133	*92.2*			*30.0-143*	*10/15/2019 12:26*	WG1362475

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.615		0.430	0.659	10/09/2019 09:00	WG1357552
(T) Barium	*92.7*			*62.0-143*	*10/09/2019 09:00*	WG1357552
(T) Yttrium	*109*			*79.0-136*	*10/09/2019 09:00*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.746		0.591	0.881	10/15/2019 12:26	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.130		0.161	0.222	10/15/2019 12:26	WG1362475
(T) Barium-133	*90.5*			*30.0-143*	*10/15/2019 12:26*	WG1362475

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	3.42		0.449	0.586	10/09/2019 09:00	WG1357552
(T) Barium	*110*			*62.0-143*	*10/09/2019 09:00*	WG1357552
(T) Yttrium	*112*			*79.0-136*	*10/09/2019 09:00*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	4.35		0.832	0.95	10/15/2019 12:26	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.927		0.383	0.364	10/15/2019 12:26	WG1362475
(T) Barium-133	*89.4*			*30.0-143*	*10/15/2019 12:26*	WG1362475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.640		0.427	0.61	10/09/2019 12:50	WG1357552
(T) Barium	*111*			*62.0-143*	*10/09/2019 12:50*	WG1357552
(T) Yttrium	*113*			*79.0-136*	*10/09/2019 12:50*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.711		0.567	0.846	10/15/2019 12:26	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0715		0.140	0.236	10/15/2019 12:26	WG1362475
(T) Barium-133	*90.1*			*30.0-143*	*10/15/2019 12:26*	WG1362475

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.71		0.401	0.56	10/09/2019 12:50	WG1357552
(T) Barium	*122*			*62.0-143*	*10/09/2019 12:50*	WG1357552
(T) Yttrium	*101*			*79.0-136*	*10/09/2019 12:50*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.12		0.637	0.719	10/15/2019 12:26	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.407		0.236	0.159	10/15/2019 12:26	WG1362475
(T) Barium-133	*92.0*			*30.0-143*	*10/15/2019 12:26*	WG1362475

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	14.6		0.657	0.615	10/09/2019 12:50	WG1357552
(T) Barium	*116*			*62.0-143*	*10/09/2019 12:50*	WG1357552
(T) Yttrium	*108*			*79.0-136*	*10/09/2019 12:50*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	15.6		1.05	0.842	10/15/2019 12:26	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.03		0.390	0.227	10/15/2019 12:26	WG1362475
(T) Barium-133	*92.3*			*30.0-143*	*10/15/2019 12:26*	WG1362475

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	8.30		0.543	0.629	10/09/2019 12:50	WG1357552
(T) Barium	*114*			*62.0-143*	*10/09/2019 12:50*	WG1357552
(T) Yttrium	*106*			*79.0-136*	*10/09/2019 12:50*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	8.90		0.917	1.02	10/15/2019 12:57	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.609		0.374	0.387	10/15/2019 12:57	WG1362475
(T) Barium-133	*87.9*			*30.0-143*	*10/15/2019 12:57*	WG1362475

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.56		0.489	0.844	10/09/2019 12:50	WG1357552
(T) Barium	*97.6*			*62.0-143*	*10/09/2019 12:50*	WG1357552
(T) Yttrium	*107*			*79.0-136*	*10/09/2019 12:50*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.07		0.785	1.08	10/15/2019 12:57	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.507		0.296	0.237	10/15/2019 12:57	WG1362475
(T) Barium-133	*92.1*			*30.0-143*	*10/15/2019 12:57*	WG1362475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	10.2		0.535	0.645	10/09/2019 12:50	WG1357552
(T) Barium	*100*			*62.0-143*	*10/09/2019 12:50*	WG1357552
(T) Yttrium	*108*			*79.0-136*	*10/09/2019 12:50*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	11.6		1.01	0.892	10/15/2019 12:57	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.44		0.479	0.247	10/15/2019 12:57	WG1362475
(T) Barium-133	*91.4*			*30.0-143*	*10/15/2019 12:57*	WG1362475

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.54		0.459	0.715	10/09/2019 12:50	WG1357552
(T) Barium	*92.9*			*62.0-143*	*10/09/2019 12:50*	WG1357552
(T) Yttrium	*118*			*79.0-136*	*10/09/2019 12:50*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.64		0.880	0.974	10/15/2019 12:57	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.10		0.421	0.259	10/15/2019 12:57	WG1362475
(T) Barium-133	*87.3*			*30.0-143*	*10/15/2019 12:57*	WG1362475

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	3.90		0.524	0.762	10/09/2019 12:50	WG1357552
(T) Barium	*110*			*62.0-143*	*10/09/2019 12:50*	WG1357552
(T) Yttrium	*109*			*79.0-136*	*10/09/2019 12:50*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	5.51		1.06	1.05	10/15/2019 12:57	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.61		0.532	0.287	10/15/2019 12:57	WG1362475
(T) Barium-133	*92.5*			*30.0-143*	*10/15/2019 12:57*	WG1362475

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.295		0.396	0.669	10/09/2019 12:50	WG1357552
(T) Barium	*104*			*62.0-143*	*10/09/2019 12:50*	WG1357552
(T) Yttrium	*114*			*79.0-136*	*10/09/2019 12:50*	WG1357552

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.377		0.529	0.88	10/15/2019 12:57	WG1362475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0824		0.133	0.211	10/15/2019 12:57	WG1362475
(T) Barium-133	*89.8*			*30.0-143*	*10/15/2019 12:57*	WG1362475

Method Blank (MB)

(MB) R3460075-1 10/09/19 09:00

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.330		0.426
(T) Barium	*123*		
(T) Yttrium	*113*		

L1146340-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1146340-01 10/09/19 12:50 • (DUP) R3460075-5 10/09/19 09:00

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.219	0.392	1	56.5	0.196		20	3
(T) Barium	*106*	*96.1*						
(T) Yttrium	*107*	*115*						

Laboratory Control Sample (LCS)

(LCS) R3460075-2 10/09/19 09:00

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.61	112	80.0-120	
(T) Barium			*113*		
(T) Yttrium			*114*		

L1143645-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1143645-01 10/09/19 12:50 • (MS) R3460075-3 10/09/19 09:00 • (MSD) R3460075-4 10/09/19 09:00

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	0.138	10.7	11.9	106	118	1	70.0-130			10.5		20
(T) Barium		*110*			*92.9*	*107*							
(T) Yttrium		*115*			*111*	*111*							

Method Blank (MB)

(MB) R3463461-1 10/15/19 12:26

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	0.0197		0.0650
(T) Barium-133	*92.2*		

L1142537-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1142537-09 10/15/19 12:26 • (DUP) R3463461-5 10/15/19 12:26

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.407	0.418	1	2.72	0.0281		20	3
(T) Barium-133	*92.0*	*70.6*						

Laboratory Control Sample (LCS)

(LCS) R3463461-2 10/15/19 12:26

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	5.55	111	80.0-120	
(T) Barium-133			*92.4*		

L1142537-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1142537-14 10/15/19 12:57 • (MS) R3463461-3 10/15/19 12:26 • (MSD) R3463461-7 10/21/19 17:47

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	1.10	22.5	25.1	106	119	1	75.0-125			11.1		20
(T) Barium-133		*87.3*			*70.9*	*74.7*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client:	DHCRRTX	SDG#:	114253?
Cooler Received/Opened On:	9/24/19	Temperature:	Amb
Received By:	Hailey Melson		
Signature:	Hailey Melson		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?			
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1909176

H022

1142537

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

20-Sep-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra228 E904.0	Ra226 M7500 Ra B M	Requested Tests			
MW-4	Aqueous	-01E	09/19/19 10:18 AM	1LHDPEHNO3	1					01
MW-4	Aqueous	-01F	09/19/19 10:18 AM	1LHDPEHNO3		1				
MW-5B	Aqueous	-02E	09/19/19 11:03 AM	1LHDPEHNO3	1					02
MW-5B	Aqueous	-02F	09/19/19 11:03 AM	1LHDPEHNO3		1				
MW-5	Aqueous	-03E	09/19/19 11:37 AM	1LHDPEHNO3	1					05
MW-5	Aqueous	-03F	09/19/19 11:37 AM	1LHDPEHNO3		1				
MW-303	Aqueous	-04E	09/19/19 11:42 AM	1LHDPEHNO3	1					04
MW-303	Aqueous	-04F	09/19/19 11:42 AM	1LHDPEHNO3		1				
MW-8	Aqueous	-05E	09/19/19 12:31 PM	1LHDPEHNO3	1					03
MW-8	Aqueous	-05F	09/19/19 12:31 PM	1LHDPEHNO3		1				
MW-9	Aqueous	-06E	09/19/19 01:14 PM	1LHDPEHNO3	1					06
MW-9	Aqueous	-06F	09/19/19 01:14 PM	1LHDPEHNO3		1				
MW-6RB	Aqueous	-07E	09/19/19 02:00 PM	1LHDPEHNO3	1					07
MW-6RB	Aqueous	-07F	09/19/19 02:00 PM	1LHDPEHNO3		1				
MW-10	Aqueous	-08E	09/19/19 02:45 PM	1LHDPEHNO3	1					08
MW-10	Aqueous	-08F	09/19/19 02:45 PM	1LHDPEHNO3		1				
DB-5	Aqueous	-09E	09/19/19 10:25 AM	1LHDPEHNO3	1					09
DB-5	Aqueous	-09F	09/19/19 10:25 AM	1LHDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

RAD SCREEN: <0.5 mR/hr

		Date/Time			Date/Time
Relinquished by:		9/20/19 1700	Received by:		9/24/19 10:00
Relinquished by:			Received by:		

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1909176

114237

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122
TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

20-Sep-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra228 E904.0	Ra226 M7500 Ra B M	Requested Tests				
MW-3RB	Aqueous	-10E	09/19/19 11:05 AM	1LHDPEHNO3	1						10
MW-3RB	Aqueous	-10F	09/19/19 11:05 AM	1LHDPEHNO3		1					
MW-3R	Aqueous	-11E	09/19/19 11:35 AM	1LHDPEHNO3	1						11
MW-3R	Aqueous	-11F	09/19/19 11:35 AM	1LHDPEHNO3		1					
MW-1	Aqueous	-12E	09/19/19 12:25 PM	1LHDPEHNO3	1						12
MW-1	Aqueous	-12F	09/19/19 12:25 PM	1LHDPEHNO3		1					
MW-7B	Aqueous	-13E	09/19/19 01:05 PM	1LHDPEHNO3	1						13
MW-7B	Aqueous	-13F	09/19/19 01:05 PM	1LHDPEHNO3		1					
MW-7	Aqueous	-14E	09/19/19 01:35 PM	1LHDPEHNO3	1						14
MW-7	Aqueous	-14F	09/19/19 01:35 PM	1LHDPEHNO3		1					
MW-11B	Aqueous	-15E	09/19/19 02:20 PM	1LHDPEHNO3	1						15
MW-11B	Aqueous	-15F	09/19/19 02:20 PM	1LHDPEHNO3		1					
MW-11	Aqueous	-16E	09/19/19 02:50 PM	1LHDPEHNO3	1						16
MW-11	Aqueous	-16F	09/19/19 02:50 PM	1LHDPEHNO3		1					

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

RAD SCREEN: <0.5 mR/hr

		Date/Time			Date/Time
Relinquished by:		9/20/19 1700	Received by:		9/24/19 10:00
Relinquished by:			Received by:		

January 10, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 1911260

RE: Copano APAR Soil

Dear Kevin Dworsky:

DHL Analytical, Inc. received 56 sample(s) on 11/27/2019 for the analyses presented in the following report.

REVISION#1: This revision consists of correcting the Combined Radium result for sample BSBG-5 as per the client. Please replace the original report with this revised report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 80197 CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Victoria, TX 77901
PHONE: 361-573-6442 FAX/E-MAIL:
DATA REPORTED TO: Matt Wickham, Greg Logan, Stephen Grahman
ADDITIONAL REPORT COPIES TO: Caitlin Carter

DATE: 11-26-19 PAGE 1 OF 5
PO #: DHL WORK ORDER #: 1911260
PROJECT LOCATION OR NAME: Cooper APAR Soils
CLENT PROJECT #: 19134560 COLLECTOR:

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 | NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS ~~AMMONIA~~ ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ Al, Sb, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Hg ☐ | PH ☒ HEX CHROM ☐ ALKALINITY ☒ COD ☐ | CHLORIDE ☐ ANIONS Cl, NO3, SO4 ☒ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | TOC ☒ Screening Level List | COPC List

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4	NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
B65B-1	01	11-26-19	9:28	S	P, G	3					☒	☒	TOC ☒ Screening Level List	See Attached List for Analysis
B65B-2	02		9:37											
B65B-3	03		9:45											
B65B-4	04		9:57											
B65B-5	05		10:07											
B65B-6	06		10:13											
B65B-7	07		10:21											
B65B-8	08		10:33											
B65B-9	09		10:39											
B65B-10	10	11-26-19	10:46	S	P, G	3					☒	☒	TOC ☒ Screening Level List	

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RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY: 1.8 1.1 1.2 2.2 3.8
RECEIVING TEMP: 1.4°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED
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№ 80196

CHAIN-OF-CUSTODY

CLIENT: Golder
ADDRESS:
PHONE: FAX/E-MAIL:
DATA REPORTED TO:
ADDITIONAL REPORT COPIES TO:

DATE: PAGE 2 OF 5
PO #: DHL WORK ORDER #: 1911260
PROJECT LOCATION OR NAME: Copano ARAR Soil
CLENT PROJECT #: 19134560 COLLECTOR:

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ TPHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ____ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ ____ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | Scaling Level List | COPC List | FIELD NOTES

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	Scaling Level List	COPC List	FIELD NOTES
SB-1	11	11-25-19	9:15	S	P, G	3				X	X	X	X	See attached
SB-11	12		12:26											List for
SB-14	13		15:27											analysis
SB-16	14		16:13											
SB-21	15		16:46											
SB-26	16		14:46											
SB-30	17		13:50											
SB-33	18		12:52											
SB-37	19		11:22											
SB-40	20		10:42											
SB-41	21	11-25-19	10:23	S	P, G	3				X	X	X	X	

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☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY: 1.1 1.2 2.2 3.8
RECEIVING TEMP: 1.4 1.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

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№ 80195

CHAIN-OF-CUSTODY

CLIENT: Golder
ADDRESS:
PHONE: FAX/E-MAIL:
DATA REPORTED TO:
ADDITIONAL REPORT COPIES TO:

DATE: 11-26-19 PAGE 3 OF 5
PO #: DHL WORK ORDER #: 1911260
PROJECT LOCATION OR NAME: Cooper APAR Soils
CLENT PROJECT #: 19134560 COLLECTOR:

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT
P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | Screening - Level List | COC List

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
SB-44	22	11-25-19	9:13	S	P,G	3				X	X	See attached
SB-43	23		9:37									List for
SB-42	24		9:57									copy
SB-39	25		10:54									analysis
SB-38	26		11:08									
SB-36	27		11:43									
SB-35	28		11:58									
SB-34	29		12:30									
SB-32	30		13:08									
SB-31	31		13:31									
SB-29	32		14:01									
SB-28	33		14:15									
SB-27	34		14:26									
SB-25	35		15:00									
SB-24	36	↓	15:12	↓	↓	↓				*	↓	

HOLD

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☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY: 1.1 1.2 2.2 3.8
RECEIVING TEMP: 1.4 1.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

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№ 80194

CHAIN-OF-CUSTODY

CLIENT: Golder
ADDRESS:
PHONE: FAX/E-MAIL:
DATA REPORTED TO:
ADDITIONAL REPORT COPIES TO:

DATE: PAGE 4 OF 5
PO #: DHL WORK ORDER #: 1911260
PROJECT LOCATION OR NAME: Copano AAR Soils
CLENT PROJECT #: 19134560 COLLECTOR:

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 2008 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | Screening-Level List | CORE List

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED		FIELD NOTES
SB-23	37	11-25-19	15:24	S	8,16	3				X	X	X	See Attached
SB-22	38		16:04									HOLD	List for
SB-20	39		16:31										analysis
SB-19	40		16:44										
SB-2	41		9:37									HOLD	
SB-3	42		9:53										
SB-4	43		10:06										
SB-5	44		10:20									HOLD	
SB-6	45		10:38										
SB-7	46		10:52										
SB-8	47		11:15									HOLD	
SB-9	48		11:29										
SB-10	49		11:44										
SB-12	50		12:34									HOLD	
SB-13	51	↓	13:00	↓	↓	4				↓	↓	X	

RELINQUISHED BY: (Signature) DATE/TIME 11-26-19/18:00 RECEIVED BY: (Signature) Fed Ex
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
FEDEX 11-27-19 1140
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY: 1.1 1.2 2.2 3.8
RECEIVING TEMP: 1.4 1.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

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№ 80193

CHAIN-OF-CUSTODY

CLIENT: Golder
ADDRESS:
PHONE: FAX/E-MAIL:
DATA REPORTED TO:
ADDITIONAL REPORT COPIES TO:

DATE: PAGE 5 OF 5
PO #: DHL WORK ORDER #: 1911260
PROJECT LOCATION OR NAME: Cooper APAR SB15
CLENT PROJECT #: 1913560 COLLECTOR:

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT
P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ☐ NaOH ☐, ICE, UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ T PHOS, AMMONIA ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ ____ ☐ | RCRA ☐ TX11 ☐ ____ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ____ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | Screening Level List | Cr6 List

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
SB-15	52	11-25-19	16:02	S	P,G	3				X	X	X	See Attached
SB-17	53		16:27									X HOLD	Lists for
SB-18	54		16:45									X	analysis
SB-101	55		10:00									X HOLD	
SB-102	56		~~11:15~~ 11:00							X	X	X	

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RELINQUISHED BY: (Signature) FEDEX DATE/TIME 11-27-19 1140 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY: 1.1 1.2 2.2 3.8
RECEIVING TEMP: 1.4 1.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

SCREENING-LEVEL LIST

pH
calcium
sodium
aluminum
sulfate
alkalinity
TOC

COPC LIST

Aluminum
antimony
arsenic
chromium
lead
mercury
nickel
thallium
vanadium

Uranium (metal)

Radium 226/228

Ammonia, nitrogen

1.4°C

DHL ANALYTICAL

ORIGIN ID:VCTA (361) 573-0442
KEVIN DWORSKY
GOLDER ASSOCIATES INC.
620 E. AIRLINE

VICTORIA, TX 77901
UNITED STATES US

SHIP DATE: 26NOV19
ACTWGT: 60.00 LB
CAD: 2806631/INET4160
DIMS: 24x13x14 IN

BILL SENDER

TO SAMPLE RECEIVING
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 386-8222 REF: 19134560
INV:
PO: DEPT:

567 J1/F33005A2

FedEx Express

6 of 6
MPS# 0263 7770 9327 1966
Mstr# 7770 9327 0970

0201

WED - 27 NOV 10:30A
PRIORITY OVERNIGHT

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TX-US AUS

44 BSMA

CUSTODY SEAL

DATE 11-26-19

SIGNATURE

1.8°C

Page 5 of 6

ORIGIN ID:VCTA (361) 573-6442
KEVIN DWORSKY
GOLDER ASSOCIATES INC.
620 E. AIRLINE

VICTORIA, TX 77901
UNITED STATES US

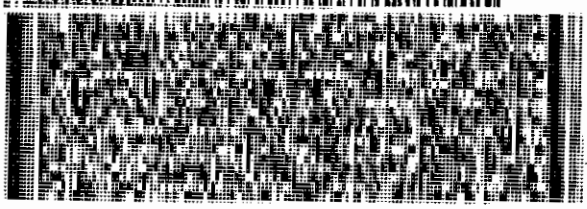
SHIP DATE: 26NOV19
ACTWGT: 60.00 LB
CAD: 2806631/INET4160
DIMS: 24x13x14 IN

BILL SENDER

TO SAMPLE RECEIVING
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2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF: 19134560
INV:
PO: DEPT:

567 J1/F3300/5/2



FedEx Express

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PRIORITY OVERNIGHT

5 of 6
MPS# 0263 7770 9327 1267
Mstr# 7770 9327 0970

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78664
TX-US AUS

44 BSMA

SIGNATURE

DATE 11-26-19

CUSTODY SEAL

1-1 05

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Page 1

573-6442

GOLDER ASSOCIATES INC.
620 E. AIRLINE

VICTORIA, TX 77901
UNITED STATES US

SHIP DATE: 26NOV19
ACTWGT: 60.00 LB
CAD: 2806631/INET4160
DIMS: 24x13x14 IN

BILL SENDER

TO SAMPLE RECEIVING
DHL ANALYTICAL
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ROUND ROCK TX 78664
(512) 388-8222 REF: 19134560
INV:
PO: DEPT:

567JI/F330/05A2

FedEx Express

WED - 27 NOV 10:30A
PRIORITY OVERNIGHT

1 of 6

TRK# 0201 7770 9327 0970

MASTER

44 BSMA

78664
TX-US AUS

CUSTODY SEAL
11-26-19
DATE
SIGNATURE

DHL ANALYTICAL

1.2°C

ORIGIN ID:VCTA (361) 573-6442
KEVIN DWORSKY
GOLDER ASSOCIATES INC.
620 E. AIRLINE

VICTORIA, TX 77901
UNITED STATES US

SHIP DATE: 26NOV19
ACTWGT: 60.00 LB
CAD: 2806631/INET4160
DIMS: 24x13x14 IN

BILL SENDER

TO SAMPLE RECEIVING
DHL ANALYTICAL
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INV:
PO: DEPT:

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2 of 6
MPS# 0263 7770 9327 1348
Mstr# 7770 9327 0970

0201

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DATE 11-26-19

SIGNATURE

2-20C

ORIGIN ID:VCTA (361) 573-6442
KEVIN DWORSKY
GOLDER ASSOCIATES INC.
620 E. AIRLINE

VICTORIA, TX 77901
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SHIP DATE: 26NOV19
ACTWGT: 60.00 LB
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BILL SENDER

TO SAMPLE RECEIVING
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF: 19134560
INV:
PO: DEPT:

567 J1 F330/05/A2

FedEx Express

3 of 6

WED - 27 NOV 10:30A
PRIORITY OVERNIGHT

MPS# 0263 7770 9327 1624
Mstr# 7770 9327 0970 0201

44 BSMA

78664
TX-US AUS

CUSTODY SEAL

DATE 11-26-19

SIGNATURE

3.8°C

Page 4 of 6

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UNITED STATES US

SHIP DATE: 26NOV19
ACTWGT: 60.00 LB
CAD: 2806631/INET4160
DIMS: 24x13x14 IN

BILL SENDER

TO SAMPLE RECEIVING
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF: 19134560
INV:
PO: DEPT:

567 J1/F330/05A2

FedEx Express

WED - 27 NOV 10:30A
PRIORITY OVERNIGHT

4 of 6
MPS# 0263 7770 9327 1370
Mstr# 7770 9327 0970

0201

78664
TX-US AUS

44 BSMA

CUSTODY SEAL

DATE 11-26-19

SIGNATURE

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder

Date Received: 11/27/2019

Work Order Number 1911260

Received by: CC

Checklist completed by: Signature 11/27/2019 Date

Reviewed by Initials 11/27/2019 Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.4 °C/1.8/1.1/1.2/2.2/3.8
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: Date contacted: Person contacted

Contacted by: Regarding:

Comments:

Corrective Action

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano APAR Soil	**LRC Date:** 1/3/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1911260
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?	**X**				
		7) Were % moisture (or solids) reported for all soil and sediment samples?	**X**				
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?		**X**			**R5-04**
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?	**X**				**R5-05**
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?		**X**			**R7-04**
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?		**X**			**R8-03**
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano APAR Soil	**LRC Date:** 1/3/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1911260
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			S9-01
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

01/10/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *03-Jan-20*

CLIENT: Golder
Project: Copano APAR Soil
Lab Order: 1911260

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method SW6020B - Uranium in Soil Analysis (this parameter is not NELAP certified)
Method SW7471B - Mercury Analysis
Method SW9056A - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method E350.3 - Ammonia Analysis
Method SW9045D - pH of a Solid Analysis (corrosivity)
Method D2216 - Percent Moisture Analysis
Sub-contract - FOC analysis by method WALKLEY-BLACK. Analyzed at ALS. Radium analysis by method DOE Ga-01-R/901.1. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 11/27/19. A total of 56 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R5-04

For Metals analysis performed on 12/4/19 (batch 93920) Lead was detected below the reporting limit in the method blank (MB-93920).

Exception Report R5-05

For Metals analysis (batch 93920) all associated samples were detected greater than 10 times the amount in the blank for Lead. No further corrective actions were taken.

Exception Report R7-03 & R7-04

For Metals analysis performed on 12/4/19, 12/5/19 and 12/6/19 (batches 93920, 93944 & 93966) the matrix spikes and/or matrix spike duplicate recoveries were out of control limits for a total of three analytes. In addition, the matrix spike and matrix spike duplicate (batch 93920) had the RPD slightly above control limits for Antimony. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates were from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Anions analysis performed on 12/15/19 (batch 93946) the matrix spike recovery was below control limits for Sulfate. This was due to matrix effect. This is flagged accordingly. The sample selected for

the matrix spike and matrix spike duplicate (batch 93946) was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Ammonia analysis performed on 12/3/19 and 12/4/19 (batches 93935 & 93953) the matrix spikes and matrix spike duplicate recoveries (1911260-01 MS/MSD, 1911260-11 MS/MSD & 1911260-21 MS/MSD) were below control limits. This was due to matrix effect. These are flagged accordingly. The samples selected for the matrix spikes and matrix spike duplicates were from this work order. The LCSs were within control limits. No further corrective actions were taken.

Exception Report R8-03

For Anions analysis performed on 12/3/19 and 12/6/19 (batches 93907 & 93970) the sample and sample duplicates (1911260-01, 1911260-01-DUP, 1911260-42 & 1911260-DUP) had the RPDs slightly above control limits for Sulfate. This was due to matrix effect. No further corrective actions were taken.

Exception Report R10-01

For Anions analysis all samples were diluted prior to analysis due to the nature of the samples (matrix).

Exception Report S9-01

For Metals analysis performed on 12/4/19 (batch 93920) the RPD for the serial dilution was slightly above control limits for Lead. This is flagged accordingly in the QC summary report. The PDS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT: Golder
Project: Copano APAR Soil
Lab Order: 1911260

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1911260-01	BGSB-1		11/26/19 09:28 AM	11/27/2019
1911260-02	BGSB-2		11/26/19 09:37 AM	11/27/2019
1911260-03	BGSB-3		11/26/19 09:45 AM	11/27/2019
1911260-04	BGSB-4		11/26/19 09:57 AM	11/27/2019
1911260-05	BGSB-5		11/26/19 10:07 AM	11/27/2019
1911260-06	BGSB-6		11/26/19 10:13 AM	11/27/2019
1911260-07	BGSB-7		11/26/19 10:21 AM	11/27/2019
1911260-08	BGSB-8		11/26/19 10:33 AM	11/27/2019
1911260-09	BGSB-9		11/26/19 10:39 AM	11/27/2019
1911260-10	BGSB-10		11/26/19 10:46 AM	11/27/2019
1911260-11	SB-1		11/25/19 09:15 AM	11/27/2019
1911260-12	SB-11		11/25/19 12:16 PM	11/27/2019
1911260-13	SB-14		11/25/19 03:27 PM	11/27/2019
1911260-14	SB-16		11/25/19 04:13 PM	11/27/2019
1911260-15	SB-21		11/25/19 04:16 PM	11/27/2019
1911260-16	SB-26		11/25/19 02:46 PM	11/27/2019
1911260-17	SB-30		11/25/19 01:50 PM	11/27/2019
1911260-18	SB-33		11/25/19 12:52 PM	11/27/2019
1911260-19	SB-37		11/25/19 11:22 AM	11/27/2019
1911260-20	SB-40		11/25/19 10:42 AM	11/27/2019
1911260-21	SB-41		11/25/19 10:23 AM	11/27/2019
1911260-22	SB-44		11/25/19 09:13 AM	11/27/2019
1911260-23	SB-43		11/25/19 09:37 AM	11/27/2019
1911260-24	SB-42		11/25/19 09:57 AM	11/27/2019
1911260-25	SB-39		11/25/19 10:54 AM	11/27/2019
1911260-26	SB-38		11/25/19 11:08 AM	11/27/2019
1911260-27	SB-36		11/25/19 11:43 AM	11/27/2019
1911260-28	SB-35		11/25/19 11:58 AM	11/27/2019
1911260-29	SB-34		11/25/19 12:30 PM	11/27/2019
1911260-30	SB-32		11/25/19 01:08 PM	11/27/2019
1911260-31	SB-31		11/25/19 01:31 PM	11/27/2019
1911260-32	SB-29		11/25/19 02:01 PM	11/27/2019
1911260-33	SB-28		11/25/19 02:15 PM	11/27/2019
1911260-34	SB-27		11/25/19 02:26 PM	11/27/2019
1911260-35	SB-25		11/25/19 03:00 PM	11/27/2019
1911260-36	SB-24		11/25/19 03:12 PM	11/27/2019
1911260-37	SB-23		11/25/19 03:24 PM	11/27/2019
1911260-38	SB-22		11/25/19 04:04 PM	11/27/2019

CLIENT: Golder
Project: Copano APAR Soil
Lab Order: 1911260

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1911260-39	SB-20		11/25/19 04:31 PM	11/27/2019
1911260-40	SB-19		11/25/19 04:44 PM	11/27/2019
1911260-41	SB-2		11/25/19 09:37 AM	11/27/2019
1911260-42	SB-3		11/25/19 09:53 AM	11/27/2019
1911260-43	SB-4		11/25/19 10:06 AM	11/27/2019
1911260-44	SB-5		11/25/19 10:20 AM	11/27/2019
1911260-45	SB-6		11/25/19 10:38 AM	11/27/2019
1911260-46	SB-7		11/25/19 10:52 AM	11/27/2019
1911260-47	SB-8		11/25/19 11:15 AM	11/27/2019
1911260-48	SB-9		11/25/19 11:29 AM	11/27/2019
1911260-49	SB-10		11/25/19 11:44 AM	11/27/2019
1911260-50	SB-12		11/25/19 12:34 PM	11/27/2019
1911260-51	SB-13		11/25/19 01:00 PM	11/27/2019
1911260-52	SB-15		11/25/19 04:02 PM	11/27/2019
1911260-53	SB-17		11/25/19 04:27 PM	11/27/2019
1911260-54	SB-18		11/25/19 04:45 PM	11/27/2019
1911260-55	SB-101		11/25/19 10:00 AM	11/27/2019
1911260-56	SB-102		11/25/19 11:00 AM	11/27/2019

Lab Order: 1911260
Client: Golder
Project: Copano APAR Soil

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-01A	BGSB-1	11/26/19 09:28 AM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	BGSB-1	11/26/19 09:28 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-1	11/26/19 09:28 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-1	11/26/19 09:28 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	BGSB-1	11/26/19 09:28 AM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	BGSB-1	11/26/19 09:28 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	BGSB-1	11/26/19 09:28 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-1	11/26/19 09:28 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-1	11/26/19 09:28 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-1	11/26/19 09:28 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/03/19 01:28 PM	93935
1911260-02A	BGSB-2	11/26/19 09:37 AM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	BGSB-2	11/26/19 09:37 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-2	11/26/19 09:37 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-2	11/26/19 09:37 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	BGSB-2	11/26/19 09:37 AM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	BGSB-2	11/26/19 09:37 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	BGSB-2	11/26/19 09:37 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-2	11/26/19 09:37 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-2	11/26/19 09:37 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-2	11/26/19 09:37 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/03/19 01:28 PM	93935
1911260-03A	BGSB-3	11/26/19 09:45 AM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	BGSB-3	11/26/19 09:45 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-3	11/26/19 09:45 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-3	11/26/19 09:45 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	BGSB-3	11/26/19 09:45 AM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	BGSB-3	11/26/19 09:45 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	BGSB-3	11/26/19 09:45 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-3	11/26/19 09:45 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920

Lab Order: 1911260
Client: Golder
Project: Copano APAR Soil

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-03A	BGSB-3	11/26/19 09:45 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-3	11/26/19 09:45 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/03/19 01:28 PM	93935
1911260-04A	BGSB-4	11/26/19 09:57 AM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	BGSB-4	11/26/19 09:57 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-4	11/26/19 09:57 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	BGSB-4	11/26/19 09:57 AM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	BGSB-4	11/26/19 09:57 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	BGSB-4	11/26/19 09:57 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-4	11/26/19 09:57 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-4	11/26/19 09:57 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-4	11/26/19 09:57 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/03/19 01:28 PM	93935
1911260-05A	BGSB-5	11/26/19 10:07 AM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	BGSB-5	11/26/19 10:07 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-5	11/26/19 10:07 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	BGSB-5	11/26/19 10:07 AM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	BGSB-5	11/26/19 10:07 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	BGSB-5	11/26/19 10:07 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-5	11/26/19 10:07 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-5	11/26/19 10:07 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-5	11/26/19 10:07 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/03/19 01:28 PM	93935
1911260-06A	BGSB-6	11/26/19 10:13 AM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	BGSB-6	11/26/19 10:13 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-6	11/26/19 10:13 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	BGSB-6	11/26/19 10:13 AM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	BGSB-6	11/26/19 10:13 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	BGSB-6	11/26/19 10:13 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-6	11/26/19 10:13 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-6	11/26/19 10:13 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920

Lab Order: 1911260
Client: Golder
Project: Copano APAR Soil

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-06A	BGSB-6	11/26/19 10:13 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/03/19 01:28 PM	93935
1911260-07A	BGSB-7	11/26/19 10:21 AM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	BGSB-7	11/26/19 10:21 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-7	11/26/19 10:21 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	BGSB-7	11/26/19 10:21 AM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	BGSB-7	11/26/19 10:21 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	BGSB-7	11/26/19 10:21 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-7	11/26/19 10:21 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-7	11/26/19 10:21 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-7	11/26/19 10:21 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/03/19 01:28 PM	93935
1911260-08A	BGSB-8	11/26/19 10:33 AM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	BGSB-8	11/26/19 10:33 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-8	11/26/19 10:33 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	BGSB-8	11/26/19 10:33 AM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	BGSB-8	11/26/19 10:33 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	BGSB-8	11/26/19 10:33 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-8	11/26/19 10:33 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-8	11/26/19 10:33 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-8	11/26/19 10:33 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/03/19 01:28 PM	93935
1911260-09A	BGSB-9	11/26/19 10:39 AM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	BGSB-9	11/26/19 10:39 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-9	11/26/19 10:39 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	BGSB-9	11/26/19 10:39 AM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	BGSB-9	11/26/19 10:39 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	BGSB-9	11/26/19 10:39 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-9	11/26/19 10:39 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-9	11/26/19 10:39 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-9	11/26/19 10:39 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/03/19 01:28 PM	93935

Lab Order: 1911260
Client: Golder
Project: Copano APAR Soil

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-10A	BGSB-10	11/26/19 10:46 AM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	BGSB-10	11/26/19 10:46 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	BGSB-10	11/26/19 10:46 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	BGSB-10	11/26/19 10:46 AM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	BGSB-10	11/26/19 10:46 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	BGSB-10	11/26/19 10:46 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-10	11/26/19 10:46 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-10	11/26/19 10:46 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	BGSB-10	11/26/19 10:46 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/03/19 01:28 PM	93935
1911260-11A	SB-1	11/25/19 09:15 AM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	SB-1	11/25/19 09:15 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	SB-1	11/25/19 09:15 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	SB-1	11/25/19 09:15 AM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	SB-1	11/25/19 09:15 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	SB-1	11/25/19 09:15 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-1	11/25/19 09:15 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-1	11/25/19 09:15 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-1	11/25/19 09:15 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/04/19 11:19 AM	93953
1911260-12A	SB-11	11/25/19 12:16 PM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	SB-11	11/25/19 12:16 PM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	SB-11	11/25/19 12:16 PM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	SB-11	11/25/19 12:16 PM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	SB-11	11/25/19 12:16 PM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	SB-11	11/25/19 12:16 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-11	11/25/19 12:16 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-11	11/25/19 12:16 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-11	11/25/19 12:16 PM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/04/19 11:19 AM	93953
1911260-13A	SB-14	11/25/19 03:27 PM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952

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Client: Golder
Project: Copano APAR Soil

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-13A	SB-14	11/25/19 03:27 PM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	SB-14	11/25/19 03:27 PM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	SB-14	11/25/19 03:27 PM	Soil	D2216	Moisture Preparation	12/05/19 02:42 PM	93976
	SB-14	11/25/19 03:27 PM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	SB-14	11/25/19 03:27 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-14	11/25/19 03:27 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-14	11/25/19 03:27 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-14	11/25/19 03:27 PM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/04/19 11:19 AM	93953
1911260-14A	SB-16	11/25/19 04:13 PM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	SB-16	11/25/19 04:13 PM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	SB-16	11/25/19 04:13 PM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	SB-16	11/25/19 04:13 PM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-16	11/25/19 04:13 PM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	SB-16	11/25/19 04:13 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-16	11/25/19 04:13 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-16	11/25/19 04:13 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-16	11/25/19 04:13 PM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/04/19 11:19 AM	93953
1911260-15A	SB-21	11/25/19 04:16 PM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	SB-21	11/25/19 04:16 PM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	SB-21	11/25/19 04:16 PM	Soil	SW7471B	Mercury Soil Prep, Total	12/02/19 08:35 AM	93905
	SB-21	11/25/19 04:16 PM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-21	11/25/19 04:16 PM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	SB-21	11/25/19 04:16 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-21	11/25/19 04:16 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-21	11/25/19 04:16 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-21	11/25/19 04:16 PM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/04/19 11:19 AM	93953
1911260-16A	SB-26	11/25/19 02:46 PM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	SB-26	11/25/19 02:46 PM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907

Lab Order: 1911260
Client: Golder
Project: Copano APAR Soil

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-16A	SB-26	11/25/19 02:46 PM	Soil	SW7471B	Mercury Soil Prep, Total	12/06/19 08:38 AM	93981
	SB-26	11/25/19 02:46 PM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-26	11/25/19 02:46 PM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	SB-26	11/25/19 02:46 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-26	11/25/19 02:46 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-26	11/25/19 02:46 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-26	11/25/19 02:46 PM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/04/19 11:19 AM	93953
1911260-17A	SB-30	11/25/19 01:50 PM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	SB-30	11/25/19 01:50 PM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	SB-30	11/25/19 01:50 PM	Soil	SW7471B	Mercury Soil Prep, Total	12/06/19 08:38 AM	93981
	SB-30	11/25/19 01:50 PM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-30	11/25/19 01:50 PM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	SB-30	11/25/19 01:50 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-30	11/25/19 01:50 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-30	11/25/19 01:50 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-30	11/25/19 01:50 PM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/04/19 11:19 AM	93953
1911260-18A	SB-33	11/25/19 12:52 PM	Soil	USDA 60	1:5 Water Extract	12/04/19 10:47 AM	93952
	SB-33	11/25/19 12:52 PM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	SB-33	11/25/19 12:52 PM	Soil	SW7471B	Mercury Soil Prep, Total	12/06/19 08:38 AM	93981
	SB-33	11/25/19 12:52 PM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-33	11/25/19 12:52 PM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	SB-33	11/25/19 12:52 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-33	11/25/19 12:52 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-33	11/25/19 12:52 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-33	11/25/19 12:52 PM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/04/19 11:19 AM	93953
1911260-19A	SB-37	11/25/19 11:22 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-37	11/25/19 11:22 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	SB-37	11/25/19 11:22 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/06/19 08:38 AM	93981

Lab Order: 1911260
Client: Golder
Project: Copano APAR Soil

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-19A	SB-37	11/25/19 11:22 AM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-37	11/25/19 11:22 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	SB-37	11/25/19 11:22 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-37	11/25/19 11:22 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-37	11/25/19 11:22 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-37	11/25/19 11:22 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/04/19 11:19 AM	93953
1911260-20A	SB-40	11/25/19 10:42 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-40	11/25/19 10:42 AM	Soil	SW9056A	Anion Prep	12/03/19 09:58 AM	93907
	SB-40	11/25/19 10:42 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/06/19 08:38 AM	93981
	SB-40	11/25/19 10:42 AM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-40	11/25/19 10:42 AM	Soil	SW9045C	pH Preparation	12/02/19 09:07 AM	93910
	SB-40	11/25/19 10:42 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-40	11/25/19 10:42 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-40	11/25/19 10:42 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/03/19 08:32 AM	93920
	SB-40	11/25/19 10:42 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/04/19 11:19 AM	93953
1911260-21A	SB-41	11/25/19 10:23 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-41	11/25/19 10:23 AM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-41	11/25/19 10:23 AM	Soil	SW7471B	Mercury Soil Prep, Total	12/06/19 08:38 AM	93981
	SB-41	11/25/19 10:23 AM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-41	11/25/19 10:23 AM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-41	11/25/19 10:23 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-41	11/25/19 10:23 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-41	11/25/19 10:23 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-41	11/25/19 10:23 AM	Soil	USDA 60	Soil Preparation for Soluble Ammonia	12/04/19 11:19 AM	93953
1911260-22A	SB-44	11/25/19 09:13 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-44	11/25/19 09:13 AM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-44	11/25/19 09:13 AM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-44	11/25/19 09:13 AM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-22A	SB-44	11/25/19 09:13 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-44	11/25/19 09:13 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-23A	SB-43	11/25/19 09:37 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-43	11/25/19 09:37 AM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-43	11/25/19 09:37 AM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-43	11/25/19 09:37 AM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-43	11/25/19 09:37 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-43	11/25/19 09:37 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-24A	SB-42	11/25/19 09:57 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-42	11/25/19 09:57 AM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-42	11/25/19 09:57 AM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-42	11/25/19 09:57 AM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-42	11/25/19 09:57 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-42	11/25/19 09:57 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-25A	SB-39	11/25/19 10:54 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-39	11/25/19 10:54 AM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-39	11/25/19 10:54 AM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-39	11/25/19 10:54 AM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-39	11/25/19 10:54 AM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-39	11/25/19 10:54 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-39	11/25/19 10:54 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-26A	SB-38	11/25/19 11:08 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-38	11/25/19 11:08 AM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-38	11/25/19 11:08 AM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-38	11/25/19 11:08 AM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-38	11/25/19 11:08 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-38	11/25/19 11:08 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-27A	SB-36	11/25/19 11:43 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973

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Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-27A	SB-36	11/25/19 11:43 AM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-36	11/25/19 11:43 AM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-36	11/25/19 11:43 AM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-36	11/25/19 11:43 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-36	11/25/19 11:43 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-28A	SB-35	11/25/19 11:58 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-35	11/25/19 11:58 AM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-35	11/25/19 11:58 AM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-35	11/25/19 11:58 AM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-35	11/25/19 11:58 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-35	11/25/19 11:58 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-29A	SB-34	11/25/19 12:30 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-34	11/25/19 12:30 PM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-34	11/25/19 12:30 PM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-34	11/25/19 12:30 PM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-34	11/25/19 12:30 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-34	11/25/19 12:30 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-30A	SB-32	11/25/19 01:08 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-32	11/25/19 01:08 PM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-32	11/25/19 01:08 PM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-32	11/25/19 01:08 PM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-32	11/25/19 01:08 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-32	11/25/19 01:08 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-31A	SB-31	11/25/19 01:31 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-31	11/25/19 01:31 PM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-31	11/25/19 01:31 PM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-31	11/25/19 01:31 PM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-31	11/25/19 01:31 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-31A	SB-31	11/25/19 01:31 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-32A	SB-29	11/25/19 02:01 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-29	11/25/19 02:01 PM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-29	11/25/19 02:01 PM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-29	11/25/19 02:01 PM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-29	11/25/19 02:01 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-29	11/25/19 02:01 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-33A	SB-28	11/25/19 02:15 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-28	11/25/19 02:15 PM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-28	11/25/19 02:15 PM	Soil	D2216	Moisture Preparation	12/05/19 03:12 PM	93978
	SB-28	11/25/19 02:15 PM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-28	11/25/19 02:15 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-28	11/25/19 02:15 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-34A	SB-27	11/25/19 02:26 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-27	11/25/19 02:26 PM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-27	11/25/19 02:26 PM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-27	11/25/19 02:26 PM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-27	11/25/19 02:26 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-27	11/25/19 02:26 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-35A	SB-25	11/25/19 03:00 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-25	11/25/19 03:00 PM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-25	11/25/19 03:00 PM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-25	11/25/19 03:00 PM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-25	11/25/19 03:00 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-25	11/25/19 03:00 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-36A	SB-24	11/25/19 03:12 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-24	11/25/19 03:12 PM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-24	11/25/19 03:12 PM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-36A	SB-24	11/25/19 03:12 PM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-24	11/25/19 03:12 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-24	11/25/19 03:12 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-37A	SB-23	11/25/19 03:24 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-23	11/25/19 03:24 PM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-23	11/25/19 03:24 PM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-23	11/25/19 03:24 PM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-23	11/25/19 03:24 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-23	11/25/19 03:24 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-38A	SB-22	11/25/19 04:04 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 01:54 PM	93973
	SB-22	11/25/19 04:04 PM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-22	11/25/19 04:04 PM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-22	11/25/19 04:04 PM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-22	11/25/19 04:04 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-22	11/25/19 04:04 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-39A	SB-20	11/25/19 04:31 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-20	11/25/19 04:31 PM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-20	11/25/19 04:31 PM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-20	11/25/19 04:31 PM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-20	11/25/19 04:31 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-20	11/25/19 04:31 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-40A	SB-19	11/25/19 04:44 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-19	11/25/19 04:44 PM	Soil	SW9056A	Anion Prep	12/05/19 09:11 AM	93946
	SB-19	11/25/19 04:44 PM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-19	11/25/19 04:44 PM	Soil	SW9045C	pH Preparation	12/02/19 10:29 AM	93913
	SB-19	11/25/19 04:44 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
	SB-19	11/25/19 04:44 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/04/19 09:08 AM	93944
1911260-41A	SB-2	11/25/19 09:37 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977

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Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-41A	SB-2	11/25/19 09:37 AM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-2	11/25/19 09:37 AM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-2	11/25/19 09:37 AM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-2	11/25/19 09:37 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-2	11/25/19 09:37 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-42A	SB-3	11/25/19 09:53 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-3	11/25/19 09:53 AM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-3	11/25/19 09:53 AM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-3	11/25/19 09:53 AM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-3	11/25/19 09:53 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-3	11/25/19 09:53 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-43A	SB-4	11/25/19 10:06 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-4	11/25/19 10:06 AM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-4	11/25/19 10:06 AM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-4	11/25/19 10:06 AM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-4	11/25/19 10:06 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-4	11/25/19 10:06 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-44A	SB-5	11/25/19 10:20 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-5	11/25/19 10:20 AM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-5	11/25/19 10:20 AM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-5	11/25/19 10:20 AM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-5	11/25/19 10:20 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-5	11/25/19 10:20 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-45A	SB-6	11/25/19 10:38 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-6	11/25/19 10:38 AM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-6	11/25/19 10:38 AM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-6	11/25/19 10:38 AM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-6	11/25/19 10:38 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966

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Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-45A	SB-6	11/25/19 10:38 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-46A	SB-7	11/25/19 10:52 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-7	11/25/19 10:52 AM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-7	11/25/19 10:52 AM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-7	11/25/19 10:52 AM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-7	11/25/19 10:52 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-7	11/25/19 10:52 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-47A	SB-8	11/25/19 11:15 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-8	11/25/19 11:15 AM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-8	11/25/19 11:15 AM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-8	11/25/19 11:15 AM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-8	11/25/19 11:15 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-8	11/25/19 11:15 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-48A	SB-9	11/25/19 11:29 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-9	11/25/19 11:29 AM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-9	11/25/19 11:29 AM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-9	11/25/19 11:29 AM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-9	11/25/19 11:29 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-9	11/25/19 11:29 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-49A	SB-10	11/25/19 11:44 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-10	11/25/19 11:44 AM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-10	11/25/19 11:44 AM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-10	11/25/19 11:44 AM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-10	11/25/19 11:44 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-10	11/25/19 11:44 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-50A	SB-12	11/25/19 12:34 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-12	11/25/19 12:34 PM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-12	11/25/19 12:34 PM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-50A	SB-12	11/25/19 12:34 PM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-12	11/25/19 12:34 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-12	11/25/19 12:34 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-51A	SB-13	11/25/19 01:00 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-13	11/25/19 01:00 PM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-13	11/25/19 01:00 PM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-13	11/25/19 01:00 PM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-13	11/25/19 01:00 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-13	11/25/19 01:00 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-52A	SB-15	11/25/19 04:02 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-15	11/25/19 04:02 PM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-15	11/25/19 04:02 PM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-15	11/25/19 04:02 PM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-15	11/25/19 04:02 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-15	11/25/19 04:02 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-53A	SB-17	11/25/19 04:27 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-17	11/25/19 04:27 PM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-17	11/25/19 04:27 PM	Soil	D2216	Moisture Preparation	12/06/19 03:04 PM	93991
	SB-17	11/25/19 04:27 PM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-17	11/25/19 04:27 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-17	11/25/19 04:27 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-54A	SB-18	11/25/19 04:45 PM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-18	11/25/19 04:45 PM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-18	11/25/19 04:45 PM	Soil	D2216	Moisture Preparation	12/06/19 03:05 PM	93992
	SB-18	11/25/19 04:45 PM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-18	11/25/19 04:45 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-18	11/25/19 04:45 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-55A	SB-101	11/25/19 10:00 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977

Lab Order: 1911260
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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1911260-55A	SB-101	11/25/19 10:00 AM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-101	11/25/19 10:00 AM	Soil	D2216	Moisture Preparation	12/06/19 03:05 PM	93992
	SB-101	11/25/19 10:00 AM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-101	11/25/19 10:00 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-101	11/25/19 10:00 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
1911260-56A	SB-102	11/25/19 11:00 AM	Soil	USDA 60	1:5 Water Extract	12/05/19 02:57 PM	93977
	SB-102	11/25/19 11:00 AM	Soil	SW9056A	Anion Prep	12/05/19 09:42 AM	93970
	SB-102	11/25/19 11:00 AM	Soil	D2216	Moisture Preparation	12/06/19 03:05 PM	93992
	SB-102	11/25/19 11:00 AM	Soil	SW9045C	pH Preparation	12/04/19 09:25 AM	93949
	SB-102	11/25/19 11:00 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966
	SB-102	11/25/19 11:00 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	12/05/19 09:01 AM	93966

Lab Order: 1911260
Client: Golder
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-01A	BGSB-1	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93935	1	12/03/19 04:15 PM	WC_191203A
	BGSB-1	Soil	SW9056A	Anions by IC method - Soil	93907	10	12/03/19 04:19 PM	IC2_191203A
	BGSB-1	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 05:34 PM	IC2_191203A
	BGSB-1	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A
	BGSB-1	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	BGSB-1	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 09:12 AM	TITRATOR_191205A
	BGSB-1	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:10 PM	CETAC2_HG_191202A
	BGSB-1	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 11:21 AM	ICP-MS5_191204A
	BGSB-1	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	100	12/04/19 12:37 PM	ICP-MS5_191204A
	BGSB-1	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 11:21 AM	ICP-MS5_191204B
1911260-01B	BGSB-1	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A
1911260-02A	BGSB-2	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93935	1	12/03/19 04:15 PM	WC_191203A
	BGSB-2	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 06:38 PM	IC2_191203A
	BGSB-2	Soil	SW9056A	Anions by IC method - Soil	93907	10	12/03/19 04:35 PM	IC2_191203A
	BGSB-2	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A
	BGSB-2	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	BGSB-2	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 09:23 AM	TITRATOR_191205A
	BGSB-2	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:12 PM	CETAC2_HG_191202A
	BGSB-2	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 11:24 AM	ICP-MS5_191204A
	BGSB-2	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 12:39 PM	ICP-MS5_191204A
	BGSB-2	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 11:24 AM	ICP-MS5_191204B
1911260-02B	BGSB-2	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A
1911260-03A	BGSB-3	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93935	1	12/03/19 04:15 PM	WC_191203A
	BGSB-3	Soil	SW9056A	Anions by IC method - Soil	93907	10	12/03/19 04:51 PM	IC2_191203A
	BGSB-3	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 07:10 PM	IC2_191203A
	BGSB-3	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A
	BGSB-3	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-03A	BGSB-3	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 09:36 AM	TITRATOR_191205A
	BGSB-3	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:14 PM	CETAC2_HG_191202A
	BGSB-3	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 11:26 AM	ICP-MS5_191204A
	BGSB-3	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	100	12/04/19 12:42 PM	ICP-MS5_191204A
	BGSB-3	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 11:26 AM	ICP-MS5_191204B
1911260-03B	BGSB-3	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A
1911260-04A	BGSB-4	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93935	1	12/03/19 04:15 PM	WC_191203A
	BGSB-4	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 07:26 PM	IC2_191203A
	BGSB-4	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A
	BGSB-4	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	BGSB-4	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 09:45 AM	TITRATOR_191205A
	BGSB-4	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:16 PM	CETAC2_HG_191202A
	BGSB-4	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 11:28 AM	ICP-MS5_191204A
	BGSB-4	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 12:44 PM	ICP-MS5_191204A
	BGSB-4	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 11:28 AM	ICP-MS5_191204B
1911260-04B	BGSB-4	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A
1911260-05A	BGSB-5	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93935	1	12/03/19 04:15 PM	WC_191203A
	BGSB-5	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 07:42 PM	IC2_191203A
	BGSB-5	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A
	BGSB-5	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	BGSB-5	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 09:48 AM	TITRATOR_191205A
	BGSB-5	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:19 PM	CETAC2_HG_191202A
	BGSB-5	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 11:30 AM	ICP-MS5_191204A
	BGSB-5	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 12:46 PM	ICP-MS5_191204A
	BGSB-5	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 11:30 AM	ICP-MS5_191204B
1911260-05B	BGSB-5	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-06A	BGSB-6	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93935	1	12/03/19 04:15 PM	WC_191203A
	BGSB-6	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 07:58 PM	IC2_191203A
	BGSB-6	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A
	BGSB-6	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	BGSB-6	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 09:52 AM	TITRATOR_191205A
	BGSB-6	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:26 PM	CETAC2_HG_191202A
	BGSB-6	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 11:33 AM	ICP-MS5_191204A
	BGSB-6	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	100	12/04/19 12:48 PM	ICP-MS5_191204A
	BGSB-6	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 11:33 AM	ICP-MS5_191204B
1911260-06B	BGSB-6	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A
1911260-07A	BGSB-7	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93935	1	12/03/19 04:15 PM	WC_191203A
	BGSB-7	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 08:14 PM	IC2_191203A
	BGSB-7	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A
	BGSB-7	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	BGSB-7	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 09:57 AM	TITRATOR_191205A
	BGSB-7	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:28 PM	CETAC2_HG_191202A
	BGSB-7	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 12:51 PM	ICP-MS5_191204A
	BGSB-7	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 11:35 AM	ICP-MS5_191204A
	BGSB-7	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 11:35 AM	ICP-MS5_191204B
1911260-07B	BGSB-7	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A
1911260-08A	BGSB-8	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93935	1	12/03/19 04:15 PM	WC_191203A
	BGSB-8	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 09:50 PM	IC2_191203A
	BGSB-8	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A
	BGSB-8	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	BGSB-8	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 10:02 AM	TITRATOR_191205A
	BGSB-8	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:30 PM	CETAC2_HG_191202A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-08A	BGSB-8	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 11:37 AM	ICP-MS5_191204A
	BGSB-8	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 12:53 PM	ICP-MS5_191204A
	BGSB-8	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 11:37 AM	ICP-MS5_191204B
1911260-08B	BGSB-8	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A
1911260-09A	BGSB-9	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93935	1	12/03/19 04:15 PM	WC_191203A
	BGSB-9	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 10:06 PM	IC2_191203A
	BGSB-9	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A
	BGSB-9	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	BGSB-9	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 10:14 AM	TITRATOR_191205A
	BGSB-9	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:32 PM	CETAC2_HG_191202A
	BGSB-9	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 11:39 AM	ICP-MS5_191204A
	BGSB-9	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	100	12/04/19 12:55 PM	ICP-MS5_191204A
	BGSB-9	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 11:39 AM	ICP-MS5_191204B
1911260-09B	BGSB-9	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A
1911260-10A	BGSB-10	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93935	1	12/03/19 04:15 PM	WC_191203A
	BGSB-10	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 10:22 PM	IC2_191203A
	BGSB-10	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A
	BGSB-10	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	BGSB-10	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 10:21 AM	TITRATOR_191205A
	BGSB-10	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:35 PM	CETAC2_HG_191202A
	BGSB-10	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 11:58 AM	ICP-MS5_191204A
	BGSB-10	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 01:08 PM	ICP-MS5_191204A
	BGSB-10	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 11:58 AM	ICP-MS5_191204B
1911260-10B	BGSB-10	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A
1911260-11A	SB-1	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93953	1	12/04/19 03:05 PM	WC_191204A
	SB-1	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 10:38 PM	IC2_191203A
	SB-1	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-11A	SB-1	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	SB-1	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 10:24 AM	TITRATOR_191205A
	SB-1	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:37 PM	CETAC2_HG_191202A
	SB-1	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 12:00 PM	ICP-MS5_191204A
	SB-1	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 01:11 PM	ICP-MS5_191204A
	SB-1	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 12:00 PM	ICP-MS5_191204B
1911260-11B	SB-1	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A
1911260-12A	SB-11	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93953	1	12/04/19 03:05 PM	WC_191204A
	SB-11	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 10:54 PM	IC2_191203A
	SB-11	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A
	SB-11	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	SB-11	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 10:30 AM	TITRATOR_191205A
	SB-11	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:39 PM	CETAC2_HG_191202A
	SB-11	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 12:02 PM	ICP-MS5_191204A
	SB-11	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 01:13 PM	ICP-MS5_191204A
	SB-11	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 12:02 PM	ICP-MS5_191204B
1911260-12B	SB-11	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A
1911260-13A	SB-14	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93953	1	12/04/19 03:05 PM	WC_191204A
	SB-14	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 11:10 PM	IC2_191203A
	SB-14	Soil	D2216	Percent Moisture	93976	1	12/06/19 08:46 AM	PMOIST_191205A
	SB-14	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	SB-14	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 10:35 AM	TITRATOR_191205A
	SB-14	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:42 PM	CETAC2_HG_191202A
	SB-14	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	100	12/04/19 01:15 PM	ICP-MS5_191204A
	SB-14	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 12:04 PM	ICP-MS5_191204A
	SB-14	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 12:04 PM	ICP-MS5_191204B

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Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-13B	SB-14	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/11/19	SUB_191211A
1911260-14A	SB-16	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93953	1	12/04/19 03:05 PM	WC_191204A
	SB-16	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 11:26 PM	IC2_191203A
	SB-16	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-16	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	SB-16	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 10:42 AM	TITRATOR_191205A
	SB-16	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:44 PM	CETAC2_HG_191202A
	SB-16	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 12:07 PM	ICP-MS5_191204A
	SB-16	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 01:17 PM	ICP-MS5_191204A
	SB-16	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 12:07 PM	ICP-MS5_191204B
1911260-14B	SB-16	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-15A	SB-21	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93953	1	12/04/19 03:05 PM	WC_191204A
	SB-21	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 11:42 PM	IC2_191203A
	SB-21	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-21	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	SB-21	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 10:46 AM	TITRATOR_191205A
	SB-21	Soil	SW7471B	Total Mercury: Soil/Solid	93905	1	12/02/19 03:46 PM	CETAC2_HG_191202A
	SB-21	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 12:09 PM	ICP-MS5_191204A
	SB-21	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 01:20 PM	ICP-MS5_191204A
	SB-21	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 12:09 PM	ICP-MS5_191204B
1911260-15B	SB-21	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-16A	SB-26	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93953	1	12/04/19 03:05 PM	WC_191204A
	SB-26	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/03/19 11:58 PM	IC2_191203A
	SB-26	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-26	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	SB-26	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 10:57 AM	TITRATOR_191205A

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1911260-16A	SB-26	Soil	SW7471B	Total Mercury: Soil/Solid	93981	1	12/06/19 11:49 AM	CETAC2_HG_191206A
	SB-26	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 11:14 AM	ICP-MS5_191204A
	SB-26	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 12:33 PM	ICP-MS5_191204A
	SB-26	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 11:14 AM	ICP-MS5_191204B
1911260-16B	SB-26	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-17A	SB-30	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93953	1	12/04/19 03:05 PM	WC_191204A
	SB-30	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/04/19 12:14 AM	IC2_191203A
	SB-30	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-30	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	SB-30	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 11:04 AM	TITRATOR_191205A
	SB-30	Soil	SW7471B	Total Mercury: Soil/Solid	93981	1	12/06/19 11:52 AM	CETAC2_HG_191206A
	SB-30	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 01:22 PM	ICP-MS5_191204A
	SB-30	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 12:11 PM	ICP-MS5_191204A
	SB-30	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 12:11 PM	ICP-MS5_191204B
1911260-17B	SB-30	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-18A	SB-33	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93953	1	12/04/19 03:05 PM	WC_191204A
	SB-33	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/04/19 01:50 AM	IC2_191203A
	SB-33	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-33	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	SB-33	Soil	M2320 B	Soluble Alkalinity of Soil	93952	1	12/05/19 11:14 AM	TITRATOR_191205A
	SB-33	Soil	SW7471B	Total Mercury: Soil/Solid	93981	1	12/06/19 11:54 AM	CETAC2_HG_191206A
	SB-33	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 12:13 PM	ICP-MS5_191204A
	SB-33	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 01:24 PM	ICP-MS5_191204A
	SB-33	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 12:13 PM	ICP-MS5_191204B
1911260-18B	SB-33	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-19A	SB-37	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93953	1	12/04/19 03:05 PM	WC_191204A

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Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-19A	SB-37	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/04/19 02:06 AM	IC2_191203A
	SB-37	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-37	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	SB-37	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 03:00 PM	TITRATOR_191206A
	SB-37	Soil	SW7471B	Total Mercury: Soil/Solid	93981	1	12/06/19 11:56 AM	CETAC2_HG_191206A
	SB-37	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 12:16 PM	ICP-MS5_191204A
	SB-37	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 01:26 PM	ICP-MS5_191204A
	SB-37	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 12:16 PM	ICP-MS5_191204B
1911260-19B	SB-37	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-20A	SB-40	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93953	1	12/04/19 03:05 PM	WC_191204A
	SB-40	Soil	SW9056A	Anions by IC method - Soil	93907	5	12/04/19 02:22 AM	IC2_191203A
	SB-40	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-40	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93910	1	12/02/19 03:30 PM	PH2_191202A
	SB-40	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 03:11 PM	TITRATOR_191206A
	SB-40	Soil	SW7471B	Total Mercury: Soil/Solid	93981	1	12/06/19 11:58 AM	CETAC2_HG_191206A
	SB-40	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	5	12/04/19 12:18 PM	ICP-MS5_191204A
	SB-40	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93920	50	12/04/19 01:29 PM	ICP-MS5_191204A
	SB-40	Soil	SW6020B	Uranium in Soil	93920	5	12/04/19 12:18 PM	ICP-MS5_191204B
1911260-20B	SB-40	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-21A	SB-41	Soil	E350.3	Ammonia in Solid/Soil (Soluble)	93953	1	12/04/19 03:05 PM	WC_191204A
	SB-41	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 05:07 PM	IC4_191205A
	SB-41	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-41	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-41	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 03:17 PM	TITRATOR_191206A
	SB-41	Soil	SW7471B	Total Mercury: Soil/Solid	93981	1	12/06/19 12:01 PM	CETAC2_HG_191206A
	SB-41	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 12:52 PM	ICP-MS4_191205A

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Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-21A	SB-41	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 01:58 PM	ICP-MS4_191205A
	SB-41	Soil	SW6020B	Uranium in Soil	93944	5	12/05/19 12:52 PM	ICP-MS4_191205B
1911260-21B	SB-41	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-22A	SB-44	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 06:29 PM	IC4_191205A
	SB-44	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-44	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-44	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 03:20 PM	TITRATOR_191206A
	SB-44	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 12:53 PM	ICP-MS4_191205A
	SB-44	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:00 PM	ICP-MS4_191205A
1911260-22B	SB-44	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-23A	SB-43	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 07:01 PM	IC4_191205A
	SB-43	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-43	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-43	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 03:22 PM	TITRATOR_191206A
	SB-43	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 12:56 PM	ICP-MS4_191205A
	SB-43	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:02 PM	ICP-MS4_191205A
1911260-23B	SB-43	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-24A	SB-42	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 07:17 PM	IC4_191205A
	SB-42	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-42	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-42	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 03:25 PM	TITRATOR_191206A
	SB-42	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 12:58 PM	ICP-MS4_191205A
	SB-42	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:04 PM	ICP-MS4_191205A
1911260-24B	SB-42	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-25A	SB-39	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 07:33 PM	IC4_191205A
	SB-39	Soil	SW9056A	Anions by IC method - Soil	93946	10	12/06/19 06:31 PM	IC4_191206A
	SB-39	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-39	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A

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1911260-25A	SB-39	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 03:28 PM	TITRATOR_191206A
	SB-39	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 12:59 PM	ICP-MS4_191205A
	SB-39	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	100	12/05/19 02:06 PM	ICP-MS4_191205A
1911260-25B	SB-39	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-26A	SB-38	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 07:49 PM	IC4_191205A
	SB-38	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-38	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-38	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 03:33 PM	TITRATOR_191206A
	SB-38	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:01 PM	ICP-MS4_191205A
	SB-38	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	100	12/05/19 02:08 PM	ICP-MS4_191205A
1911260-26B	SB-38	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-27A	SB-36	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 08:05 PM	IC4_191205A
	SB-36	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-36	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-36	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 03:47 PM	TITRATOR_191206A
	SB-36	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:03 PM	ICP-MS4_191205A
	SB-36	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	100	12/05/19 02:10 PM	ICP-MS4_191205A
1911260-27B	SB-36	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-28A	SB-35	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 08:21 PM	IC4_191205A
	SB-35	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-35	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-35	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 03:50 PM	TITRATOR_191206A
	SB-35	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:05 PM	ICP-MS4_191205A
	SB-35	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:12 PM	ICP-MS4_191205A
1911260-28B	SB-35	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-29A	SB-34	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 08:37 PM	IC4_191205A
	SB-34	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-34	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A

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Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-29A	SB-34	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 03:56 PM	TITRATOR_191206A
	SB-34	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:07 PM	ICP-MS4_191205A
	SB-34	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:14 PM	ICP-MS4_191205A
1911260-29B	SB-34	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-30A	SB-32	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 08:53 PM	IC4_191205A
	SB-32	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-32	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-32	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 04:00 PM	TITRATOR_191206A
	SB-32	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:26 PM	ICP-MS4_191205A
	SB-32	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:27 PM	ICP-MS4_191205A
1911260-30B	SB-32	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-31A	SB-31	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 10:29 PM	IC4_191205A
	SB-31	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-31	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-31	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 04:03 PM	TITRATOR_191206A
	SB-31	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:28 PM	ICP-MS4_191205A
	SB-31	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:29 PM	ICP-MS4_191205A
1911260-31B	SB-31	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-32A	SB-29	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 10:45 PM	IC4_191205A
	SB-29	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-29	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-29	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 04:14 PM	TITRATOR_191206A
	SB-29	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:30 PM	ICP-MS4_191205A
	SB-29	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:31 PM	ICP-MS4_191205A
1911260-32B	SB-29	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-33A	SB-28	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 11:01 PM	IC4_191205A
	SB-28	Soil	D2216	Percent Moisture	93978	1	12/06/19 08:46 AM	PMOIST_191205B
	SB-28	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-33A	SB-28	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 04:20 PM	TITRATOR_191206A
	SB-28	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:32 PM	ICP-MS4_191205A
	SB-28	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:33 PM	ICP-MS4_191205A
1911260-33B	SB-28	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/12/19	SUB_191211A
1911260-34A	SB-27	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 11:17 PM	IC4_191205A
	SB-27	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-27	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-27	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 04:26 PM	TITRATOR_191206A
	SB-27	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:34 PM	ICP-MS4_191205A
	SB-27	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:35 PM	ICP-MS4_191205A
1911260-34B	SB-27	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-35A	SB-25	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 11:33 PM	IC4_191205A
	SB-25	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-25	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-25	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 04:34 PM	TITRATOR_191206A
	SB-25	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:36 PM	ICP-MS4_191205A
	SB-25	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:37 PM	ICP-MS4_191205A
1911260-35B	SB-25	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-36A	SB-24	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/05/19 11:49 PM	IC4_191205A
	SB-24	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-24	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-24	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 04:42 PM	TITRATOR_191206A
	SB-24	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:38 PM	ICP-MS4_191205A
	SB-24	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:39 PM	ICP-MS4_191205A
1911260-36B	SB-24	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-37A	SB-23	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/06/19 12:05 AM	IC4_191205A
	SB-23	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-23	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A

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Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-37A	SB-23	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 04:53 PM	TITRATOR_191206A
	SB-23	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:40 PM	ICP-MS4_191205A
	SB-23	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:41 PM	ICP-MS4_191205A
1911260-37B	SB-23	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-38A	SB-22	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/06/19 12:21 AM	IC4_191205A
	SB-22	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-22	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-22	Soil	M2320 B	Soluble Alkalinity of Soil	93973	1	12/06/19 04:58 PM	TITRATOR_191206A
	SB-22	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:43 PM	ICP-MS4_191205A
	SB-22	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:42 PM	ICP-MS4_191205A
1911260-38B	SB-22	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-39A	SB-20	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/06/19 12:37 AM	IC4_191205A
	SB-20	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-20	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-20	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 05:22 PM	TITRATOR_191206A
	SB-20	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 01:44 PM	ICP-MS4_191205A
	SB-20	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 02:45 PM	ICP-MS4_191205A
1911260-39B	SB-20	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-40A	SB-19	Soil	SW9056A	Anions by IC method - Soil	93946	5	12/06/19 12:53 AM	IC4_191205A
	SB-19	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-19	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93913	1	12/03/19 03:00 PM	PH2_191203A
	SB-19	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 05:34 PM	TITRATOR_191206A
	SB-19	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	50	12/05/19 01:54 PM	ICP-MS4_191205A
	SB-19	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93944	5	12/05/19 12:48 PM	ICP-MS4_191205A
1911260-40B	SB-19	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-41A	SB-2	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 12:18 PM	IC4_191206A
	SB-2	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-2	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A

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Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-41A	SB-2	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 05:45 PM	TITRATOR_191206A
	SB-2	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 10:56 AM	ICP-MS4_191206A
	SB-2	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	50	12/06/19 11:53 AM	ICP-MS4_191206A
1911260-41B	SB-2	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-42A	SB-3	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 01:22 PM	IC4_191206A
	SB-3	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-3	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A
	SB-3	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 05:51 PM	TITRATOR_191206A
	SB-3	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 10:58 AM	ICP-MS4_191206A
	SB-3	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	50	12/06/19 11:55 AM	ICP-MS4_191206A
1911260-42B	SB-3	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-43A	SB-4	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 01:54 PM	IC4_191206A
	SB-4	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-4	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A
	SB-4	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 05:59 PM	TITRATOR_191206A
	SB-4	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:00 AM	ICP-MS4_191206A
	SB-4	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	100	12/06/19 11:57 AM	ICP-MS4_191206A
1911260-43B	SB-4	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-44A	SB-5	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 02:37 PM	IC4_191206A
	SB-5	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-5	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A
	SB-5	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 06:04 PM	TITRATOR_191206A
	SB-5	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	100	12/06/19 11:59 AM	ICP-MS4_191206A
	SB-5	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:02 AM	ICP-MS4_191206A
1911260-44B	SB-5	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-45A	SB-6	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 02:53 PM	IC4_191206A
	SB-6	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-6	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-45A	SB-6	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 06:12 PM	TITRATOR_191206A
	SB-6	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:04 AM	ICP-MS4_191206A
	SB-6	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	100	12/06/19 12:01 PM	ICP-MS4_191206A
1911260-45B	SB-6	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-46A	SB-7	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 03:09 PM	IC4_191206A
	SB-7	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-7	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A
	SB-7	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 06:19 PM	TITRATOR_191206A
	SB-7	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:06 AM	ICP-MS4_191206A
	SB-7	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	50	12/06/19 12:03 PM	ICP-MS4_191206A
1911260-46B	SB-7	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-47A	SB-8	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 03:25 PM	IC4_191206A
	SB-8	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-8	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A
	SB-8	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 06:29 PM	TITRATOR_191206A
	SB-8	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:08 AM	ICP-MS4_191206A
	SB-8	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	50	12/06/19 12:05 PM	ICP-MS4_191206A
1911260-47B	SB-8	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-48A	SB-9	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 03:41 PM	IC4_191206A
	SB-9	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-9	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A
	SB-9	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 06:39 PM	TITRATOR_191206A
	SB-9	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:24 AM	ICP-MS4_191206A
	SB-9	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	100	12/06/19 12:07 PM	ICP-MS4_191206A
1911260-48B	SB-9	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-49A	SB-10	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 03:57 PM	IC4_191206A
	SB-10	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-10	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A

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Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-49A	SB-10	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 06:48 PM	TITRATOR_191206A
	SB-10	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:26 AM	ICP-MS4_191206A
	SB-10	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	100	12/06/19 12:09 PM	ICP-MS4_191206A
1911260-49B	SB-10	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/16/19	SUB_191211A
1911260-50A	SB-12	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 04:13 PM	IC4_191206A
	SB-12	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-12	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A
	SB-12	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 06:53 PM	TITRATOR_191206A
	SB-12	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:28 AM	ICP-MS4_191206A
	SB-12	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	100	12/06/19 12:21 PM	ICP-MS4_191206A
1911260-50B	SB-12	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/16/19	SUB_191211A
1911260-51A	SB-13	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 06:47 PM	IC4_191206A
	SB-13	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-13	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A
	SB-13	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 06:56 PM	TITRATOR_191206A
	SB-13	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:30 AM	ICP-MS4_191206A
	SB-13	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	50	12/06/19 12:23 PM	ICP-MS4_191206A
1911260-51B	SB-13	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/16/19	SUB_191211A
1911260-52A	SB-15	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 07:03 PM	IC4_191206A
	SB-15	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-15	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A
	SB-15	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 07:06 PM	TITRATOR_191206A
	SB-15	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	100	12/06/19 12:25 PM	ICP-MS4_191206A
	SB-15	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:32 AM	ICP-MS4_191206A
1911260-52B	SB-15	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/16/19	SUB_191211A
1911260-53A	SB-17	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 07:19 PM	IC4_191206A
	SB-17	Soil	D2216	Percent Moisture	93991	1	12/09/19 08:45 AM	PMOIST_191206A
	SB-17	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A

Lab Order: 1911260
Client: Golder
Project: Copano APAR Soil

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1911260-53A	SB-17	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 07:14 PM	TITRATOR_191206A
	SB-17	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:34 AM	ICP-MS4_191206A
	SB-17	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	100	12/06/19 12:27 PM	ICP-MS4_191206A
1911260-53B	SB-17	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/13/19	SUB_191211A
1911260-54A	SB-18	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 07:35 PM	IC4_191206A
	SB-18	Soil	D2216	Percent Moisture	93992	1	12/09/19 08:45 AM	PMOIST_191206B
	SB-18	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A
	SB-18	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 07:21 PM	TITRATOR_191206A
	SB-18	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	100	12/06/19 11:49 AM	ICP-MS4_191206A
	SB-18	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 10:48 AM	ICP-MS4_191206A
1911260-54B	SB-18	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/16/19	SUB_191211A
1911260-55A	SB-101	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 07:51 PM	IC4_191206A
	SB-101	Soil	D2216	Percent Moisture	93992	1	12/09/19 08:45 AM	PMOIST_191206B
	SB-101	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A
	SB-101	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 07:31 PM	TITRATOR_191206A
	SB-101	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:36 AM	ICP-MS4_191206A
	SB-101	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	100	12/06/19 12:29 PM	ICP-MS4_191206A
1911260-55B	SB-101	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/16/19	SUB_191211A
1911260-56A	SB-102	Soil	SW9056A	Anions by IC method - Soil	93970	5	12/06/19 08:07 PM	IC4_191206A
	SB-102	Soil	D2216	Percent Moisture	93992	1	12/09/19 08:45 AM	PMOIST_191206B
	SB-102	Soil	SW9045D	pH of Solid or Liq. (Corrosivity)	93949	1	12/04/19 02:35 PM	PH2_191204A
	SB-102	Soil	M2320 B	Soluble Alkalinity of Soil	93977	1	12/06/19 07:34 PM	TITRATOR_191206A
	SB-102	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	5	12/06/19 11:38 AM	ICP-MS4_191206A
	SB-102	Soil	SW6020B	Trace Metals: ICP-MS - Solid	93966	100	12/06/19 12:31 PM	ICP-MS4_191206A
1911260-56B	SB-102	Soil	Walkley-Black	FOC by Walkley-Black	R107953	1	12/16/19	SUB_191211A

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	BGSB-1
Project:	Copano APAR Soil	**Lab ID:**	1911260-01
Project No:	19134560	**Collection Date:**	11/26/19 09:28 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	27200	282	847		mg/Kg-dry	100	12/04/19 12:37 PM
Antimony	<0.565	0.565	1.13		mg/Kg-dry	5	12/04/19 11:21 AM
Arsenic	4.32	0.565	1.13		mg/Kg-dry	5	12/04/19 11:21 AM
Calcium	5790	14.1	42.3		mg/Kg-dry	5	12/04/19 11:21 AM
Chromium	17.4	0.565	2.26		mg/Kg-dry	5	12/04/19 11:21 AM
Lead	13.2	0.113	0.339		mg/Kg-dry	5	12/04/19 11:21 AM
Nickel	10.5	0.565	2.26		mg/Kg-dry	5	12/04/19 11:21 AM
Sodium	102	14.1	42.3		mg/Kg-dry	5	12/04/19 11:21 AM
Thallium	<0.565	0.565	1.13		mg/Kg-dry	5	12/04/19 11:21 AM
Vanadium	26.5	1.13	2.82		mg/Kg-dry	5	12/04/19 11:21 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	0.0184	0.0175	0.0436	J	mg/Kg-dry	1	12/02/19 03:10 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.13	1.13	2.82	N	mg/Kg-dry	5	12/04/19 11:21 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0110	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	34.7	16.8	55.9	J	mg/Kg-dry	5	12/03/19 05:34 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	203	55.8	55.8		mg/L @ pH 4.54-dr	1	12/05/19 09:12 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.964	0.964	1.51		mg/Kg-dry	1	12/03/19 04:15 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.02	0	0		pH Units@23.8°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	18.0	0	0		WT%	1	12/06/19 08:46 AM

Qualifiers:

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	BGSB-2
Project:	Copano APAR Soil	**Lab ID:**	1911260-02
Project No:	19134560	**Collection Date:**	11/26/19 09:37 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	22800	145	435		mg/Kg-dry	50	12/04/19 12:39 PM
Antimony	<0.580	0.580	1.16		mg/Kg-dry	5	12/04/19 11:24 AM
Arsenic	3.65	0.580	1.16		mg/Kg-dry	5	12/04/19 11:24 AM
Calcium	4780	14.5	43.5		mg/Kg-dry	5	12/04/19 11:24 AM
Chromium	14.6	0.580	2.32		mg/Kg-dry	5	12/04/19 11:24 AM
Lead	10.9	0.116	0.348		mg/Kg-dry	5	12/04/19 11:24 AM
Nickel	8.79	0.580	2.32		mg/Kg-dry	5	12/04/19 11:24 AM
Sodium	143	14.5	43.5		mg/Kg-dry	5	12/04/19 11:24 AM
Thallium	<0.580	0.580	1.16		mg/Kg-dry	5	12/04/19 11:24 AM
Vanadium	21.7	1.16	2.90		mg/Kg-dry	5	12/04/19 11:24 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0168	0.0168	0.0419		mg/Kg-dry	1	12/02/19 03:12 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.16	1.16	2.90	N	mg/Kg-dry	5	12/04/19 11:24 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0124	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<17.8	17.8	59.2		mg/Kg-dry	5	12/03/19 06:38 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	264	60.9	60.9		mg/L @ pH 4.55-dr	1	12/05/19 09:23 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.944	0.944	1.48		mg/Kg-dry	1	12/03/19 04:15 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.29	0	0		pH Units@23.8°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	19.5	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	BGSB-3
Project:	Copano APAR Soil	**Lab ID:**	1911260-03
Project No:	19134560	**Collection Date:**	11/26/19 09:45 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	29300	311	932		mg/Kg-dry	100	12/04/19 12:42 PM
Antimony	<0.621	0.621	1.24		mg/Kg-dry	5	12/04/19 11:26 AM
Arsenic	3.47	0.621	1.24		mg/Kg-dry	5	12/04/19 11:26 AM
Calcium	4380	15.5	46.6		mg/Kg-dry	5	12/04/19 11:26 AM
Chromium	18.4	0.621	2.49		mg/Kg-dry	5	12/04/19 11:26 AM
Lead	12.3	0.124	0.373		mg/Kg-dry	5	12/04/19 11:26 AM
Nickel	11.7	0.621	2.49		mg/Kg-dry	5	12/04/19 11:26 AM
Sodium	1440	15.5	46.6		mg/Kg-dry	5	12/04/19 11:26 AM
Thallium	<0.621	0.621	1.24		mg/Kg-dry	5	12/04/19 11:26 AM
Vanadium	25.7	1.24	3.11		mg/Kg-dry	5	12/04/19 11:26 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0178	0.0178	0.0446		mg/Kg-dry	1	12/02/19 03:14 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.24	1.24	3.11	N	mg/Kg-dry	5	12/04/19 11:26 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00836	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	53.9	18.3	61.2	J	mg/Kg-dry	5	12/03/19 07:10 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	423	58.9	58.9		mg/L @ pH 4.55-dr	1	12/05/19 09:36 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.980	0.980	1.53		mg/Kg-dry	1	12/03/19 04:15 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.57	0	0		pH Units@23.9°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	19.5	0	0		WT%	1	12/06/19 08:46 AM

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E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	BGSB-4
Project:	Copano APAR Soil	**Lab ID:**	1911260-04
Project No:	19134560	**Collection Date:**	11/26/19 09:57 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	21300	129	387		mg/Kg-dry	50	12/04/19 12:44 PM
Antimony	<0.516	0.516	1.03		mg/Kg-dry	5	12/04/19 11:28 AM
Arsenic	4.24	0.516	1.03		mg/Kg-dry	5	12/04/19 11:28 AM
Calcium	3520	12.9	38.7		mg/Kg-dry	5	12/04/19 11:28 AM
Chromium	13.9	0.516	2.06		mg/Kg-dry	5	12/04/19 11:28 AM
Lead	11.8	0.103	0.310		mg/Kg-dry	5	12/04/19 11:28 AM
Nickel	8.55	0.516	2.06		mg/Kg-dry	5	12/04/19 11:28 AM
Sodium	964	12.9	38.7		mg/Kg-dry	5	12/04/19 11:28 AM
Thallium	<0.516	0.516	1.03		mg/Kg-dry	5	12/04/19 11:28 AM
Vanadium	21.3	1.03	2.58		mg/Kg-dry	5	12/04/19 11:28 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0170	0.0170	0.0425		mg/Kg-dry	1	12/02/19 03:16 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.03	1.03	2.58	N	mg/Kg-dry	5	12/04/19 11:28 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00870	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	30.1	18.3	60.9	J	mg/Kg-dry	5	12/03/19 07:26 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	514	60.2	60.2		mg/L @ pH 4.55-dr	1	12/05/19 09:45 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.977	0.977	1.53		mg/Kg-dry	1	12/03/19 04:15 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.53	0	0		pH Units@23.7°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	20.6	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	BGSB-5
Project:	Copano APAR Soil	**Lab ID:**	1911260-05
Project No:	19134560	**Collection Date:**	11/26/19 10:07 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	20800	142	427		mg/Kg-dry	50	12/04/19 12:46 PM
Antimony	<0.569	0.569	1.14		mg/Kg-dry	5	12/04/19 11:30 AM
Arsenic	4.18	0.569	1.14		mg/Kg-dry	5	12/04/19 11:30 AM
Calcium	4020	14.2	42.7		mg/Kg-dry	5	12/04/19 11:30 AM
Chromium	13.6	0.569	2.28		mg/Kg-dry	5	12/04/19 11:30 AM
Lead	10.6	0.114	0.341		mg/Kg-dry	5	12/04/19 11:30 AM
Nickel	8.30	0.569	2.28		mg/Kg-dry	5	12/04/19 11:30 AM
Sodium	120	14.2	42.7		mg/Kg-dry	5	12/04/19 11:30 AM
Thallium	<0.569	0.569	1.14		mg/Kg-dry	5	12/04/19 11:30 AM
Vanadium	22.4	1.14	2.85		mg/Kg-dry	5	12/04/19 11:30 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0168	0.0168	0.0421		mg/Kg-dry	1	12/02/19 03:19 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.14	1.14	2.85	N	mg/Kg-dry	5	12/04/19 11:30 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00735	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<16.6	16.6	55.4		mg/Kg-dry	5	12/03/19 07:42 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	118	59.0	59.0		mg/L @ pH 4.54-dr	1	12/05/19 09:48 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.883	0.883	1.38		mg/Kg-dry	1	12/03/19 04:15 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	6.97	0	0		pH Units@24.1°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	17.1	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	BGSB-6
Project:	Copano APAR Soil	**Lab ID:**	1911260-06
Project No:	19134560	**Collection Date:**	11/26/19 10:13 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	27500	290	870		mg/Kg-dry	100	12/04/19 12:48 PM
Antimony	<0.580	0.580	1.16		mg/Kg-dry	5	12/04/19 11:33 AM
Arsenic	4.10	0.580	1.16		mg/Kg-dry	5	12/04/19 11:33 AM
Calcium	5500	14.5	43.5		mg/Kg-dry	5	12/04/19 11:33 AM
Chromium	17.1	0.580	2.32		mg/Kg-dry	5	12/04/19 11:33 AM
Lead	12.9	0.116	0.348		mg/Kg-dry	5	12/04/19 11:33 AM
Nickel	10.2	0.580	2.32		mg/Kg-dry	5	12/04/19 11:33 AM
Sodium	145	14.5	43.5		mg/Kg-dry	5	12/04/19 11:33 AM
Thallium	<0.580	0.580	1.16		mg/Kg-dry	5	12/04/19 11:33 AM
Vanadium	25.5	1.16	2.90		mg/Kg-dry	5	12/04/19 11:33 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	0.0189	0.0161	0.0402	J	mg/Kg-dry	1	12/02/19 03:26 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.16	1.16	2.90	N	mg/Kg-dry	5	12/04/19 11:33 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0102	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	58.0	16.9	56.5		mg/Kg-dry	5	12/03/19 07:58 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	122	58.5	58.5		mg/L @ pH 4.54-dr	1	12/05/19 09:52 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.916	0.916	1.43		mg/Kg-dry	1	12/03/19 04:15 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	6.47	0	0		pH Units@23.9°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	17.1	0	0		WT%	1	12/06/19 08:46 AM

Qualifiers:

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C - Sample Result or QC discussed in Case Narrative
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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	BGSB-7
Project:	Copano APAR Soil	**Lab ID:**	1911260-07
Project No:	19134560	**Collection Date:**	11/26/19 10:21 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	26500	155	465		mg/Kg-dry	50	12/04/19 12:51 PM
Antimony	<0.619	0.619	1.24		mg/Kg-dry	5	12/04/19 11:35 AM
Arsenic	4.33	0.619	1.24		mg/Kg-dry	5	12/04/19 11:35 AM
Calcium	5070	15.5	46.5		mg/Kg-dry	5	12/04/19 11:35 AM
Chromium	16.7	0.619	2.48		mg/Kg-dry	5	12/04/19 11:35 AM
Lead	11.2	0.124	0.372		mg/Kg-dry	5	12/04/19 11:35 AM
Nickel	9.90	0.619	2.48		mg/Kg-dry	5	12/04/19 11:35 AM
Sodium	220	15.5	46.5		mg/Kg-dry	5	12/04/19 11:35 AM
Thallium	<0.619	0.619	1.24		mg/Kg-dry	5	12/04/19 11:35 AM
Vanadium	26.2	1.24	3.10		mg/Kg-dry	5	12/04/19 11:35 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0196	0.0196	0.0491		mg/Kg-dry	1	12/02/19 03:28 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.24	1.24	3.10	N	mg/Kg-dry	5	12/04/19 11:35 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00783	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	23.1	19.4	64.8	J	mg/Kg-dry	5	12/03/19 08:14 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	201	66.2	66.2		mg/L @ pH 4.54-dr	1	12/05/19 09:57 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<1.02	1.02	1.60		mg/Kg-dry	1	12/03/19 04:15 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.03	0	0		pH Units@24.1°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	25.3	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	BGSB-8
Project:	Copano APAR Soil	**Lab ID:**	1911260-08
Project No:	19134560	**Collection Date:**	11/26/19 10:33 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	26300	157	472		mg/Kg-dry	50	12/04/19 12:53 PM
Antimony	<0.629	0.629	1.26		mg/Kg-dry	5	12/04/19 11:37 AM
Arsenic	4.09	0.629	1.26		mg/Kg-dry	5	12/04/19 11:37 AM
Calcium	5340	15.7	47.2		mg/Kg-dry	5	12/04/19 11:37 AM
Chromium	16.7	0.629	2.51		mg/Kg-dry	5	12/04/19 11:37 AM
Lead	11.2	0.126	0.377		mg/Kg-dry	5	12/04/19 11:37 AM
Nickel	9.69	0.629	2.51		mg/Kg-dry	5	12/04/19 11:37 AM
Sodium	185	15.7	47.2		mg/Kg-dry	5	12/04/19 11:37 AM
Thallium	<0.629	0.629	1.26		mg/Kg-dry	5	12/04/19 11:37 AM
Vanadium	25.8	1.26	3.14		mg/Kg-dry	5	12/04/19 11:37 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0193	0.0193	0.0483		mg/Kg-dry	1	12/02/19 03:30 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.26	1.26	3.14	N	mg/Kg-dry	5	12/04/19 11:37 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00642	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<20.3	20.3	67.6		mg/Kg-dry	5	12/03/19 09:50 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	227	66.7	66.7		mg/L @ pH 4.55-dr	1	12/05/19 10:02 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<1.02	1.02	1.60		mg/Kg-dry	1	12/03/19 04:15 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.21	0	0		pH Units@23.9°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	27.0	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	BGSB-9
Project:	Copano APAR Soil	**Lab ID:**	1911260-09
Project No:	19134560	**Collection Date:**	11/26/19 10:39 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	31000	330	990		mg/Kg-dry	100	12/04/19 12:55 PM
Antimony	<0.660	0.660	1.32		mg/Kg-dry	5	12/04/19 11:39 AM
Arsenic	4.05	0.660	1.32		mg/Kg-dry	5	12/04/19 11:39 AM
Calcium	18800	330	990		mg/Kg-dry	100	12/04/19 12:55 PM
Chromium	19.4	0.660	2.64		mg/Kg-dry	5	12/04/19 11:39 AM
Lead	12.3	0.132	0.396		mg/Kg-dry	5	12/04/19 11:39 AM
Nickel	11.8	0.660	2.64		mg/Kg-dry	5	12/04/19 11:39 AM
Sodium	454	16.5	49.5		mg/Kg-dry	5	12/04/19 11:39 AM
Thallium	<0.660	0.660	1.32		mg/Kg-dry	5	12/04/19 11:39 AM
Vanadium	28.9	1.32	3.30		mg/Kg-dry	5	12/04/19 11:39 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0190	0.0190	0.0476		mg/Kg-dry	1	12/02/19 03:32 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.32	1.32	3.30	N	mg/Kg-dry	5	12/04/19 11:39 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00770	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	38.9	20.3	67.7	J	mg/Kg-dry	5	12/03/19 10:06 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	450	69.0	69.0		mg/L @ pH 4.54-dr	1	12/05/19 10:14 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<1.10	1.10	1.72		mg/Kg-dry	1	12/03/19 04:15 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.65	0	0		pH Units@23.9°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	27.8	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	BGSB-10
Project:	Copano APAR Soil	**Lab ID:**	1911260-10
Project No:	19134560	**Collection Date:**	11/26/19 10:46 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	25900	158	474		mg/Kg-dry	50	12/04/19 01:08 PM
Antimony	<0.631	0.631	1.26		mg/Kg-dry	5	12/04/19 11:58 AM
Arsenic	4.55	0.631	1.26		mg/Kg-dry	5	12/04/19 11:58 AM
Calcium	5000	15.8	47.4		mg/Kg-dry	5	12/04/19 11:58 AM
Chromium	16.6	0.631	2.53		mg/Kg-dry	5	12/04/19 11:58 AM
Lead	11.5	0.126	0.379		mg/Kg-dry	5	12/04/19 11:58 AM
Nickel	9.60	0.631	2.53		mg/Kg-dry	5	12/04/19 11:58 AM
Sodium	417	15.8	47.4		mg/Kg-dry	5	12/04/19 11:58 AM
Thallium	<0.631	0.631	1.26		mg/Kg-dry	5	12/04/19 11:58 AM
Vanadium	26.2	1.26	3.16		mg/Kg-dry	5	12/04/19 11:58 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0196	0.0196	0.0491		mg/Kg-dry	1	12/02/19 03:35 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.26	1.26	3.16	N	mg/Kg-dry	5	12/04/19 11:58 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00588	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<18.6	18.6	62.1		mg/Kg-dry	5	12/03/19 10:22 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	366	65.2	65.2		mg/L @ pH 4.55-dr	1	12/05/19 10:21 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<1.03	1.03	1.61		mg/Kg-dry	1	12/03/19 04:15 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	6.92	0	0		pH Units@23.7°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	24.6	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-1
Project:	Copano APAR Soil	**Lab ID:**	1911260-11
Project No:	19134560	**Collection Date:**	11/25/19 09:15 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	19800	140	421		mg/Kg-dry	50	12/04/19 01:11 PM
Antimony	<0.562	0.562	1.12		mg/Kg-dry	5	12/04/19 12:00 PM
Arsenic	4.26	0.562	1.12		mg/Kg-dry	5	12/04/19 12:00 PM
Calcium	2630	14.0	42.1		mg/Kg-dry	5	12/04/19 12:00 PM
Chromium	14.3	0.562	2.25		mg/Kg-dry	5	12/04/19 12:00 PM
Lead	9.15	0.112	0.337		mg/Kg-dry	5	12/04/19 12:00 PM
Nickel	19.0	0.562	2.25		mg/Kg-dry	5	12/04/19 12:00 PM
Sodium	7920	140	421		mg/Kg-dry	50	12/04/19 01:11 PM
Thallium	<0.562	0.562	1.12		mg/Kg-dry	5	12/04/19 12:00 PM
Vanadium	28.1	1.12	2.81		mg/Kg-dry	5	12/04/19 12:00 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0191	0.0191	0.0477		mg/Kg-dry	1	12/02/19 03:37 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.12	1.12	2.81	N	mg/Kg-dry	5	12/04/19 12:00 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00680	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	1090	18.8	62.7		mg/Kg-dry	5	12/03/19 10:38 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	125	60.9	60.9		mg/L @ pH 4.5-dry	1	12/05/19 10:24 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	2.40	1.03	1.61		mg/Kg-dry	1	12/04/19 03:05 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.14	0	0		pH Units@23.9°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	23.9	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-11
Project:	Copano APAR Soil	**Lab ID:**	1911260-12
Project No:	19134560	**Collection Date:**	11/25/19 12:16 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	22700	143	429		mg/Kg-dry	50	12/04/19 01:13 PM
Antimony	<0.572	0.572	1.14		mg/Kg-dry	5	12/04/19 12:02 PM
Arsenic	2.48	0.572	1.14		mg/Kg-dry	5	12/04/19 12:02 PM
Calcium	3990	14.3	42.9		mg/Kg-dry	5	12/04/19 12:02 PM
Chromium	14.9	0.572	2.29		mg/Kg-dry	5	12/04/19 12:02 PM
Lead	10.2	0.114	0.343		mg/Kg-dry	5	12/04/19 12:02 PM
Nickel	8.15	0.572	2.29		mg/Kg-dry	5	12/04/19 12:02 PM
Sodium	255	14.3	42.9		mg/Kg-dry	5	12/04/19 12:02 PM
Thallium	<0.572	0.572	1.14		mg/Kg-dry	5	12/04/19 12:02 PM
Vanadium	23.1	1.14	2.86		mg/Kg-dry	5	12/04/19 12:02 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0170	0.0170	0.0425		mg/Kg-dry	1	12/02/19 03:39 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.14	1.14	2.86	N	mg/Kg-dry	5	12/04/19 12:02 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00908	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<17.9	17.9	59.7		mg/Kg-dry	5	12/03/19 10:54 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	278	62.1	62.1		mg/L @ pH 4.55-dr	1	12/05/19 10:30 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<1.00	1.00	1.57		mg/Kg-dry	1	12/04/19 03:05 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.74	0	0		pH Units@23.8°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	21.3	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-14
Project:	Copano APAR Soil	**Lab ID:**	1911260-13
Project No:	19134560	**Collection Date:**	11/25/19 03:27 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	34500	298	894		mg/Kg-dry	100	12/04/19 01:15 PM
Antimony	<0.596	0.596	1.19		mg/Kg-dry	5	12/04/19 12:04 PM
Arsenic	1.96	0.596	1.19		mg/Kg-dry	5	12/04/19 12:04 PM
Calcium	2380	14.9	44.7		mg/Kg-dry	5	12/04/19 12:04 PM
Chromium	22.2	0.596	2.38		mg/Kg-dry	5	12/04/19 12:04 PM
Lead	12.3	0.119	0.358		mg/Kg-dry	5	12/04/19 12:04 PM
Nickel	11.9	0.596	2.38		mg/Kg-dry	5	12/04/19 12:04 PM
Sodium	678	14.9	44.7		mg/Kg-dry	5	12/04/19 12:04 PM
Thallium	<0.596	0.596	1.19		mg/Kg-dry	5	12/04/19 12:04 PM
Vanadium	30.9	1.19	2.98		mg/Kg-dry	5	12/04/19 12:04 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0204	0.0204	0.0511		mg/Kg-dry	1	12/02/19 03:42 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.19	1.19	2.98	N	mg/Kg-dry	5	12/04/19 12:04 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00394	0.000200	0.000200		Fraction-dry	1	12/11/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	43.0	19.4	64.7	J	mg/Kg-dry	5	12/03/19 11:10 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	236	63.2	63.2		mg/L @ pH 4.55-dr	1	12/05/19 10:35 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<1.05	1.05	1.64		mg/Kg-dry	1	12/04/19 03:05 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.12	0	0		pH Units@23.9°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	25.1	0	0		WT%	1	12/06/19 08:46 AM

Qualifiers:

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C - Sample Result or QC discussed in Case Narrative
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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-16
Project:	Copano APAR Soil	**Lab ID:**	1911260-14
Project No:	19134560	**Collection Date:**	11/25/19 04:13 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	15600	137	410		mg/Kg-dry	50	12/04/19 01:17 PM
Antimony	<0.546	0.546	1.09		mg/Kg-dry	5	12/04/19 12:07 PM
Arsenic	3.41	0.546	1.09		mg/Kg-dry	5	12/04/19 12:07 PM
Calcium	1350	13.7	41.0		mg/Kg-dry	5	12/04/19 12:07 PM
Chromium	11.1	0.546	2.19		mg/Kg-dry	5	12/04/19 12:07 PM
Lead	7.19	0.109	0.328		mg/Kg-dry	5	12/04/19 12:07 PM
Nickel	5.71	0.546	2.19		mg/Kg-dry	5	12/04/19 12:07 PM
Sodium	686	13.7	41.0		mg/Kg-dry	5	12/04/19 12:07 PM
Thallium	<0.546	0.546	1.09		mg/Kg-dry	5	12/04/19 12:07 PM
Vanadium	19.2	1.09	2.73		mg/Kg-dry	5	12/04/19 12:07 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0190	0.0190	0.0476		mg/Kg-dry	1	12/02/19 03:44 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.09	1.09	2.73	N	mg/Kg-dry	5	12/04/19 12:07 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00845	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	23.2	17.9	59.6	J	mg/Kg-dry	5	12/03/19 11:26 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	380	57.2	57.2		mg/L @ pH 4.55-dr	1	12/05/19 10:42 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.939	0.939	1.47		mg/Kg-dry	1	12/04/19 03:05 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.31	0	0		pH Units@24°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	18.3	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-21
Project:	Copano APAR Soil	**Lab ID:**	1911260-15
Project No:	19134560	**Collection Date:**	11/25/19 04:16 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	9090	149	446		mg/Kg-dry	50	12/04/19 01:20 PM
Antimony	<0.595	0.595	1.19		mg/Kg-dry	5	12/04/19 12:09 PM
Arsenic	2.14	0.595	1.19		mg/Kg-dry	5	12/04/19 12:09 PM
Calcium	646	14.9	44.6		mg/Kg-dry	5	12/04/19 12:09 PM
Chromium	7.33	0.595	2.38		mg/Kg-dry	5	12/04/19 12:09 PM
Lead	4.87	0.119	0.357		mg/Kg-dry	5	12/04/19 12:09 PM
Nickel	4.02	0.595	2.38		mg/Kg-dry	5	12/04/19 12:09 PM
Sodium	190	14.9	44.6		mg/Kg-dry	5	12/04/19 12:09 PM
Thallium	<0.595	0.595	1.19		mg/Kg-dry	5	12/04/19 12:09 PM
Vanadium	13.1	1.19	2.97		mg/Kg-dry	5	12/04/19 12:09 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0170	0.0170	0.0425		mg/Kg-dry	1	12/02/19 03:46 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.19	1.19	2.97	N	mg/Kg-dry	5	12/04/19 12:09 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00450	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<18.3	18.3	61.1		mg/Kg-dry	5	12/03/19 11:42 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	102	62.0	62.0		mg/L @ pH 4.54-dr	1	12/05/19 10:46 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.923	0.923	1.44		mg/Kg-dry	1	12/04/19 03:05 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.14	0	0		pH Units@24°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	19.9	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-26
Project:	Copano APAR Soil	**Lab ID:**	1911260-16
Project No:	19134560	**Collection Date:**	11/25/19 02:46 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	17800	143	430		mg/Kg-dry	50	12/04/19 12:33 PM
Antimony	<0.574	0.574	1.15		mg/Kg-dry	5	12/04/19 11:14 AM
Arsenic	3.56	0.574	1.15		mg/Kg-dry	5	12/04/19 11:14 AM
Calcium	3340	14.3	43.0		mg/Kg-dry	5	12/04/19 11:14 AM
Chromium	13.0	0.574	2.29		mg/Kg-dry	5	12/04/19 11:14 AM
Lead	8.77	0.115	0.344		mg/Kg-dry	5	12/04/19 11:14 AM
Nickel	7.39	0.574	2.29		mg/Kg-dry	5	12/04/19 11:14 AM
Sodium	839	14.3	43.0		mg/Kg-dry	5	12/04/19 11:14 AM
Thallium	<0.574	0.574	1.15		mg/Kg-dry	5	12/04/19 11:14 AM
Vanadium	24.3	1.15	2.87		mg/Kg-dry	5	12/04/19 11:14 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0174	0.0174	0.0435		mg/Kg-dry	1	12/06/19 11:49 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.15	1.15	2.87	N	mg/Kg-dry	5	12/04/19 11:14 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00994	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	25.6	17.6	58.7	J	mg/Kg-dry	5	12/03/19 11:58 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	1040	55.8	55.8		mg/L @ pH 4.55-dr	1	12/05/19 10:57 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.922	0.922	1.44		mg/Kg-dry	1	12/04/19 03:05 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.86	0	0		pH Units@23.9°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	17.8	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-30
Project:	Copano APAR Soil	**Lab ID:**	1911260-17
Project No:	19134560	**Collection Date:**	11/25/19 01:50 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	24800	144	432		mg/Kg-dry	50	12/04/19 01:22 PM
Antimony	<0.576	0.576	1.15		mg/Kg-dry	5	12/04/19 12:11 PM
Arsenic	3.40	0.576	1.15		mg/Kg-dry	5	12/04/19 12:11 PM
Calcium	4580	14.4	43.2		mg/Kg-dry	5	12/04/19 12:11 PM
Chromium	16.4	0.576	2.30		mg/Kg-dry	5	12/04/19 12:11 PM
Lead	18.5	0.115	0.345		mg/Kg-dry	5	12/04/19 12:11 PM
Nickel	9.91	0.576	2.30		mg/Kg-dry	5	12/04/19 12:11 PM
Sodium	410	14.4	43.2		mg/Kg-dry	5	12/04/19 12:11 PM
Thallium	<0.576	0.576	1.15		mg/Kg-dry	5	12/04/19 12:11 PM
Vanadium	24.7	1.15	2.88		mg/Kg-dry	5	12/04/19 12:11 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0188	0.0188	0.0469		mg/Kg-dry	1	12/06/19 11:52 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.15	1.15	2.88	N	mg/Kg-dry	5	12/04/19 12:11 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0112	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<18.7	18.7	62.5		mg/Kg-dry	5	12/04/19 12:14 AM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	427	59.7	59.7		mg/L @ pH 4.54-dr	1	12/05/19 11:04 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<1.03	1.03	1.61		mg/Kg-dry	1	12/04/19 03:05 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.79	0	0		pH Units@23.8°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	22.4	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-33
Project:	Copano APAR Soil	**Lab ID:**	1911260-18
Project No:	19134560	**Collection Date:**	11/25/19 12:52 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	25900	149	448		mg/Kg-dry	50	12/04/19 01:24 PM
Antimony	<0.597	0.597	1.19		mg/Kg-dry	5	12/04/19 12:13 PM
Arsenic	3.33	0.597	1.19		mg/Kg-dry	5	12/04/19 12:13 PM
Calcium	4410	14.9	44.8		mg/Kg-dry	5	12/04/19 12:13 PM
Chromium	17.3	0.597	2.39		mg/Kg-dry	5	12/04/19 12:13 PM
Lead	9.38	0.119	0.358		mg/Kg-dry	5	12/04/19 12:13 PM
Nickel	8.60	0.597	2.39		mg/Kg-dry	5	12/04/19 12:13 PM
Sodium	1110	14.9	44.8		mg/Kg-dry	5	12/04/19 12:13 PM
Thallium	<0.597	0.597	1.19		mg/Kg-dry	5	12/04/19 12:13 PM
Vanadium	26.6	1.19	2.99		mg/Kg-dry	5	12/04/19 12:13 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	0.0185	0.0183	0.0456	J	mg/Kg-dry	1	12/06/19 11:54 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.19	1.19	2.99	N	mg/Kg-dry	5	12/04/19 12:13 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00674	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	19.9	17.9	59.7	J	mg/Kg-dry	5	12/04/19 01:50 AM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	1070	60.5	60.5		mg/L @ pH 4.55-dr	1	12/05/19 11:14 AM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.950	0.950	1.48		mg/Kg-dry	1	12/04/19 03:05 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.93	0	0		pH Units@23.8°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	18.7	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-37
Project:	Copano APAR Soil	**Lab ID:**	1911260-19
Project No:	19134560	**Collection Date:**	11/25/19 11:22 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	17100	135	405		mg/Kg-dry	50	12/04/19 01:26 PM
Antimony	<0.540	0.540	1.08		mg/Kg-dry	5	12/04/19 12:16 PM
Arsenic	3.24	0.540	1.08		mg/Kg-dry	5	12/04/19 12:16 PM
Calcium	868	13.5	40.5		mg/Kg-dry	5	12/04/19 12:16 PM
Chromium	14.2	0.540	2.16		mg/Kg-dry	5	12/04/19 12:16 PM
Lead	11.7	0.108	0.324		mg/Kg-dry	5	12/04/19 12:16 PM
Nickel	7.98	0.540	2.16		mg/Kg-dry	5	12/04/19 12:16 PM
Sodium	1230	13.5	40.5		mg/Kg-dry	5	12/04/19 12:16 PM
Thallium	<0.540	0.540	1.08		mg/Kg-dry	5	12/04/19 12:16 PM
Vanadium	21.7	1.08	2.70		mg/Kg-dry	5	12/04/19 12:16 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0165	0.0165	0.0411		mg/Kg-dry	1	12/06/19 11:56 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.08	1.08	2.70	N	mg/Kg-dry	5	12/04/19 12:16 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0101	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	71.9	17.6	58.7		mg/Kg-dry	5	12/04/19 02:06 AM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	484	55.2	55.2		mg/L @ pH 4.55-dr	1	12/06/19 03:00 PM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.930	0.930	1.45		mg/Kg-dry	1	12/04/19 03:05 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.00	0	0		pH Units@23.7°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	16.5	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-40
Project:	Copano APAR Soil	**Lab ID:**	1911260-20
Project No:	19134560	**Collection Date:**	11/25/19 10:42 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	18500	139	417		mg/Kg-dry	50	12/04/19 01:29 PM
Antimony	<0.556	0.556	1.11		mg/Kg-dry	5	12/04/19 12:18 PM
Arsenic	5.58	0.556	1.11		mg/Kg-dry	5	12/04/19 12:18 PM
Calcium	27900	139	417		mg/Kg-dry	50	12/04/19 01:29 PM
Chromium	64.4	0.556	2.22		mg/Kg-dry	5	12/04/19 12:18 PM
Lead	12.3	0.111	0.334		mg/Kg-dry	5	12/04/19 12:18 PM
Nickel	29.4	0.556	2.22		mg/Kg-dry	5	12/04/19 12:18 PM
Sodium	13500	139	417		mg/Kg-dry	50	12/04/19 01:29 PM
Thallium	<0.556	0.556	1.11		mg/Kg-dry	5	12/04/19 12:18 PM
Vanadium	51.7	1.11	2.78		mg/Kg-dry	5	12/04/19 12:18 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0181	0.0181	0.0452		mg/Kg-dry	1	12/06/19 11:58 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	1.19	1.11	2.78	JN	mg/Kg-dry	5	12/04/19 12:18 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00667	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	2800	17.1	57.0		mg/Kg-dry	5	12/04/19 02:22 AM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	133	59.5	59.5		mg/L @ pH 4.5-dry	1	12/06/19 03:11 PM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.950	0.950	1.48		mg/Kg-dry	1	12/04/19 03:05 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.12	0	0		pH Units@23.9°C	1	12/02/19 03:30 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	16.7	0	0		WT%	1	12/06/19 08:46 AM

Qualifiers:

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C - Sample Result or QC discussed in Case Narrative
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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-41
Project:	Copano APAR Soil	**Lab ID:**	1911260-21
Project No:	19134560	**Collection Date:**	11/25/19 10:23 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	21400	140	419		mg/Kg-dry	50	12/05/19 01:58 PM
Antimony	<0.559	0.559	1.12		mg/Kg-dry	5	12/05/19 12:52 PM
Arsenic	3.32	0.559	1.12		mg/Kg-dry	5	12/05/19 12:52 PM
Calcium	23800	140	419		mg/Kg-dry	50	12/05/19 01:58 PM
Chromium	15.1	0.559	2.24		mg/Kg-dry	5	12/05/19 12:52 PM
Lead	6.89	0.112	0.335		mg/Kg-dry	5	12/05/19 12:52 PM
Nickel	7.64	0.559	2.24		mg/Kg-dry	5	12/05/19 12:52 PM
Sodium	8060	140	419		mg/Kg-dry	50	12/05/19 01:58 PM
Thallium	<0.559	0.559	1.12		mg/Kg-dry	5	12/05/19 12:52 PM
Vanadium	27.1	1.12	2.79		mg/Kg-dry	5	12/05/19 12:52 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0177	0.0177	0.0442		mg/Kg-dry	1	12/06/19 12:01 PM
URANIUM IN SOIL		**SW6020B**					Analyst: **SP**
Uranium	<1.12	1.12	2.79	N	mg/Kg-dry	5	12/05/19 12:52 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00109	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	919	17.9	59.6		mg/Kg-dry	5	12/05/19 05:07 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	204	60.2	60.2		mg/L @ pH 4.44-dr	1	12/06/19 03:17 PM
AMMONIA IN SOLID/SOIL (SOLUBLE)		**E350.3**					Analyst: **RBW**
Soluble Ammonia-N (As N)	<0.967	0.967	1.51		mg/Kg-dry	1	12/04/19 03:05 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.70	0	0		pH Units@24.2°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	18.6	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-44
Project:	Copano APAR Soil	**Lab ID:**	1911260-22
Project No:	19134560	**Collection Date:**	11/25/19 09:13 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	12500	129	386		mg/Kg-dry	50	12/05/19 02:00 PM
Calcium	1200	12.9	38.6		mg/Kg-dry	5	12/05/19 12:53 PM
Sodium	66.0	12.9	38.6		mg/Kg-dry	5	12/05/19 12:53 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00646	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<17.1	17.1	57.1		mg/Kg-dry	5	12/05/19 06:29 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	77.2	60.3	60.3		mg/L @ pH 4.52-dr	1	12/06/19 03:20 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	6.69	0	0		pH Units@24.1°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	17.2	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-43
Project:	Copano APAR Soil	**Lab ID:**	1911260-23
Project No:	19134560	**Collection Date:**	11/25/19 09:37 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	16600	135	404		mg/Kg-dry	50	12/05/19 02:02 PM
Calcium	2160	13.5	40.4		mg/Kg-dry	5	12/05/19 12:56 PM
Sodium	2110	13.5	40.4		mg/Kg-dry	5	12/05/19 12:56 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00662	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	252	17.2	57.3		mg/Kg-dry	5	12/05/19 07:01 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	90.5	57.7	57.7		mg/L @ pH 4.5-dry	1	12/06/19 03:22 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.32	0	0		pH Units@24°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	13.5	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-42
Project:	Copano APAR Soil	**Lab ID:**	1911260-24
Project No:	19134560	**Collection Date:**	11/25/19 09:57 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	27100	151	453		mg/Kg-dry	50	12/05/19 02:04 PM
Calcium	21300	151	453		mg/Kg-dry	50	12/05/19 02:04 PM
Sodium	9590	151	453		mg/Kg-dry	50	12/05/19 02:04 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00408	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	2000	18.4	61.2		mg/Kg-dry	5	12/05/19 07:17 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	131	57.1	57.1		mg/L @ pH 4.5-dry	1	12/06/19 03:25 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.50	0	0		pH Units@23.9°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	19.6	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-39
Project:	Copano APAR Soil	**Lab ID:**	1911260-25
Project No:	19134560	**Collection Date:**	11/25/19 10:54 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	27600	281	842		mg/Kg-dry	100	12/05/19 02:06 PM
Calcium	7330	281	842		mg/Kg-dry	100	12/05/19 02:06 PM
Sodium	6320	14.0	42.1		mg/Kg-dry	5	12/05/19 12:59 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00686	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	4690	35.3	118		mg/Kg-dry	10	12/06/19 06:31 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	110	60.9	60.9		mg/L @ pH 4.48-dr	1	12/06/19 03:28 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.79	0	0		pH Units@23.8°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	18.2	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-38
Project:	Copano APAR Soil	**Lab ID:**	1911260-26
Project No:	19134560	**Collection Date:**	11/25/19 11:08 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	19000	256	768		mg/Kg-dry	100	12/05/19 02:08 PM
Calcium	118000	256	768		mg/Kg-dry	100	12/05/19 02:08 PM
Sodium	132	12.8	38.4		mg/Kg-dry	5	12/05/19 01:01 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00528	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<16.3	16.3	54.3		mg/Kg-dry	5	12/05/19 07:49 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	355	54.5	54.5		mg/L @ pH 4.54-dr	1	12/06/19 03:33 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	8.29	0	0		pH Units@23.7°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	15.8	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-36
Project:	Copano APAR Soil	**Lab ID:**	1911260-27
Project No:	19134560	**Collection Date:**	11/25/19 11:43 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	28000	282	847		mg/Kg-dry	100	12/05/19 02:10 PM
Calcium	1270	14.1	42.4		mg/Kg-dry	5	12/05/19 01:03 PM
Sodium	2890	14.1	42.4		mg/Kg-dry	5	12/05/19 01:03 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00647	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	181	19.7	65.7		mg/Kg-dry	5	12/05/19 08:05 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	656	62.9	62.9		mg/L @ pH 4.55-dr	1	12/06/19 03:47 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	8.15	0	0		pH Units@23.6°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	24.1	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-35
Project:	Copano APAR Soil	**Lab ID:**	1911260-28
Project No:	19134560	**Collection Date:**	11/25/19 11:58 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	24000	135	406		mg/Kg-dry	50	12/05/19 02:12 PM
Calcium	1480	13.5	40.6		mg/Kg-dry	5	12/05/19 01:05 PM
Sodium	5170	13.5	40.6		mg/Kg-dry	5	12/05/19 01:05 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0147	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	490	19.0	63.4		mg/Kg-dry	5	12/05/19 08:21 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	168	60.0	60.0		mg/L @ pH 4.49-dr	1	12/06/19 03:50 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.66	0	0		pH Units@24°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	23.1	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-34
Project:	Copano APAR Soil	**Lab ID:**	1911260-29
Project No:	19134560	**Collection Date:**	11/25/19 12:30 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	20400	143	429		mg/Kg-dry	50	12/05/19 02:14 PM
Calcium	1670	14.3	42.9		mg/Kg-dry	5	12/05/19 01:07 PM
Sodium	2310	14.3	42.9		mg/Kg-dry	5	12/05/19 01:07 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00887	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	246	18.0	59.8		mg/Kg-dry	5	12/05/19 08:37 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	339	56.0	56.0		mg/L @ pH 4.54-dr	1	12/06/19 03:56 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.47	0	0		pH Units@24.1°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	16.8	0	0		WT%	1	12/06/19 08:46 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-32
Project:	Copano APAR Soil	**Lab ID:**	1911260-30
Project No:	19134560	**Collection Date:**	11/25/19 01:08 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	8000	153	458		mg/Kg-dry	50	12/05/19 02:27 PM
Calcium	963	15.3	45.8		mg/Kg-dry	5	12/05/19 01:26 PM
Sodium	413	15.3	45.8		mg/Kg-dry	5	12/05/19 01:26 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00612	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	19.2	17.9	59.8	J	mg/Kg-dry	5	12/05/19 08:53 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	245	63.7	63.7		mg/L @ pH 4.54-dr	1	12/06/19 04:00 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.66	0	0		pH Units@23.9°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	21.6	0	0		WT%	1	12/06/19 08:46 AM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-31
Project:	Copano APAR Soil	**Lab ID:**	1911260-31
Project No:	19134560	**Collection Date:**	11/25/19 01:31 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	22400	141	422		mg/Kg-dry	50	12/05/19 02:29 PM
Calcium	699	14.1	42.2		mg/Kg-dry	5	12/05/19 01:28 PM
Sodium	10500	141	422		mg/Kg-dry	50	12/05/19 02:29 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00698	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	1580	17.8	59.5		mg/Kg-dry	5	12/05/19 10:29 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	<57.8	57.8	57.8		mg/L @ pH 4.5-dry	1	12/06/19 04:03 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	6.89	0	0		pH Units@23.7°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	19.5	0	0		WT%	1	12/06/19 08:46 AM

Qualifiers:

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-29
Project:	Copano APAR Soil	**Lab ID:**	1911260-32
Project No:	19134560	**Collection Date:**	11/25/19 02:01 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	19300	131	392		mg/Kg-dry	50	12/05/19 02:31 PM
Calcium	2400	13.1	39.2		mg/Kg-dry	5	12/05/19 01:30 PM
Sodium	566	13.1	39.2		mg/Kg-dry	5	12/05/19 01:30 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00938	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<16.8	16.8	56.1		mg/Kg-dry	5	12/05/19 10:45 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	670	59.0	59.0		mg/L @ pH 4.55-dr	1	12/06/19 04:14 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.74	0	0		pH Units@23.6°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	16.9	0	0		WT%	1	12/06/19 08:46 AM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-28
Project:	Copano APAR Soil	**Lab ID:**	1911260-33
Project No:	19134560	**Collection Date:**	11/25/19 02:15 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	16800	136	408		mg/Kg-dry	50	12/05/19 02:33 PM
Calcium	1430	13.6	40.8		mg/Kg-dry	5	12/05/19 01:32 PM
Sodium	763	13.6	40.8		mg/Kg-dry	5	12/05/19 01:32 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00874	0.000200	0.000200		Fraction-dry	1	12/12/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<18.0	18.0	59.9		mg/Kg-dry	5	12/05/19 11:01 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	272	60.4	60.4		mg/L @ pH 4.55-dr	1	12/06/19 04:20 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.21	0	0		pH Units@23.3°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	17.3	0	0		WT%	1	12/06/19 08:46 AM

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See Final Page of Report for MQLs and MDLs
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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-27
Project:	Copano APAR Soil	**Lab ID:**	1911260-34
Project No:	19134560	**Collection Date:**	11/25/19 02:26 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	17500	132	396		mg/Kg-dry	50	12/05/19 02:35 PM
Calcium	1750	13.2	39.6		mg/Kg-dry	5	12/05/19 01:34 PM
Sodium	406	13.2	39.6		mg/Kg-dry	5	12/05/19 01:34 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0115	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<17.8	17.8	59.2		mg/Kg-dry	5	12/05/19 11:17 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	297	60.1	60.1		mg/L @ pH 4.55-dr	1	12/06/19 04:26 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	6.93	0	0		pH Units@23.5°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	18.0	0	0		WT%	1	12/09/19 08:45 AM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-25
Project:	Copano APAR Soil	**Lab ID:**	1911260-35
Project No:	19134560	**Collection Date:**	11/25/19 03:00 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	23400	145	435		mg/Kg-dry	50	12/05/19 02:37 PM
Calcium	9720	145	435		mg/Kg-dry	50	12/05/19 02:37 PM
Sodium	854	14.5	43.5		mg/Kg-dry	5	12/05/19 01:36 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00804	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<18.1	18.1	60.2		mg/Kg-dry	5	12/05/19 11:33 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	848	58.3	58.3		mg/L @ pH 4.55-dr	1	12/06/19 04:34 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	8.51	0	0		pH Units@23.6°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	19.6	0	0		WT%	1	12/09/19 08:45 AM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-24
Project:	Copano APAR Soil	**Lab ID:**	1911260-36
Project No:	19134560	**Collection Date:**	11/25/19 03:12 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	19000	136	407		mg/Kg-dry	50	12/05/19 02:39 PM
Calcium	2060	13.6	40.7		mg/Kg-dry	5	12/05/19 01:38 PM
Sodium	487	13.6	40.7		mg/Kg-dry	5	12/05/19 01:38 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00549	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<17.0	17.0	56.6		mg/Kg-dry	5	12/05/19 11:49 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	339	60.1	60.1		mg/L @ pH 4.55-dr	1	12/06/19 04:42 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.12	0	0		pH Units@24°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	17.6	0	0		WT%	1	12/09/19 08:45 AM

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C - Sample Result or QC discussed in Case Narrative
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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-23
Project:	Copano APAR Soil	**Lab ID:**	1911260-37
Project No:	19134560	**Collection Date:**	11/25/19 03:24 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	22400	143	428		mg/Kg-dry	50	12/05/19 02:41 PM
Calcium	7110	14.3	42.8		mg/Kg-dry	5	12/05/19 01:40 PM
Sodium	182	14.3	42.8		mg/Kg-dry	5	12/05/19 01:40 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0120	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	19.5	17.2	57.5	J	mg/Kg-dry	5	12/06/19 12:05 AM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	323	59.2	59.2		mg/L @ pH 4.53-dr	1	12/06/19 04:53 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.72	0	0		pH Units@23.9°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	17.9	0	0		WT%	1	12/09/19 08:45 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-22
Project:	Copano APAR Soil	**Lab ID:**	1911260-38
Project No:	19134560	**Collection Date:**	11/25/19 04:04 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	25800	148	444		mg/Kg-dry	50	12/05/19 02:43 PM
Calcium	1400	14.8	44.4		mg/Kg-dry	5	12/05/19 01:42 PM
Sodium	1420	14.8	44.4		mg/Kg-dry	5	12/05/19 01:42 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0129	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	80.4	20.1	66.9		mg/Kg-dry	5	12/06/19 12:21 AM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	414	68.2	68.2		mg/L @ pH 4.55-dr	1	12/06/19 04:58 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.82	0	0		pH Units@23.7°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	26.8	0	0		WT%	1	12/09/19 08:45 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-20
Project:	Copano APAR Soil	**Lab ID:**	1911260-39
Project No:	19134560	**Collection Date:**	11/25/19 04:31 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	25100	135	404		mg/Kg-dry	50	12/05/19 02:45 PM
Calcium	1970	13.5	40.4		mg/Kg-dry	5	12/05/19 01:44 PM
Sodium	1380	13.5	40.4		mg/Kg-dry	5	12/05/19 01:44 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00938	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	35.8	18.4	61.2	J	mg/Kg-dry	5	12/06/19 12:37 AM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	526	61.4	61.4		mg/L @ pH 4.55-dr	1	12/06/19 05:22 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	6.81	0	0		pH Units@24°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	20.6	0	0		WT%	1	12/09/19 08:45 AM

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C - Sample Result or QC discussed in Case Narrative
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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-19
Project:	Copano APAR Soil	**Lab ID:**	1911260-40
Project No:	19134560	**Collection Date:**	11/25/19 04:44 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	17800	134	403		mg/Kg-dry	50	12/05/19 01:54 PM
Calcium	1130	13.4	40.3		mg/Kg-dry	5	12/05/19 12:48 PM
Sodium	3270	13.4	40.3		mg/Kg-dry	5	12/05/19 12:48 PM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00790	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	395	16.9	56.2		mg/Kg-dry	5	12/06/19 12:53 AM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	<57.2	57.2	57.2		mg/L @ pH 4.49-dr	1	12/06/19 05:34 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	6.16	0	0		pH Units@23.8°C	1	12/03/19 03:00 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	12.6	0	0		WT%	1	12/09/19 08:45 AM

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C - Sample Result or QC discussed in Case Narrative
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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-2
Project:	Copano APAR Soil	**Lab ID:**	1911260-41
Project No:	19134560	**Collection Date:**	11/25/19 09:37 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	21900	160	480		mg/Kg-dry	50	12/06/19 11:53 AM
Calcium	1910	16.0	48.0		mg/Kg-dry	5	12/06/19 10:56 AM
Sodium	864	16.0	48.0		mg/Kg-dry	5	12/06/19 10:56 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0156	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<18.9	18.9	63.0		mg/Kg-dry	5	12/06/19 12:18 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	471	64.2	64.2		mg/L @ pH 4.55-dr	1	12/06/19 05:45 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	6.78	0	0		pH Units@22.9°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	24.2	0	0		WT%	1	12/09/19 08:45 AM

Qualifiers:

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DF- Dilution Factor
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C - Sample Result or QC discussed in Case Narrative
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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-3
Project:	Copano APAR Soil	**Lab ID:**	1911260-42
Project No:	19134560	**Collection Date:**	11/25/19 09:53 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	25700	142	426		mg/Kg-dry	50	12/06/19 11:55 AM
Calcium	29800	142	426		mg/Kg-dry	50	12/06/19 11:55 AM
Sodium	550	14.2	42.6		mg/Kg-dry	5	12/06/19 10:58 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00400	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	23.8	17.6	58.7	J	mg/Kg-dry	5	12/06/19 01:22 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	599	61.7	61.7		mg/L @ pH 4.55-dr	1	12/06/19 05:51 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.94	0	0		pH Units@22.9°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	20.7	0	0		WT%	1	12/09/19 08:45 AM

Qualifiers:

ND - Not Detected at the SDL
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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-4
Project:	Copano APAR Soil	**Lab ID:**	1911260-43
Project No:	19134560	**Collection Date:**	11/25/19 10:06 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	26600	281	843		mg/Kg-dry	100	12/06/19 11:57 AM
Calcium	2730	14.1	42.2		mg/Kg-dry	5	12/06/19 11:00 AM
Sodium	936	14.1	42.2		mg/Kg-dry	5	12/06/19 11:00 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00904	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<18.5	18.5	61.7		mg/Kg-dry	5	12/06/19 01:54 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	409	62.3	62.3		mg/L @ pH 4.55-dr	1	12/06/19 05:59 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.52	0	0		pH Units@23°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	21.3	0	0		WT%	1	12/09/19 08:45 AM

Qualifiers:

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-5
Project:	Copano APAR Soil	**Lab ID:**	1911260-44
Project No:	19134560	**Collection Date:**	11/25/19 10:20 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	25800	278	833		mg/Kg-dry	100	12/06/19 11:59 AM
Calcium	2870	13.9	41.7		mg/Kg-dry	5	12/06/19 11:02 AM
Sodium	1420	13.9	41.7		mg/Kg-dry	5	12/06/19 11:02 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0100	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	49.4	18.2	60.8	J	mg/Kg-dry	5	12/06/19 02:37 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	208	60.5	60.5		mg/L @ pH 4.55-dr	1	12/06/19 06:04 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	6.99	0	0		pH Units@23°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	18.9	0	0		WT%	1	12/09/19 08:45 AM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-6
Project:	Copano APAR Soil	**Lab ID:**	1911260-45
Project No:	19134560	**Collection Date:**	11/25/19 10:38 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	30900	312	937		mg/Kg-dry	100	12/06/19 12:01 PM
Calcium	3550	15.6	46.9		mg/Kg-dry	5	12/06/19 11:04 AM
Sodium	761	15.6	46.9		mg/Kg-dry	5	12/06/19 11:04 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0114	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<20.0	20.0	66.8		mg/Kg-dry	5	12/06/19 02:53 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	427	67.4	67.4		mg/L @ pH 4.55-dr	1	12/06/19 06:12 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.19	0	0		pH Units@23°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	26.6	0	0		WT%	1	12/09/19 08:45 AM

Qualifiers:

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-7
Project:	Copano APAR Soil	**Lab ID:**	1911260-46
Project No:	19134560	**Collection Date:**	11/25/19 10:52 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	22200	138	413		mg/Kg-dry	50	12/06/19 12:03 PM
Calcium	2760	13.8	41.3		mg/Kg-dry	5	12/06/19 11:06 AM
Sodium	693	13.8	41.3		mg/Kg-dry	5	12/06/19 11:06 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00609	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	28.7	17.2	57.3	J	mg/Kg-dry	5	12/06/19 03:09 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	364	59.4	59.4		mg/L @ pH 4.55-dr	1	12/06/19 06:19 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.22	0	0		pH Units@22.9°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	16.0	0	0		WT%	1	12/09/19 08:45 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-8
Project:	Copano APAR Soil	**Lab ID:**	1911260-47
Project No:	19134560	**Collection Date:**	11/25/19 11:15 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	20000	128	383		mg/Kg-dry	50	12/06/19 12:05 PM
Calcium	12800	128	383		mg/Kg-dry	50	12/06/19 12:05 PM
Sodium	244	12.8	38.3		mg/Kg-dry	5	12/06/19 11:08 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0110	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<18.0	18.0	59.9		mg/Kg-dry	5	12/06/19 03:25 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	385	57.7	57.7		mg/L @ pH 4.54-dr	1	12/06/19 06:29 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.60	0	0		pH Units@22.7°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	17.8	0	0		WT%	1	12/09/19 08:45 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-9
Project:	Copano APAR Soil	**Lab ID:**	1911260-48
Project No:	19134560	**Collection Date:**	11/25/19 11:29 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	29800	286	858		mg/Kg-dry	100	12/06/19 12:07 PM
Calcium	1980	14.3	42.9		mg/Kg-dry	5	12/06/19 11:24 AM
Sodium	1550	14.3	42.9		mg/Kg-dry	5	12/06/19 11:24 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00677	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	53.0	19.0	63.4	J	mg/Kg-dry	5	12/06/19 03:41 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	545	65.4	65.4		mg/L @ pH 4.55-dr	1	12/06/19 06:39 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.60	0	0		pH Units@23°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	25.9	0	0		WT%	1	12/09/19 08:45 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-10
Project:	Copano APAR Soil	**Lab ID:**	1911260-49
Project No:	19134560	**Collection Date:**	11/25/19 11:44 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	29800	292	876		mg/Kg-dry	100	12/06/19 12:09 PM
Calcium	4050	14.6	43.8		mg/Kg-dry	5	12/06/19 11:26 AM
Sodium	628	14.6	43.8		mg/Kg-dry	5	12/06/19 11:26 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0111	0.000200	0.000200		Fraction-dry	1	12/16/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	35.9	17.6	58.8	J	mg/Kg-dry	5	12/06/19 03:57 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	526	63.0	63.0		mg/L @ pH 4.55-dr	1	12/06/19 06:48 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.61	0	0		pH Units@22.8°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	20.8	0	0		WT%	1	12/09/19 08:45 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-12
Project:	Copano APAR Soil	**Lab ID:**	1911260-50
Project No:	19134560	**Collection Date:**	11/25/19 12:34 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	30300	300	899		mg/Kg-dry	100	12/06/19 12:21 PM
Calcium	2450	15.0	44.9		mg/Kg-dry	5	12/06/19 11:28 AM
Sodium	3990	15.0	44.9		mg/Kg-dry	5	12/06/19 11:28 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0105	0.000200	0.000200		Fraction-dry	1	12/16/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	369	18.0	59.9		mg/Kg-dry	5	12/06/19 04:13 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	260	64.1	64.1		mg/L @ pH 4.54-dr	1	12/06/19 06:53 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.33	0	0		pH Units@22.6°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	23.4	0	0		WT%	1	12/09/19 08:45 AM

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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-13
Project:	Copano APAR Soil	**Lab ID:**	1911260-51
Project No:	19134560	**Collection Date:**	11/25/19 01:00 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	4440	133	400		mg/Kg-dry	50	12/06/19 12:23 PM
Calcium	492	13.3	40.0		mg/Kg-dry	5	12/06/19 11:30 AM
Sodium	40.9	13.3	40.0		mg/Kg-dry	5	12/06/19 11:30 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00650	0.000200	0.000200		Fraction-dry	1	12/16/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<17.0	17.0	56.6		mg/Kg-dry	5	12/06/19 06:47 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	<52.0	52.0	52.0		mg/L @ pH 4.52-dr	1	12/06/19 06:56 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.11	0	0		pH Units@22.2°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	12.3	0	0		WT%	1	12/09/19 08:45 AM

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DF- Dilution Factor
N - Parameter not NELAP certified
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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-15
Project:	Copano APAR Soil	**Lab ID:**	1911260-52
Project No:	19134560	**Collection Date:**	11/25/19 04:02 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	28700	317	950		mg/Kg-dry	100	12/06/19 12:25 PM
Calcium	2300	15.8	47.5		mg/Kg-dry	5	12/06/19 11:32 AM
Sodium	1980	15.8	47.5		mg/Kg-dry	5	12/06/19 11:32 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.0104	0.000200	0.000200		Fraction-dry	1	12/16/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	111	19.0	63.2		mg/Kg-dry	5	12/06/19 07:03 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	573	60.7	60.7		mg/L @ pH 4.54-dr	1	12/06/19 07:06 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.16	0	0		pH Units@22.1°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	23.3	0	0		WT%	1	12/09/19 08:45 AM

Qualifiers:

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DF- Dilution Factor
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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-17
Project:	Copano APAR Soil	**Lab ID:**	1911260-53
Project No:	19134560	**Collection Date:**	11/25/19 04:27 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	30100	329	986		mg/Kg-dry	100	12/06/19 12:27 PM
Calcium	1990	16.4	49.3		mg/Kg-dry	5	12/06/19 11:34 AM
Sodium	3020	16.4	49.3		mg/Kg-dry	5	12/06/19 11:34 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00876	0.000200	0.000200		Fraction-dry	1	12/13/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	450	18.4	61.4		mg/Kg-dry	5	12/06/19 07:19 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	550	61.9	61.9		mg/L @ pH 4.55-dr	1	12/06/19 07:14 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.87	0	0		pH Units@22°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	24.7	0	0		WT%	1	12/09/19 08:45 AM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-18
Project:	Copano APAR Soil	**Lab ID:**	1911260-54
Project No:	19134560	**Collection Date:**	11/25/19 04:45 PM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	27500	298	895		mg/Kg-dry	100	12/06/19 11:49 AM
Calcium	2020	14.9	44.8		mg/Kg-dry	5	12/06/19 10:48 AM
Sodium	383	14.9	44.8		mg/Kg-dry	5	12/06/19 10:48 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00699	0.000200	0.000200		Fraction-dry	1	12/16/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	<17.1	17.1	56.9		mg/Kg-dry	5	12/06/19 07:35 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	328	58.6	58.6		mg/L @ pH 4.55-dr	1	12/06/19 07:21 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	8.11	0	0		pH Units@22.1°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	18.6	0	0		WT%	1	12/09/19 08:45 AM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-101
Project:	Copano APAR Soil	**Lab ID:**	1911260-55
Project No:	19134560	**Collection Date:**	11/25/19 10:00 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	31600	267	800		mg/Kg-dry	100	12/06/19 12:29 PM
Calcium	8850	267	800		mg/Kg-dry	100	12/06/19 12:29 PM
Sodium	828	13.3	40.0		mg/Kg-dry	5	12/06/19 11:36 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00574	0.000200	0.000200		Fraction-dry	1	12/16/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	26.4	18.3	61.1	J	mg/Kg-dry	5	12/06/19 07:51 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	915	62.3	62.3		mg/L @ pH 4.53-dr	1	12/06/19 07:31 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	8.31	0	0		pH Units@21.9°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	21.9	0	0		WT%	1	12/09/19 08:45 AM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT:	Golder	**Client Sample ID:**	SB-102
Project:	Copano APAR Soil	**Lab ID:**	1911260-56
Project No:	19134560	**Collection Date:**	11/25/19 11:00 AM
Lab Order:	1911260	**Matrix:**	SOIL

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **SP**
Aluminum	24700	273	820		mg/Kg-dry	100	12/06/19 12:31 PM
Calcium	3800	13.7	41.0		mg/Kg-dry	5	12/06/19 11:38 AM
Sodium	4710	13.7	41.0		mg/Kg-dry	5	12/06/19 11:38 AM
FOC BY WALKLEY-BLACK		**WALKLEY-BLACK**					Analyst: **SUB**
Organic Carbon by Walkley-Black	0.00726	0.000200	0.000200		Fraction-dry	1	12/16/19
ANIONS BY IC METHOD - SOIL		**SW9056A**					Analyst: **SNM**
Sulfate	3610	17.7	59.0		mg/Kg-dry	5	12/06/19 08:07 PM
SOLUBLE ALKALINITY OF SOIL		**M2320 B**					Analyst: **BTJ**
Alkalinity, Total (As CaCO3)	80.0	56.3	56.3		mg/L @ pH 4.49-dr	1	12/06/19 07:34 PM
PH OF SOLID OR LIQ. (CORROSIVITY)		**SW9045D**					Analyst: **JS**
pH	7.81	0	0		pH Units@22.4°C	1	12/04/19 02:35 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	16.9	0	0		WT%	1	12/09/19 08:45 AM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191114A

Sample ID: **DCS-93705**	Batch ID: **93705**	TestNo: **SW7471B**	Units: **mg/Kg**		
SampType: **DCS**	Run ID: **CETAC2_HG_191114A**	Analysis Date: **11/14/2019 3:35:27 PM**	Prep Date: **11/14/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0394	0.0400	0.04000	0	98.5	80	124	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191202A

The QC data in batch 93905 applies to the following samples: 1911260-01A, 1911260-02A, 1911260-03A, 1911260-04A, 1911260-05A, 1911260-06A, 1911260-07A, 1911260-08A, 1911260-09A, 1911260-10A, 1911260-11A, 1911260-12A, 1911260-13A, 1911260-14A, 1911260-15A

Sample ID: **MB-93905** Batch ID: **93905** TestNo: **SW7471B** Units: **mg/Kg**
SampType: **MBLK** Run ID: **CETAC2_HG_191202A** Analysis Date: **12/2/2019 2:43:00 PM** Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0160	0.0400								

Sample ID: **LCS-93905** Batch ID: **93905** TestNo: **SW7471B** Units: **mg/Kg**
SampType: **LCS** Run ID: **CETAC2_HG_191202A** Analysis Date: **12/2/2019 2:45:16 PM** Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.183	0.0400	0.2000	0	91.5	85	115			

Sample ID: **LCSD-93905** Batch ID: **93905** TestNo: **SW7471B** Units: **mg/Kg**
SampType: **LCSD** Run ID: **CETAC2_HG_191202A** Analysis Date: **12/2/2019 2:47:32 PM** Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.184	0.0400	0.2000	0	92.0	85	115	0.545	25	

Sample ID: **1911218-01A MS** Batch ID: **93905** TestNo: **SW7471B** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **CETAC2_HG_191202A** Analysis Date: **12/2/2019 2:54:20 PM** Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.211	0.0427	0.2136	0	99.0	80	120			

Sample ID: **1911218-01A MSD** Batch ID: **93905** TestNo: **SW7471B** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **CETAC2_HG_191202A** Analysis Date: **12/2/2019 2:56:35 PM** Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.212	0.0432	0.2161	0	98.0	80	120	0.158	25	

Sample ID: **1911218-01A SD** Batch ID: **93905** TestNo: **SW7471B** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **CETAC2_HG_191202A** Analysis Date: **12/2/2019 2:58:51 PM** Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0810	0.203	0	0				0	10	

Sample ID: **1911218-01A PDS** Batch ID: **93905** TestNo: **SW7471B** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **CETAC2_HG_191202A** Analysis Date: **12/2/2019 3:01:07 PM** Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.260	0.0405	0.2532	0	103	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191202A

Sample ID: **ICV-191202**	Batch ID: **R107692**	TestNo: **SW7471B**	Units: **mg/Kg**
SampType: **ICV**	Run ID: **CETAC2_HG_191202A**	Analysis Date: **12/2/2019 2:38:26 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00382	0.0400	0.004000	0	95.5	90	110			

Sample ID: **CCV1-191202**	Batch ID: **R107692**	TestNo: **SW7471B**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **CETAC2_HG_191202A**	Analysis Date: **12/2/2019 3:21:32 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.0400	0.002000	0	101	90	110			

Sample ID: **CCV2-191202**	Batch ID: **R107692**	TestNo: **SW7471B**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **CETAC2_HG_191202A**	Analysis Date: **12/2/2019 3:48:52 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.0400	0.002000	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191206A

The QC data in batch 93981 applies to the following samples: 1911260-16A, 1911260-17A, 1911260-18A, 1911260-19A, 1911260-20A, 1911260-21A, 1911260-23A

Sample ID: **MB-93981** Batch ID: **93981** TestNo: **SW7471B** Units: **mg/Kg**
SampType: **MBLK** Run ID: **CETAC2_HG_191206A** Analysis Date: **12/6/2019 11:43:07 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0160	0.0400								

Sample ID: **LCS-93981** Batch ID: **93981** TestNo: **SW7471B** Units: **mg/Kg**
SampType: **LCS** Run ID: **CETAC2_HG_191206A** Analysis Date: **12/6/2019 11:45:23 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.186	0.0400	0.2000	0	93.0	85	115			

Sample ID: **LCSD-93981** Batch ID: **93981** TestNo: **SW7471B** Units: **mg/Kg**
SampType: **LCSD** Run ID: **CETAC2_HG_191206A** Analysis Date: **12/6/2019 11:47:39 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.183	0.0400	0.2000	0	91.5	85	115	1.63	25	

Sample ID: **1912039-04C MS** Batch ID: **93981** TestNo: **SW7471B** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **CETAC2_HG_191206A** Analysis Date: **12/6/2019 12:08:03 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.202	0.0409	0.2045	0	99.0	80	120			

Sample ID: **1912039-04C MSD** Batch ID: **93981** TestNo: **SW7471B** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **CETAC2_HG_191206A** Analysis Date: **12/6/2019 12:10:18 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.199	0.0401	0.2006	0	99.0	80	120	1.90	25	

Sample ID: **1912039-04C SD** Batch ID: **93981** TestNo: **SW7471B** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **CETAC2_HG_191206A** Analysis Date: **12/6/2019 12:12:34 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0805	0.201	0	0				0	10	

Sample ID: **1912039-04C PDS** Batch ID: **93981** TestNo: **SW7471B** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **CETAC2_HG_191206A** Analysis Date: **12/6/2019 12:14:51 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.252	0.0402	0.2515	0	100	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191206A

Sample ID: **ICV-191206**	Batch ID: **R107771**	TestNo: **SW7471B**	Units: **mg/Kg**
SampType: **ICV**	Run ID: **CETAC2_HG_191206A**	Analysis Date: **12/6/2019 11:38:33 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00385	0.0400	0.004000	0	96.2	90	110			

Sample ID: **CCV1-191206**	Batch ID: **R107771**	TestNo: **SW7471B**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **CETAC2_HG_191206A**	Analysis Date: **12/6/2019 12:21:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.0400	0.002000	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190926A

Sample ID: **DCS1-92931**	Batch ID: **92931**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **DCS**	Run ID: **ICP-MS4_190926A**	Analysis Date: **9/26/2019 12:09:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	41.0	37.5	37.50	0	109	70	130	0	0	
Calcium	47.4	37.5	37.50	0	126	70	130	0	0	
Lead	0.264	0.300	0.2500	0	106	70	130	0	0	
Sodium	48.5	37.5	37.50	0	129	70	130	0	0	

Sample ID: **DCS2-92931**	Batch ID: **92931**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **DCS2**	Run ID: **ICP-MS4_190926A**	Analysis Date: **9/26/2019 12:11:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	1.26	1.00	1.250	0	101	70	130	0	0	
Arsenic	1.32	1.00	1.250	0	106	70	130	0	0	
Chromium	1.42	2.00	1.250	0	114	70	130	0	0	
Nickel	1.31	2.00	1.250	0	105	70	130	0	0	
Thallium	1.24	1.00	1.250	0	98.8	70	130	0	0	

Sample ID: **DCS3-92931**	Batch ID: **92931**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **DCS3**	Run ID: **ICP-MS4_190926A**	Analysis Date: **9/26/2019 12:13:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	2.62	2.50	2.500	0	105	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191014B

Sample ID: **DCS1-92931** Batch ID: **92931** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **DCS** Run ID: **ICP-MS4_191014B** Analysis Date: **10/14/2019 10:47:00 A** Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.232	2.50	0.2500	0	92.6	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191205A

The QC data in batch 93944 applies to the following samples: 1911260-21A, 1911260-22A, 1911260-23A, 1911260-24A, 1911260-25A, 1911260-26A, 1911260-27A, 1911260-28A, 1911260-29A, 1911260-30A, 1911260-31A, 1911260-32A, 1911260-33A, 1911260-34A, 1911260-35A, 1911260-36A, 1911260-37A, 1911260-38A, 1911260-39A, 1911260-40A

Sample ID: **MB-93944** Batch ID: **93944** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **MBLK** Run ID: **ICP-MS4_191205A** Analysis Date: **12/5/2019 12:39:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<12.5	37.5								
Antimony	<0.500	1.00								
Arsenic	<0.500	1.00								
Calcium	<12.5	37.5								
Chromium	<0.500	2.00								
Lead	<0.100	0.300								
Nickel	<0.500	2.00								
Sodium	<12.5	37.5								
Thallium	<0.500	1.00								
Vanadium	<1.00	2.50								

Sample ID: **LCS-93944** Batch ID: **93944** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCS** Run ID: **ICP-MS4_191205A** Analysis Date: **12/5/2019 12:42:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	238	37.5	250.0	0	95.4	80	120			
Antimony	48.4	1.00	50.00	0	96.8	80	120			
Arsenic	52.5	1.00	50.00	0	105	80	120			
Calcium	1160	37.5	1250	0	93.2	80	120			
Chromium	51.4	2.00	50.00	0	103	80	120			
Lead	50.1	0.300	50.00	0	100	80	120			
Nickel	53.2	2.00	50.00	0	106	80	120			
Sodium	1220	37.5	1250	0	97.9	80	120			
Thallium	50.0	1.00	50.00	0	100	80	120			
Vanadium	50.4	2.50	50.00	0	101	80	120			

Sample ID: **LCSD-93944** Batch ID: **93944** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCSD** Run ID: **ICP-MS4_191205A** Analysis Date: **12/5/2019 12:44:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	251	37.5	250.0	0	100	80	120	5.11	25	
Antimony	50.9	1.00	50.00	0	102	80	120	4.96	25	
Arsenic	54.7	1.00	50.00	0	109	80	120	4.09	25	
Calcium	1200	37.5	1250	0	95.8	80	120	2.82	25	
Chromium	53.9	2.00	50.00	0	108	80	120	4.75	25	
Lead	51.7	0.300	50.00	0	103	80	120	3.13	25	
Nickel	55.0	2.00	50.00	0	110	80	120	3.33	25	
Sodium	1270	37.5	1250	0	102	80	120	3.65	25	
Thallium	52.0	1.00	50.00	0	104	80	120	3.94	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191205A

Sample ID: **LCSD-93944**	Batch ID: **93944**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **LCSD**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 12:44:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	52.6	2.50	50.00	0	105	80	120	4.21	25	

Sample ID: **1911260-40A SD**	Batch ID: **93944**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **SD**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 12:50:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<2.68	5.37	0	0				0	10	
Arsenic	2.92	5.37	0	2.923				0.027	10	
Calcium	1130	201	0	1131				0.035	10	
Chromium	14.0	10.7	0	13.78				1.67	10	
Lead	10.4	1.61	0	10.68				2.96	10	
Nickel	7.51	10.7	0	7.446				0.926	10	
Sodium	3310	201	0	3272				1.03	10	
Thallium	<2.68	5.37	0	0				0	10	
Vanadium	19.6	13.4	0	19.71				0.321	10	

Sample ID: **1911260-40A PDS**	Batch ID: **93944**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **PDS**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 1:09:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	56.5	1.07	53.69	0	105	80	120			
Arsenic	61.6	1.07	53.69	2.923	109	80	120			
Calcium	2490	40.3	1342	1131	101	80	120			
Chromium	71.4	2.15	53.69	13.78	107	80	120			
Lead	67.3	0.322	53.69	10.68	105	80	120			
Nickel	66.1	2.15	53.69	7.446	109	80	120			
Sodium	4590	40.3	1342	3272	98.2	80	120			
Thallium	55.8	1.07	53.69	0	104	80	120			
Vanadium	76.0	2.68	53.69	19.71	105	80	120			

Sample ID: **1911260-40A MS**	Batch ID: **93944**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 1:12:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	17100	40.0	266.8	17610	-198	80	120			S
Antimony	32.7	1.07	53.36	0	61.3	80	120			S
Arsenic	57.5	1.07	53.36	2.923	102	80	120			
Calcium	2280	40.0	1334	1131	86.2	80	120			
Chromium	66.8	2.13	53.36	13.78	99.4	80	120			
Lead	64.9	0.320	53.36	10.68	102	80	120			
Nickel	62.8	2.13	53.36	7.446	104	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191205A

Sample ID: **1911260-40A MS**	Batch ID: **93944**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 1:12:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	4230	40.0	1334	3272	72.1	80	120			S
Thallium	54.8	1.07	53.36	0	103	80	120			
Vanadium	73.5	2.67	53.36	19.71	101	80	120			

Sample ID: **1911260-40A MSD**	Batch ID: **93944**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 1:14:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	20500	37.0	246.9	17610	1180	80	120	18.3	25	S
Antimony	29.2	0.988	49.39	0	59.2	80	120	11.2	25	S
Arsenic	54.8	0.988	49.39	2.923	105	80	120	4.78	25	
Calcium	2370	37.0	1235	1131	101	80	120	4.00	25	
Chromium	67.3	1.98	49.39	13.78	108	80	120	0.788	25	
Lead	63.7	0.296	49.39	10.68	107	80	120	1.90	25	
Nickel	61.5	1.98	49.39	7.446	109	80	120	2.21	25	
Sodium	4700	37.0	1235	3272	116	80	120	10.5	25	
Thallium	52.5	0.988	49.39	0	106	80	120	4.18	25	
Vanadium	73.3	2.47	49.39	19.71	109	80	120	0.158	25	

Sample ID: **1911260-40A SD**	Batch ID: **93944**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **SD**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 1:56:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	18000	2010	0	17820				0.838	10	

Sample ID: **1911260-40A PDS**	Batch ID: **93944**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **PDS**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 2:16:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	30800	403	13420	17820	96.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191205A

Sample ID: **ICV-191205** Batch ID: **R107759** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_191205A** Analysis Date: **12/5/2019 11:51:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.40	0.0300	2.50	0	96.0	90	110			
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.104	0.00500	0.100	0	104	90	110			
Calcium	2.48	0.300	2.50	0	99.2	90	110			
Chromium	0.108	0.00500	0.100	0	108	90	110			
Lead	0.100	0.00100	0.100	0	100	90	110			
Nickel	0.109	0.0100	0.100	0	109	90	110			
Sodium	2.68	0.300	2.50	0	107	90	110			
Thallium	0.0999	0.00150	0.100	0	99.9	90	110			
Vanadium	0.103	0.00100	0.100	0	103	90	110			

Sample ID: **LCVL-191205** Batch ID: **R107759** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_191205A** Analysis Date: **12/5/2019 11:56:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0981	0.0300	0.100	0	98.1	70	130			
Antimony	0.00197	0.00250	0.00200	0	98.7	70	130			
Arsenic	0.00572	0.00500	0.00500	0	114	70	130			
Calcium	0.0946	0.300	0.100	0	94.6	70	130			
Chromium	0.00547	0.00500	0.00500	0	109	70	130			
Lead	0.000988	0.00100	0.00100	0	98.8	70	130			
Nickel	0.00568	0.0100	0.00500	0	114	70	130			
Sodium	0.110	0.300	0.100	0	110	70	130			
Thallium	0.000981	0.00150	0.00100	0	98.1	70	130			
Vanadium	0.00106	0.00100	0.00100	0	106	70	130			

Sample ID: **CCV1-191205** Batch ID: **R107759** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_191205A** Analysis Date: **12/5/2019 12:31:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.92	0.0300	5.00	0	98.4	90	110			
Antimony	0.200	0.00250	0.200	0	100	90	110			
Arsenic	0.216	0.00500	0.200	0	108	90	110			
Calcium	4.96	0.300	5.00	0	99.2	90	110			
Chromium	0.211	0.00500	0.200	0	106	90	110			
Lead	0.207	0.00100	0.200	0	104	90	110			
Nickel	0.211	0.0100	0.200	0	105	90	110			
Sodium	5.14	0.300	5.00	0	103	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			
Vanadium	0.207	0.00100	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191205A

Sample ID: **LCVL1-191205** Batch ID: **R107759** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_191205A** Analysis Date: **12/5/2019 12:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.110	0.0300	0.100	0	110	70	130			
Antimony	0.00203	0.00250	0.00200	0	101	70	130			
Arsenic	0.00562	0.00500	0.00500	0	112	70	130			
Calcium	0.116	0.300	0.100	0	116	70	130			
Chromium	0.00549	0.00500	0.00500	0	110	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			
Nickel	0.00559	0.0100	0.00500	0	112	70	130			
Sodium	0.104	0.300	0.100	0	104	70	130			
Thallium	0.000991	0.00150	0.00100	0	99.1	70	130			
Vanadium	0.00108	0.00100	0.00100	0	108	70	130			

Sample ID: **CCV2-191205** Batch ID: **R107759** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_191205A** Analysis Date: **12/5/2019 1:16:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.10	0.0300	5.00	0	102	90	110			
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.214	0.00500	0.200	0	107	90	110			
Calcium	4.86	0.300	5.00	0	97.3	90	110			
Chromium	0.212	0.00500	0.200	0	106	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Nickel	0.211	0.0100	0.200	0	106	90	110			
Sodium	5.20	0.300	5.00	0	104	90	110			
Thallium	0.202	0.00150	0.200	0	101	90	110			
Vanadium	0.207	0.00100	0.200	0	104	90	110			

Sample ID: **LCVL2-191205** Batch ID: **R107759** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_191205A** Analysis Date: **12/5/2019 1:21:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	70	130			
Antimony	0.00206	0.00250	0.00200	0	103	70	130			
Arsenic	0.00572	0.00500	0.00500	0	114	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00542	0.00500	0.00500	0	108	70	130			
Lead	0.000988	0.00100	0.00100	0	98.8	70	130			
Nickel	0.00569	0.0100	0.00500	0	114	70	130			
Sodium	0.105	0.300	0.100	0	105	70	130			
Thallium	0.000958	0.00150	0.00100	0	95.8	70	130			
Vanadium	0.00106	0.00100	0.00100	0	106	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191205A

Sample ID: **CCV3-191205**	Batch ID: **R107759**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 1:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.95	0.0300	5.00	0	99.0	90	110			
Calcium	4.93	0.300	5.00	0	98.6	90	110			
Sodium	5.11	0.300	5.00	0	102	90	110			

Sample ID: **LCVL3-191205**	Batch ID: **R107759**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 1:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.107	0.0300	0.100	0	107	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			
Sodium	0.105	0.300	0.100	0	105	70	130			

Sample ID: **CCV4-191205**	Batch ID: **R107759**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 2:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.94	0.0300	5.00	0	98.7	90	110			
Calcium	4.91	0.300	5.00	0	98.3	90	110			
Sodium	5.17	0.300	5.00	0	103	90	110			

Sample ID: **LCVL4-191205**	Batch ID: **R107759**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0966	0.0300	0.100	0	96.6	70	130			
Calcium	0.0979	0.300	0.100	0	97.9	70	130			
Sodium	0.103	0.300	0.100	0	103	70	130			

Sample ID: **CCV5-191205**	Batch ID: **R107759**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 2:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.99	0.0300	5.00	0	99.8	90	110			
Calcium	4.82	0.300	5.00	0	96.4	90	110			
Sodium	5.11	0.300	5.00	0	102	90	110			

Sample ID: **LCVL5-191205**	Batch ID: **R107759**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191205A**	Analysis Date: **12/5/2019 2:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.100	0.0300	0.100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191205A

Sample ID: **LCVL5-191205** Batch ID: **R107759** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_191205A** Analysis Date: **12/5/2019 2:51:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0968	0.300	0.100	0	96.8	70	130			
Sodium	0.103	0.300	0.100	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191205B

The QC data in batch 93944 applies to the following samples: 1911260-21A, 1911260-22A, 1911260-23A, 1911260-24A, 1911260-25A, 1911260-26A, 1911260-27A, 1911260-28A, 1911260-29A, 1911260-30A, 1911260-31A, 1911260-32A, 1911260-33A, 1911260-34A, 1911260-35A, 1911260-36A, 1911260-37A, 1911260-38A, 1911260-39A, 1911260-40A

Sample ID: **MB-93944** Batch ID: **93944** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **MBLK** Run ID: **ICP-MS4_191205B** Analysis Date: **12/5/2019 12:39:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<1.00	2.50								N

Sample ID: **LCS-93944** Batch ID: **93944** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCS** Run ID: **ICP-MS4_191205B** Analysis Date: **12/5/2019 12:42:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	48.2	2.50	50.00	0	96.3	80	120			N

Sample ID: **LCSD-93944** Batch ID: **93944** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCSD** Run ID: **ICP-MS4_191205B** Analysis Date: **12/5/2019 12:44:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	50.0	2.50	50.00	0	99.9	80	120	3.70	20	N

Sample ID: **1911260-40A SD** Batch ID: **93944** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **ICP-MS4_191205B** Analysis Date: **12/5/2019 12:50:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<5.37	13.4	0	0				0	10	N

Sample ID: **1911260-40A PDS** Batch ID: **93944** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **ICP-MS4_191205B** Analysis Date: **12/5/2019 1:09:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	55.4	2.68	53.69	0	103	80	120			N

Sample ID: **1911260-40A MS** Batch ID: **93944** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **ICP-MS4_191205B** Analysis Date: **12/5/2019 1:12:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	52.7	2.67	53.36	0	98.8	80	120			N

Sample ID: **1911260-40A MSD** Batch ID: **93944** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **ICP-MS4_191205B** Analysis Date: **12/5/2019 1:14:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	50.7	2.47	49.39	0	103	80	120	3.86	20	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191205B

Sample ID: **ICV-191205**	Batch ID: **R107762**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **ICV**	Run ID: **ICP-MS4_191205B**	Analysis Date: **12/5/2019 11:51:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0967	0.500	0.1000	0	96.7	90	110			N

Sample ID: **LCVL-191205**	Batch ID: **R107762**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **LCVL**	Run ID: **ICP-MS4_191205B**	Analysis Date: **12/5/2019 11:56:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00466	0.500	0.005000	0	93.1	70	130			N

Sample ID: **CCV1-191205**	Batch ID: **R107762**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **ICP-MS4_191205B**	Analysis Date: **12/5/2019 12:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.197	0.500	0.2000	0	98.6	90	110			N

Sample ID: **LCVL1-191205**	Batch ID: **R107762**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **LCVL**	Run ID: **ICP-MS4_191205B**	Analysis Date: **12/5/2019 12:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00465	0.500	0.005000	0	92.9	70	130			N

Sample ID: **CCV2-191205**	Batch ID: **R107762**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **ICP-MS4_191205B**	Analysis Date: **12/5/2019 1:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.500	0.2000	0	97.3	90	110			N

Sample ID: **LCVL2-191205**	Batch ID: **R107762**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **LCVL**	Run ID: **ICP-MS4_191205B**	Analysis Date: **12/5/2019 1:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00462	0.500	0.005000	0	92.5	70	130			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191206A

The QC data in batch 93966 applies to the following samples: 1911260-41A, 1911260-42A, 1911260-43A, 1911260-44A, 1911260-45A, 1911260-46A, 1911260-47A, 1911260-48A, 1911260-49A, 1911260-50A, 1911260-51A, 1911260-52A, 1911260-53A, 1911260-54A, 1911260-55A, 1911260-56A

Sample ID: **MB-93966** Batch ID: **93966** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **MBLK** Run ID: **ICP-MS4_191206A** Analysis Date: **12/6/2019 10:37:00 AM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<12.5	37.5								
Calcium	<12.5	37.5								
Sodium	<12.5	37.5								

Sample ID: **LCS-93966** Batch ID: **93966** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCS** Run ID: **ICP-MS4_191206A** Analysis Date: **12/6/2019 10:42:00 AM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	254	37.5	250.0	0	102	80	120			
Calcium	1220	37.5	1250	0	97.9	80	120			
Sodium	1270	37.5	1250	0	101	80	120			

Sample ID: **LCSD-93966** Batch ID: **93966** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCSD** Run ID: **ICP-MS4_191206A** Analysis Date: **12/6/2019 10:44:00 AM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	252	37.5	250.0	0	101	80	120	0.862	25	
Calcium	1220	37.5	1250	0	97.4	80	120	0.504	25	
Sodium	1260	37.5	1250	0	101	80	120	0.592	25	

Sample ID: **1911260-54A SD** Batch ID: **93966** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **ICP-MS4_191206A** Analysis Date: **12/6/2019 10:50:00 AM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2050	224	0	2016				1.86	20	
Sodium	391	224	0	382.8				2.19	20	

Sample ID: **1911260-54A PDS** Batch ID: **93966** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **ICP-MS4_191206A** Analysis Date: **12/6/2019 11:10:00 AM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	3450	44.8	1492	2016	95.9	75	125			
Sodium	1800	44.8	1492	382.8	95.3	75	125			

Sample ID: **1911260-54A MS** Batch ID: **93966** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **ICP-MS4_191206A** Analysis Date: **12/6/2019 11:12:00 AM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	28500	44.3	295.5	28220	104	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191206A

Sample ID: **1911260-54A MS**	Batch ID: **93966**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 11:12:00 AM**	Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	3330	44.3	1477	2016	88.9	75	125			
Sodium	1740	44.3	1477	382.8	91.9	75	125			

Sample ID: **1911260-54A MSD**	Batch ID: **93966**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 11:14:00 AM**	Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	30300	42.3	281.9	28220	741	75	125	6.07	25	S
Calcium	3450	42.3	1410	2016	102	75	125	3.64	25	
Sodium	1800	42.3	1410	382.8	101	75	125	3.32	25	

Sample ID: **1911260-54A SD**	Batch ID: **93966**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **SD**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 11:51:00 AM**	Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	27700	4480	0	27480				0.896	20	

Sample ID: **1911260-54A PDS**	Batch ID: **93966**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **PDS**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 12:11:00 PM**	Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	55400	895	29830	27480	93.6	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191206A

Sample ID: **ICV-191206**	Batch ID: **R107781**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 10:23:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.30	0.0300	2.50	0	92.0	90	110			
Calcium	2.44	0.300	2.50	0	97.6	90	110			
Sodium	2.52	0.300	2.50	0	101	90	110			

Sample ID: **LCVL-191206**	Batch ID: **R107781**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 10:30:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.101	0.0300	0.100	0	101	80	120			
Calcium	0.0943	0.300	0.100	0	94.3	80	120			
Sodium	0.103	0.300	0.100	0	103	80	120			

Sample ID: **CCV1-191206**	Batch ID: **R107781**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 11:16:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.17	0.0300	5.00	0	103	90	110			
Calcium	5.04	0.300	5.00	0	101	90	110			
Sodium	5.14	0.300	5.00	0	103	90	110			

Sample ID: **LCVL1-191206**	Batch ID: **R107781**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 11:20:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.106	0.0300	0.100	0	106	80	120			
Calcium	0.102	0.300	0.100	0	102	80	120			
Sodium	0.0983	0.300	0.100	0	98.3	80	120			

Sample ID: **CCV2-191206**	Batch ID: **R107781**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 11:39:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.19	0.0300	5.00	0	104	90	110			
Calcium	5.04	0.300	5.00	0	101	90	110			
Sodium	5.15	0.300	5.00	0	103	90	110			

Sample ID: **LCVL2-191206**	Batch ID: **R107781**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 11:45:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.103	0.0300	0.100	0	103	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191206A

Sample ID: **LCVL2-191206**	Batch ID: **R107781**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 11:45:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0969	0.300	0.100	0	96.9	80	120			
Sodium	0.0994	0.300	0.100	0	99.4	80	120			

Sample ID: **CCV3-191206**	Batch ID: **R107781**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 12:13:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.21	0.0300	5.00	0	104	90	110			
Calcium	5.11	0.300	5.00	0	102	90	110			

Sample ID: **LCVL3-191206**	Batch ID: **R107781**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 12:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.108	0.0300	0.100	0	108	80	120			
Calcium	0.0953	0.300	0.100	0	95.3	80	120			

Sample ID: **CCV4-191206**	Batch ID: **R107781**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 12:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.18	0.0300	5.00	0	104	90	110			
Calcium	4.98	0.300	5.00	0	99.6	90	110			

Sample ID: **LCVL4-191206**	Batch ID: **R107781**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191206A**	Analysis Date: **12/6/2019 12:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.105	0.0300	0.100	0	105	80	120			
Calcium	0.0972	0.300	0.100	0	97.2	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191001C

Sample ID: **DCS2-92931**	Batch ID: **92931**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **DCS2**	Run ID: **ICP-MS5_191001C**	Analysis Date: **10/1/2019 11:00:00 AM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	1.23	1.00	1.250	0	98.1	70	130	0	0	
Arsenic	1.26	1.00	1.250	0	101	70	130	0	0	
Chromium	1.39	2.00	1.250	0	111	70	130	0	0	
Nickel	1.29	2.00	1.250	0	104	70	130	0	0	
Thallium	1.26	1.00	1.250	0	100	70	130	0	0	

Sample ID: **DCS3-92931**	Batch ID: **92931**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **DCS3**	Run ID: **ICP-MS5_191001C**	Analysis Date: **10/1/2019 11:02:00 AM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	2.50	2.50	2.500	0	99.9	70	130	0	0	

Sample ID: **DCS1-92931**	Batch ID: **92931**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **DCS**	Run ID: **ICP-MS5_191001C**	Analysis Date: **10/1/2019 11:07:00 AM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	41.0	37.5	37.50	0	109	70	130	0	0	
Calcium	46.8	37.5	37.50	0	125	70	130	0	0	
Lead	0.311	0.300	0.2500	0	124	70	130	0	0	
Sodium	39.4	37.5	37.50	0	105	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191001E

Sample ID: **DCS2-92931**	Batch ID: **92931**	TestNo: **SW6020B**		Units: **mg/Kg**	
SampType: **DCS**	Run ID: **ICP-MS5_191001E**	Analysis Date: **10/1/2019 11:00:00 AM**		Prep Date: **9/25/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	1.20	2.50	1.250	0	96.1	60	140	0	0	N

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191204A

The QC data in batch 93920 applies to the following samples: 1911260-01A, 1911260-02A, 1911260-03A, 1911260-04A, 1911260-05A, 1911260-06A, 1911260-07A, 1911260-08A, 1911260-09A, 1911260-10A, 1911260-11A, 1911260-12A, 1911260-13A, 1911260-14A, 1911260-15A, 1911260-16A, 1911260-17A, 1911260-18A, 1911260-19A, 1911260-20A

Sample ID: **MB-93920** Batch ID: **93920** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **MBLK** Run ID: **ICP-MS5_191204A** Analysis Date: **12/4/2019 11:05:00 AM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<12.5	37.5								
Antimony	<0.500	1.00								
Arsenic	<0.500	1.00								
Calcium	<12.5	37.5								
Chromium	<0.500	2.00								
Lead	0.150	0.300								
Nickel	<0.500	2.00								
Sodium	<12.5	37.5								
Thallium	<0.500	1.00								
Vanadium	<1.00	2.50								

Sample ID: **LCS-93920** Batch ID: **93920** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCS** Run ID: **ICP-MS5_191204A** Analysis Date: **12/4/2019 11:08:00 AM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	249	37.5	250.0	0	99.7	80	120			
Antimony	50.8	1.00	50.00	0	102	80	120			
Arsenic	49.7	1.00	50.00	0	99.4	80	120			
Calcium	1200	37.5	1250	0	96.2	80	120			
Chromium	50.1	2.00	50.00	0	100	80	120			
Lead	48.4	0.300	50.00	0	96.8	80	120			
Nickel	50.3	2.00	50.00	0	101	80	120			
Sodium	1220	37.5	1250	0	97.4	80	120			
Thallium	48.9	1.00	50.00	0	97.8	80	120			
Vanadium	49.1	2.50	50.00	0	98.2	80	120			

Sample ID: **LCSD-93920** Batch ID: **93920** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCSD** Run ID: **ICP-MS5_191204A** Analysis Date: **12/4/2019 11:10:00 AM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	249	37.5	250.0	0	99.6	80	120	0.142	25	
Antimony	51.0	1.00	50.00	0	102	80	120	0.365	25	
Arsenic	49.9	1.00	50.00	0	99.8	80	120	0.404	25	
Calcium	1230	37.5	1250	0	98.2	80	120	2.08	25	
Chromium	50.0	2.00	50.00	0	100	80	120	0.103	25	
Lead	48.7	0.300	50.00	0	97.5	80	120	0.698	25	
Nickel	50.4	2.00	50.00	0	101	80	120	0.380	25	
Sodium	1210	37.5	1250	0	96.7	80	120	0.632	25	
Thallium	49.1	1.00	50.00	0	98.2	80	120	0.344	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191204A

Sample ID: **LCSD-93920**	Batch ID: **93920**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **LCSD**	Run ID: **ICP-MS5_191204A**	Analysis Date: **12/4/2019 11:10:00 AM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	49.1	2.50	50.00	0	98.2	80	120	0.080	25	

Sample ID: **1911260-16A SD**	Batch ID: **93920**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **SD**	Run ID: **ICP-MS5_191204A**	Analysis Date: **12/4/2019 11:16:00 AM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<2.87	5.74	0	0				0	10	
Arsenic	3.31	5.74	0	3.564				7.52	10	
Calcium	3160	215	0	3340				5.43	10	
Chromium	12.1	11.5	0	12.98				6.78	10	
Lead	7.87	1.72	0	8.771				10.8	10	R
Nickel	7.31	11.5	0	7.392				1.10	10	
Sodium	780	215	0	838.8				7.31	10	
Thallium	<2.87	5.74	0	0				0	10	
Vanadium	22.9	14.3	0	24.30				6.04	10	

Sample ID: **1911260-16A PDS**	Batch ID: **93920**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **PDS**	Run ID: **ICP-MS5_191204A**	Analysis Date: **12/4/2019 11:41:00 AM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	58.3	1.15	57.36	0	102	80	120			
Arsenic	57.8	1.15	57.36	3.564	94.6	80	120			
Calcium	4700	43.0	1434	3340	94.6	80	120			
Chromium	68.9	2.29	57.36	12.98	97.6	80	120			
Lead	63.8	0.344	57.36	8.771	95.9	80	120			
Nickel	62.8	2.29	57.36	7.392	96.6	80	120			
Sodium	2190	43.0	1434	838.8	93.9	80	120			
Thallium	56.2	1.15	57.36	0	97.9	80	120			
Vanadium	79.1	2.87	57.36	24.30	95.5	80	120			

Sample ID: **1911260-16A MS**	Batch ID: **93920**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **ICP-MS5_191204A**	Analysis Date: **12/4/2019 11:44:00 AM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	19400	43.8	292.3	19390	15.9	80	120			S
Antimony	37.1	1.17	58.47	0	63.4	80	120			S
Arsenic	58.4	1.17	58.47	3.564	93.8	80	120			
Calcium	4750	43.8	1462	3340	96.3	80	120			
Chromium	69.5	2.34	58.47	12.98	96.6	80	120			
Lead	65.6	0.351	58.47	8.771	97.2	80	120			
Nickel	64.3	2.34	58.47	7.392	97.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191204A

Sample ID: **1911260-16A MS**	Batch ID: **93920**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **ICP-MS5_191204A**	Analysis Date: **12/4/2019 11:44:00 AM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	2180	43.8	1462	838.8	91.5	80	120			
Thallium	57.9	1.17	58.47	0	99.0	80	120			
Vanadium	80.8	2.92	58.47	24.30	96.7	80	120			

Sample ID: **1911260-16A MSD**	Batch ID: **93920**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **ICP-MS5_191204A**	Analysis Date: **12/4/2019 11:46:00 AM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	19500	41.8	278.9	19390	25.6	80	120	0.128	25	S
Antimony	28.6	1.12	55.78	0	51.3	80	120	25.7	25	SR
Arsenic	55.6	1.12	55.78	3.564	93.2	80	120	4.99	25	
Calcium	4620	41.8	1395	3340	91.7	80	120	2.75	25	
Chromium	66.5	2.23	55.78	12.98	95.9	80	120	4.37	25	
Lead	62.2	0.335	55.78	8.771	95.8	80	120	5.34	25	
Nickel	61.7	2.23	55.78	7.392	97.4	80	120	4.14	25	
Sodium	2110	41.8	1395	838.8	90.9	80	120	3.24	25	
Thallium	54.6	1.12	55.78	0	97.9	80	120	5.73	25	
Vanadium	77.2	2.79	55.78	24.30	94.8	80	120	4.62	25	

Sample ID: **1911260-16A SD**	Batch ID: **93920**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **SD**	Run ID: **ICP-MS5_191204A**	Analysis Date: **12/4/2019 12:35:00 PM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	18200	2150	0	17780				2.07	10	

Sample ID: **1911260-16A PDS**	Batch ID: **93920**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **PDS**	Run ID: **ICP-MS5_191204A**	Analysis Date: **12/4/2019 12:57:00 PM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	31700	430	14340	17780	97.1	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191204A

Sample ID: **ICV-191204** Batch ID: **R107733** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_191204A** Analysis Date: **12/4/2019 10:46:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.39	0.0300	2.50	0	95.7	90	110			
Antimony	0.103	0.00250	0.100	0	103	90	110			
Arsenic	0.0981	0.00500	0.100	0	98.1	90	110			
Calcium	2.60	0.300	2.50	0	104	90	110			
Chromium	0.101	0.00500	0.100	0	101	90	110			
Lead	0.0959	0.00100	0.100	0	95.9	90	110			
Nickel	0.103	0.0100	0.100	0	103	90	110			
Sodium	2.49	0.300	2.50	0	99.5	90	110			
Thallium	0.0964	0.00150	0.100	0	96.4	90	110			
Vanadium	0.0989	0.00100	0.100	0	98.9	90	110			

Sample ID: **LCVL-191204** Batch ID: **R107733** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_191204A** Analysis Date: **12/4/2019 10:54:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.100	0.0300	0.100	0	100	70	130			
Antimony	0.00202	0.00250	0.00200	0	101	70	130			
Arsenic	0.00500	0.00500	0.00500	0	99.9	70	130			
Calcium	0.0858	0.300	0.100	0	85.8	70	130			
Chromium	0.00497	0.00500	0.00500	0	99.4	70	130			
Lead	0.000965	0.00100	0.00100	0	96.5	70	130			
Nickel	0.00497	0.0100	0.00500	0	99.4	70	130			
Sodium	0.102	0.300	0.100	0	102	70	130			
Thallium	0.000977	0.00150	0.00100	0	97.7	70	130			
Vanadium	0.000924	0.00100	0.00100	0	92.4	70	130			

Sample ID: **CCV1-191204** Batch ID: **R107733** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_191204A** Analysis Date: **12/4/2019 11:48:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.02	0.0300	5.00	0	100	90	110			
Antimony	0.202	0.00250	0.200	0	101	90	110			
Arsenic	0.201	0.00500	0.200	0	101	90	110			
Calcium	4.92	0.300	5.00	0	98.5	90	110			
Chromium	0.196	0.00500	0.200	0	98.1	90	110			
Lead	0.192	0.00100	0.200	0	95.8	90	110			
Nickel	0.204	0.0100	0.200	0	102	90	110			
Sodium	4.93	0.300	5.00	0	98.5	90	110			
Thallium	0.194	0.00150	0.200	0	96.8	90	110			
Vanadium	0.194	0.00100	0.200	0	96.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191204A

Sample ID: **LCVL1-191204** Batch ID: **R107733** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_191204A** Analysis Date: **12/4/2019 11:53:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.107	0.0300	0.100	0	107	70	130			
Antimony	0.00194	0.00250	0.00200	0	97.2	70	130			
Arsenic	0.00498	0.00500	0.00500	0	99.5	70	130			
Calcium	0.0939	0.300	0.100	0	93.9	70	130			
Chromium	0.00500	0.00500	0.00500	0	100	70	130			
Lead	0.000983	0.00100	0.00100	0	98.3	70	130			
Nickel	0.00524	0.0100	0.00500	0	105	70	130			
Sodium	0.0967	0.300	0.100	0	96.7	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			
Vanadium	0.00106	0.00100	0.00100	0	106	70	130			

Sample ID: **CCV2-191204** Batch ID: **R107733** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_191204A** Analysis Date: **12/4/2019 12:20:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.89	0.0300	5.00	0	97.9	90	110			
Antimony	0.199	0.00250	0.200	0	99.7	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Calcium	4.93	0.300	5.00	0	98.6	90	110			
Chromium	0.193	0.00500	0.200	0	96.7	90	110			
Lead	0.188	0.00100	0.200	0	94.2	90	110			
Nickel	0.202	0.0100	0.200	0	101	90	110			
Sodium	4.92	0.300	5.00	0	98.4	90	110			
Thallium	0.189	0.00150	0.200	0	94.3	90	110			
Vanadium	0.193	0.00100	0.200	0	96.6	90	110			

Sample ID: **LCVL2-191204** Batch ID: **R107733** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_191204A** Analysis Date: **12/4/2019 12:26:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0973	0.0300	0.100	0	97.3	70	130			
Antimony	0.00206	0.00250	0.00200	0	103	70	130			
Arsenic	0.00505	0.00500	0.00500	0	101	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			
Chromium	0.00502	0.00500	0.00500	0	100	70	130			
Lead	0.000988	0.00100	0.00100	0	98.8	70	130			
Nickel	0.00512	0.0100	0.00500	0	102	70	130			
Sodium	0.0944	0.300	0.100	0	94.4	70	130			
Thallium	0.000991	0.00150	0.00100	0	99.1	70	130			
Vanadium	0.00103	0.00100	0.00100	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191204A

Sample ID: **CCV3-191204**	Batch ID: **R107733**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191204A**	Analysis Date: **12/4/2019 12:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0	99.6	90	110			
Calcium	5.00	0.300	5.00	0	100	90	110			
Sodium	4.98	0.300	5.00	0	99.7	90	110			

Sample ID: **LCVL3-191204**	Batch ID: **R107733**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_191204A**	Analysis Date: **12/4/2019 1:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.104	0.0300	0.100	0	104	70	130			
Calcium	0.0861	0.300	0.100	0	86.1	70	130			
Sodium	0.0934	0.300	0.100	0	93.4	70	130			

Sample ID: **CCV4-191204**	Batch ID: **R107733**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191204A**	Analysis Date: **12/4/2019 1:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.00	0.0300	5.00	0	100	90	110			
Calcium	5.03	0.300	5.00	0	101	90	110			
Sodium	4.98	0.300	5.00	0	99.7	90	110			

Sample ID: **LCVL4-191204**	Batch ID: **R107733**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_191204A**	Analysis Date: **12/4/2019 1:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0995	0.0300	0.100	0	99.5	70	130			
Calcium	0.0784	0.300	0.100	0	78.4	70	130			
Sodium	0.0922	0.300	0.100	0	92.2	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191204B

The QC data in batch 93920 applies to the following samples: 1911260-01A, 1911260-02A, 1911260-03A, 1911260-04A, 1911260-05A, 1911260-06A, 1911260-07A, 1911260-08A, 1911260-09A, 1911260-10A, 1911260-11A, 1911260-12A, 1911260-13A, 1911260-14A, 1911260-15A, 1911260-16A, 1911260-17A, 1911260-18A, 1911260-19A, 1911260-20A

Sample ID: **MB-93920** Batch ID: **93920** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **MBLK** Run ID: **ICP-MS5_191204B** Analysis Date: **12/4/2019 11:05:00 AM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<1.00	2.50								N

Sample ID: **LCS-93920** Batch ID: **93920** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCS** Run ID: **ICP-MS5_191204B** Analysis Date: **12/4/2019 11:08:00 AM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	50.3	2.50	50.00	0	101	80	120			N

Sample ID: **LCSD-93920** Batch ID: **93920** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCSD** Run ID: **ICP-MS5_191204B** Analysis Date: **12/4/2019 11:10:00 AM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	50.6	2.50	50.00	0	101	80	120	0.716	20	N

Sample ID: **1911260-16A SD** Batch ID: **93920** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **ICP-MS5_191204B** Analysis Date: **12/4/2019 11:16:00 AM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<5.74	14.3	0	0				0	10	N

Sample ID: **1911260-16A PDS** Batch ID: **93920** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **ICP-MS5_191204B** Analysis Date: **12/4/2019 11:41:00 AM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	58.7	2.87	57.36	0	102	80	120			N

Sample ID: **1911260-16A MS** Batch ID: **93920** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **ICP-MS5_191204B** Analysis Date: **12/4/2019 11:44:00 AM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	59.7	2.92	58.47	0	102	80	120			N

Sample ID: **1911260-16A MSD** Batch ID: **93920** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **ICP-MS5_191204B** Analysis Date: **12/4/2019 11:46:00 AM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	56.6	2.79	55.78	0	101	80	120	5.45	20	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191204B

Sample ID: **ICV-191204**	Batch ID: **R107734**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **ICV**	Run ID: **ICP-MS5_191204B**	Analysis Date: **12/4/2019 10:46:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0941	0.500	0.1000	0	94.1	90	110			N

Sample ID: **LCVL-191204**	Batch ID: **R107734**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **LCVL**	Run ID: **ICP-MS5_191204B**	Analysis Date: **12/4/2019 10:54:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00475	0.500	0.005000	0	95.1	70	130			N

Sample ID: **CCV1-191204**	Batch ID: **R107734**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **ICP-MS5_191204B**	Analysis Date: **12/4/2019 11:48:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.202	0.500	0.2000	0	101	90	110			N

Sample ID: **LCVL1-191204**	Batch ID: **R107734**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **LCVL**	Run ID: **ICP-MS5_191204B**	Analysis Date: **12/4/2019 11:53:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00477	0.500	0.005000	0	95.4	70	130			N

Sample ID: **CCV2-191204**	Batch ID: **R107734**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **ICP-MS5_191204B**	Analysis Date: **12/4/2019 12:20:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.500	0.2000	0	98.0	90	110			N

Sample ID: **LCVL2-191204**	Batch ID: **R107734**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **LCVL**	Run ID: **ICP-MS5_191204B**	Analysis Date: **12/4/2019 12:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00471	0.500	0.005000	0	94.1	70	130			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191002A

Sample ID: **DCS-93050**	Batch ID: **93050**	TestNo: **SW9056A**	Units: **mg/Kg**
SampType: **DCS**	Run ID: **IC2_191002A**	Analysis Date: **10/2/2019 11:23:14 AM**	Prep Date: **10/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.69	10.0	7.500	0	129	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191203A

The QC data in batch 93907 applies to the following samples: 1911260-01A, 1911260-02A, 1911260-03A, 1911260-04A, 1911260-05A, 1911260-06A, 1911260-07A, 1911260-08A, 1911260-09A, 1911260-10A, 1911260-11A, 1911260-12A, 1911260-13A, 1911260-14A, 1911260-15A, 1911260-16A, 1911260-17A, 1911260-18A, 1911260-19A, 1911260-20A

Sample ID: **MB-93907** Batch ID: **93907** TestNo: **SW9056A** Units: **mg/Kg**
SampType: **MBLK** Run ID: **IC2_191203A** Analysis Date: **12/3/2019 11:51:27 AM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<3.00	10.0								

Sample ID: **LCS-93907** Batch ID: **93907** TestNo: **SW9056A** Units: **mg/Kg**
SampType: **LCS** Run ID: **IC2_191203A** Analysis Date: **12/3/2019 12:07:27 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	149	10.0	150.0	0	99.2	80	120			

Sample ID: **LCSD-93907** Batch ID: **93907** TestNo: **SW9056A** Units: **mg/Kg**
SampType: **LCSD** Run ID: **IC2_191203A** Analysis Date: **12/3/2019 12:23:27 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	149	10.0	150.0	0	99.3	80	120	0.142	15	

Sample ID: **1911260-01A-DUP** Batch ID: **93907** TestNo: **SW9056A** Units: **mg/Kg-dry**
SampType: **DUP** Run ID: **IC2_191203A** Analysis Date: **12/3/2019 5:50:53 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	38.6	60.0	0	34.71				10.5	10	R

Sample ID: **1911260-01AMS** Batch ID: **93907** TestNo: **SW9056A** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **IC2_191203A** Analysis Date: **12/3/2019 6:06:53 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	145	58.6	117.2	34.71	94.0	80	120			

Sample ID: **1911260-01AMSD** Batch ID: **93907** TestNo: **SW9056A** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **IC2_191203A** Analysis Date: **12/3/2019 6:22:53 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	145	57.8	115.7	34.71	95.5	80	120	0.186	15	

Sample ID: **1911260-02A-DUP** Batch ID: **93907** TestNo: **SW9056A** Units: **mg/Kg-dry**
SampType: **DUP** Run ID: **IC2_191203A** Analysis Date: **12/3/2019 6:54:53 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<18.3	61.1	0	0				0	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191203A

Sample ID: **ICV-191203**	Batch ID: **R107720**	TestNo: **SW9056A**	Units: **mg/Kg**
SampType: **ICV**	Run ID: **IC2_191203A**	Analysis Date: **12/3/2019 10:15:27 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	77.4	10.0	75.00	0	103	90	110			

Sample ID: **CCV1-191203**	Batch ID: **R107720**	TestNo: **SW9056A**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **IC2_191203A**	Analysis Date: **12/3/2019 3:47:51 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	30.1	10.0	30.00	0	100	90	110			

Sample ID: **CCV2-191203**	Batch ID: **R107720**	TestNo: **SW9056A**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **IC2_191203A**	Analysis Date: **12/3/2019 9:18:53 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.8	10.0	30.00	0	99.4	90	110			

Sample ID: **CCV3-191203**	Batch ID: **R107720**	TestNo: **SW9056A**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **IC2_191203A**	Analysis Date: **12/4/2019 1:18:53 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.9	10.0	30.00	0	99.5	90	110			

Sample ID: **CCV4-191203**	Batch ID: **R107720**	TestNo: **SW9056A**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **IC2_191203A**	Analysis Date: **12/4/2019 3:26:52 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	30.3	10.0	30.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191002A

Sample ID: **DCS-93058** Batch ID: **93058** TestNo: **SW9056A** Units: **mg/Kg**
SampType: **DCS** Run ID: **IC4_191002A** Analysis Date: **10/2/2019 12:37:56 PM** Prep Date: **10/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.13	10.0	7.500	0	122	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191205A

The QC data in batch 93946 applies to the following samples: 1911260-21A, 1911260-22A, 1911260-23A, 1911260-24A, 1911260-25A, 1911260-26A, 1911260-27A, 1911260-28A, 1911260-29A, 1911260-30A, 1911260-31A, 1911260-32A, 1911260-33A, 1911260-34A, 1911260-35A, 1911260-36A, 1911260-37A, 1911260-38A, 1911260-39A, 1911260-40A

Sample ID: **1911260-21A-DUP** Batch ID: **93946** TestNo: **SW9056A** Units: **mg/Kg-dry**
SampType: **DUP** Run ID: **IC4_191205A** Analysis Date: **12/5/2019 5:41:59 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	878	59.1	0	918.9				4.54	10	

Sample ID: **MB-93946** Batch ID: **93946** TestNo: **SW9056A** Units: **mg/Kg**
SampType: **MBLK** Run ID: **IC4_191205A** Analysis Date: **12/5/2019 3:57:27 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<3.00	10.0								

Sample ID: **LCS-93946** Batch ID: **93946** TestNo: **SW9056A** Units: **mg/Kg**
SampType: **LCS** Run ID: **IC4_191205A** Analysis Date: **12/5/2019 4:19:14 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	147	10.0	150.0	0	98.1	80	120			

Sample ID: **LCSD-93946** Batch ID: **93946** TestNo: **SW9056A** Units: **mg/Kg**
SampType: **LCSD** Run ID: **IC4_191205A** Analysis Date: **12/5/2019 4:35:14 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	145	10.0	150.0	0	96.6	80	120	1.51	15	

Sample ID: **1911260-21AMS** Batch ID: **93946** TestNo: **SW9056A** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **IC4_191205A** Analysis Date: **12/5/2019 5:57:59 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	986	58.3	116.6	918.9	57.7	80	120			S

Sample ID: **1911260-21AMSD** Batch ID: **93946** TestNo: **SW9056A** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **IC4_191205A** Analysis Date: **12/5/2019 6:13:59 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	1050	58.4	116.8	918.9	108	80	120	5.81	15	

Sample ID: **1911260-22A-DUP** Batch ID: **93946** TestNo: **SW9056A** Units: **mg/Kg-dry**
SampType: **DUP** Run ID: **IC4_191205A** Analysis Date: **12/5/2019 6:45:59 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<17.3	57.7	0	0				0	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191205A

Sample ID: **ICV-191205**	Batch ID: **R107766**	TestNo: **SW9056A**	Units: **mg/Kg**
SampType: **ICV**	Run ID: **IC4_191205A**	Analysis Date: **12/5/2019 3:04:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	73.6	10.0	75.00	0	98.2	90	110			

Sample ID: **CCV1-191205**	Batch ID: **R107766**	TestNo: **SW9056A**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **IC4_191205A**	Analysis Date: **12/5/2019 9:57:59 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.6	10.0	30.00	0	98.6	90	110			

Sample ID: **CCV2-191205**	Batch ID: **R107766**	TestNo: **SW9056A**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **IC4_191205A**	Analysis Date: **12/6/2019 1:57:59 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.8	10.0	30.00	0	99.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191206A

The QC data in batch 93970 applies to the following samples: 1911260-41A, 1911260-42A, 1911260-43A, 1911260-44A, 1911260-45A, 1911260-46A, 1911260-47A, 1911260-48A, 1911260-49A, 1911260-50A, 1911260-51A, 1911260-52A, 1911260-53A, 1911260-54A, 1911260-55A, 1911260-56A

Sample ID: **MB-93970** Batch ID: **93970** TestNo: **SW9056A** Units: **mg/Kg**
SampType: **MBLK** Run ID: **IC4_191206A** Analysis Date: **12/6/2019 10:06:13 AM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<3.00	10.0								

Sample ID: **LCS-93970** Batch ID: **93970** TestNo: **SW9056A** Units: **mg/Kg**
SampType: **LCS** Run ID: **IC4_191206A** Analysis Date: **12/6/2019 10:22:13 AM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	150	10.0	150.0	0	100	80	120			

Sample ID: **LCSD-93970** Batch ID: **93970** TestNo: **SW9056A** Units: **mg/Kg**
SampType: **LCSD** Run ID: **IC4_191206A** Analysis Date: **12/6/2019 10:38:13 AM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	149	10.0	150.0	0	99.2	80	120	0.971	15	

Sample ID: **1911260-41A-DUP** Batch ID: **93970** TestNo: **SW9056A** Units: **mg/Kg-dry**
SampType: **DUP** Run ID: **IC4_191206A** Analysis Date: **12/6/2019 12:34:42 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<19.7	65.6	0	0				0	10	

Sample ID: **1911260-41AMS** Batch ID: **93970** TestNo: **SW9056A** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **IC4_191206A** Analysis Date: **12/6/2019 12:50:42 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	127	60.3	120.6	0	105	80	120			

Sample ID: **1911260-41AMSD** Batch ID: **93970** TestNo: **SW9056A** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **IC4_191206A** Analysis Date: **12/6/2019 1:06:42 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	128	61.1	122.1	0	105	80	120	0.752	15	

Sample ID: **1911260-42A-DUP** Batch ID: **93970** TestNo: **SW9056A** Units: **mg/Kg-dry**
SampType: **DUP** Run ID: **IC4_191206A** Analysis Date: **12/6/2019 1:38:42 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	20.5	58.5	0	23.83				15.1	10	R

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191206A

Sample ID: **ICV-191206**	Batch ID: **R107788**	TestNo: **SW9056A**	Units: **mg/Kg**
SampType: **ICV**	Run ID: **IC4_191206A**	Analysis Date: **12/6/2019 9:34:13 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	75.9	10.0	75.00	0	101	90	110			

Sample ID: **CCV1-191206**	Batch ID: **R107788**	TestNo: **SW9056A**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **IC4_191206A**	Analysis Date: **12/6/2019 5:59:42 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.7	10.0	30.00	0	98.9	90	110			

Sample ID: **CCV2-191206**	Batch ID: **R107788**	TestNo: **SW9056A**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **IC4_191206A**	Analysis Date: **12/6/2019 9:11:42 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	30.0	10.0	30.00	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: PH2_191202A

The QC data in batch 93910 applies to the following samples: 1911260-01A, 1911260-02A, 1911260-03A, 1911260-04A, 1911260-05A, 1911260-06A, 1911260-07A, 1911260-08A, 1911260-09A, 1911260-10A, 1911260-11A, 1911260-12A, 1911260-13A, 1911260-14A, 1911260-15A, 1911260-16A, 1911260-17A, 1911260-18A, 1911260-19A, 1911260-20A

Sample ID: **1911260-01A-DUP** Batch ID: **93910** TestNo: **SW9045D** Units: **pH Units@23.9°C**
SampType: **DUP** Run ID: **PH2_191202A** Analysis Date: **12/2/2019 3:30:00 PM** Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.94	0	0	7.020				1.15	5	

Sample ID: **1911260-20A-DUP** Batch ID: **93910** TestNo: **SW9045D** Units: **pH Units@24°C**
SampType: **DUP** Run ID: **PH2_191202A** Analysis Date: **12/2/2019 3:30:00 PM** Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.42	0	0	7.120				4.13	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: PH2_191202A

Sample ID: **ICV-191202**	Batch ID: **PH_S-12/02/19**	TestNo: **SW9045D**	Units: **pH Units@23.9°C**
SampType: **ICV**	Run ID: **PH2_191202A**	Analysis Date: **12/2/2019 3:30:00 PM**	Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.05	0	7.000	0	101	99	101			

Sample ID: **CCV-191202**	Batch ID: **PH_S-12/02/19**	TestNo: **SW9045D**	Units: **pH Units@24°C**
SampType: **CCV**	Run ID: **PH2_191202A**	Analysis Date: **12/2/2019 3:30:00 PM**	Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.04	0	7.000	0	101	97.1	102.9			

Sample ID: **CCV2-191202**	Batch ID: **PH_S-12/02/19**	TestNo: **SW9045D**	Units: **pH Units@24.8°C**
SampType: **CCV**	Run ID: **PH2_191202A**	Analysis Date: **12/2/2019 3:30:00 PM**	Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.07	0	7.000	0	101	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: PH2_191203A

The QC data in batch 93913 applies to the following samples: 1911260-21A, 1911260-22A, 1911260-23A, 1911260-24A, 1911260-25A, 1911260-26A, 1911260-27A, 1911260-28A, 1911260-29A, 1911260-30A, 1911260-31A, 1911260-32A, 1911260-33A, 1911260-34A, 1911260-35A, 1911260-36A, 1911260-37A, 1911260-38A, 1911260-39A, 1911260-40A

Sample ID: **1911260-21A-DUP** Batch ID: **93913** TestNo: **SW9045D** Units: **pH Units@23.9°C**
SampType: **DUP** Run ID: **PH2_191203A** Analysis Date: **12/3/2019 3:00:00 PM** Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.79	0	0	7.700				1.16	5	

Sample ID: **1911260-40A-DUP** Batch ID: **93913** TestNo: **SW9045D** Units: **pH Units@23.9°C**
SampType: **DUP** Run ID: **PH2_191203A** Analysis Date: **12/3/2019 3:00:00 PM** Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.34	0	0	6.160				2.88	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: PH2_191203A

Sample ID: **ICV-191203**	Batch ID: **PH_S-12/03/19**	TestNo: **SW9045D**	Units: **pH Units@23.5°C**
SampType: **ICV**	Run ID: **PH2_191203A**	Analysis Date: **12/3/2019 3:00:00 PM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.03	0	7.000	0	100	99	101			

Sample ID: **CCV-191203**	Batch ID: **PH_S-12/03/19**	TestNo: **SW9045D**	Units: **pH Units@24°C**
SampType: **CCV**	Run ID: **PH2_191203A**	Analysis Date: **12/3/2019 3:00:00 PM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.07	0	7.000	0	101	97.1	102.9			

Sample ID: **CCV2-191203**	Batch ID: **PH_S-12/03/19**	TestNo: **SW9045D**	Units: **pH Units@24.5°C**
SampType: **CCV**	Run ID: **PH2_191203A**	Analysis Date: **12/3/2019 3:00:00 PM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.08	0	7.000	0	101	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: PH2_191204A

The QC data in batch 93949 applies to the following samples: 1911260-41A, 1911260-42A, 1911260-43A, 1911260-44A, 1911260-45A, 1911260-46A, 1911260-47A, 1911260-48A, 1911260-49A, 1911260-50A, 1911260-51A, 1911260-52A, 1911260-53A, 1911260-54A, 1911260-55A, 1911260-56A

Sample ID: **1911260-41A-DUP** Batch ID: **93949** TestNo: **SW9045D** Units: **pH Units@22.8°C**
SampType: **DUP** Run ID: **PH2_191204A** Analysis Date: **12/4/2019 2:35:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.07	0	0	6.780				4.19	5	

Sample ID: **1911260-56A-DUP** Batch ID: **93949** TestNo: **SW9045D** Units: **pH Units@22.2°C**
SampType: **DUP** Run ID: **PH2_191204A** Analysis Date: **12/4/2019 2:35:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.85	0	0	7.810				0.511	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: PH2_191204A

Sample ID: **ICV-191204**	Batch ID: **PH_S-12/04/19**	TestNo: **SW9045D**	Units: **pH Units@21.9°C**
SampType: **ICV**	Run ID: **PH2_191204A**	Analysis Date: **12/4/2019 2:35:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.03	0	7.000	0	100	99	101			

Sample ID: **CCV2-191204**	Batch ID: **PH_S-12/04/19**	TestNo: **SW9045D**	Units: **pH Units@22.1°C**
SampType: **CCV**	Run ID: **PH2_191204A**	Analysis Date: **12/4/2019 2:35:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.04	0	7.000	0	101	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: PH2_191204A

Sample ID: **CCV-191204**	Batch ID: **R107740**	TestNo: **SW9045D**		Units:	**pH Units@21.9°C**
SampType: **CCV**	Run ID: **PH2_191204A**	Analysis Date: **12/4/2019 2:35:00 PM**		Prep Date:	**12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.04	0	7.000	0	101	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_191205A

The QC data in batch 93976 applies to the following samples: 1911260-01A, 1911260-02A, 1911260-03A, 1911260-04A, 1911260-05A, 1911260-06A, 1911260-07A, 1911260-08A, 1911260-09A, 1911260-10A, 1911260-11A, 1911260-12A, 1911260-13A

Sample ID: **1911253-01A-DUP** Batch ID: **93976** TestNo: **D2216** Units: **WT%**
SampType: **DUP** Run ID: **PMOIST_191205A** Analysis Date: **12/6/2019 8:46:00 AM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	16.6	0	0	20.56				21.5	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_191205B

The QC data in batch 93978 applies to the following samples: 1911260-14A, 1911260-15A, 1911260-16A, 1911260-17A, 1911260-18A, 1911260-19A, 1911260-20A, 1911260-21A, 1911260-22A, 1911260-23A, 1911260-24A, 1911260-25A, 1911260-26A, 1911260-27A, 1911260-28A, 1911260-29A, 1911260-30A, 1911260-31A, 1911260-32A, 1911260-33A

Sample ID: **1911260-33A-DUP** Batch ID: **93978** TestNo: **D2216** Units: **WT%**
SampType: **DUP** Run ID: **PMOIST_191205B** Analysis Date: **12/6/2019 8:46:00 AM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	17.0	0	0	17.34				2.12	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_191206A

The QC data in batch 93991 applies to the following samples: 1911260-34A, 1911260-35A, 1911260-36A, 1911260-37A, 1911260-38A, 1911260-39A, 1911260-40A, 1911260-41A, 1911260-42A, 1911260-43A, 1911260-44A, 1911260-45A, 1911260-46A, 1911260-47A, 1911260-48A, 1911260-49A, 1911260-50A, 1911260-51A, 1911260-52A, 1911260-53A

Sample ID: **1911260-53A-DUP** Batch ID: **93991** TestNo: **D2216** Units: **WT%**
SampType: **DUP** Run ID: **PMOIST_191206A** Analysis Date: **12/9/2019 8:45:00 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	23.9	0	0	24.72				3.29	30	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_191206B

The QC data in batch 93992 applies to the following samples: 1911260-54A, 1911260-55A, 1911260-56A

Sample ID: **1912045-02B-DUP** Batch ID: **93992** TestNo: **D2216** Units: **WT%**
SampType: **DUP** Run ID: **PMOIST_191206B** Analysis Date: **12/9/2019 8:45:00 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	23.2	0	0	24.08				3.72	30	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191205A

The QC data in batch 93952 applies to the following samples: 1911260-01A, 1911260-02A, 1911260-03A, 1911260-04A, 1911260-05A, 1911260-06A, 1911260-07A, 1911260-08A, 1911260-09A, 1911260-10A, 1911260-11A, 1911260-12A, 1911260-13A, 1911260-14A, 1911260-15A, 1911260-16A, 1911260-17A, 1911260-18A

Sample ID: **MB-93952** Batch ID: **93952** TestNo: **M2320 B** Units: **mg/L @ pH 4.01**
SampType: **MBLK** Run ID: **TITRATOR_191205A** Analysis Date: **12/5/2019 8:48:00 AM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	<50.0	50.0								

Sample ID: **LCS-93952** Batch ID: **93952** TestNo: **M2320 B** Units: **mg/L @ pH 4.11**
SampType: **LCS** Run ID: **TITRATOR_191205A** Analysis Date: **12/5/2019 8:52:00 AM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	271	50.0	250.0	0	108	81.6	123			

Sample ID: **LCSD-93952** Batch ID: **93952** TestNo: **M2320 B** Units: **mg/L @ pH 4.24**
SampType: **LCSD** Run ID: **TITRATOR_191205A** Analysis Date: **12/5/2019 8:56:00 AM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	265	50.0	250.0	0	106	81.6	123	2.39	25	

Sample ID: **1911260-01A-DUP** Batch ID: **93952** TestNo: **M2320 B** Units: **mg/L @ pH 4.55-dr**
SampType: **DUP** Run ID: **TITRATOR_191205A** Analysis Date: **12/5/2019 9:18:00 AM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	223	57.3	0	203.2				9.23	25	

Sample ID: **1911260-02A-DUP** Batch ID: **93952** TestNo: **M2320 B** Units: **mg/L @ pH 4.55-dr**
SampType: **DUP** Run ID: **TITRATOR_191205A** Analysis Date: **12/5/2019 9:28:00 AM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	242	58.1	0	263.5				8.36	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191205A

Sample ID: **ICV-191205**	Batch ID: **R107753**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.07**
SampType: **ICV**	Run ID: **TITRATOR_191205A**	Analysis Date: **12/5/2019 8:39:00 AM**	Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	101	50.0	100.0	0	101	98	102			

Sample ID: **CCV1-191205**	Batch ID: **R107753**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.26**
SampType: **CCV**	Run ID: **TITRATOR_191205A**	Analysis Date: **12/5/2019 10:07:00 AM**	Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	101	50.0	100.0	0	101	90	110			

Sample ID: **CCV2-191205**	Batch ID: **R107753**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.25**
SampType: **CCV**	Run ID: **TITRATOR_191205A**	Analysis Date: **12/5/2019 11:19:00 AM**	Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	100	50.0	100.0	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191206A

The QC data in batch 93973 applies to the following samples: 1911260-19A, 1911260-20A, 1911260-21A, 1911260-22A, 1911260-23A, 1911260-24A, 1911260-25A, 1911260-26A, 1911260-27A, 1911260-28A, 1911260-29A, 1911260-30A, 1911260-31A, 1911260-32A, 1911260-33A, 1911260-34A, 1911260-35A, 1911260-36A, 1911260-37A, 1911260-38A

Sample ID: **MB-93973** Batch ID: **93973** TestNo: **M2320 B** Units: **mg/L @ pH 4.17**
SampType: **MBLK** Run ID: **TITRATOR_191206A** Analysis Date: **12/6/2019 2:43:00 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	<50.0	50.0								

Sample ID: **LCS-93973** Batch ID: **93973** TestNo: **M2320 B** Units: **mg/L @ pH 4.25**
SampType: **LCS** Run ID: **TITRATOR_191206A** Analysis Date: **12/6/2019 2:48:00 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	265	50.0	250.0	0	106	81.6	123			

Sample ID: **1911260-19A-DUP** Batch ID: **93973** TestNo: **M2320 B** Units: **mg/L @ pH 4.55-dr**
SampType: **DUP** Run ID: **TITRATOR_191206A** Analysis Date: **12/6/2019 3:08:00 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	384	59.9	0	483.7				23.1	25	

Sample ID: **1911260-20A-DUP** Batch ID: **93973** TestNo: **M2320 B** Units: **mg/L @ pH 4.48-dr**
SampType: **DUP** Run ID: **TITRATOR_191206A** Analysis Date: **12/6/2019 3:14:00 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	116	60.0	0	133.3				13.6	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191206A

The QC data in batch 93977 applies to the following samples: 1911260-39A, 1911260-40A, 1911260-41A, 1911260-42A, 1911260-43A, 1911260-44A, 1911260-45A, 1911260-46A, 1911260-47A, 1911260-48A, 1911260-49A, 1911260-50A, 1911260-51A, 1911260-52A, 1911260-53A, 1911260-54A, 1911260-55A, 1911260-56A

Sample ID: **MB-93977**	Batch ID: **93977**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.34**
SampType: **MBLK**	Run ID: **TITRATOR_191206A**	Analysis Date: **12/6/2019 5:05:00 PM**	Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	<50.0	50.0								

Sample ID: **LCS-93977**	Batch ID: **93977**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.2**
SampType: **LCS**	Run ID: **TITRATOR_191206A**	Analysis Date: **12/6/2019 5:09:00 PM**	Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	262	50.0	250.0	0	105	81.6	123			

Sample ID: **1911260-39A-DUP**	Batch ID: **93977**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.55-dr**
SampType: **DUP**	Run ID: **TITRATOR_191206A**	Analysis Date: **12/6/2019 5:32:00 PM**	Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	555	62.9	0	526.4				5.24	25	

Sample ID: **1911260-40A-DUP**	Batch ID: **93977**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.49-dr**
SampType: **DUP**	Run ID: **TITRATOR_191206A**	Analysis Date: **12/6/2019 5:37:00 PM**	Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	<56.9	56.9	0	0				0	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191206A

Sample ID: **ICV-191206**	Batch ID: **R107790**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.29**
SampType: **ICV**	Run ID: **TITRATOR_191206A**	Analysis Date: **12/6/2019 2:06:00 PM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	101	50.0	100.0	0	101	98	102			

Sample ID: **CCV1-191206**	Batch ID: **R107790**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.23**
SampType: **CCV**	Run ID: **TITRATOR_191206A**	Analysis Date: **12/6/2019 3:39:00 PM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	101	50.0	100.0	0	101	90	110			

Sample ID: **CCV2-191206**	Batch ID: **R107790**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.43**
SampType: **CCV**	Run ID: **TITRATOR_191206A**	Analysis Date: **12/6/2019 4:48:00 PM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	97.6	50.0	100.0	0	97.6	90	110			

Sample ID: **CCV3-191206**	Batch ID: **R107790**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.4**
SampType: **CCV**	Run ID: **TITRATOR_191206A**	Analysis Date: **12/6/2019 5:03:00 PM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	100	50.0	100.0	0	100	90	110			

Sample ID: **CCV4-191206**	Batch ID: **R107790**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.2**
SampType: **CCV**	Run ID: **TITRATOR_191206A**	Analysis Date: **12/6/2019 6:25:00 PM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	101	50.0	100.0	0	101	90	110			

Sample ID: **CCV5-191206**	Batch ID: **R107790**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.38**
SampType: **CCV**	Run ID: **TITRATOR_191206A**	Analysis Date: **12/6/2019 7:40:00 PM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	98.4	50.0	100.0	0	98.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191203A

The QC data in batch 93935 applies to the following samples: 1911260-01A, 1911260-02A, 1911260-03A, 1911260-04A, 1911260-05A, 1911260-06A, 1911260-07A, 1911260-08A, 1911260-09A, 1911260-10A

Sample ID: **MB-93935** Batch ID: **93935** TestNo: **E350.3** Units: **mg/Kg**
SampType: **MBLK** Run ID: **WC_191203A** Analysis Date: **12/3/2019 4:15:00 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	<0.800	1.25								

Sample ID: **LCS-93935** Batch ID: **93935** TestNo: **E350.3** Units: **mg/Kg**
SampType: **LCS** Run ID: **WC_191203A** Analysis Date: **12/3/2019 4:15:00 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	23.5	1.25	25.00	0	93.8	80	120			

Sample ID: **LCSD-93935** Batch ID: **93935** TestNo: **E350.3** Units: **mg/Kg**
SampType: **LCSD** Run ID: **WC_191203A** Analysis Date: **12/3/2019 4:15:00 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	23.3	1.25	25.00	0	93.2	80	120	0.642	30	

Sample ID: **DCS-93935** Batch ID: **93935** TestNo: **E350.3** Units: **mg/Kg**
SampType: **DCS** Run ID: **WC_191203A** Analysis Date: **12/3/2019 4:15:00 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	0.625	1.25	1.000	0	62.5	25	400			

Sample ID: **1911260-01AMS** Batch ID: **93935** TestNo: **E350.3** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **WC_191203A** Analysis Date: **12/3/2019 4:15:00 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	11.8	1.40	28.02	0	42.2	80	120			S

Sample ID: **1911260-01AMSD** Batch ID: **93935** TestNo: **E350.3** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **WC_191203A** Analysis Date: **12/3/2019 4:15:00 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	11.7	1.42	28.33	0	41.2	80	120	1.29	30	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191203A

Sample ID: **ICV-191203**	Batch ID: **R107745**	TestNo: **E350.3**	Units: **mg/Kg**
SampType: **ICV**	Run ID: **WC_191203A**	Analysis Date: **12/3/2019 4:15:00 PM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	2.77	1.25	2.500	0	111	80	120			

Sample ID: **CCV-191203**	Batch ID: **R107745**	TestNo: **E350.3**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **WC_191203A**	Analysis Date: **12/3/2019 4:15:00 PM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	4.30	1.25	5.000	0	86.0	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191204A

The QC data in batch 93953 applies to the following samples: 1911260-11A, 1911260-12A, 1911260-13A, 1911260-14A, 1911260-15A, 1911260-16A, 1911260-17A, 1911260-18A, 1911260-19A, 1911260-20A, 1911260-21A

Sample ID: **MB-93953** Batch ID: **93953** TestNo: **E350.3** Units: **mg/Kg**
SampType: **MBLK** Run ID: **WC_191204A** Analysis Date: **12/4/2019 3:05:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	<0.800	1.25								

Sample ID: **LCS-93953** Batch ID: **93953** TestNo: **E350.3** Units: **mg/Kg**
SampType: **LCS** Run ID: **WC_191204A** Analysis Date: **12/4/2019 3:05:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	22.2	1.25	25.00	0	88.6	80	120			

Sample ID: **1911260-11AMS** Batch ID: **93953** TestNo: **E350.3** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **WC_191204A** Analysis Date: **12/4/2019 3:05:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	19.5	1.61	32.13	2.395	53.1	80	120			S

Sample ID: **1911260-11AMSD** Batch ID: **93953** TestNo: **E350.3** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **WC_191204A** Analysis Date: **12/4/2019 3:05:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	19.2	1.57	31.42	2.395	53.6	80	120	1.24	30	S

Sample ID: **1911260-21AMS** Batch ID: **93953** TestNo: **E350.3** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **WC_191204A** Analysis Date: **12/4/2019 3:05:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	11.5	1.49	29.85	0	38.4	80	120			S

Sample ID: **1911260-21AMSD** Batch ID: **93953** TestNo: **E350.3** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **WC_191204A** Analysis Date: **12/4/2019 3:05:00 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	12.1	1.52	30.35	0	40.0	80	120	5.75	30	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191204A

Sample ID: **ICV-191204**	Batch ID: **R107747**	TestNo: **E350.3**	Units: **mg/Kg**
SampType: **ICV**	Run ID: **WC_191204A**	Analysis Date: **12/4/2019 3:05:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	2.76	1.25	2.500	0	110	80	120			

Sample ID: **CCV1-191204**	Batch ID: **R107747**	TestNo: **E350.3**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **WC_191204A**	Analysis Date: **12/4/2019 3:05:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	4.06	1.25	5.000	0	81.2	80	120			

Sample ID: **CCV2-191204**	Batch ID: **R107747**	TestNo: **E350.3**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **WC_191204A**	Analysis Date: **12/4/2019 3:05:00 PM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Soluble Ammonia-N (As N)	4.13	1.25	5.000	0	82.6	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *03-Jan-20*

CLIENT: Golder
Work Order: 1911260
Project: Copano APAR Soil

MQL SUMMARY REPORT

TestNo: SW6020B	MDL	MQL
Analyte	**mg/Kg**	**mg/Kg**
Aluminum	12.5	37.5
Antimony	0.500	1.00
Arsenic	0.500	1.00
Calcium	12.5	37.5
Chromium	0.500	2.00
Lead	0.100	0.300
Nickel	0.500	2.00
Sodium	12.5	37.5
Thallium	0.500	1.00
Vanadium	1.00	2.50

TestNo: SW9056A	MDL	MQL
Analyte	**mg/Kg**	**mg/Kg**
Sulfate	3.00	10.0

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.3**	**g/L @ pH 4.3**
Alkalinity, Total (As CaCO3)	50.0	50.0
Alkalinity, Total (As CaCO3)	50.0	50.0
Alkalinity, Total (As CaCO3)	50.0	50.0

TestNo: E350.3	MDL	MQL
Analyte	**mg/Kg**	**mg/Kg**
Soluble Ammonia-N (As N)	0.800	1.25

TestNo: SW7471B	MDL	MQL
Analyte	**mg/Kg**	**mg/Kg**
Mercury	0.0160	0.0400

TestNo: SW6020B	MDL	MQL
Analyte	**mg/Kg**	**mg/Kg**
Uranium, Total	1.00	2.50

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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December 16, 2019

John Dupont
DHL Analytical
2300 Double Creek Drive
Round Rock, TX 78664

Work Order: **HS19120103**

Laboratory Results for: **1911260**

Dear John,

ALS Environmental received 56 sample(s) on Dec 03, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: JUMOKE.LAWAL
Dane J. Wacasey

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Work Order: HS19120103

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19120103-01	BGSB-1	Soil		26-Nov-2019 09:28	03-Dec-2019 11:15	
HS19120103-02	BGSB-2	Soil		26-Nov-2019 09:37	03-Dec-2019 11:15	
HS19120103-03	BGSB-3	Soil		26-Nov-2019 09:45	03-Dec-2019 11:15	
HS19120103-04	BGSB-4	Soil		26-Nov-2019 09:57	03-Dec-2019 11:15	
HS19120103-05	BGSB-5	Soil		26-Nov-2019 10:07	03-Dec-2019 11:15	
HS19120103-06	BGSB-6	Soil		26-Nov-2019 10:13	03-Dec-2019 11:15	
HS19120103-07	BGSB-7	Soil		26-Nov-2019 10:21	03-Dec-2019 11:15	
HS19120103-08	BGSB-8	Soil		26-Nov-2019 10:33	03-Dec-2019 11:15	
HS19120103-09	BGSB-9	Soil		26-Nov-2019 10:39	03-Dec-2019 11:15	
HS19120103-10	BGSB-10	Soil		26-Nov-2019 10:46	03-Dec-2019 11:15	
HS19120103-11	SB-1	Soil		25-Nov-2019 09:15	03-Dec-2019 11:15	
HS19120103-12	SB-11	Soil		25-Nov-2019 12:16	03-Dec-2019 11:15	
HS19120103-13	SB-14	Soil		25-Nov-2019 15:27	03-Dec-2019 11:15	
HS19120103-14	SB-16	Soil		25-Nov-2019 16:13	03-Dec-2019 11:15	
HS19120103-15	SB-21	Soil		25-Nov-2019 16:16	03-Dec-2019 11:15	
HS19120103-16	SB-26	Soil		25-Nov-2019 14:46	03-Dec-2019 11:15	
HS19120103-17	SB-30	Soil		25-Nov-2019 13:50	03-Dec-2019 11:15	
HS19120103-18	SB-33	Soil		25-Nov-2019 12:52	03-Dec-2019 11:15	
HS19120103-19	SB-37	Soil		25-Nov-2019 11:22	03-Dec-2019 11:15	
HS19120103-20	SB-40	Soil		25-Nov-2019 10:42	03-Dec-2019 11:15	
HS19120103-21	SB-41	Soil		25-Nov-2019 10:23	03-Dec-2019 11:15	
HS19120103-22	SB-44	Soil		25-Nov-2019 09:13	03-Dec-2019 11:15	
HS19120103-23	SB-43	Soil		25-Nov-2019 09:37	03-Dec-2019 11:15	
HS19120103-24	SB-42	Soil		25-Nov-2019 09:57	03-Dec-2019 11:15	
HS19120103-25	SB-39	Soil		25-Nov-2019 10:54	03-Dec-2019 11:15	
HS19120103-26	SB-38	Soil		25-Nov-2019 11:08	03-Dec-2019 11:15	

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Work Order: HS19120103

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19120103-27	SB-36	Soil		25-Nov-2019 11:43	03-Dec-2019 11:15	☐
HS19120103-28	SB-35	Soil		25-Nov-2019 11:58	03-Dec-2019 11:15	☐
HS19120103-29	SB-34	Soil		25-Nov-2019 12:30	03-Dec-2019 11:15	☐
HS19120103-30	SB-32	Soil		25-Nov-2019 13:08	03-Dec-2019 11:15	☐
HS19120103-31	SB-31	Soil		25-Nov-2019 01:31	03-Dec-2019 11:15	☐
HS19120103-32	SB-29	Soil		25-Nov-2019 14:01	03-Dec-2019 11:15	☐
HS19120103-33	SB-28	Soil		25-Nov-2019 14:15	03-Dec-2019 11:15	☐
HS19120103-34	SB-27	Soil		25-Nov-2019 14:26	03-Dec-2019 11:15	☐
HS19120103-35	SB-25	Soil		25-Nov-2019 15:00	03-Dec-2019 11:15	☐
HS19120103-36	SB-24	Soil		25-Nov-2019 15:12	03-Dec-2019 11:15	☐
HS19120103-37	SB-23	Soil		25-Nov-2019 15:24	03-Dec-2019 11:15	☐
HS19120103-38	SB-22	Soil		25-Nov-2019 16:04	03-Dec-2019 11:15	☐
HS19120103-39	SB-20	Soil		25-Nov-2019 16:31	03-Dec-2019 11:15	☐
HS19120103-40	SB-19	Soil		25-Nov-2019 16:44	03-Dec-2019 11:15	☐
HS19120103-41	SB-2	Soil		25-Nov-2019 09:37	03-Dec-2019 11:15	☐
HS19120103-42	SB-3	Soil		25-Nov-2019 09:53	03-Dec-2019 11:15	☐
HS19120103-43	SB-4	Soil		25-Nov-2019 10:06	03-Dec-2019 11:15	☐
HS19120103-44	SB-5	Soil		25-Nov-2019 10:20	03-Dec-2019 11:15	☐
HS19120103-45	SB-6	Soil		25-Nov-2019 10:38	03-Dec-2019 11:15	☐
HS19120103-46	SB-7	Soil		25-Nov-2019 10:52	03-Dec-2019 11:15	☐
HS19120103-47	SB-8	Soil		25-Nov-2019 11:15	03-Dec-2019 11:15	☐
HS19120103-48	SB-9	Soil		25-Nov-2019 11:29	03-Dec-2019 11:15	☐
HS19120103-49	SB-10	Soil		25-Nov-2019 11:44	03-Dec-2019 11:15	☐
HS19120103-50	SB-12	Soil		25-Nov-2019 12:34	03-Dec-2019 11:15	☐
HS19120103-51	SB-13	Soil		25-Nov-2019 13:00	03-Dec-2019 11:15	☐
HS19120103-52	SB-15	Soil		25-Nov-2019 16:02	03-Dec-2019 11:15	☐
HS19120103-53	SB-17	Soil		25-Nov-2019 16:27	03-Dec-2019 11:15	☐

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Work Order: HS19120103

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19120103-54	SB-18	Soil		25-Nov-2019 16:45	03-Dec-2019 11:15	☐
HS19120103-55	SB-101	Soil		25-Nov-2019 10:00	03-Dec-2019 11:15	☐
HS19120103-56	SB-102	Soil		25-Nov-2019 11:00	03-Dec-2019 11:15	☐

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Work Order: HS19120103

CASE NARRATIVE

WetChemistry by Method WALKLEY-BLACK

Batch ID: R352636

Sample ID: HS19120650-01DUP

- DUP is for an unrelated sample (Fractional Organic Carbon)

Batch ID: R352295,R352434,R352559

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: BGSB-1
Collection Date: 26-Nov-2019 09:28

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-01
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0110**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: BGSB-2
Collection Date: 26-Nov-2019 09:37

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-02
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0124**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: BGSB-3
Collection Date: 26-Nov-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-03
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00836**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: BGSB-4
Collection Date: 26-Nov-2019 09:57

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-04
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00870**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: BGSB-5
Collection Date: 26-Nov-2019 10:07

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-05
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00735**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: BGSB-6
Collection Date: 26-Nov-2019 10:13

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-06
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0102**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: BGSB-7
Collection Date: 26-Nov-2019 10:21

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-07
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00783**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: BGSB-8
Collection Date: 26-Nov-2019 10:33

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-08
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00642**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: BGSB-9
Collection Date: 26-Nov-2019 10:39

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-09
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00770**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: BGSB-10
Collection Date: 26-Nov-2019 10:46

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-10
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00588**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-1
Collection Date: 25-Nov-2019 09:15

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-11
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00680**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-11
Collection Date: 25-Nov-2019 12:16

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-12
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00908**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-14
Collection Date: 25-Nov-2019 15:27

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-13
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00394**		**0.000200**	**0.000200**	**g-C/g-soil**	1	11-Dec-2019 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-16
Collection Date: 25-Nov-2019 16:13

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-14
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00845**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-21
Collection Date: 25-Nov-2019 16:16

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-15
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00450**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-26
Collection Date: 25-Nov-2019 14:46

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-16
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00994**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-30
Collection Date: 25-Nov-2019 13:50

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-17
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.0112**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-33
Collection Date: 25-Nov-2019 12:52

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-18
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00674**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-37
Collection Date: 25-Nov-2019 11:22

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-19
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.0101**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-40
Collection Date: 25-Nov-2019 10:42

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-20
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00667**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-41
Collection Date: 25-Nov-2019 10:23

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-21
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00109**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-44
Collection Date: 25-Nov-2019 09:13

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-22
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00646**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-43
Collection Date: 25-Nov-2019 09:37

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-23
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00662**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-42
Collection Date: 25-Nov-2019 09:57

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-24
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00408**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-39
Collection Date: 25-Nov-2019 10:54

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-25
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00686**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-38
Collection Date: 25-Nov-2019 11:08

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-26
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00528**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-36
Collection Date: 25-Nov-2019 11:43

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-27
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00647**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-35
Collection Date: 25-Nov-2019 11:58

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-28
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.0147**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-34
Collection Date: 25-Nov-2019 12:30

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-29
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00887**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-32
Collection Date: 25-Nov-2019 13:08

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-30
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00612**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-31
Collection Date: 25-Nov-2019 01:31

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-31
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00698**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-29
Collection Date: 25-Nov-2019 14:01

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-32
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00938**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-28
Collection Date: 25-Nov-2019 14:15

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-33
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: MWG
Fractional Organic Carbon	**0.00874**		**0.000200**	**0.000200**	**g-C/g-soil**	1	12-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-27
Collection Date: 25-Nov-2019 14:26

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-34
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0115**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-25
Collection Date: 25-Nov-2019 15:00

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-35
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00804**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-24
Collection Date: 25-Nov-2019 15:12

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-36
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00549**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-23
Collection Date: 25-Nov-2019 15:24

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-37
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0120**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-22
Collection Date: 25-Nov-2019 16:04

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-38
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0129**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-20
Collection Date: 25-Nov-2019 16:31

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-39
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00938**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-19
Collection Date: 25-Nov-2019 16:44

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-40
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00790**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-2
Collection Date: 25-Nov-2019 09:37

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-41
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0156**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-3
Collection Date: 25-Nov-2019 09:53

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-42
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00400**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-4
Collection Date: 25-Nov-2019 10:06

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-43
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00904**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-5
Collection Date: 25-Nov-2019 10:20

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-44
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0100**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-6
Collection Date: 25-Nov-2019 10:38

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-45
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0114**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-7
Collection Date: 25-Nov-2019 10:52

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-46
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00609**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-8
Collection Date: 25-Nov-2019 11:15

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-47
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0110**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-9
Collection Date: 25-Nov-2019 11:29

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-48
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00677**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-10
Collection Date: 25-Nov-2019 11:44

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-49
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0111**		**0.000200**	**0.000200**	**g-C/g-soil**	1	16-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-12
Collection Date: 25-Nov-2019 12:34

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-50
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0105**		**0.000200**	**0.000200**	**g-C/g-soil**	1	16-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-13
Collection Date: 25-Nov-2019 13:00

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-51
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00650**		**0.000200**	**0.000200**	**g-C/g-soil**	1	16-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-15
Collection Date: 25-Nov-2019 16:02

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-52
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.0104**		**0.000200**	**0.000200**	**g-C/g-soil**	1	16-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-17
Collection Date: 25-Nov-2019 16:27

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-53
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00876**		**0.000200**	**0.000200**	**g-C/g-soil**	1	13-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-18
Collection Date: 25-Nov-2019 16:45

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-54
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00699**		**0.000200**	**0.000200**	**g-C/g-soil**	1	16-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-101
Collection Date: 25-Nov-2019 10:00

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-55
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00574**		**0.000200**	**0.000200**	**g-C/g-soil**	1	16-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
Sample ID: SB-102
Collection Date: 25-Nov-2019 11:00

ANALYTICAL REPORT
WorkOrder:HS19120103
Lab ID:HS19120103-56
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
FRACTIONAL ORGANIC CARBON BY WB Method:WALKLEY-BLACK							Analyst: KMU
Fractional Organic Carbon	**0.00726**		**0.000200**	**0.000200**	**g-C/g-soil**	1	16-Dec-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
WorkOrder: HS19120103

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R352295 (0)	**Test Name :** FRACTIONAL ORGANIC CARBON BY WB				**Matrix:** Soil	
HS19120103-01	BGSB-1	26 Nov 2019 09:28			11 Dec 2019 14:00	1
HS19120103-02	BGSB-2	26 Nov 2019 09:37			11 Dec 2019 14:00	1
HS19120103-03	BGSB-3	26 Nov 2019 09:45			11 Dec 2019 14:00	1
HS19120103-04	BGSB-4	26 Nov 2019 09:57			11 Dec 2019 14:00	1
HS19120103-05	BGSB-5	26 Nov 2019 10:07			11 Dec 2019 14:00	1
HS19120103-06	BGSB-6	26 Nov 2019 10:13			11 Dec 2019 14:00	1
HS19120103-07	BGSB-7	26 Nov 2019 10:21			11 Dec 2019 14:00	1
HS19120103-08	BGSB-8	26 Nov 2019 10:33			11 Dec 2019 14:00	1
HS19120103-09	BGSB-9	26 Nov 2019 10:39			11 Dec 2019 14:00	1
HS19120103-10	BGSB-10	26 Nov 2019 10:46			11 Dec 2019 14:00	1
HS19120103-11	SB-1	25 Nov 2019 09:15			11 Dec 2019 14:00	1
HS19120103-12	SB-11	25 Nov 2019 12:16			11 Dec 2019 14:00	1
HS19120103-13	SB-14	25 Nov 2019 15:27			11 Dec 2019 14:00	1
Batch ID: R352434 (0)	**Test Name :** FRACTIONAL ORGANIC CARBON BY WB				**Matrix:** Soil	
HS19120103-14	SB-16	25 Nov 2019 16:13			12 Dec 2019 12:00	1
HS19120103-15	SB-21	25 Nov 2019 16:16			12 Dec 2019 12:00	1
HS19120103-16	SB-26	25 Nov 2019 14:46			12 Dec 2019 12:00	1
HS19120103-17	SB-30	25 Nov 2019 13:50			12 Dec 2019 12:00	1
HS19120103-18	SB-33	25 Nov 2019 12:52			12 Dec 2019 12:00	1
HS19120103-19	SB-37	25 Nov 2019 11:22			12 Dec 2019 12:00	1
HS19120103-20	SB-40	25 Nov 2019 10:42			12 Dec 2019 12:00	1
HS19120103-21	SB-41	25 Nov 2019 10:23			12 Dec 2019 12:00	1
HS19120103-22	SB-44	25 Nov 2019 09:13			12 Dec 2019 12:00	1
HS19120103-23	SB-43	25 Nov 2019 09:37			12 Dec 2019 12:00	1
HS19120103-24	SB-42	25 Nov 2019 09:57			12 Dec 2019 12:00	1
HS19120103-25	SB-39	25 Nov 2019 10:54			12 Dec 2019 12:00	1
HS19120103-26	SB-38	25 Nov 2019 11:08			12 Dec 2019 12:00	1
HS19120103-27	SB-36	25 Nov 2019 11:43			12 Dec 2019 12:00	1
HS19120103-28	SB-35	25 Nov 2019 11:58			12 Dec 2019 12:00	1
HS19120103-29	SB-34	25 Nov 2019 12:30			12 Dec 2019 12:00	1
HS19120103-30	SB-32	25 Nov 2019 13:08			12 Dec 2019 12:00	1
HS19120103-31	SB-31	25 Nov 2019 01:31			12 Dec 2019 12:00	1
HS19120103-32	SB-29	25 Nov 2019 14:01			12 Dec 2019 12:00	1
HS19120103-33	SB-28	25 Nov 2019 14:15			12 Dec 2019 12:00	1

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
WorkOrder: HS19120103

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R352559 (0)	**Test Name :** FRACTIONAL ORGANIC CARBON BY WB				**Matrix:** Soil	
HS19120103-34	SB-27	25 Nov 2019 14:26			13 Dec 2019 12:00	1
HS19120103-35	SB-25	25 Nov 2019 15:00			13 Dec 2019 12:00	1
HS19120103-36	SB-24	25 Nov 2019 15:12			13 Dec 2019 12:00	1
HS19120103-37	SB-23	25 Nov 2019 15:24			13 Dec 2019 12:00	1
HS19120103-38	SB-22	25 Nov 2019 16:04			13 Dec 2019 12:00	1
HS19120103-39	SB-20	25 Nov 2019 16:31			13 Dec 2019 12:00	1
HS19120103-40	SB-19	25 Nov 2019 16:44			13 Dec 2019 12:00	1
HS19120103-41	SB-2	25 Nov 2019 09:37			13 Dec 2019 12:00	1
HS19120103-42	SB-3	25 Nov 2019 09:53			13 Dec 2019 12:00	1
HS19120103-43	SB-4	25 Nov 2019 10:06			13 Dec 2019 12:00	1
HS19120103-44	SB-5	25 Nov 2019 10:20			13 Dec 2019 12:00	1
HS19120103-45	SB-6	25 Nov 2019 10:38			13 Dec 2019 12:00	1
HS19120103-46	SB-7	25 Nov 2019 10:52			13 Dec 2019 12:00	1
HS19120103-47	SB-8	25 Nov 2019 11:15			13 Dec 2019 12:00	1
HS19120103-48	SB-9	25 Nov 2019 11:29			13 Dec 2019 12:00	1
HS19120103-53	SB-17	25 Nov 2019 16:27			13 Dec 2019 12:00	1
Batch ID: R352636 (0)	**Test Name :** FRACTIONAL ORGANIC CARBON BY WB				**Matrix:** Soil	
HS19120103-49	SB-10	25 Nov 2019 11:44			16 Dec 2019 12:00	1
HS19120103-50	SB-12	25 Nov 2019 12:34			16 Dec 2019 12:00	1
HS19120103-51	SB-13	25 Nov 2019 13:00			16 Dec 2019 12:00	1
HS19120103-52	SB-15	25 Nov 2019 16:02			16 Dec 2019 12:00	1
HS19120103-54	SB-18	25 Nov 2019 16:45			16 Dec 2019 12:00	1
HS19120103-55	SB-101	25 Nov 2019 10:00			16 Dec 2019 12:00	1
HS19120103-56	SB-102	25 Nov 2019 11:00			16 Dec 2019 12:00	1

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
WorkOrder: HS19120103

QC BATCH REPORT

Batch ID: R352295 (0) **Instrument: WetChem_HS** **Method: FRACTIONAL ORGANIC CARBON BY WB**

MBLK Sample ID: **MBLK-R352295** Units: **g-C/g-soil** Analysis Date: **11-Dec-2019 14:00**
Client ID: Run ID: **WetChem_HS_352295** SeqNo: **5384989** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	U	0.000200								

LCS Sample ID: **LCS-R352295** Units: **g-C/g-soil** Analysis Date: **11-Dec-2019 14:00**
Client ID: Run ID: **WetChem_HS_352295** SeqNo: **5384988** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.009128	0.000200	0.01	0	91.3	60 - 110				

LCSD Sample ID: **LCSD-R352295** Units: **g-C/g-soil** Analysis Date: **11-Dec-2019 14:00**
Client ID: Run ID: **WetChem_HS_352295** SeqNo: **5384987** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.009599	0.000200	0.01	0	96.0	60 - 110	0.009128	5.03	20	

MS Sample ID: **HS19120097-12MS** Units: **g-C/g-soil** Analysis Date: **11-Dec-2019 14:00**
Client ID: Run ID: **WetChem_HS_352295** SeqNo: **5384990** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.01081	0.000200	0.0132	0.000124	80.9	60 - 110				

DUP Sample ID: **HS19120097-12DUP** Units: **g-C/g-soil** Analysis Date: **11-Dec-2019 14:00**
Client ID: Run ID: **WetChem_HS_352295** SeqNo: **5384991** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	U	0.000200					0.000124	0	20	

The following samples were analyzed in this batch:

HS19120103-01	HS19120103-02	HS19120103-03	HS19120103-04
HS19120103-05	HS19120103-06	HS19120103-07	HS19120103-08
HS19120103-09	HS19120103-10	HS19120103-11	HS19120103-12
HS19120103-13			

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
WorkOrder: HS19120103

QC BATCH REPORT

Batch ID: R352434 (0) **Instrument: WetChem_HS** **Method: FRACTIONAL ORGANIC CARBON BY WB**

MBLK Sample ID: **MBLK-R352434** Units: **g-C/g-soil** Analysis Date: **12-Dec-2019 12:00**
Client ID: Run ID: **WetChem_HS_352434** SeqNo: **5388606** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	U	0.000200								

LCS Sample ID: **LCS-R352434** Units: **g-C/g-soil** Analysis Date: **12-Dec-2019 12:00**
Client ID: Run ID: **WetChem_HS_352434** SeqNo: **5388605** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.008536	0.000200	0.01	0	85.4	60 - 110				

LCSD Sample ID: **LCSD-R352434** Units: **g-C/g-soil** Analysis Date: **12-Dec-2019 12:00**
Client ID: Run ID: **WetChem_HS_352434** SeqNo: **5388604** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.008437	0.000200	0.01	0	84.4	60 - 110	0.008536	1.17	20	

MS Sample ID: **HS19120103-14MS** Units: **g-C/g-soil** Analysis Date: **12-Dec-2019 12:00**
Client ID: **SB-16** Run ID: **WetChem_HS_352434** SeqNo: **5388607** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.02179	0.000200	0.0198	0.008447	67.4	60 - 110				

DUP Sample ID: **HS19120103-14DUP** Units: **g-C/g-soil** Analysis Date: **12-Dec-2019 12:00**
Client ID: **SB-16** Run ID: **WetChem_HS_352434** SeqNo: **5388608** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.008249	0.000200					0.008447	2.37	20	

The following samples were analyzed in this batch:

HS19120103-14	HS19120103-15	HS19120103-16	HS19120103-17
HS19120103-18	HS19120103-19	HS19120103-20	HS19120103-21
HS19120103-22	HS19120103-23	HS19120103-24	HS19120103-25
HS19120103-26	HS19120103-27	HS19120103-28	HS19120103-29
HS19120103-30	HS19120103-31	HS19120103-32	HS19120103-33

RIGHT SOLUTION | RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
WorkOrder: HS19120103

QC BATCH REPORT

Batch ID: R352559 (0) **Instrument: WetChem_HS** **Method: FRACTIONAL ORGANIC CARBON BY WB**

MBLK Sample ID: **MBLK-R352559** Units: **g-C/g-soil** Analysis Date: **13-Dec-2019 12:00**
Client ID: Run ID: **WetChem_HS_352559** SeqNo: **5391620** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	U	0.000200								

LCS Sample ID: **LCS-R352559** Units: **g-C/g-soil** Analysis Date: **13-Dec-2019 12:00**
Client ID: Run ID: **WetChem_HS_352559** SeqNo: **5391619** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.009481	0.000200	0.01	0	94.8	60 - 110				

LCSD Sample ID: **LCSD-R352559** Units: **g-C/g-soil** Analysis Date: **13-Dec-2019 12:00**
Client ID: Run ID: **WetChem_HS_352559** SeqNo: **5391618** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.009185	0.000200	0.01	0	91.8	60 - 110	0.009481	3.17	20	

MS Sample ID: **HS19120103-34MS** Units: **g-C/g-soil** Analysis Date: **13-Dec-2019 12:00**
Client ID: **SB-27** Run ID: **WetChem_HS_352559** SeqNo: **5391621** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.02493	0.000200	0.0191	0.01154	70.1	60 - 110				

DUP Sample ID: **HS19120103-34DUP** Units: **g-C/g-soil** Analysis Date: **13-Dec-2019 12:00**
Client ID: **SB-27** Run ID: **WetChem_HS_352559** SeqNo: **5391622** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.01119	0.000200					0.01154	3.1	20	

The following samples were analyzed in this batch:

HS19120103-34	HS19120103-35	HS19120103-36	HS19120103-37
HS19120103-38	HS19120103-39	HS19120103-40	HS19120103-41
HS19120103-42	HS19120103-43	HS19120103-44	HS19120103-45
HS19120103-46	HS19120103-47	HS19120103-48	HS19120103-53

RIGHT SOLUTION RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
WorkOrder: HS19120103

QC BATCH REPORT

Batch ID: R352636 (0) **Instrument: WetChem_HS** **Method: FRACTIONAL ORGANIC CARBON BY WB**

MBLK Sample ID: **MBLK-R352636** Units: **g-C/g-soil** Analysis Date: **16-Dec-2019 12:00**
Client ID: Run ID: **WetChem_HS_352636** SeqNo: **5393099** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	U	0.000200								

LCS Sample ID: **LCS-R352636** Units: **g-C/g-soil** Analysis Date: **16-Dec-2019 12:00**
Client ID: Run ID: **WetChem_HS_352636** SeqNo: **5393098** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.009877	0.000200	0.01	0	98.8	60 - 110				

LCSD Sample ID: **LCSD-R352636** Units: **g-C/g-soil** Analysis Date: **16-Dec-2019 12:00**
Client ID: Run ID: **WetChem_HS_352636** SeqNo: **5393097** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.009584	0.000200	0.01	0	95.8	60 - 110	0.009877	3.01	20	

MS Sample ID: **HS19120650-01MS** Units: **g-C/g-soil** Analysis Date: **16-Dec-2019 12:00**
Client ID: Run ID: **WetChem_HS_352636** SeqNo: **5393100** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.01281	0.000200	0.0132	0.00065	92.2	60 - 110				

DUP Sample ID: **HS19120650-01DUP** Units: **g-C/g-soil** Analysis Date: **16-Dec-2019 12:00**
Client ID: Run ID: **WetChem_HS_352636** SeqNo: **5393101** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fractional Organic Carbon	0.000909	0.000200					0.00065	33.2	20	R

The following samples were analyzed in this batch: HS19120103-49 HS19120103-50 HS19120103-51 HS19120103-52 HS19120103-54 HS19120103-55 HS19120103-56

RIGHT SOLUTIONS RIGHT PARTNER

Client: DHL Analytical
Project: 1911260
WorkOrder: **HS19120103**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
g-C/g-soil	

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

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Sample Receipt Checklist

Client Name: DHL
Work Order: HS19120103

Date/Time Received: **03-Dec-2019 11:15**
Received by: **NDD**

Checklist completed by: *Paresh M. Giga* eSignature — 3-Dec-2019 Date

Reviewed by: *Andy C. Neir* eSignature — 4-Dec-2019 Date

Matrices: **Soil**

Carrier name: **UPS**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	4 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:none
Samplers name present on COC?	Yes ☐	No ☑	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.7c U/C	IR11	
Cooler(s)/Kit(s):	White		
Date/Time sample(s) sent to storage:	12/3/19 19:45		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

RIGHT SOLUTION RIGHT PARTNER

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1911260

HS19120103
DHL Analytical
FOC

Subcontractor:

ALS Laboratory Group
P.O. Box 975444
Houston, Texas 77099

TEL: (281) 530-5656
FAX: (281) 530-5887
Acct #:

19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	FOC Walkley-Black	Requested Tests				
BGSB-1	Soil	-01B	11/26/19 09:28 AM	2OZGLJAR	1					
BSBG-2	Soil	-02B	11/26/19 09:37 AM	2OZGLJAR	1					
BSBG-3	Soil	-03B	11/26/19 09:45 AM	2OZGLJAR	1					
BSBG-4	Soil	-04B	11/26/19 09:57 AM	2OZGLJAR	1					
BSBG-5	Soil	-05B	11/26/19 10:07 AM	2OZGLJAR	1					
BSBG-6	Soil	-06B	11/26/19 10:13 AM	2OZGLJAR	1					
BSBG-7	Soil	-07B	11/26/19 10:21 AM	2OZGLJAR	1					
BSBG-8	Soil	-08B	11/26/19 10:33 AM	2OZGLJAR	1					
BSBG-9	Soil	-09B	11/26/19 10:39 AM	2OZGLJAR	1					
BSBG-10	Soil	-10B	11/26/19 10:46 AM	8OZGLJAR	1					
SB-1	Soil	-11B	11/25/19 09:15 AM	2OZGLJAR	1					
SB-11	Soil	-12B	11/25/19 12:16 PM	2OZGLJAR	1					
SB-14	Soil	-13B	11/25/19 03:27 PM	2OZGLJAR	1					
SB-16	Soil	-14B	11/25/19 04:13 PM	2OZGLJAR	1					
SB-21	Soil	-15B	11/25/19 04:16 PM	2OZGLJAR	1					
SB-26	Soil	-16B	11/25/19 02:46 PM	2OZGLJAR	1					
SB-30	Soil	-17B	11/25/19 01:50 PM	2OZGLJAR	1					
SB-33	Soil	-18B	11/25/19 12:52 PM	2OZGLJAR	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Quality Control Package Needed: Standard - SEND PDF & Excel EDD Please
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com
Call John DuPont if you have questions.

HIC
0-7 IR11 white
clr-0 19100

UPS

	Date/Time		Date/Time
Relinquished by:	12/2/19 1700	**Received by:**	Dec/03 11:15
Relinquished by:		**Received by:**	

RIGHT SOLUTIONS | RIGHT PARTNER

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1911260

HS19120103
DHL Analytical
FOC

Subcontractor:
ALS Laboratory Group
P.O. Box 975444
Houston, Texas 77099
TEL: (281) 530-5656
FAX: (281) 530-5887
Acct #:

27-Nov-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	FOC Walkley-Black	Requested Tests			
SB-37	Soil	-19B	11/25/19 11:22 AM	2OZGLJAR	1				
SB-40	Soil	-20B	11/25/19 10:42 AM	2OZGLJAR	1				
SB-41	Soil	-21B	11/25/19 10:23 AM	2OZGLJAR	1				
SB-44	Soil	-22B	11/25/19 09:13 AM	2OZGLJAR	1				
SB-43	Soil	-23B	11/25/19 09:37 AM	2OZGLJAR	1				
SB-42	Soil	-24B	11/25/19 09:57 AM	2OZGLJAR	1				
SB-39	Soil	-25B	11/25/19 10:54 AM	2OZGLJAR	1				
SB-38	Soil	-26B	11/25/19 11:08 AM	2OZGLJAR	1				
SB-36	Soil	-27B	11/25/19 11:43 AM	2OZGLJAR	1				
SB-35	Soil	-28B	11/25/19 11:58 AM	2OZGLJAR	1				
SB-34	Soil	-29B	11/25/19 12:30 PM	2OZGLJAR	1				
SB-32	Soil	-30B	11/25/19 01:08 PM	2OZGLJAR	1				
SB-31	Soil	-31B	11/25/19 01:31 PM	2OZGLJAR	1				
SB-29	Soil	-32B	11/25/19 02:01 PM	2OZGLJAR	1				
SB-28	Soil	-33B	11/25/19 02:15 PM	2OZGLJAR	1				
SB-27	Soil	-34B	11/25/19 02:26 PM	2OZGLJAR	1				
SB-25	Soil	-35B	11/25/19 03:00 PM	2OZGLJAR	1				
SB-24	Soil	-36B	11/25/19 03:12 PM	2OZGLJAR	1				

General Comments:
Please analyze these samples with a Standard Turnaround Time.
Quality Control Package Needed: Standard - SEND PDF & Excel EDD Please
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com
Call John DuPont if you have questions.

u/c 0-7 IR 11 C/F-0 white 19100

		Date/Time			Date/Time
Relinquished by:	[signature]	12/2/19 1700	Received by:	UPS Nelson	Dec 03 11:15
Relinquished by:			Received by:		

RIGHT SOLUTIONS | RIGHT PARTNER

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1911260

HS19120103

DHL Analytical
FOC

Subcontractor:

ALS Laboratory Group
P.O. Box 975444
Houston, Texas 77099

TEL: (281) 530-5656
FAX: (281) 530-5887
Acct #:

21-Nov-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	FOC Requested Tests: Walkley-Black
SB-23	Soil	-37B	11/25/19 03:24 PM	2OZGLJAR	1
SB-22	Soil	-38B	11/25/19 04:04 PM	2OZGLJAR	1
SB-20	Soil	-39B	11/25/19 04:31 PM	2OZGLJAR	1
SB-19	Soil	-40B	11/25/19 04:44 PM	2OZGLJAR	1
SB-2	Soil	-41B	11/25/19 09:37 AM	2OZGLJAR	1
SB-3	Soil	-42B	11/25/19 09:53 AM	2OZGLJAR	1
SB-4	Soil	-43B	11/25/19 10:06 AM	2OZGLJAR	1
SB-5	Soil	-44B	11/25/19 10:20 AM	2OZGLJAR	1
SB-6	Soil	-45B	11/25/19 10:38 AM	2OZGLJAR	1
SB-7	Soil	-46B	11/25/19 10:52 AM	2OZGLJAR	1
SB-8	Soil	-47B	11/25/19 11:15 AM	2OZGLJAR	1
SB-9	Soil	-48B	11/25/19 11:29 AM	2OZGLJAR	1
SB-10	Soil	-49B	11/25/19 11:44 AM	2OZGLJAR	1
SB-12	Soil	-50B	11/25/19 12:34 PM	2OZGLJAR	1
SB-13	Soil	-51B	11/25/19 01:00 PM	2OZGLJAR	1
SB-15	Soil	-52B	11/25/19 04:02 PM	2OZGLJAR	1
SB-17	Soil	-53B	11/25/19 04:27 PM	2OZGLJAR	1
SB-18	Soil	-54B	11/25/19 04:45 PM	2OZGLJAR	1

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Quality Control Package Needed: Standard - SEND PDF & Excel EDD Please
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com
Call John DuPont if you have questions.

UIC
0.7 IR 11
C/F-0

	Date/Time		Date/Time
Relinquished by:	12/2/19 1700	**Received by:**	Nelson Dec 02 11:15
Relinquished by:		**Received by:**	

RIGHT SOLUTIONS | RIGHT PARTNER

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1911260

HS19120103

DHL Analytical
FOC

Subcontractor:

ALS Laboratory Group
P.O. Box 975444
Houston, Texas 77099

TEL: (281) 530-5656
FAX: (281) 530-5887
Acct #:

27-Nov-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	FOC Walkley-Black	Requested Tests				
SB-101	Soil	-55B	11/25/19 10:00 AM	8OZGLJAR	1					
SB-102	Soil	-56B	11/25/19 11:00 AM	8OZGLJAR	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Quality Control Package Needed: Standard - SEND PDF & Excel EDD Please
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com
Call John DuPont if you have questions.

VTC
0.7 IKE II white
1900
CLF-0

		Date/Time			Date/Time
Relinquished by:		12/2/19 1700	Received by:	UPS NElson	Dec/03 11:15
Relinquished by:			Received by:		

RIGHT SOLUTIONS | RIGHT PARTNER

CUSTODY SEAL

DATE 12/2/19

SIGNATURE

DHL ANALYTICAL

LOGIN
5123888222
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664

57 LBS

1 OF 1

SHIP TO:
SAMPLE RECEIVING
281 530 5656
ALS LABORATORY GROUP
10450 STANCLIFF RD.
HOUSTON TX 77099

TX 774 9-08

UPS GROUND
TRACKING #: 1Z 970 R40 03 2329 9673

BILLING: P/P

XOL 19.3E.10 8N45 20.0A 10/2019

FOR UPS SHIPPING ONLY

11/29/2019

Print Label

ups://speedship.wwex.com/pls/apex/f?p=77055:23:109111775621773:::23:P23_SHIP_I...

RIGHT SOLUTIONS | RIGHT PARTNER

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

January 09, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1166057
Samples Received:	12/02/2019
Project Number:	1911260
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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BSBG-8 L1166057-08 14
BSBG-9 L1166057-09 15
BSBG-10 L1166057-10 16
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BSBG-1 L1166057-01 Solids and Chemical Materials

Collected by | Collected date/time 11/26/19 09:28 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397472	1	12/03/19 10:51	12/30/19 15:12	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397472	1	12/03/19 10:51	12/30/19 15:12	DME	Mt. Juliet, TN

BSBG-2 L1166057-02 Solids and Chemical Materials

Collected by | Collected date/time 11/26/19 09:37 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397472	1	12/03/19 10:51	12/28/19 12:01	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397472	1	12/03/19 10:51	12/28/19 12:01	DME	Mt. Juliet, TN

BSBG-3 L1166057-03 Solids and Chemical Materials

Collected by | Collected date/time 11/26/19 09:45 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397472	1	12/03/19 10:51	12/28/19 12:01	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397472	1	12/03/19 10:51	12/28/19 12:01	DME	Mt. Juliet, TN

BSBG-4 L1166057-04 Solids and Chemical Materials

Collected by | Collected date/time 11/26/19 09:57 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397472	1	12/03/19 10:51	12/28/19 12:01	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397472	1	12/03/19 10:51	12/28/19 12:01	DME	Mt. Juliet, TN

BSBG-5 L1166057-05 Solids and Chemical Materials

Collected by | Collected date/time 11/26/19 10:07 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397472	1	12/03/19 10:51	12/28/19 12:02	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397472	1	12/03/19 10:51	12/28/19 12:02	DME	Mt. Juliet, TN

BSBG-6 L1166057-06 Solids and Chemical Materials

Collected by | Collected date/time 11/26/19 10:13 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397472	1	12/03/19 10:51	12/28/19 12:02	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397472	1	12/03/19 10:51	12/28/19 12:02	DME	Mt. Juliet, TN

BSBG-7 L1166057-07 Solids and Chemical Materials

Collected by | Collected date/time 11/26/19 10:21 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397472	1	12/03/19 10:51	12/28/19 12:03	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397472	1	12/03/19 10:51	12/28/19 12:03	DME	Mt. Juliet, TN

BSBG-8 L1166057-08 Solids and Chemical Materials

Collected by | Collected date/time 11/26/19 10:33 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397472	1	12/03/19 10:51	12/28/19 12:03	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397472	1	12/03/19 10:51	12/28/19 12:03	DME	Mt. Juliet, TN

BSBG-9 L1166057-09 Solids and Chemical Materials

Collected by | Collected date/time 11/26/19 10:39 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/27/19 17:12	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/27/19 17:12	DME	Mt. Juliet, TN

BSBG-10 L1166057-10 Solids and Chemical Materials

Collected by | Collected date/time 11/26/19 10:46 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/27/19 17:22	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/27/19 17:22	DME	Mt. Juliet, TN

SB-1 L1166057-11 Solids and Chemical Materials

Collected by | Collected date/time 11/25/19 09:15 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/28/19 13:04	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/28/19 13:04	DME	Mt. Juliet, TN

SB-11 L1166057-12 Solids and Chemical Materials

Collected by | Collected date/time 11/25/19 12:16 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/28/19 13:08	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/28/19 13:08	DME	Mt. Juliet, TN

SB-14 L1166057-13 Solids and Chemical Materials

Collected by | Collected date/time 11/25/19 15:27 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/28/19 13:09	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/28/19 13:09	DME	Mt. Juliet, TN

SB-16 L1166057-14 Solids and Chemical Materials

Collected by | Collected date/time 11/25/19 16:13 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/28/19 13:10	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/28/19 13:10	DME	Mt. Juliet, TN

SB-21 L1166057-15 Solids and Chemical Materials

Collected by | Collected date/time 11/25/19 16:16 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/27/19 15:21	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/27/19 15:21	DME	Mt. Juliet, TN

SB-26 L1166057-16 Solids and Chemical Materials

Collected by | Collected date/time 11/25/19 14:46 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/28/19 13:32	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/28/19 13:32	DME	Mt. Juliet, TN

SB-30 L1166057-17 Solids and Chemical Materials

Collected by | Collected date/time 11/25/19 13:50 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/28/19 14:06	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/28/19 14:06	DME	Mt. Juliet, TN

SB-33 L1166057-18 Solids and Chemical Materials

Collected by | Collected date/time 11/25/19 12:52 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/28/19 14:14	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/28/19 14:14	DME	Mt. Juliet, TN

SB-37 L1166057-19 Solids and Chemical Materials

Collected by | Collected date/time 11/25/19 11:22 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/28/19 14:15	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/28/19 14:15	DME	Mt. Juliet, TN

SB-40 L1166057-20 Solids and Chemical Materials

Collected by | Collected date/time 11/25/19 10:42 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/28/19 14:16	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/28/19 14:16	DME	Mt. Juliet, TN

SB-41 L1166057-21 Solids and Chemical Materials

Collected by | Collected date/time 11/25/19 10:23 | Received date/time 12/02/19 12:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1397479	1	12/03/19 10:51	12/28/19 14:37	DME	Mt. Juliet, TN
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1397479	1	12/03/19 10:51	12/28/19 14:37	DME	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Report Revision History

Version 1: 12/31/19 10:06

Project Narrative

Corrected combined calculation error on -05.

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.54		0.351	0.427	12/30/2019 15:12	WG1397472

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.782		0.201	0.265	12/30/2019 15:12	WG1397472
Bismuth-214 (Ra-226)	0.761		0.150	0.162	12/30/2019 15:12	WG1397472

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.47		0.445	0.632	12/28/2019 12:01	WG1397472

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.624		0.256	0.419	12/28/2019 12:01	WG1397472
Bismuth-214 (Ra-226)	0.843		0.189	0.213	12/28/2019 12:01	WG1397472

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.72		0.302	0.317	12/28/2019 12:01	WG1397472

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.834		0.177	0.21	12/28/2019 12:01	WG1397472
Bismuth-214 (Ra-226)	0.884		0.125	0.107	12/28/2019 12:01	WG1397472

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.62		0.332	0.404	12/28/2019 12:01	WG1397472

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.762		0.195	0.277	12/28/2019 12:01	WG1397472
Bismuth-214 (Ra-226)	0.859		0.138	0.127	12/28/2019 12:01	WG1397472

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.70		0.463	0.592	12/28/2019 12:02	WG1397472

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.868		0.270	0.38	12/28/2019 12:02	WG1397472
Bismuth-214 (Ra-226)	0.837		0.192	0.212	12/28/2019 12:02	WG1397472

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.52		0.349	0.463	12/28/2019 12:02	WG1397472

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.786		0.210	0.3	12/28/2019 12:02	WG1397472
Bismuth-214 (Ra-226)	0.734		0.138	0.163	12/28/2019 12:02	WG1397472

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.25		0.440	0.659	12/28/2019 12:03	WG1397472

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.555		0.273	0.493	12/28/2019 12:03	WG1397472
Bismuth-214 (Ra-226)	0.696		0.167	0.166	12/28/2019 12:03	WG1397472

Radiochemistry by Method Calculation

Analyte	Result pCi/g	Qualifier	Uncertainty + / -	MDA pCi/g	Analysis Date date / time	Batch
Combined Radium	1.51		0.342	0.432	12/28/2019 12:03	WG1397472

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result pCi/g	Qualifier	Uncertainty + / -	MDA pCi/g	Analysis Date date / time	Batch
Actinium-228 (Ra-228)	0.652		0.204	0.315	12/28/2019 12:03	WG1397472
Bismuth-214 (Ra-226)	0.857		0.138	0.117	12/28/2019 12:03	WG1397472

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.73		0.396	0.425	12/27/2019 17:12	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.796		0.203	0.266	12/27/2019 17:12	WG1397479
Bismuth-214 (Ra-226)	0.931		0.192	0.159	12/27/2019 17:12	WG1397479

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.67		0.348	0.501	12/27/2019 17:22	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.891		0.196	0.302	12/27/2019 17:22	WG1397479
Bismuth-214 (Ra-226)	0.776		0.152	0.199	12/27/2019 17:22	WG1397479

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.45		0.339	0.447	12/28/2019 13:04	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.634		0.185	0.284	12/28/2019 13:04	WG1397479
Bismuth-214 (Ra-226)	0.820		0.155	0.163	12/28/2019 13:04	WG1397479

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.12		0.317	0.416	12/28/2019 13:08	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.450		0.165	0.276	12/28/2019 13:08	WG1397479
Bismuth-214 (Ra-226)	0.669		0.152	0.14	12/28/2019 13:08	WG1397479

Radiochemistry by Method Calculation

Analyte	Result pCi/g	Qualifier	Uncertainty + / -	MDA pCi/g	Analysis Date date / time	Batch
Combined Radium	2.36		0.506	0.565	12/28/2019 13:09	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result pCi/g	Qualifier	Uncertainty + / -	MDA pCi/g	Analysis Date date / time	Batch
Actinium-228 (Ra-228)	0.836		0.253	0.375	12/28/2019 13:09	WG1397479
Bismuth-214 (Ra-226)	1.52		0.253	0.19	12/28/2019 13:09	WG1397479

Radiochemistry by Method Calculation

Analyte	Result pCi/g	Qualifier	Uncertainty + / -	MDA pCi/g	Analysis Date date / time	Batch
Combined Radium	1.30		0.296	0.464	12/28/2019 13:10	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result pCi/g	Qualifier	Uncertainty + / -	MDA pCi/g	Analysis Date date / time	Batch
Actinium-228 (Ra-228)	0.735		0.170	0.286	12/28/2019 13:10	WG1397479
Bismuth-214 (Ra-226)	0.561		0.127	0.178	12/28/2019 13:10	WG1397479

Radiochemistry by Method Calculation

Analyte	Result pCi/g	Qualifier	Uncertainty + / -	MDA pCi/g	Analysis Date date / time	Batch
Combined Radium	0.698		0.252	0.428	12/27/2019 15:21	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result pCi/g	Qualifier	Uncertainty + / -	MDA pCi/g	Analysis Date date / time	Batch
Actinium-228 (Ra-228)	0.302		0.139	0.276	12/27/2019 15:21	WG1397479
Bismuth-214 (Ra-226)	0.395		0.113	0.152	12/27/2019 15:21	WG1397479

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.43		0.540	0.896	12/28/2019 13:32	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.569		0.310	0.615	12/28/2019 13:32	WG1397479
Bismuth-214 (Ra-226)	0.861		0.230	0.281	12/28/2019 13:32	WG1397479

Radiochemistry by Method Calculation

Analyte	Result pCi/g	Qualifier	Uncertainty + / -	MDA pCi/g	Analysis Date date / time	Batch
Combined Radium	1.66		0.363	0.5	12/28/2019 14:06	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result pCi/g	Qualifier	Uncertainty + / -	MDA pCi/g	Analysis Date date / time	Batch
Actinium-228 (Ra-228)	0.952		0.219	0.333	12/28/2019 14:06	WG1397479
Bismuth-214 (Ra-226)	0.708		0.144	0.167	12/28/2019 14:06	WG1397479

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.34		0.329	0.363	12/28/2019 14:14	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.637		0.172	0.221	12/28/2019 14:14	WG1397479
Bismuth-214 (Ra-226)	0.703		0.157	0.142	12/28/2019 14:14	WG1397479

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.55		0.403	0.493	12/28/2019 14:15	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.815		0.232	0.307	12/28/2019 14:15	WG1397479
Bismuth-214 (Ra-226)	0.736		0.171	0.186	12/28/2019 14:15	WG1397479

Radiochemistry by Method Calculation

Analyte	Result pCi/g	Qualifier	Uncertainty + / -	MDA pCi/g	Analysis Date date / time	Batch
Combined Radium	1.93		0.367	0.537	12/28/2019 14:16	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result pCi/g	Qualifier	Uncertainty + / -	MDA pCi/g	Analysis Date date / time	Batch
Actinium-228 (Ra-228)	1.09		0.212	0.332	12/28/2019 14:16	WG1397479
Bismuth-214 (Ra-226)	0.838		0.155	0.205	12/28/2019 14:16	WG1397479

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Combined Radium	1.06		0.447	0.745	12/28/2019 14:37	WG1397479

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.369		0.246	0.484	12/28/2019 14:37	WG1397479
Bismuth-214 (Ra-226)	0.695		0.201	0.261	12/28/2019 14:37	WG1397479

Method Blank (MB)

(MB) R3486995-3 12/27/19 17:04

Analyte	MB Result pCi/g	MB Qualifier	MB MDA pCi/g
Actinium-228 (Ra-228)	0.00402		0.346
Bismuth-214 (Ra-226)	0.0340		0.233

L1165619-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1165619-01 12/27/19 12:03 • (DUP) R3486995-4 12/27/19 17:05

Analyte	Original Result pCi/g	DUP Result pCi/g	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Actinium-228 (Ra-228)	1.23	0.938	1	27.1	0.637		20	3
Bismuth-214 (Ra-226)	0.958	1.30	1	30.6	1.06		20	3

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3486995-1 12/27/19 12:01 • (LCSD) R3486995-2 12/27/19 12:44

Analyte	Spike Amount pCi/g	LCS Result pCi/g	LCSD Result pCi/g	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Americium-241	160	150	144	93.6	89.6	80.0-120			4.36	20
Cesium-137	235	221	232	94.0	99.0	80.0-120			5.21	20
Cobalt-60	292	288	293	98.5	100	80.0-120			1.89	20

Method Blank (MB)

(MB) R3486785-2 12/27/19 16:33

Analyte	MB Result pCi/g	MB Qualifier	MB MDA pCi/g
Actinium-228 (Ra-228)	-0.0597		0.405
Bismuth-214 (Ra-226)	0.0743		0.251

L1165838-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1165838-01 12/27/19 14:59 • (DUP) R3486785-3 12/28/19 12:02

Analyte	Original Result pCi/g	DUP Result pCi/g	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Americium-241	0.0828	0.00827	1	164	0.215		20	3
Bismuth-214 (Ra-226)	2.85	2.39	1	17.6	0.658		20	3
Cesium-137	0.00850	0.0422	1	133	0.250		20	3
Cobalt-60	0.0332	0.00895	1	115	0.270		20	3

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3486785-1 12/27/19 16:13 • (LCSD) R3486785-4 12/28/19 14:05

Analyte	Spike Amount pCi/g	LCS Result pCi/g	LCSD Result pCi/g	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Americium-241	47.3	46.2	45.0	97.6	95.2	80.0-120			2.46	20
Cesium-137	72.4	82.7	80.4	114	111	80.0-120			2.86	20
Cobalt-60	86.9	90.3	86.3	104	99.3	80.0-120			4.50	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

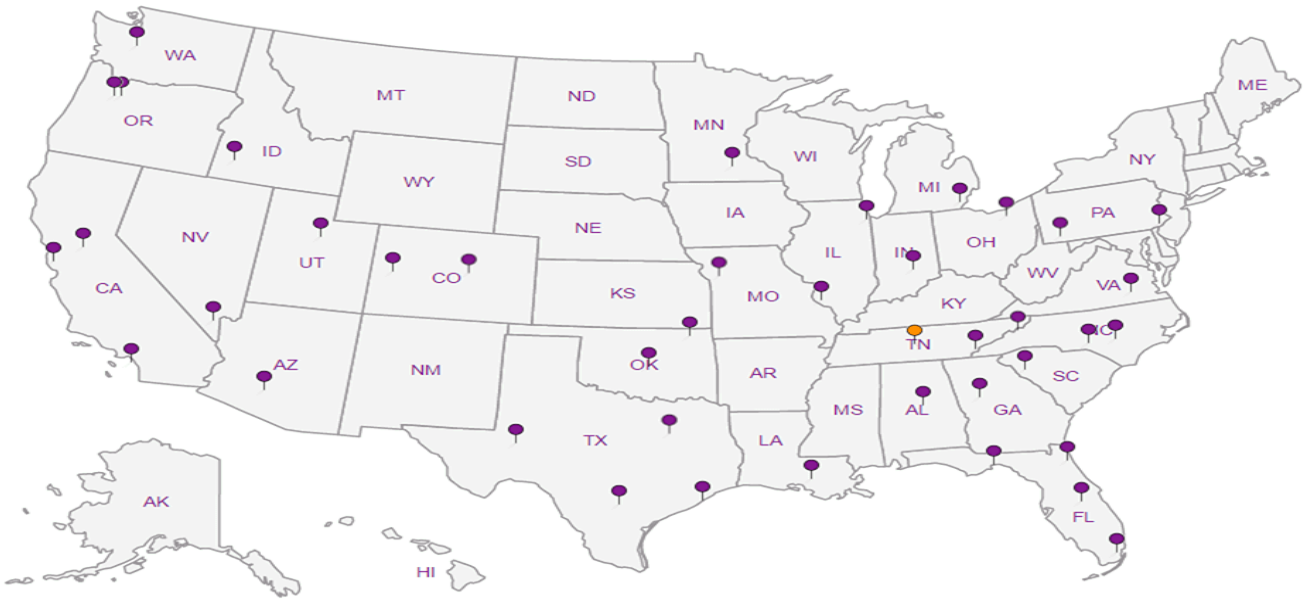
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

G161

Work Order: 1911260

4116057

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

27-Nov-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Radium_S E901.1	Requested Tests				
BGSB-1	Soil	-01C	11/26/19 09:28 AM	500HDPE	1					-01
BSBG-2	Soil	-02C	11/26/19 09:37 AM	500HDPE	1					-02
BSBG-3	Soil	-03C	11/26/19 09:45 AM	500HDPE	1					-03
BSBG-4	Soil	-04C	11/26/19 09:57 AM	500HDPE	1					-04
BSBG-5	Soil	-05C	11/26/19 10:07 AM	500HDPE	1					-05
BSBG-6	Soil	-06C	11/26/19 10:13 AM	500HDPE	1					-06
BSBG-7	Soil	-07C	11/26/19 10:21 AM	500HDPE	1					-07
BSBG-8	Soil	-08C	11/26/19 10:33 AM	500HDPE	1					-08
BSBG-9	Soil	-09C	11/26/19 10:39 AM	500HDPE	1					-09
BSBG-10	Soil	-10C	11/26/19 10:46 AM	500HDPE	1					-10
SB-1	Soil	-11C	11/25/19 09:15 AM	500HDPE	1					-11
SB-11	Soil	-12C	11/25/19 12:16 PM	500HDPE	1					-12
SB-14	Soil	-13C	11/25/19 03:27 PM	500HDPE	1					-13
SB-16	Soil	-14C	11/25/19 04:13 PM	500HDPE	1					-14
SB-21	Soil	-15C	11/25/19 04:16 PM	500HDPE	1					-15
SB-26	Soil	-16C	11/25/19 02:46 PM	500HDPE	1					-16
SB-30	Soil	-17C	11/25/19 01:50 PM	500HDPE	1					-17
SB-33	Soil	-18C	11/25/19 12:52 PM	500HDPE	1					-18

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Quality Control Package Needed: Standard - SEND PDF & Excel EDD Please
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com
Call John DuPont if you have questions.

	Date/Time		Date/Time
Relinquished by:	11-27-19 1700	**Received by:** UPS	11-27-19 1700
Relinquished by:		**Received by:** Carol Kemp	12/2/19 12:00

OK

RAD SCREEN: <0.5 mR/hr <500 cpm Amb

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1911260

L1166057

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

27-Nov-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests: Radium-S E901.1					
SB-37	Soil	-19C	11/25/19 11:22 AM	500HDPE	1					-19
SB-40	Soil	-20C	11/25/19 10:42 AM	500HDPE	1					-20
SB-41	Soil	-21C	11/25/19 10:23 AM	500HDPE	1					-21

General Comments:
Please analyze these samples with a Standard Turnaround Time.
Quality Control Package Needed: Standard - SEND PDF & Excel EDD Please
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com
Call John DuPont if you have questions.

OK

		Date/Time		Date/Time
Relinquished by:		11-27-19 1700	**Received by:**	11-27-19 1700
Relinquished by:			**Received by:** Carol Kemp	12/2/19 12:00

RAD SCREEN: <0.5 mR/hr

< 500 cpm

Amb

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHL RRTX	L1166057	
Cooler Received/Opened On: 12/2/19 Temperature:	Amb	
Received By: Carol Kemp		
Signature: Carol Kemp		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	~		
COC Signed / Accurate?		~	
Bottles arrive intact?		~	
Correct bottles used?		~	
Sufficient volume sent?		~	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

February 26, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 1912022

RE: Copano GW Sampling 4Q19

Dear Kevin Dworsky:

DHL Analytical, Inc. received 19 sample(s) on 12/4/2019 for the analyses presented in the following report.

Revision Number 1 for Work Order 1912022: This revision consists of adding Dissolved Uranium to the report, per the client's request. Please replace the original Data Report with this revision.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 80177

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Victoria, TX 77901
PHONE: 361-573-6442 FAX/E-MAIL: R_Urwin@Golder.com
DATA REPORTED TO: Kevin Dworsky, Greg Logan
ADDITIONAL REPORT COPIES TO: Richard Urwin

DATE: 12/3/19 PAGE 1 OF 2
PO #: DHL WORK ORDER #: 1912022
PROJECT LOCATION OR NAME: Copano GW Sampling 4Q19
CLENT PROJECT #: 191255.25 COLLECTOR: R. Urwin

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☒ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 625 PEST ☐ 8082 PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☒ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ____ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | TDS / metals [Ca, K, Mg, Na] / Anions [Cl, F, SO4, Alk]

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	FIELD NOTES
MW-6R	01	12/3/19	08:52	W	P	6		X	X	X	X	
MW-6RB	02	12/3/19	09:40									
MW-9	03	12/3/19	10:32									
MW-8	04	12/3/19	11:10									
MW-5	05	12/3/19	11:57									
MW-5B	06	12/3/19	12:36									
MW-4	07	12/3/19	13:05									
DB-6	08	12/3/19	14:24									
MW4-2A	09	12/3/19	16:18									
MW101	10	12/3/19	16:28									

SEE Attached For Tests

RELINQUISHED BY: (Signature) DATE/TIME 12/3/19 RECEIVED BY: (Signature) Fed Ex
RELINQUISHED BY: (Signature) Fed Ex DATE/TIME 12/4/19 1022 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☒ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ ____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.5/0.6/1.5/2.7°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY ☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

CHAIN-OF-CUSTODY

№ 80174

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Victoria TX 77901
PHONE: 361 573 6432 FAX/E-MAIL: Matt_Wickham@golder.com
DATA REPORTED TO: Matt Wickham
ADDITIONAL REPORT COPIES TO: Corey Logan

DATE: 12/3/19 PAGE 1 OF 2
PO #: DHL WORK ORDER #: 1912022
PROJECT LOCATION OR NAME: Coppano 4Q19
CLENT PROJECT #: 19125525 COLLECTOR: S. Fenner

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8082 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ _____ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS _____ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | Total Metals Ba Zn Cr Pb

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	FIELD NOTES
MW-10	11	12/3/19	0906	W	P	6		4x	1x	1x		
MW-11	12		0952	W		6						
MW-11B	13		1043	W		6						
MW-7	14		1140	W		6						
MW-7B	15		1243	W		6						
MW-1	16	12/3/19	1349	W		6		x	x	x		
MW-3R	17	~~12/3/19~~ 12/4/19	1442	W		6		x	x	x		
MW-3RB	18	~~12/3/19~~ 12/4/19	1531	W		6		x	x	x		
MW-4-1	19	12/3/19	1633	W		6		x	x	x		

RELINQUISHED BY: (Signature) DATE/TIME 12/3 1830 RECEIVED BY: (Signature) Fed Ex
RELINQUISHED BY: (Signature) DATE/TIME 12/4/19 1022 RECEIVED BY: (Signature)
Fed Ex
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☐
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.5/0.6/1.5 / 2.7c THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Dissolved Metals[1]	SW6020A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Metals.
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Dissolved Mercury	SW7470A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Mercury.
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:

1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium, Uranium

2) From time of sample collection

TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Dissolved Metals[1]	SW6020A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Metals.
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Dissolved Mercury	SW7470A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Mercury.
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:

1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium, Uranium

2) From time of sample collection

CUSTODY SEAL

DHL ANALYTICAL

DATE 12/3/19

SIGNATURE

1.5°C

ORIGIN ID:VCTA (361) 573-6442

GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 03DEC19
ACTWGT: 61.70 LB
CAD: 6995139/SSFE2021
DIMS: 24x14x13 IN

BILL THIRD PARTY

Part # 156297-455 HRUB EXP 07/20

TO **DHL ANALYTICAL**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:

INV:

PO: DEPT:

FedEx Express

J1921190919013UF

1 of 4

TRK# 0201 **7785 6485 3095**

MASTER

WED - 04 DEC 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US AUS

RT 51

FZ

2.7°C

CUS

DATE

SIGNAT

TODY SEAL

12/3/19

URE

DHL ANALYTICAL

ORIGIN ID:VCTA (361) 573-6442

GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 03DEC19
ACTWGT: 56.80 LB
CAD: 6995139/SSFE2021
DIMS: 24x14x13 IN

BILL THIRD PARTY

Part # 156297-435 RRDB EXP 07/20

TO **DHL ANALYTICAL**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

J1927190910LW

2 of 4

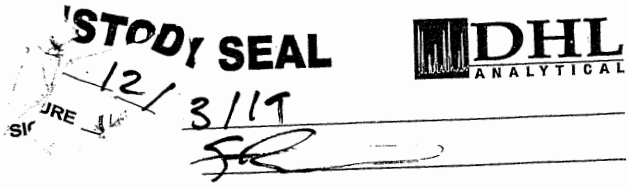
MPS# 0263 **7785 6485 3100**

Mstr# 7785 6485 3095 0201

WED - 04 DEC 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**



0.6°C

ORIGIN ID:VCTA (361) 573-6442

GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 03DEC19
ACTWGT: 58.00 LB
CAD: 6995139/SSFE2021
DIMS: 24x14x13 IN

BILL THIRD PARTY

Part # 156297-435 HRLB EXP 07/20

TO **DHL ANALYTICAL**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx
Express

3 of 4
MPS# 0263 **7785 6485 3110**
Mstr# **7785 6485 3095** 0201

WED - 04 DEC 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**

CUSTODY SEAL

DATE 12/13/19

SIGNATURE

DHL ANALYTICAL

1.5°C

ORIGIN ID:VCTA (361) 573-6442

GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 03DEC19
ACTWGT: 57.50 LB
CAD: 6995139/SSFE2021
DIMS: 24x14x13 IN

BILL THIRD PARTY

Part # 156297-435 RRD EXP 07/20

TO **DHL ANALYTICAL**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

4 of 4

MPS# 0263 **7785 6485 3121**

Mstr# 7785 6485 3095 0201

WED - 04 DEC 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **12/4/2019**

Work Order Number **1912022** Received by: **EL**

Checklist completed by: _____ 12/4/2019 Reviewed by _____ 12/4/2019
Signature | Date | Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**1.5** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW Sampling 4Q19	**LRC Date:** 1/14/2020
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 1912022**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?		**X**			**R5-04**
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?		**X**			**R5-05**
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?		**X**			**R7-04**
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW Sampling 4Q19	**LRC Date:** 1/14/2020
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 1912022**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?		X			**S2-04**
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28, 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

02/26/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *26-Feb-20*

CLIENT: Golder
Project: Copano GW Sampling 4Q19
Lab Order: 1912022

CASE NARRATIVE

N Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Total and Dissolved Metals Analysis
Method SW6020B - Total and Dissolved Uranium in Water Analysis (these parameters are not NELAP Certified)
Method SW7470A - Total and Dissolved Mercury Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 12/4/2019. A total of 19 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R5-04 and R5-05

For Total Metals Analysis, Aluminum was detected below the reporting limit for Method Blank-94027. This analyte may be biased high in the associated samples. No further corrective action was taken.

Exception Report R7-03 and R7-04

For Anions Analysis, for Batches 983954 and 93999, the recoveries/RPDs of up to two anions for the Matrix Spike and Matrix Spike Duplicate(s) were outside of the method control limits. These are flagged accordingly in the QC Summary Report. These anions were within method control limit in the associated LCS(s). The reference samples selected for the Batch 93954 QC was from this workorder. No further corrective action was taken.

For Total Metals Analysis, Batch 94027, the recoveries of three analytes for the Matrix Spike and Matrix Spike Duplicate (1912022-06 MS/MSD) were outside of the method control limits. These are flagged accordingly in the QC Summary Report. These analytes were within method control limits in the associated LCS. The reference samples selected for the Batch QC was from this workorder. No further corrective action was taken.

For Total and Dissolved Mercury Analysis, Batches 94003 and 94004, the recoveries of the Matrix Spike and Matrix Spike Duplicate(s) (1912022-01 MS/MSD) were below the method control limits.

These are flagged accordingly in the QC Summary Report. The associated LCS(s) were within method control limits. The reference samples selected for the Batch QC were from this workorder. No further corrective action was taken.

Exception Report R10-01

For Total/Dissolved Metals Analysis, the results of three dissolved analytes for most of the samples were slightly greater than the results of the same total analytes. The results were within acceptable analytical variation limits. The results were verified and no further corrective action was taken.

For Total/Dissolved Uranium Analysis, the results of Dissolved Uranium for ten samples was slightly greater than the results of total Uranium. The results were within acceptable analytical variation limits. No further corrective action was taken.

Exception Report S2-04

For Total Metals Analysis, performed on 12/12/2019, Vanadium was detected below the reporting limit in CCB3-191212 and CCB4-191212. This analyte may be biased high in the associated samples. No further corrective action was taken.

For Anions Analysis, performed on 12/6/2019, Chloride was detected below the reporting limit in CCB1-191206. This anion was detected in the associated samples at greater than 10x the amount detected in the blank. No further corrective action was taken.

Exception Report S9-01

For Total Metals Analysis, the RPD of Aluminum for the Post Digestion Spike (1912022-06 SD) was above the method control limits. This is flagged accordingly in the QC Summary Report. This analyte was within method control limits in the associated Post Digestion Spike. No further corrective action was taken.

For Total and Dissolved Mercury Analysis, Batches 94003 and 94004, the recoveries of the Post Digestion Spike(s) (1912022-01 PDS) were outside of the method control limits. These are flagged accordingly in the QC Summary Report. The Serial Dilution(s) were within method control limits. No further corrective action was taken.

DHL Analytical, Inc.

Date: *14-Jan-20*

CLIENT: Golder
Project: Copano GW Sampling 4Q19
Lab Order: 1912022

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1912022-01	MW-6R		12/03/19 08:52 AM	12/4/2019
1912022-02	MW-6RB		12/03/19 09:40 AM	12/4/2019
1912022-03	MW-9		12/03/19 10:32 AM	12/4/2019
1912022-04	MW-8		12/03/19 11:10 AM	12/4/2019
1912022-05	MW-5		12/03/19 11:57 AM	12/4/2019
1912022-06	MW-5B		12/03/19 12:36 PM	12/4/2019
1912022-07	MW-4		12/03/19 01:25 PM	12/4/2019
1912022-08	DB-5		12/03/19 02:29 PM	12/4/2019
1912022-09	MW4-2A		12/03/19 04:18 PM	12/4/2019
1912022-10	MW-101		12/03/19 04:28 PM	12/4/2019
1912022-11	MW-10		12/03/19 09:06 AM	12/4/2019
1912022-12	MW-11		12/03/19 09:52 AM	12/4/2019
1912022-13	MW-11B		12/03/19 10:43 AM	12/4/2019
1912022-14	MW-7		12/03/19 11:40 AM	12/4/2019
1912022-15	MW-7B		12/03/19 12:43 PM	12/4/2019
1912022-16	MW-1		12/03/19 01:49 PM	12/4/2019
1912022-17	MW-3R		12/03/19 02:42 PM	12/4/2019
1912022-18	MW-3RB		12/03/19 03:31 PM	12/4/2019
1912022-19	MW-4-1		12/03/19 04:33 PM	12/4/2019

Lab Order: 1912022
Client: Golder
Project: Copano GW Sampling 4Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912022-01A	MW-6R	12/03/19 08:52 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-6R	12/03/19 08:52 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-6R	12/03/19 08:52 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-6R	12/03/19 08:52 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-6R	12/03/19 08:52 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
	MW-6R	12/03/19 08:52 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-01B	MW-6R	12/03/19 08:52 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-6R	12/03/19 08:52 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
	MW-6R	12/03/19 08:52 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-01C	MW-6R	12/03/19 08:52 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-01D	MW-6R	12/03/19 08:52 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	MW-6R	12/03/19 08:52 AM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-6R	12/03/19 08:52 AM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-6R	12/03/19 08:52 AM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-02A	MW-6RB	12/03/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-6RB	12/03/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-6RB	12/03/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-6RB	12/03/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-6RB	12/03/19 09:40 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-02B	MW-6RB	12/03/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-6RB	12/03/19 09:40 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-02C	MW-6RB	12/03/19 09:40 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-02D	MW-6RB	12/03/19 09:40 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	MW-6RB	12/03/19 09:40 AM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-6RB	12/03/19 09:40 AM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-6RB	12/03/19 09:40 AM	Aqueous	E300	Anion Preparation	12/09/19 08:35 AM	93999
	MW-6RB	12/03/19 09:40 AM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-03A	MW-9	12/03/19 10:32 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027

Lab Order: 1912022
Client: Golder
Project: Copano GW Sampling 4Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912022-03A	MW-9	12/03/19 10:32 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-9	12/03/19 10:32 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-9	12/03/19 10:32 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-9	12/03/19 10:32 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-03B	MW-9	12/03/19 10:32 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-9	12/03/19 10:32 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-03C	MW-9	12/03/19 10:32 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-03D	MW-9	12/03/19 10:32 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	MW-9	12/03/19 10:32 AM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-9	12/03/19 10:32 AM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-9	12/03/19 10:32 AM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-04A	MW-8	12/03/19 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-8	12/03/19 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-8	12/03/19 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-8	12/03/19 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-8	12/03/19 11:10 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-04B	MW-8	12/03/19 11:10 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-8	12/03/19 11:10 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-04C	MW-8	12/03/19 11:10 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-04D	MW-8	12/03/19 11:10 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	MW-8	12/03/19 11:10 AM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-8	12/03/19 11:10 AM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-8	12/03/19 11:10 AM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-05A	MW-5	12/03/19 11:57 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-5	12/03/19 11:57 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-5	12/03/19 11:57 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-5	12/03/19 11:57 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-5	12/03/19 11:57 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003

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Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912022-05B	MW-5	12/03/19 11:57 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-5	12/03/19 11:57 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-05C	MW-5	12/03/19 11:57 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-05D	MW-5	12/03/19 11:57 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	MW-5	12/03/19 11:57 AM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-5	12/03/19 11:57 AM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-5	12/03/19 11:57 AM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-06A	MW-5B	12/03/19 12:36 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-5B	12/03/19 12:36 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-5B	12/03/19 12:36 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-5B	12/03/19 12:36 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-5B	12/03/19 12:36 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-06B	MW-5B	12/03/19 12:36 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-5B	12/03/19 12:36 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-06C	MW-5B	12/03/19 12:36 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-06D	MW-5B	12/03/19 12:36 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	MW-5B	12/03/19 12:36 PM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-5B	12/03/19 12:36 PM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-5B	12/03/19 12:36 PM	Aqueous	E300	Anion Preparation	12/09/19 08:35 AM	93999
	MW-5B	12/03/19 12:36 PM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-07A	MW-4	12/03/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-4	12/03/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-4	12/03/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-4	12/03/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-4	12/03/19 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-07B	MW-4	12/03/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-4	12/03/19 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-07C	MW-4	12/03/19 01:25 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015

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Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912022-07D	MW-4	12/03/19 01:25 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	MW-4	12/03/19 01:25 PM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-4	12/03/19 01:25 PM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-4	12/03/19 01:25 PM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-08A	DB-5	12/03/19 02:29 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	DB-5	12/03/19 02:29 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	DB-5	12/03/19 02:29 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	DB-5	12/03/19 02:29 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	DB-5	12/03/19 02:29 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-08B	DB-5	12/03/19 02:29 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	DB-5	12/03/19 02:29 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-08C	DB-5	12/03/19 02:29 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-08D	DB-5	12/03/19 02:29 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	DB-5	12/03/19 02:29 PM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	DB-5	12/03/19 02:29 PM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	DB-5	12/03/19 02:29 PM	Aqueous	E300	Anion Preparation	12/09/19 08:35 AM	93999
	DB-5	12/03/19 02:29 PM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-09A	MW4-2A	12/03/19 04:18 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW4-2A	12/03/19 04:18 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW4-2A	12/03/19 04:18 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW4-2A	12/03/19 04:18 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW4-2A	12/03/19 04:18 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-09B	MW4-2A	12/03/19 04:18 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW4-2A	12/03/19 04:18 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-09C	MW4-2A	12/03/19 04:18 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-09D	MW4-2A	12/03/19 04:18 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	MW4-2A	12/03/19 04:18 PM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW4-2A	12/03/19 04:18 PM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988

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Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912022-09D	MW4-2A	12/03/19 04:18 PM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-10A	MW-101	12/03/19 04:28 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-101	12/03/19 04:28 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-101	12/03/19 04:28 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-101	12/03/19 04:28 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-101	12/03/19 04:28 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-10B	MW-101	12/03/19 04:28 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-101	12/03/19 04:28 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-10C	MW-101	12/03/19 04:28 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-10D	MW-101	12/03/19 04:28 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	MW-101	12/03/19 04:28 PM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-101	12/03/19 04:28 PM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-101	12/03/19 04:28 PM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-11A	MW-10	12/03/19 09:06 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-10	12/03/19 09:06 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-10	12/03/19 09:06 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-10	12/03/19 09:06 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-10	12/03/19 09:06 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-11B	MW-10	12/03/19 09:06 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-10	12/03/19 09:06 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-11C	MW-10	12/03/19 09:06 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-11D	MW-10	12/03/19 09:06 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	MW-10	12/03/19 09:06 AM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-10	12/03/19 09:06 AM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-10	12/03/19 09:06 AM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-12A	MW-11	12/03/19 09:52 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-11	12/03/19 09:52 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-11	12/03/19 09:52 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027

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Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912022-12A	MW-11	12/03/19 09:52 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-11	12/03/19 09:52 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-12B	MW-11	12/03/19 09:52 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-11	12/03/19 09:52 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-12C	MW-11	12/03/19 09:52 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-12D	MW-11	12/03/19 09:52 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	MW-11	12/03/19 09:52 AM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-11	12/03/19 09:52 AM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-11	12/03/19 09:52 AM	Aqueous	E300	Anion Preparation	12/09/19 08:35 AM	93999
	MW-11	12/03/19 09:52 AM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-13A	MW-11B	12/03/19 10:43 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-11B	12/03/19 10:43 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-11B	12/03/19 10:43 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-11B	12/03/19 10:43 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-11B	12/03/19 10:43 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-13B	MW-11B	12/03/19 10:43 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-11B	12/03/19 10:43 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-13C	MW-11B	12/03/19 10:43 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-13D	MW-11B	12/03/19 10:43 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 09:43 AM	94008
	MW-11B	12/03/19 10:43 AM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-11B	12/03/19 10:43 AM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-11B	12/03/19 10:43 AM	Aqueous	E300	Anion Preparation	12/09/19 08:35 AM	93999
	MW-11B	12/03/19 10:43 AM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-14A	MW-7	12/03/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-7	12/03/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-7	12/03/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-7	12/03/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-7	12/03/19 11:40 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003

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Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912022-14B	MW-7	12/03/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-7	12/03/19 11:40 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-14C	MW-7	12/03/19 11:40 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-14D	MW-7	12/03/19 11:40 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW-7	12/03/19 11:40 AM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-7	12/03/19 11:40 AM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-7	12/03/19 11:40 AM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-15A	MW-7B	12/03/19 12:43 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-7B	12/03/19 12:43 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-7B	12/03/19 12:43 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-7B	12/03/19 12:43 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-7B	12/03/19 12:43 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-15B	MW-7B	12/03/19 12:43 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-7B	12/03/19 12:43 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-15C	MW-7B	12/03/19 12:43 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-15D	MW-7B	12/03/19 12:43 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW-7B	12/03/19 12:43 PM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-7B	12/03/19 12:43 PM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-7B	12/03/19 12:43 PM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-16A	MW-1	12/03/19 01:49 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-1	12/03/19 01:49 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-1	12/03/19 01:49 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-1	12/03/19 01:49 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-1	12/03/19 01:49 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-16B	MW-1	12/03/19 01:49 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-1	12/03/19 01:49 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-16C	MW-1	12/03/19 01:49 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-16D	MW-1	12/03/19 01:49 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019

Lab Order: 1912022
Client: Golder
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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912022-16D	MW-1	12/03/19 01:49 PM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-1	12/03/19 01:49 PM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-1	12/03/19 01:49 PM	Aqueous	E300	Anion Preparation	12/09/19 08:35 AM	93999
	MW-1	12/03/19 01:49 PM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-17A	MW-3R	12/03/19 02:42 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-3R	12/03/19 02:42 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-3R	12/03/19 02:42 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-3R	12/03/19 02:42 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-3R	12/03/19 02:42 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-17B	MW-3R	12/03/19 02:42 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-3R	12/03/19 02:42 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-17C	MW-3R	12/03/19 02:42 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-17D	MW-3R	12/03/19 02:42 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW-3R	12/03/19 02:42 PM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-3R	12/03/19 02:42 PM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-3R	12/03/19 02:42 PM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912022-18A	MW-3RB	12/03/19 03:31 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-3RB	12/03/19 03:31 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-3RB	12/03/19 03:31 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-3RB	12/03/19 03:31 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-3RB	12/03/19 03:31 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-18B	MW-3RB	12/03/19 03:31 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-3RB	12/03/19 03:31 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-18C	MW-3RB	12/03/19 03:31 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-18D	MW-3RB	12/03/19 03:31 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW-3RB	12/03/19 03:31 PM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-3RB	12/03/19 03:31 PM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-3RB	12/03/19 03:31 PM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912022-19A	MW-4-1	12/03/19 04:33 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-4-1	12/03/19 04:33 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-4-1	12/03/19 04:33 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-4-1	12/03/19 04:33 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/10/19 08:58 AM	94027
	MW-4-1	12/03/19 04:33 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94003
1912022-19B	MW-4-1	12/03/19 04:33 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:37 AM	94053
	MW-4-1	12/03/19 04:33 PM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912022-19C	MW-4-1	12/03/19 04:33 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912022-19D	MW-4-1	12/03/19 04:33 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW-4-1	12/03/19 04:33 PM	Aqueous	E300	Anion Preparation	12/04/19 12:05 PM	93954
	MW-4-1	12/03/19 04:33 PM	Aqueous	E300	Anion Preparation	12/06/19 11:44 AM	93988
	MW-4-1	12/03/19 04:33 PM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912022-01A	MW-6R	Aqueous	SW7470A	Mercury Total: Aqueous	94003	5	12/10/19 02:08 PM	CETAC2_HG_191210A
	MW-6R	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 11:44 AM	CETAC2_HG_191210A
	MW-6R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 11:23 AM	ICP-MS4_191211A
	MW-6R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	500	12/11/19 01:14 PM	ICP-MS5_191211A
	MW-6R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	50	12/11/19 02:18 PM	ICP-MS5_191211A
	MW-6R	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 11:23 AM	ICP-MS4_191211C
1912022-01B	MW-6R	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 12:54 PM	CETAC2_HG_191210B
	MW-6R	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	5	12/10/19 02:15 PM	CETAC2_HG_191210B
	MW-6R	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 12:33 PM	ICP-MS4_191212A
1912022-01C	MW-6R	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-01D	MW-6R	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 11:33 AM	TITRATOR_191209A
	MW-6R	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 05:07 PM	IC2_191206B
	MW-6R	Aqueous	E300	Anions by IC method - Water	93954	10	12/04/19 02:44 PM	IC4_191204A
	MW-6R	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-02A	MW-6RB	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 11:55 AM	CETAC2_HG_191210A
	MW-6RB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	500	12/11/19 01:16 PM	ICP-MS5_191211A
	MW-6RB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	50	12/11/19 02:20 PM	ICP-MS5_191211A
	MW-6RB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 11:25 AM	ICP-MS4_191211A
	MW-6RB	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 11:25 AM	ICP-MS4_191211C
1912022-02B	MW-6RB	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:05 PM	CETAC2_HG_191210B
	MW-6RB	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 12:35 PM	ICP-MS4_191212A
1912022-02C	MW-6RB	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-02D	MW-6RB	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 11:59 AM	TITRATOR_191209A
	MW-6RB	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 05:55 PM	IC2_191206B
	MW-6RB	Aqueous	E300	Anions by IC method - Water	93954	10	12/04/19 03:00 PM	IC4_191204A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912022-02D	MW-6RB	Aqueous	E300	Anions by IC method - Water	93999	100	12/10/19 10:06 AM	IC4_191209B
	MW-6RB	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-03A	MW-9	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 11:57 AM	CETAC2_HG_191210A
	MW-9	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 11:27 AM	ICP-MS4_191211A
	MW-9	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	50	12/11/19 02:22 PM	ICP-MS5_191211A
	MW-9	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	500	12/11/19 01:18 PM	ICP-MS5_191211A
	MW-9	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 11:27 AM	ICP-MS4_191211C
1912022-03B	MW-9	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:08 PM	CETAC2_HG_191210B
	MW-9	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 12:37 PM	ICP-MS4_191212A
1912022-03C	MW-9	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-03D	MW-9	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 12:12 PM	TITRATOR_191209A
	MW-9	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 06:43 PM	IC2_191206B
	MW-9	Aqueous	E300	Anions by IC method - Water	93954	10	12/04/19 03:16 PM	IC4_191204A
	MW-9	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-04A	MW-8	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 11:59 AM	CETAC2_HG_191210A
	MW-8	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 11:29 AM	ICP-MS4_191211A
	MW-8	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	500	12/11/19 01:21 PM	ICP-MS5_191211A
	MW-8	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	50	12/11/19 02:24 PM	ICP-MS5_191211A
	MW-8	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 11:29 AM	ICP-MS4_191211C
1912022-04B	MW-8	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:10 PM	CETAC2_HG_191210B
	MW-8	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 12:39 PM	ICP-MS4_191212A
1912022-04C	MW-8	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-04D	MW-8	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 12:25 PM	TITRATOR_191209A
	MW-8	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 06:59 PM	IC2_191206B
	MW-8	Aqueous	E300	Anions by IC method - Water	93954	10	12/04/19 03:32 PM	IC4_191204A
	MW-8	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912022-05A	MW-5	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:02 PM	CETAC2_HG_191210 A
	MW-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 11:31 AM	ICP-MS4_191211A
	MW-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	500	12/11/19 01:23 PM	ICP-MS5_191211A
	MW-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	50	12/11/19 02:27 PM	ICP-MS5_191211A
	MW-5	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 11:31 AM	ICP-MS4_191211C
1912022-05B	MW-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:12 PM	CETAC2_HG_191210 B
	MW-5	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 12:41 PM	ICP-MS4_191212A
1912022-05C	MW-5	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-05D	MW-5	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 12:35 PM	TITRATOR_191209A
	MW-5	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 07:15 PM	IC2_191206B
	MW-5	Aqueous	E300	Anions by IC method - Water	93954	10	12/04/19 03:48 PM	IC4_191204A
	MW-5	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-06A	MW-5B	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:04 PM	CETAC2_HG_191210 A
	MW-5B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 11:19 AM	ICP-MS4_191211A
	MW-5B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	500	12/11/19 01:09 PM	ICP-MS5_191211A
	MW-5B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	50	12/11/19 02:13 PM	ICP-MS5_191211A
	MW-5B	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 11:19 AM	ICP-MS4_191211C
1912022-06B	MW-5B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:14 PM	CETAC2_HG_191210 B
	MW-5B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 12:43 PM	ICP-MS4_191212A
1912022-06C	MW-5B	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-06D	MW-5B	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 12:45 PM	TITRATOR_191209A
	MW-5B	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 07:31 PM	IC2_191206B
	MW-5B	Aqueous	E300	Anions by IC method - Water	93954	10	12/04/19 04:04 PM	IC4_191204A
	MW-5B	Aqueous	E300	Anions by IC method - Water	93999	100	12/10/19 10:22 AM	IC4_191209B
	MW-5B	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-07A	MW-4	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:06 PM	CETAC2_HG_191210 A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912022-07A	MW-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 11:33 AM	ICP-MS4_191211A
	MW-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1000	12/11/19 01:25 PM	ICP-MS5_191211A
	MW-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	100	12/11/19 02:29 PM	ICP-MS5_191211A
	MW-4	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 11:33 AM	ICP-MS4_191211C
1912022-07B	MW-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:17 PM	CETAC2_HG_191210B
	MW-4	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 12:45 PM	ICP-MS4_191212A
1912022-07C	MW-4	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-07D	MW-4	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 12:54 PM	TITRATOR_191209A
	MW-4	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 07:47 PM	IC2_191206B
	MW-4	Aqueous	E300	Anions by IC method - Water	93954	10	12/04/19 04:20 PM	IC4_191204A
	MW-4	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-08A	DB-5	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:08 PM	CETAC2_HG_191210A
	DB-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 11:35 AM	ICP-MS4_191211A
	DB-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1000	12/11/19 01:27 PM	ICP-MS5_191211A
	DB-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	100	12/11/19 02:31 PM	ICP-MS5_191211A
	DB-5	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 11:35 AM	ICP-MS4_191211C
1912022-08B	DB-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:19 PM	CETAC2_HG_191210B
	DB-5	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 12:47 PM	ICP-MS4_191212A
1912022-08C	DB-5	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-08D	DB-5	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 01:06 PM	TITRATOR_191209A
	DB-5	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 08:03 PM	IC2_191206B
	DB-5	Aqueous	E300	Anions by IC method - Water	93954	10	12/04/19 04:36 PM	IC4_191204A
	DB-5	Aqueous	E300	Anions by IC method - Water	93999	100	12/10/19 10:38 AM	IC4_191209B
	DB-5	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-09A	MW4-2A	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:11 PM	CETAC2_HG_191210A
	MW4-2A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 11:37 AM	ICP-MS4_191211A

Lab Order: 1912022
Client: Golder
Project: Copano GW Sampling 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912022-09A	MW4-2A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1000	12/11/19 01:29 PM	ICP-MS5_191211A
	MW4-2A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	100	12/11/19 02:33 PM	ICP-MS5_191211A
	MW4-2A	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 11:37 AM	ICP-MS4_191211C
1912022-09B	MW4-2A	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:21 PM	CETAC2_HG_191210B
	MW4-2A	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 12:49 PM	ICP-MS4_191212A
1912022-09C	MW4-2A	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-09D	MW4-2A	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 01:09 PM	TITRATOR_191209A
	MW4-2A	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 08:19 PM	IC2_191206B
	MW4-2A	Aqueous	E300	Anions by IC method - Water	93954	10	12/04/19 05:04 PM	IC4_191204A
	MW4-2A	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-10A	MW-101	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:13 PM	CETAC2_HG_191210A
	MW-101	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 11:39 AM	ICP-MS4_191211A
	MW-101	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1000	12/11/19 01:32 PM	ICP-MS5_191211A
	MW-101	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	100	12/11/19 02:36 PM	ICP-MS5_191211A
	MW-101	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 11:39 AM	ICP-MS4_191211C
1912022-10B	MW-101	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:23 PM	CETAC2_HG_191210B
	MW-101	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 01:08 PM	ICP-MS4_191212A
1912022-10C	MW-101	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-10D	MW-101	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 01:18 PM	TITRATOR_191209A
	MW-101	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 08:35 PM	IC2_191206B
	MW-101	Aqueous	E300	Anions by IC method - Water	93954	10	12/04/19 05:29 PM	IC4_191204A
	MW-101	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-11A	MW-10	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:20 PM	CETAC2_HG_191210A
	MW-10	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 12:01 PM	ICP-MS4_191211A
	MW-10	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	500	12/11/19 01:46 PM	ICP-MS5_191211A
	MW-10	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	50	12/11/19 02:45 PM	ICP-MS5_191211A

Lab Order: 1912022
Client: Golder
Project: Copano GW Sampling 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912022-11A	MW-10	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 12:01 PM	ICP-MS4_191211C
1912022-11B	MW-10	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:30 PM	CETAC2_HG_191210B
	MW-10	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 01:10 PM	ICP-MS4_191212A
1912022-11C	MW-10	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-11D	MW-10	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 01:28 PM	TITRATOR_191209A
	MW-10	Aqueous	E300	Anions by IC method - Water	93954	10	12/05/19 08:55 AM	IC2_191204B
	MW-10	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 10:11 PM	IC2_191206B
	MW-10	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-12A	MW-11	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:22 PM	CETAC2_HG_191210A
	MW-11	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 12:03 PM	ICP-MS4_191211A
	MW-11	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	500	12/11/19 01:49 PM	ICP-MS5_191211A
	MW-11	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	50	12/11/19 02:48 PM	ICP-MS5_191211A
	MW-11	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 12:03 PM	ICP-MS4_191211C
1912022-12B	MW-11	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:33 PM	CETAC2_HG_191210B
	MW-11	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 01:12 PM	ICP-MS4_191212A
1912022-12C	MW-11	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-12D	MW-11	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 01:45 PM	TITRATOR_191209A
	MW-11	Aqueous	E300	Anions by IC method - Water	93954	10	12/05/19 09:11 AM	IC2_191204B
	MW-11	Aqueous	E300	Anions by IC method - Water	93999	100	12/10/19 10:54 AM	IC4_191209B
	MW-11	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 10:27 PM	IC2_191206B
	MW-11	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-13A	MW-11B	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:24 PM	CETAC2_HG_191210A
	MW-11B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 12:05 PM	ICP-MS4_191211A
	MW-11B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	500	12/11/19 01:51 PM	ICP-MS5_191211A
	MW-11B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	50	12/11/19 02:50 PM	ICP-MS5_191211A
	MW-11B	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 12:05 PM	ICP-MS4_191211C

Lab Order: 1912022
Client: Golder
Project: Copano GW Sampling 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912022-13B	MW-11B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:35 PM	CETAC2_HG_191210B
	MW-11B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 01:14 PM	ICP-MS4_191212A
1912022-13C	MW-11B	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-13D	MW-11B	Aqueous	M2320 B	Alkalinity	94008	1	12/09/19 01:57 PM	TITRATOR_191209A
	MW-11B	Aqueous	E300	Anions by IC method - Water	93999	100	12/10/19 11:10 AM	IC4_191209B
	MW-11B	Aqueous	E300	Anions by IC method - Water	93954	10	12/05/19 09:27 AM	IC2_191204B
	MW-11B	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 10:43 PM	IC2_191206B
	MW-11B	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-14A	MW-7	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:27 PM	CETAC2_HG_191210A
	MW-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 12:07 PM	ICP-MS4_191211A
	MW-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1000	12/11/19 01:53 PM	ICP-MS5_191211A
	MW-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	100	12/11/19 02:52 PM	ICP-MS5_191211A
	MW-7	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 12:07 PM	ICP-MS4_191211C
1912022-14B	MW-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:37 PM	CETAC2_HG_191210B
	MW-7	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 12:29 PM	ICP-MS4_191212A
1912022-14C	MW-7	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-14D	MW-7	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 04:33 PM	TITRATOR_191209A
	MW-7	Aqueous	E300	Anions by IC method - Water	93954	10	12/05/19 09:43 AM	IC2_191204B
	MW-7	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 10:59 PM	IC2_191206B
	MW-7	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-15A	MW-7B	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:29 PM	CETAC2_HG_191210A
	MW-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 12:09 PM	ICP-MS4_191211A
	MW-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	100	12/11/19 02:54 PM	ICP-MS5_191211A
	MW-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1000	12/11/19 01:55 PM	ICP-MS5_191211A
	MW-7B	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 12:09 PM	ICP-MS4_191211C
1912022-15B	MW-7B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:39 PM	CETAC2_HG_191210B

Lab Order: 1912022
Client: Golder
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912022-15B	MW-7B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 01:16 PM	ICP-MS4_191212A
1912022-15C	MW-7B	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-15D	MW-7B	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 04:40 PM	TITRATOR_191209A
	MW-7B	Aqueous	E300	Anions by IC method - Water	93954	10	12/05/19 09:59 AM	IC2_191204B
	MW-7B	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 11:15 PM	IC2_191206B
	MW-7B	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-16A	MW-1	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:31 PM	CETAC2_HG_191210A
	MW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	100	12/11/19 02:57 PM	ICP-MS5_191211A
	MW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 12:11 PM	ICP-MS4_191211A
	MW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1000	12/11/19 01:58 PM	ICP-MS5_191211A
	MW-1	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 12:11 PM	ICP-MS4_191211C
1912022-16B	MW-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:42 PM	CETAC2_HG_191210B
	MW-1	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 01:18 PM	ICP-MS4_191212A
1912022-16C	MW-1	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-16D	MW-1	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 04:49 PM	TITRATOR_191209A
	MW-1	Aqueous	E300	Anions by IC method - Water	93954	10	12/05/19 10:15 AM	IC2_191204B
	MW-1	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 11:31 PM	IC2_191206B
	MW-1	Aqueous	E300	Anions by IC method - Water	93999	100	12/10/19 11:26 AM	IC4_191209B
	MW-1	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-17A	MW-3R	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:33 PM	CETAC2_HG_191210A
	MW-3R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 12:13 PM	ICP-MS4_191211A
	MW-3R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1000	12/11/19 02:00 PM	ICP-MS5_191211A
	MW-3R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	100	12/11/19 02:59 PM	ICP-MS5_191211A
	MW-3R	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 12:13 PM	ICP-MS4_191211C
1912022-17B	MW-3R	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:44 PM	CETAC2_HG_191210B
	MW-3R	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 01:20 PM	ICP-MS4_191212A

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Client: Golder
Project: Copano GW Sampling 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912022-17C	MW-3R	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-17D	MW-3R	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 04:57 PM	TITRATOR_191209A
	MW-3R	Aqueous	E300	Anions by IC method - Water	93954	10	12/05/19 10:31 AM	IC2_191204B
	MW-3R	Aqueous	E300	Anions by IC method - Water	93988	1000	12/06/19 11:47 PM	IC2_191206B
	MW-3R	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-18A	MW-3RB	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:36 PM	CETAC2_HG_191210A
	MW-3RB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 12:15 PM	ICP-MS4_191211A
	MW-3RB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1000	12/11/19 02:02 PM	ICP-MS5_191211A
	MW-3RB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	100	12/11/19 03:01 PM	ICP-MS5_191211A
	MW-3RB	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 12:15 PM	ICP-MS4_191211C
1912022-18B	MW-3RB	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:46 PM	CETAC2_HG_191210B
	MW-3RB	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 01:22 PM	ICP-MS4_191212A
1912022-18C	MW-3RB	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-18D	MW-3RB	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 05:05 PM	TITRATOR_191209A
	MW-3RB	Aqueous	E300	Anions by IC method - Water	93954	10	12/05/19 10:47 AM	IC2_191204B
	MW-3RB	Aqueous	E300	Anions by IC method - Water	93988	1000	12/07/19 12:03 AM	IC2_191206B
	MW-3RB	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912022-19A	MW-4-1	Aqueous	SW7470A	Mercury Total: Aqueous	94003	1	12/10/19 12:38 PM	CETAC2_HG_191210A
	MW-4-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	1	12/11/19 12:17 PM	ICP-MS4_191211A
	MW-4-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	500	12/11/19 02:04 PM	ICP-MS5_191211A
	MW-4-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94027	50	12/11/19 03:03 PM	ICP-MS5_191211A
	MW-4-1	Aqueous	SW6020B	Uranium in Water by ICPMS	94027	1	12/11/19 12:17 PM	ICP-MS4_191211C
1912022-19B	MW-4-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:48 PM	CETAC2_HG_191210B
	MW-4-1	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94053	1	12/12/19 01:24 PM	ICP-MS4_191212A
1912022-19C	MW-4-1	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912022-19D	MW-4-1	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 05:19 PM	TITRATOR_191209A

Lab Order: 1912022
Client: Golder
Project: Copano GW Sampling 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912022-19D	MW-4-1	Aqueous	E300	Anions by IC method - Water	93954	10	12/05/19 11:03 AM	IC2_191204B
	MW-4-1	Aqueous	E300	Anions by IC method - Water	93988	1000	12/07/19 12:19 AM	IC2_191206B
	MW-4-1	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6R
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-01
Project No:	19125525	**Collection Date:**	12/03/19 08:52 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	12/12/19 12:33 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 12:33 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 12:33 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 12:33 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 12:33 PM
Dissolved Nickel	0.00706	0.00300	0.0100	J	mg/L	1	12/12/19 12:33 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 12:33 PM
Dissolved Vanadium	0.00816	0.000500	0.00100		mg/L	1	12/12/19 12:33 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0265	0.0100	0.0300	J	mg/L	1	12/11/19 11:23 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 11:23 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 11:23 AM
Calcium	627	5.00	15.0		mg/L	50	12/11/19 02:18 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 11:23 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 11:23 AM
Magnesium	537	5.00	15.0		mg/L	50	12/11/19 02:18 PM
Nickel	0.00636	0.00300	0.0100	J	mg/L	1	12/11/19 11:23 AM
Potassium	23.9	5.00	15.0		mg/L	50	12/11/19 02:18 PM
Sodium	7430	50.0	150		mg/L	500	12/11/19 01:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 11:23 AM
Vanadium	0.00741	0.000500	0.00100		mg/L	1	12/11/19 11:23 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.000400	0.000400	0.00100		mg/L	5	12/10/19 02:15 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	0.000476	0.000400	0.00100	J	mg/L	5	12/10/19 02:08 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.432	0.00300	0.0100	N	mg/L	1	12/11/19 11:23 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.446	0.00300	0.0100	N	mg/L	1	12/12/19 12:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	12100	300	1000		mg/L	1000	12/06/19 05:07 PM
Fluoride	1.22	1.00	4.00	J	mg/L	10	12/04/19 02:44 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/04/19 02:44 PM
Sulfate	3590	1000	3000		mg/L	1000	12/06/19 05:07 PM

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- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6R
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-01
Project No:	19125525	**Collection Date:**	12/03/19 08:52 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	583	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 11:33 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 11:33 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 11:33 AM
Alkalinity, Total (As CaCO3)	583	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 11:33 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	1.35	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	26300	1000	1000		mg/L	1	12/06/19 05:30 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6RB
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-02
Project No:	19125525	**Collection Date:**	12/03/19 09:40 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0170	0.0100	0.0300	J	mg/L	1	12/12/19 12:35 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 12:35 PM
Dissolved Arsenic	0.00353	0.00200	0.00500	J	mg/L	1	12/12/19 12:35 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 12:35 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 12:35 PM
Dissolved Nickel	0.0133	0.00300	0.0100		mg/L	1	12/12/19 12:35 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 12:35 PM
Dissolved Vanadium	0.00211	0.000500	0.00100		mg/L	1	12/12/19 12:35 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0768	0.0100	0.0300		mg/L	1	12/11/19 11:25 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 11:25 AM
Arsenic	0.00318	0.00200	0.00500	J	mg/L	1	12/11/19 11:25 AM
Calcium	594	5.00	15.0		mg/L	50	12/11/19 02:20 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 11:25 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 11:25 AM
Magnesium	587	5.00	15.0		mg/L	50	12/11/19 02:20 PM
Nickel	0.0137	0.00300	0.0100		mg/L	1	12/11/19 11:25 AM
Potassium	36.6	5.00	15.0		mg/L	50	12/11/19 02:20 PM
Sodium	6040	50.0	150		mg/L	500	12/11/19 01:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 11:25 AM
Vanadium	0.00338	0.000500	0.00100		mg/L	1	12/11/19 11:25 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:05 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 11:55 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0867	0.00300	0.0100	N	mg/L	1	12/11/19 11:25 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0861	0.00300	0.0100	N	mg/L	1	12/12/19 12:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	10600	300	1000		mg/L	1000	12/06/19 05:55 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/04/19 03:00 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/04/19 03:00 PM
Sulfate	2330	100	300		mg/L	100	12/10/19 10:06 AM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6RB
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-02
Project No:	19125525	**Collection Date:**	12/03/19 09:40 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	305	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 11:59 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 11:59 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 11:59 AM
Alkalinity, Total (As CaCO3)	305	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 11:59 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	21700	1000	1000		mg/L	1	12/06/19 05:30 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-9
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-03
Project No:	19125525	**Collection Date:**	12/03/19 10:32 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	12/12/19 12:37 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 12:37 PM
Dissolved Arsenic	0.00494	0.00200	0.00500	J	mg/L	1	12/12/19 12:37 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 12:37 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 12:37 PM
Dissolved Nickel	0.0248	0.00300	0.0100		mg/L	1	12/12/19 12:37 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 12:37 PM
Dissolved Vanadium	0.0214	0.000500	0.00100		mg/L	1	12/12/19 12:37 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0316	0.0100	0.0300		mg/L	1	12/11/19 11:27 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 11:27 AM
Arsenic	0.00455	0.00200	0.00500	J	mg/L	1	12/11/19 11:27 AM
Calcium	986	5.00	15.0		mg/L	50	12/11/19 02:22 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 11:27 AM
Lead	0.000461	0.000300	0.00100	J	mg/L	1	12/11/19 11:27 AM
Magnesium	662	5.00	15.0		mg/L	50	12/11/19 02:22 PM
Nickel	0.0244	0.00300	0.0100		mg/L	1	12/11/19 11:27 AM
Potassium	28.8	5.00	15.0		mg/L	50	12/11/19 02:22 PM
Sodium	4730	50.0	150		mg/L	500	12/11/19 01:18 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 11:27 AM
Vanadium	0.0209	0.000500	0.00100		mg/L	1	12/11/19 11:27 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:08 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 11:57 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0249	0.00300	0.0100	N	mg/L	1	12/11/19 11:27 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0253	0.00300	0.0100	N	mg/L	1	12/12/19 12:37 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	10200	300	1000		mg/L	1000	12/06/19 06:43 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/04/19 03:16 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/04/19 03:16 PM
Sulfate	1200	10.0	30.0		mg/L	10	12/04/19 03:16 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-9
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-03
Project No:	19125525	**Collection Date:**	12/03/19 10:32 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	387	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:12 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:12 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:12 PM
Alkalinity, Total (As CaCO3)	387	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:12 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	21400	1000	1000		mg/L	1	12/06/19 05:30 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-8
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-04
Project No:	19125525	**Collection Date:**	12/03/19 11:10 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	12/12/19 12:39 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 12:39 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 12:39 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 12:39 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 12:39 PM
Dissolved Nickel	0.0103	0.00300	0.0100		mg/L	1	12/12/19 12:39 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 12:39 PM
Dissolved Vanadium	0.00313	0.000500	0.00100		mg/L	1	12/12/19 12:39 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0406	0.0100	0.0300		mg/L	1	12/11/19 11:29 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 11:29 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 11:29 AM
Calcium	861	5.00	15.0		mg/L	50	12/11/19 02:24 PM
Chromium	0.00216	0.00200	0.00500	J	mg/L	1	12/11/19 11:29 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 11:29 AM
Magnesium	744	5.00	15.0		mg/L	50	12/11/19 02:24 PM
Nickel	0.00972	0.00300	0.0100	J	mg/L	1	12/11/19 11:29 AM
Potassium	24.0	5.00	15.0		mg/L	50	12/11/19 02:24 PM
Sodium	6900	50.0	150		mg/L	500	12/11/19 01:21 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 11:29 AM
Vanadium	0.00285	0.000500	0.00100		mg/L	1	12/11/19 11:29 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:10 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 11:59 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.260	0.00300	0.0100	N	mg/L	1	12/11/19 11:29 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.251	0.00300	0.0100	N	mg/L	1	12/12/19 12:39 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	11500	300	1000		mg/L	1000	12/06/19 06:59 PM
Fluoride	2.66	1.00	4.00	J	mg/L	10	12/04/19 03:32 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/04/19 03:32 PM
Sulfate	4230	1000	3000		mg/L	1000	12/06/19 06:59 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-8
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-04
Project No:	19125525	**Collection Date:**	12/03/19 11:10 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	423	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 12:25 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 12:25 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 12:25 PM
Alkalinity, Total (As CaCO3)	423	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 12:25 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	26400	1000	1000		mg/L	1	12/06/19 05:30 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-05
Project No:	19125525	**Collection Date:**	12/03/19 11:57 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	12/12/19 12:41 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 12:41 PM
Dissolved Arsenic	0.00320	0.00200	0.00500	J	mg/L	1	12/12/19 12:41 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 12:41 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 12:41 PM
Dissolved Nickel	0.0147	0.00300	0.0100		mg/L	1	12/12/19 12:41 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 12:41 PM
Dissolved Vanadium	0.0138	0.000500	0.00100		mg/L	1	12/12/19 12:41 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.102	0.0100	0.0300		mg/L	1	12/11/19 11:31 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 11:31 AM
Arsenic	0.00314	0.00200	0.00500	J	mg/L	1	12/11/19 11:31 AM
Calcium	898	5.00	15.0		mg/L	50	12/11/19 02:27 PM
Chromium	0.00530	0.00200	0.00500		mg/L	1	12/11/19 11:31 AM
Lead	0.000885	0.000300	0.00100	J	mg/L	1	12/11/19 11:31 AM
Magnesium	1140	5.00	15.0		mg/L	50	12/11/19 02:27 PM
Nickel	0.0161	0.00300	0.0100		mg/L	1	12/11/19 11:31 AM
Potassium	48.5	5.00	15.0		mg/L	50	12/11/19 02:27 PM
Sodium	6920	50.0	150		mg/L	500	12/11/19 01:23 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 11:31 AM
Vanadium	0.0134	0.000500	0.00100		mg/L	1	12/11/19 11:31 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:12 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:02 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.115	0.00300	0.0100	N	mg/L	1	12/11/19 11:31 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.110	0.00300	0.0100	N	mg/L	1	12/12/19 12:41 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	13500	300	1000		mg/L	1000	12/06/19 07:15 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/04/19 03:48 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/04/19 03:48 PM
Sulfate	3300	1000	3000		mg/L	1000	12/06/19 07:15 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-05
Project No:	19125525	**Collection Date:**	12/03/19 11:57 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	506	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:35 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:35 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:35 PM
Alkalinity, Total (As CaCO3)	506	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:35 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	27900	1000	1000		mg/L	1	12/06/19 05:30 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5B
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-06
Project No:	19125525	**Collection Date:**	12/03/19 12:36 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0144	0.0100	0.0300	J	mg/L	1	12/12/19 12:43 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 12:43 PM
Dissolved Arsenic	0.00226	0.00200	0.00500	J	mg/L	1	12/12/19 12:43 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 12:43 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 12:43 PM
Dissolved Nickel	0.00661	0.00300	0.0100	J	mg/L	1	12/12/19 12:43 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 12:43 PM
Dissolved Vanadium	0.00138	0.000500	0.00100		mg/L	1	12/12/19 12:43 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0541	0.0100	0.0300		mg/L	1	12/11/19 11:19 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 11:19 AM
Arsenic	0.00205	0.00200	0.00500	J	mg/L	1	12/11/19 11:19 AM
Calcium	976	5.00	15.0		mg/L	50	12/11/19 02:13 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 11:19 AM
Lead	0.000763	0.000300	0.00100	J	mg/L	1	12/11/19 11:19 AM
Magnesium	892	5.00	15.0		mg/L	50	12/11/19 02:13 PM
Nickel	0.00763	0.00300	0.0100	J	mg/L	1	12/11/19 11:19 AM
Potassium	56.9	5.00	15.0		mg/L	50	12/11/19 02:13 PM
Sodium	6110	50.0	150		mg/L	500	12/11/19 01:09 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 11:19 AM
Vanadium	0.00121	0.000500	0.00100		mg/L	1	12/11/19 11:19 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:14 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:04 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0518	0.00300	0.0100	N	mg/L	1	12/11/19 11:19 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0495	0.00300	0.0100	N	mg/L	1	12/12/19 12:43 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	12200	300	1000		mg/L	1000	12/06/19 07:31 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/04/19 04:04 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/04/19 04:04 PM
Sulfate	2000	100	300		mg/L	100	12/10/19 10:22 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5B
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-06
Project No:	19125525	**Collection Date:**	12/03/19 12:36 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	286	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:45 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:45 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:45 PM
Alkalinity, Total (As CaCO3)	286	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:45 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	23200	1000	1000		mg/L	1	12/06/19 05:30 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-4
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-07
Project No:	19125525	**Collection Date:**	12/03/19 01:25 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0185	0.0100	0.0300	J	mg/L	1	12/12/19 12:45 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 12:45 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 12:45 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 12:45 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 12:45 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 12:45 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 12:45 PM
Dissolved Vanadium	0.000759	0.000500	0.00100	J	mg/L	1	12/12/19 12:45 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.193	0.0100	0.0300		mg/L	1	12/11/19 11:33 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 11:33 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 11:33 AM
Calcium	997	10.0	30.0		mg/L	100	12/11/19 02:29 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 11:33 AM
Lead	0.000572	0.000300	0.00100	J	mg/L	1	12/11/19 11:33 AM
Magnesium	2040	10.0	30.0		mg/L	100	12/11/19 02:29 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/11/19 11:33 AM
Potassium	65.6	10.0	30.0		mg/L	100	12/11/19 02:29 PM
Sodium	11500	100	300		mg/L	1000	12/11/19 01:25 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 11:33 AM
Vanadium	0.000880	0.000500	0.00100	J	mg/L	1	12/11/19 11:33 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:17 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:06 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.116	0.00300	0.0100	N	mg/L	1	12/11/19 11:33 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.124	0.00300	0.0100	N	mg/L	1	12/12/19 12:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21000	300	1000		mg/L	1000	12/06/19 07:47 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/04/19 04:20 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/04/19 04:20 PM
Sulfate	5910	1000	3000		mg/L	1000	12/06/19 07:47 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-4
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-07
Project No:	19125525	**Collection Date:**	12/03/19 01:25 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	281	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:54 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:54 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:54 PM
Alkalinity, Total (As CaCO3)	281	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 12:54 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.723	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	46000	1000	1000		mg/L	1	12/06/19 05:30 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	DB-5
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-08
Project No:	19125525	**Collection Date:**	12/03/19 02:29 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0599	0.0100	0.0300		mg/L	1	12/12/19 12:47 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 12:47 PM
Dissolved Arsenic	0.00312	0.00200	0.00500	J	mg/L	1	12/12/19 12:47 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 12:47 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 12:47 PM
Dissolved Nickel	0.00546	0.00300	0.0100	J	mg/L	1	12/12/19 12:47 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 12:47 PM
Dissolved Vanadium	0.00639	0.000500	0.00100		mg/L	1	12/12/19 12:47 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0292	0.0100	0.0300	J	mg/L	1	12/11/19 11:35 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 11:35 AM
Arsenic	0.00326	0.00200	0.00500	J	mg/L	1	12/11/19 11:35 AM
Calcium	688	10.0	30.0		mg/L	100	12/11/19 02:31 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 11:35 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 11:35 AM
Magnesium	947	10.0	30.0		mg/L	100	12/11/19 02:31 PM
Nickel	0.00503	0.00300	0.0100	J	mg/L	1	12/11/19 11:35 AM
Potassium	52.2	10.0	30.0		mg/L	100	12/11/19 02:31 PM
Sodium	8970	100	300		mg/L	1000	12/11/19 01:27 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 11:35 AM
Vanadium	0.00582	0.000500	0.00100		mg/L	1	12/11/19 11:35 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:19 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:08 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0769	0.00300	0.0100	N	mg/L	1	12/11/19 11:35 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0747	0.00300	0.0100	N	mg/L	1	12/12/19 12:47 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	14900	300	1000		mg/L	1000	12/06/19 08:03 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/04/19 04:36 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/04/19 04:36 PM
Sulfate	2970	100	300		mg/L	100	12/10/19 10:38 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	DB-5
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-08
Project No:	19125525	**Collection Date:**	12/03/19 02:29 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	373	10.0	20.0		mg/L @ pH 4.54	1	12/09/19 01:06 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	12/09/19 01:06 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	12/09/19 01:06 PM
Alkalinity, Total (As CaCO3)	373	20.0	20.0		mg/L @ pH 4.54	1	12/09/19 01:06 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	1.24	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	30300	1000	1000		mg/L	1	12/06/19 05:30 PM

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E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2A
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-09
Project No:	19125525	**Collection Date:**	12/03/19 04:18 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0135	0.0100	0.0300	J	mg/L	1	12/12/19 12:49 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 12:49 PM
Dissolved Arsenic	0.00247	0.00200	0.00500	J	mg/L	1	12/12/19 12:49 PM
Dissolved Chromium	0.00307	0.00200	0.00500	J	mg/L	1	12/12/19 12:49 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 12:49 PM
Dissolved Nickel	0.0109	0.00300	0.0100		mg/L	1	12/12/19 12:49 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 12:49 PM
Dissolved Vanadium	0.00874	0.000500	0.00100		mg/L	1	12/12/19 12:49 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0465	0.0100	0.0300		mg/L	1	12/11/19 11:37 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 11:37 AM
Arsenic	0.00205	0.00200	0.00500	J	mg/L	1	12/11/19 11:37 AM
Calcium	1190	10.0	30.0		mg/L	100	12/11/19 02:33 PM
Chromium	0.0116	0.00200	0.00500		mg/L	1	12/11/19 11:37 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 11:37 AM
Magnesium	1240	10.0	30.0		mg/L	100	12/11/19 02:33 PM
Nickel	0.0143	0.00300	0.0100		mg/L	1	12/11/19 11:37 AM
Potassium	57.3	10.0	30.0		mg/L	100	12/11/19 02:33 PM
Sodium	8820	100	300		mg/L	1000	12/11/19 01:29 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 11:37 AM
Vanadium	0.00801	0.000500	0.00100		mg/L	1	12/11/19 11:37 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:21 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:11 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0901	0.00300	0.0100	N	mg/L	1	12/11/19 11:37 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0978	0.00300	0.0100	N	mg/L	1	12/12/19 12:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	16600	300	1000		mg/L	1000	12/06/19 08:19 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/04/19 05:04 PM
Nitrate-N	8.51	1.00	5.00		mg/L	10	12/04/19 05:04 PM
Sulfate	4480	1000	3000		mg/L	1000	12/06/19 08:19 PM

Qualifiers:

ND - Not Detected at the SDL
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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2A
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-09
Project No:	19125525	**Collection Date:**	12/03/19 04:18 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	14.5	10.0	20.0	J	mg/L @ pH 4.51	1	12/09/19 01:09 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	12/09/19 01:09 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	12/09/19 01:09 PM
Alkalinity, Total (As CaCO3)	<20.0	20.0	20.0		mg/L @ pH 4.51	1	12/09/19 01:09 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	35300	1000	1000		mg/L	1	12/06/19 05:30 PM

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-101
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-10
Project No:	19125525	**Collection Date:**	12/03/19 04:28 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.107	0.0100	0.0300		mg/L	1	12/12/19 01:08 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:08 PM
Dissolved Arsenic	0.00256	0.00200	0.00500	J	mg/L	1	12/12/19 01:08 PM
Dissolved Chromium	0.00353	0.00200	0.00500	J	mg/L	1	12/12/19 01:08 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:08 PM
Dissolved Nickel	0.0120	0.00300	0.0100		mg/L	1	12/12/19 01:08 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:08 PM
Dissolved Vanadium	0.00886	0.000500	0.00100		mg/L	1	12/12/19 01:08 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0476	0.0100	0.0300		mg/L	1	12/11/19 11:39 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 11:39 AM
Arsenic	0.00211	0.00200	0.00500	J	mg/L	1	12/11/19 11:39 AM
Calcium	1180	10.0	30.0		mg/L	100	12/11/19 02:36 PM
Chromium	0.0114	0.00200	0.00500		mg/L	1	12/11/19 11:39 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 11:39 AM
Magnesium	1230	10.0	30.0		mg/L	100	12/11/19 02:36 PM
Nickel	0.0143	0.00300	0.0100		mg/L	1	12/11/19 11:39 AM
Potassium	57.1	10.0	30.0		mg/L	100	12/11/19 02:36 PM
Sodium	8560	100	300		mg/L	1000	12/11/19 01:32 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 11:39 AM
Vanadium	0.00792	0.000500	0.00100		mg/L	1	12/11/19 11:39 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:23 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:13 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0887	0.00300	0.0100	N	mg/L	1	12/11/19 11:39 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0984	0.00300	0.0100	N	mg/L	1	12/12/19 01:08 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	16500	300	1000		mg/L	1000	12/06/19 08:35 PM
Fluoride	1.29	1.00	4.00	J	mg/L	10	12/04/19 05:29 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/04/19 05:29 PM
Sulfate	4330	1000	3000		mg/L	1000	12/06/19 08:35 PM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-101
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-10
Project No:	19125525	**Collection Date:**	12/03/19 04:28 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	289	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 01:18 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 01:18 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 01:18 PM
Alkalinity, Total (As CaCO3)	289	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 01:18 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	34600	1000	1000		mg/L	1	12/06/19 05:30 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-10
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-11
Project No:	19125525	**Collection Date:**	12/03/19 09:06 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0201	0.0100	0.0300	J	mg/L	1	12/12/19 01:10 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:10 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:10 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:10 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:10 PM
Dissolved Nickel	0.0116	0.00300	0.0100		mg/L	1	12/12/19 01:10 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:10 PM
Dissolved Vanadium	0.00418	0.000500	0.00100		mg/L	1	12/12/19 01:10 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0327	0.0100	0.0300		mg/L	1	12/11/19 12:01 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 12:01 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 12:01 PM
Calcium	611	5.00	15.0		mg/L	50	12/11/19 02:45 PM
Chromium	0.00229	0.00200	0.00500	J	mg/L	1	12/11/19 12:01 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 12:01 PM
Magnesium	633	5.00	15.0		mg/L	50	12/11/19 02:45 PM
Nickel	0.0123	0.00300	0.0100		mg/L	1	12/11/19 12:01 PM
Potassium	16.1	5.00	15.0		mg/L	50	12/11/19 02:45 PM
Sodium	5600	50.0	150		mg/L	500	12/11/19 01:46 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 12:01 PM
Vanadium	0.00385	0.000500	0.00100		mg/L	1	12/11/19 12:01 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:30 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:20 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.201	0.00300	0.0100	N	mg/L	1	12/11/19 12:01 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.190	0.00300	0.0100	N	mg/L	1	12/12/19 01:10 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	8880	300	1000		mg/L	1000	12/06/19 10:11 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 08:55 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 08:55 AM
Sulfate	3080	1000	3000		mg/L	1000	12/06/19 10:11 PM

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- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-10
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-11
Project No:	19125525	**Collection Date:**	12/03/19 09:06 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	510	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 01:28 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 01:28 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 01:28 PM
Alkalinity, Total (As CaCO3)	510	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 01:28 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	21900	1000	1000		mg/L	1	12/06/19 05:30 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-12
Project No:	19125525	**Collection Date:**	12/03/19 09:52 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0270	0.0100	0.0300	J	mg/L	1	12/12/19 01:12 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:12 PM
Dissolved Arsenic	0.00284	0.00200	0.00500	J	mg/L	1	12/12/19 01:12 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:12 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:12 PM
Dissolved Nickel	0.0191	0.00300	0.0100		mg/L	1	12/12/19 01:12 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:12 PM
Dissolved Vanadium	0.0259	0.000500	0.00100		mg/L	1	12/12/19 01:12 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0406	0.0100	0.0300		mg/L	1	12/11/19 12:03 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 12:03 PM
Arsenic	0.00275	0.00200	0.00500	J	mg/L	1	12/11/19 12:03 PM
Calcium	324	5.00	15.0		mg/L	50	12/11/19 02:48 PM
Chromium	0.00223	0.00200	0.00500	J	mg/L	1	12/11/19 12:03 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 12:03 PM
Magnesium	564	5.00	15.0		mg/L	50	12/11/19 02:48 PM
Nickel	0.0205	0.00300	0.0100		mg/L	1	12/11/19 12:03 PM
Potassium	18.7	5.00	15.0		mg/L	50	12/11/19 02:48 PM
Sodium	5260	50.0	150		mg/L	500	12/11/19 01:49 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 12:03 PM
Vanadium	0.0269	0.000500	0.00100		mg/L	1	12/11/19 12:03 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:33 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:22 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0887	0.00300	0.0100	N	mg/L	1	12/11/19 12:03 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0862	0.00300	0.0100	N	mg/L	1	12/12/19 01:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	8230	300	1000		mg/L	1000	12/06/19 10:27 PM
Fluoride	1.51	1.00	4.00	J	mg/L	10	12/05/19 09:11 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 09:11 AM
Sulfate	1550	100	300		mg/L	100	12/10/19 10:54 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-12
Project No:	19125525	**Collection Date:**	12/03/19 09:52 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	1000	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 01:45 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 01:45 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 01:45 PM
Alkalinity, Total (As CaCO3)	1000	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 01:45 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.182	0.100	0.250	J	mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	17500	200	200		mg/L	1	12/06/19 05:30 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11B
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-13
Project No:	19125525	**Collection Date:**	12/03/19 10:43 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0173	0.0100	0.0300	J	mg/L	1	12/12/19 01:14 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:14 PM
Dissolved Arsenic	0.00287	0.00200	0.00500	J	mg/L	1	12/12/19 01:14 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:14 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:14 PM
Dissolved Nickel	0.00495	0.00300	0.0100	J	mg/L	1	12/12/19 01:14 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:14 PM
Dissolved Vanadium	0.00484	0.000500	0.00100		mg/L	1	12/12/19 01:14 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0273	0.0100	0.0300	J	mg/L	1	12/11/19 12:05 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 12:05 PM
Arsenic	0.00295	0.00200	0.00500	J	mg/L	1	12/11/19 12:05 PM
Calcium	599	5.00	15.0		mg/L	50	12/11/19 02:50 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 12:05 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 12:05 PM
Magnesium	867	5.00	15.0		mg/L	50	12/11/19 02:50 PM
Nickel	0.00571	0.00300	0.0100	J	mg/L	1	12/11/19 12:05 PM
Potassium	42.4	5.00	15.0		mg/L	50	12/11/19 02:50 PM
Sodium	5500	50.0	150		mg/L	500	12/11/19 01:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 12:05 PM
Vanadium	0.00327	0.000500	0.00100		mg/L	1	12/11/19 12:05 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:35 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:24 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0862	0.00300	0.0100	N	mg/L	1	12/11/19 12:05 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0862	0.00300	0.0100	N	mg/L	1	12/12/19 01:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	10600	300	1000		mg/L	1000	12/06/19 10:43 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 09:27 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 09:27 AM
Sulfate	2200	100	300		mg/L	100	12/10/19 11:10 AM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11B
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-13
Project No:	19125525	**Collection Date:**	12/03/19 10:43 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	331	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 01:57 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 01:57 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 01:57 PM
Alkalinity, Total (As CaCO3)	331	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 01:57 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.111	0.100	0.250	J	mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	22100	1000	1000		mg/L	1	12/06/19 05:30 PM

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S - Spike Recovery outside control limits
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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-14
Project No:	19125525	**Collection Date:**	12/03/19 11:40 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0129	0.0100	0.0300	J	mg/L	1	12/12/19 12:29 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 12:29 PM
Dissolved Arsenic	0.00220	0.00200	0.00500	J	mg/L	1	12/12/19 12:29 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 12:29 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 12:29 PM
Dissolved Nickel	0.00554	0.00300	0.0100	J	mg/L	1	12/12/19 12:29 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 12:29 PM
Dissolved Vanadium	0.000720	0.000500	0.00100	J	mg/L	1	12/12/19 12:29 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0481	0.0100	0.0300		mg/L	1	12/11/19 12:07 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 12:07 PM
Arsenic	0.00271	0.00200	0.00500	J	mg/L	1	12/11/19 12:07 PM
Calcium	1040	10.0	30.0		mg/L	100	12/11/19 02:52 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 12:07 PM
Lead	0.000730	0.000300	0.00100	J	mg/L	1	12/11/19 12:07 PM
Magnesium	1150	10.0	30.0		mg/L	100	12/11/19 02:52 PM
Nickel	0.00578	0.00300	0.0100	J	mg/L	1	12/11/19 12:07 PM
Potassium	46.5	10.0	30.0		mg/L	100	12/11/19 02:52 PM
Sodium	11300	100	300		mg/L	1000	12/11/19 01:53 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 12:07 PM
Vanadium	0.000604	0.000500	0.00100	J	mg/L	1	12/11/19 12:07 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:37 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:27 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0845	0.00300	0.0100	N	mg/L	1	12/11/19 12:07 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0861	0.00300	0.0100	N	mg/L	1	12/12/19 12:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	20300	300	1000		mg/L	1000	12/06/19 10:59 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 09:43 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 09:43 AM
Sulfate	3200	1000	3000		mg/L	1000	12/06/19 10:59 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-14
Project No:	19125525	**Collection Date:**	12/03/19 11:40 AM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	185	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 04:33 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 04:33 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 04:33 PM
Alkalinity, Total (As CaCO3)	185	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 04:33 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	41200	1000	1000		mg/L	1	12/06/19 05:30 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7B
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-15
Project No:	19125525	**Collection Date:**	12/03/19 12:43 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0155	0.0100	0.0300	J	mg/L	1	12/12/19 01:16 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:16 PM
Dissolved Arsenic	0.00421	0.00200	0.00500	J	mg/L	1	12/12/19 01:16 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:16 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:16 PM
Dissolved Nickel	0.00729	0.00300	0.0100	J	mg/L	1	12/12/19 01:16 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:16 PM
Dissolved Vanadium	0.00454	0.000500	0.00100		mg/L	1	12/12/19 01:16 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0576	0.0100	0.0300		mg/L	1	12/11/19 12:09 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 12:09 PM
Arsenic	0.00426	0.00200	0.00500	J	mg/L	1	12/11/19 12:09 PM
Calcium	1470	10.0	30.0		mg/L	100	12/11/19 02:54 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 12:09 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 12:09 PM
Magnesium	1860	10.0	30.0		mg/L	100	12/11/19 02:54 PM
Nickel	0.00785	0.00300	0.0100	J	mg/L	1	12/11/19 12:09 PM
Potassium	82.1	10.0	30.0		mg/L	100	12/11/19 02:54 PM
Sodium	14700	100	300		mg/L	1000	12/11/19 01:55 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 12:09 PM
Vanadium	0.00403	0.000500	0.00100		mg/L	1	12/11/19 12:09 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:39 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:29 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0959	0.00300	0.0100	N	mg/L	1	12/11/19 12:09 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0941	0.00300	0.0100	N	mg/L	1	12/12/19 01:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	25600	300	1000		mg/L	1000	12/06/19 11:15 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 09:59 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 09:59 AM
Sulfate	3810	1000	3000		mg/L	1000	12/06/19 11:15 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7B
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-15
Project No:	19125525	**Collection Date:**	12/03/19 12:43 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	192	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 04:40 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 04:40 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 04:40 PM
Alkalinity, Total (As CaCO3)	192	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 04:40 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	54600	1000	1000		mg/L	1	12/06/19 05:30 PM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-1
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-16
Project No:	19125525	**Collection Date:**	12/03/19 01:49 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.138	0.0100	0.0300		mg/L	1	12/12/19 01:18 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:18 PM
Dissolved Arsenic	0.0117	0.00200	0.00500		mg/L	1	12/12/19 01:18 PM
Dissolved Chromium	0.00397	0.00200	0.00500	J	mg/L	1	12/12/19 01:18 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:18 PM
Dissolved Nickel	0.0133	0.00300	0.0100		mg/L	1	12/12/19 01:18 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:18 PM
Dissolved Vanadium	0.00300	0.000500	0.00100		mg/L	1	12/12/19 01:18 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.356	0.0100	0.0300		mg/L	1	12/11/19 12:11 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 12:11 PM
Arsenic	0.00889	0.00200	0.00500		mg/L	1	12/11/19 12:11 PM
Calcium	734	10.0	30.0		mg/L	100	12/11/19 02:57 PM
Chromium	0.0108	0.00200	0.00500		mg/L	1	12/11/19 12:11 PM
Lead	0.000486	0.000300	0.00100	J	mg/L	1	12/11/19 12:11 PM
Magnesium	1130	10.0	30.0		mg/L	100	12/11/19 02:57 PM
Nickel	0.0140	0.00300	0.0100		mg/L	1	12/11/19 12:11 PM
Potassium	48.1	10.0	30.0		mg/L	100	12/11/19 02:57 PM
Sodium	9180	100	300		mg/L	1000	12/11/19 01:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 12:11 PM
Vanadium	0.00308	0.000500	0.00100		mg/L	1	12/11/19 12:11 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:42 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:31 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0138	0.00300	0.0100	N	mg/L	1	12/11/19 12:11 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0155	0.00300	0.0100	N	mg/L	1	12/12/19 01:18 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	17100	300	1000		mg/L	1000	12/06/19 11:31 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 10:15 AM
Nitrate-N	2.06	1.00	5.00	J	mg/L	10	12/05/19 10:15 AM
Sulfate	1900	100	300		mg/L	100	12/10/19 11:26 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-1
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-16
Project No:	19125525	**Collection Date:**	12/03/19 01:49 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	262	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 04:49 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 04:49 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 04:49 PM
Alkalinity, Total (As CaCO3)	262	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 04:49 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.819	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	41600	1000	1000		mg/L	1	12/06/19 05:30 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3R
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-17
Project No:	19125525	**Collection Date:**	12/03/19 02:42 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0221	0.0100	0.0300	J	mg/L	1	12/12/19 01:20 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:20 PM
Dissolved Arsenic	0.00453	0.00200	0.00500	J	mg/L	1	12/12/19 01:20 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:20 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:20 PM
Dissolved Nickel	0.00367	0.00300	0.0100	J	mg/L	1	12/12/19 01:20 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:20 PM
Dissolved Vanadium	0.0166	0.000500	0.00100		mg/L	1	12/12/19 01:20 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0317	0.0100	0.0300		mg/L	1	12/11/19 12:13 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 12:13 PM
Arsenic	0.00388	0.00200	0.00500	J	mg/L	1	12/11/19 12:13 PM
Calcium	1180	10.0	30.0		mg/L	100	12/11/19 02:59 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 12:13 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 12:13 PM
Magnesium	1590	10.0	30.0		mg/L	100	12/11/19 02:59 PM
Nickel	0.00311	0.00300	0.0100	J	mg/L	1	12/11/19 12:13 PM
Potassium	78.8	10.0	30.0		mg/L	100	12/11/19 02:59 PM
Sodium	13400	100	300		mg/L	1000	12/11/19 02:00 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 12:13 PM
Vanadium	0.0157	0.000500	0.00100		mg/L	1	12/11/19 12:13 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:44 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	0.000197	0.0000800	0.000200	J	mg/L	1	12/10/19 12:33 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.112	0.00300	0.0100	N	mg/L	1	12/11/19 12:13 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.114	0.00300	0.0100	N	mg/L	1	12/12/19 01:20 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	22000	300	1000		mg/L	1000	12/06/19 11:47 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 10:31 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 10:31 AM
Sulfate	5320	1000	3000		mg/L	1000	12/06/19 11:47 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3R
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-17
Project No:	19125525	**Collection Date:**	12/03/19 02:42 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	235	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 04:57 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 04:57 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 04:57 PM
Alkalinity, Total (As CaCO3)	235	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 04:57 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.563	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	48200	1000	1000		mg/L	1	12/06/19 05:30 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3RB
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-18
Project No:	19125525	**Collection Date:**	12/03/19 03:31 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0173	0.0100	0.0300	J	mg/L	1	12/12/19 01:22 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:22 PM
Dissolved Arsenic	0.00532	0.00200	0.00500		mg/L	1	12/12/19 01:22 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:22 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:22 PM
Dissolved Nickel	0.00371	0.00300	0.0100	J	mg/L	1	12/12/19 01:22 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:22 PM
Dissolved Vanadium	0.0133	0.000500	0.00100		mg/L	1	12/12/19 01:22 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0327	0.0100	0.0300		mg/L	1	12/11/19 12:15 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 12:15 PM
Arsenic	0.00529	0.00200	0.00500		mg/L	1	12/11/19 12:15 PM
Calcium	1150	10.0	30.0		mg/L	100	12/11/19 03:01 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/11/19 12:15 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 12:15 PM
Magnesium	1550	10.0	30.0		mg/L	100	12/11/19 03:01 PM
Nickel	0.00379	0.00300	0.0100	J	mg/L	1	12/11/19 12:15 PM
Potassium	76.2	10.0	30.0		mg/L	100	12/11/19 03:01 PM
Sodium	12900	100	300		mg/L	1000	12/11/19 02:02 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 12:15 PM
Vanadium	0.0128	0.000500	0.00100		mg/L	1	12/11/19 12:15 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:46 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:36 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.106	0.00300	0.0100	N	mg/L	1	12/11/19 12:15 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.109	0.00300	0.0100	N	mg/L	1	12/12/19 01:22 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21800	300	1000		mg/L	1000	12/07/19 12:03 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 10:47 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 10:47 AM
Sulfate	5490	1000	3000		mg/L	1000	12/07/19 12:03 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3RB
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-18
Project No:	19125525	**Collection Date:**	12/03/19 03:31 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	237	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:05 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:05 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:05 PM
Alkalinity, Total (As CaCO3)	237	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:05 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.194	0.100	0.250	J	mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	46400	1000	1000		mg/L	1	12/06/19 05:30 PM

Qualifiers:

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-4-1
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-19
Project No:	19125525	**Collection Date:**	12/03/19 04:33 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0134	0.0100	0.0300	J	mg/L	1	12/12/19 01:24 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:24 PM
Dissolved Arsenic	0.00362	0.00200	0.00500	J	mg/L	1	12/12/19 01:24 PM
Dissolved Chromium	0.00303	0.00200	0.00500	J	mg/L	1	12/12/19 01:24 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:24 PM
Dissolved Nickel	0.00887	0.00300	0.0100	J	mg/L	1	12/12/19 01:24 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:24 PM
Dissolved Vanadium	0.00121	0.000500	0.00100		mg/L	1	12/12/19 01:24 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0366	0.0100	0.0300		mg/L	1	12/11/19 12:17 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/11/19 12:17 PM
Arsenic	0.00351	0.00200	0.00500	J	mg/L	1	12/11/19 12:17 PM
Calcium	1000	5.00	15.0		mg/L	50	12/11/19 03:03 PM
Chromium	0.00424	0.00200	0.00500	J	mg/L	1	12/11/19 12:17 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/11/19 12:17 PM
Magnesium	1010	5.00	15.0		mg/L	50	12/11/19 03:03 PM
Nickel	0.00976	0.00300	0.0100	J	mg/L	1	12/11/19 12:17 PM
Potassium	37.2	5.00	15.0		mg/L	50	12/11/19 03:03 PM
Sodium	7110	50.0	150		mg/L	500	12/11/19 02:04 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/11/19 12:17 PM
Vanadium	0.000764	0.000500	0.00100	J	mg/L	1	12/11/19 12:17 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:48 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 12:38 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.250	0.00300	0.0100	N	mg/L	1	12/11/19 12:17 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.256	0.00300	0.0100	N	mg/L	1	12/12/19 01:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	12900	300	1000		mg/L	1000	12/07/19 12:19 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 11:03 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 11:03 AM
Sulfate	3070	1000	3000		mg/L	1000	12/07/19 12:19 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-4-1
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912022-19
Project No:	19125525	**Collection Date:**	12/03/19 04:33 PM
Lab Order:	1912022	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	435	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:19 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:19 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:19 PM
Alkalinity, Total (As CaCO3)	435	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:19 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.113	0.100	0.250	J	mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	28800	1000	1000		mg/L	1	12/06/19 05:30 PM

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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191203A

Sample ID: **DCS-93925** Batch ID: **93925** TestNo: **SW7470A** Units: **mg/L**
SampType: **DCS** Run ID: **CETAC2_HG_191203A** Analysis Date: **12/3/2019 2:43:30 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000184	0.000200	0.000200	0	92.0	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191210A

The QC data in batch 94003 applies to the following samples: 1912022-01A, 1912022-02A, 1912022-03A, 1912022-04A, 1912022-05A, 1912022-06A, 1912022-07A, 1912022-08A, 1912022-09A, 1912022-10A, 1912022-11A, 1912022-12A, 1912022-13A, 1912022-14A, 1912022-15A, 1912022-16A, 1912022-17A, 1912022-18A, 1912022-19A

Sample ID: **MB-94003** Batch ID: **94003** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_191210A** Analysis Date: **12/10/2019 11:37:12 A** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-94003** Batch ID: **94003** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_191210A** Analysis Date: **12/10/2019 11:39:28 A** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00176	0.000200	0.00200	0	88.0	85	115			

Sample ID: **LCSD-94003** Batch ID: **94003** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_191210A** Analysis Date: **12/10/2019 11:41:44 A** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00182	0.000200	0.00200	0	91.0	85	115	3.35	15	

Sample ID: **1912022-01A SD** Batch ID: **94003** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_191210A** Analysis Date: **12/10/2019 11:50:48 A** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1912022-01A PDS** Batch ID: **94003** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_191210A** Analysis Date: **12/10/2019 11:53:03 A** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000118	0.000200	0.00250	0	4.72	85	115			S

Sample ID: **1912022-01A MS** Batch ID: **94003** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_191210A** Analysis Date: **12/10/2019 2:11:12 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00116	0.00100	0.00200	0.000476	34.4	80	120			S

Sample ID: **1912022-01A MSD** Batch ID: **94003** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_191210A** Analysis Date: **12/10/2019 2:13:28 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00116	0.00100	0.00200	0.000476	34.2	80	120	0.430	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191210A

Sample ID: **ICV-191210**	Batch ID: **R107842**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_191210A**	Analysis Date: **12/10/2019 9:11:47 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00393	0.000200	0.00400	0	98.2	90	110			

Sample ID: **CCV4-191210**	Batch ID: **R107842**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210A**	Analysis Date: **12/10/2019 11:32:39 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	90	110			

Sample ID: **CCV5-191210**	Batch ID: **R107842**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210A**	Analysis Date: **12/10/2019 12:15:45 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00192	0.000200	0.00200	0	96.0	90	110			

Sample ID: **CCV6-191210**	Batch ID: **R107842**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210A**	Analysis Date: **12/10/2019 12:43:04 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV8-191210**	Batch ID: **R107842**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210A**	Analysis Date: **12/10/2019 1:53:30 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV9-191210**	Batch ID: **R107842**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210A**	Analysis Date: **12/10/2019 2:22:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00184	0.000200	0.00200	0	92.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191210B

The QC data in batch 94004 applies to the following samples: 1912022-01B, 1912022-02B, 1912022-03B, 1912022-04B, 1912022-05B, 1912022-06B, 1912022-07B, 1912022-08B, 1912022-09B, 1912022-10B, 1912022-11B, 1912022-12B, 1912022-13B, 1912022-14B, 1912022-15B, 1912022-16B, 1912022-17B, 1912022-18B, 1912022-19B

Sample ID: **MB-94004** Batch ID: **94004** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_191210B** Analysis Date: **12/10/2019 12:47:38 P** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-94004** Batch ID: **94004** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_191210B** Analysis Date: **12/10/2019 12:49:53 P** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00187	0.000200	0.00200	0	93.5	85	115			

Sample ID: **LCSD-94004** Batch ID: **94004** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_191210B** Analysis Date: **12/10/2019 12:52:09 P** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00184	0.000200	0.00200	0	92.0	85	115	1.62	15	

Sample ID: **1912022-01B SD** Batch ID: **94004** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_191210B** Analysis Date: **12/10/2019 1:01:13 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1912022-01B PDS** Batch ID: **94004** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_191210B** Analysis Date: **12/10/2019 1:03:29 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200	0.00250	0	0	85	115			S

Sample ID: **1912022-01B MS** Batch ID: **94004** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_191210B** Analysis Date: **12/10/2019 2:18:01 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000755	0.00100	0.00200	0	37.8	80	120			S

Sample ID: **1912022-01B MSD** Batch ID: **94004** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_191210B** Analysis Date: **12/10/2019 2:20:16 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000780	0.00100	0.00200	0	39.0	80	120	3.26	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191210B

Sample ID: **ICV-191210**	Batch ID: **R107843**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 9:11:47 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00393	0.000200	0.00400	0	98.2	90	110			

Sample ID: **CCV6-191210**	Batch ID: **R107843**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 12:43:04 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV7-191210**	Batch ID: **R107843**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 1:26:11 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV8-191210**	Batch ID: **R107843**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 1:53:30 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV9-191210**	Batch ID: **R107843**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 2:22:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00184	0.000200	0.00200	0	92.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191001C

Sample ID: **DCS1-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_191001C**	Analysis Date: **10/1/2019 10:53:00 AM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0249	0.0300	0.0200	0	124	70	130	0	0	
Antimony	0.00103	0.00250	0.00100	0	103	70	130	0	0	
Lead	0.000538	0.00100	0.000500	0	108	70	130	0	0	
Thallium	0.000502	0.00150	0.000500	0	100	70	130	0	0	
Vanadium	0.000494	0.00100	0.000500	0	98.8	70	130	0	0	

Sample ID: **DCS2-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_191001C**	Analysis Date: **10/1/2019 10:55:00 AM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.291	0.300	0.300	0	97.0	70	130	0	0	
Magnesium	0.319	0.300	0.300	0	106	70	130	0	0	
Potassium	0.324	0.300	0.300	0	108	70	130	0	0	
Sodium	0.325	0.300	0.300	0	108	70	130	0	0	

Sample ID: **DCS3-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_191001C**	Analysis Date: **10/1/2019 10:57:00 AM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00518	0.00500	0.00500	0	104	70	130	0	0	
Chromium	0.00559	0.00500	0.00500	0	112	70	130	0	0	
Nickel	0.00560	0.0100	0.00500	0	112	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191001G

Sample ID: **DCS1-92934** Batch ID: **92934** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS** Run ID: **ICP-MS4_191001G** Analysis Date: **10/1/2019 10:53:00 AM** Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.000455	0.0100	0.000500	0	91.0	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191211A

The QC data in batch 94027 applies to the following samples: 1912022-01A, 1912022-02A, 1912022-03A, 1912022-04A, 1912022-05A, 1912022-06A, 1912022-07A, 1912022-08A, 1912022-09A, 1912022-10A, 1912022-11A, 1912022-12A, 1912022-13A, 1912022-14A, 1912022-15A, 1912022-16A, 1912022-17A, 1912022-18A, 1912022-19A

Sample ID: **LCS-94027** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_191211A** Analysis Date: **12/11/2019 11:10:00 A** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0	99.5	80	120			
Antimony	0.201	0.00250	0.200	0	100	80	120			
Arsenic	0.200	0.00500	0.200	0	99.8	80	120			
Calcium	4.86	0.300	5.00	0	97.2	80	120			
Chromium	0.206	0.00500	0.200	0	103	80	120			
Lead	0.199	0.00100	0.200	0	99.6	80	120			
Magnesium	5.24	0.300	5.00	0	105	80	120			
Nickel	0.208	0.0100	0.200	0	104	80	120			
Potassium	5.13	0.300	5.00	0	103	80	120			
Thallium	0.201	0.00150	0.200	0	100	80	120			
Vanadium	0.199	0.00100	0.200	0	99.6	80	120			

Sample ID: **LCSD-94027** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191211A** Analysis Date: **12/11/2019 11:12:00 A** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.97	0.0300	5.00	0	99.5	80	120	0.094	15	
Antimony	0.201	0.00250	0.200	0	100	80	120	0.124	15	
Arsenic	0.199	0.00500	0.200	0	99.4	80	120	0.371	15	
Calcium	4.86	0.300	5.00	0	97.2	80	120	0.023	15	
Chromium	0.207	0.00500	0.200	0	103	80	120	0.193	15	
Lead	0.200	0.00100	0.200	0	100	80	120	0.545	15	
Magnesium	5.23	0.300	5.00	0	105	80	120	0.204	15	
Nickel	0.207	0.0100	0.200	0	104	80	120	0.511	15	
Potassium	5.06	0.300	5.00	0	101	80	120	1.36	15	
Thallium	0.204	0.00150	0.200	0	102	80	120	1.49	15	
Vanadium	0.201	0.00100	0.200	0	101	80	120	1.07	15	

Sample ID: **MB-94027** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_191211A** Analysis Date: **12/11/2019 11:17:00 A** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0241	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191211A

Sample ID: **MB-94027**	Batch ID: **94027**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_191211A**	Analysis Date: **12/11/2019 11:17:00 A**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **1912022-06A SD**	Batch ID: **94027**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_191211A**	Analysis Date: **12/11/2019 11:21:00 A**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0748	0.150	0	0.0541				32.1	20	R
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00205				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0.000763				0	20	
Nickel	<0.0150	0.0500	0	0.00763				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	<0.00250	0.00500	0	0.00121				0	20	

Sample ID: **1912022-06A PDS**	Batch ID: **94027**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_191211A**	Analysis Date: **12/11/2019 11:41:00 A**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.76	0.0300	5.00	0.0541	94.1	75	125			
Antimony	0.190	0.00250	0.200	0	94.8	75	125			
Arsenic	0.191	0.00500	0.200	0.00205	94.6	75	125			
Chromium	0.164	0.00500	0.200	0	82.1	75	125			
Lead	0.207	0.00100	0.200	0.000763	103	75	125			
Nickel	0.164	0.0100	0.200	0.00763	78.1	75	125			
Thallium	0.216	0.00150	0.200	0	108	75	125			
Vanadium	0.172	0.00100	0.200	0.00121	85.6	75	125			

Sample ID: **1912022-06A MS**	Batch ID: **94027**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_191211A**	Analysis Date: **12/11/2019 11:44:00 A**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.89	0.0300	5.00	0.0541	96.7	75	125			
Antimony	0.188	0.00250	0.200	0	94.0	75	125			
Arsenic	0.201	0.00500	0.200	0.00205	99.6	75	125			
Calcium	933	0.300	5.00	955	-429	75	125			S
Chromium	0.163	0.00500	0.200	0	81.6	75	125			
Lead	0.205	0.00100	0.200	0.000763	102	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191211A

Sample ID: **1912022-06A MS**	Batch ID: **94027**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_191211A**	Analysis Date: **12/11/2019 11:44:00 A**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	789	0.300	5.00	853	-1290	75	125			S
Nickel	0.169	0.0100	0.200	0.00763	80.5	75	125			
Potassium	70.5	0.300	5.00	64.6	118	75	125			
Thallium	0.212	0.00150	0.200	0	106	75	125			
Vanadium	0.176	0.00100	0.200	0.00121	87.3	75	125			

Sample ID: **1912022-06A MSD**	Batch ID: **94027**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_191211A**	Analysis Date: **12/11/2019 11:46:00 A**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.94	0.0300	5.00	0.0541	97.6	75	125	0.942	15	
Antimony	0.186	0.00250	0.200	0	93.0	75	125	1.09	15	
Arsenic	0.201	0.00500	0.200	0.00205	99.5	75	125	0.104	15	
Calcium	925	0.300	5.00	955	-594	75	125	0.888	15	S
Chromium	0.163	0.00500	0.200	0	81.4	75	125	0.213	15	
Lead	0.207	0.00100	0.200	0.000763	103	75	125	0.961	15	
Magnesium	782	0.300	5.00	853	-1440	75	125	0.946	15	S
Nickel	0.169	0.0100	0.200	0.00763	80.7	75	125	0.240	15	
Potassium	69.8	0.300	5.00	64.6	105	75	125	0.956	15	
Thallium	0.216	0.00150	0.200	0	108	75	125	1.76	15	
Vanadium	0.175	0.00100	0.200	0.00121	87.1	75	125	0.151	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191211A

Sample ID: **ICV-191211**	Batch ID: **R107852**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_191211A**	Analysis Date: **12/11/2019 10:51:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.37	0.0300	2.50	0	94.7	90	110			
Antimony	0.0996	0.00250	0.100	0	99.6	90	110			
Arsenic	0.0987	0.00500	0.100	0	98.7	90	110			
Calcium	2.46	0.300	2.50	0	98.6	90	110			
Chromium	0.106	0.00500	0.100	0	106	90	110			
Lead	0.0968	0.00100	0.100	0	96.8	90	110			
Magnesium	2.50	0.300	2.50	0	100	90	110			
Nickel	0.105	0.0100	0.100	0	105	90	110			
Potassium	2.55	0.300	2.50	0	102	90	110			
Thallium	0.0967	0.00150	0.100	0	96.7	90	110			
Vanadium	0.101	0.00100	0.100	0	101	90	110			

Sample ID: **LCVL-191211**	Batch ID: **R107852**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191211A**	Analysis Date: **12/11/2019 11:02:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0977	0.0300	0.100	0	97.7	80	120			
Antimony	0.00186	0.00250	0.00200	0	93.0	80	120			
Arsenic	0.00492	0.00500	0.00500	0	98.3	80	120			
Calcium	0.0953	0.300	0.100	0	95.3	80	120			
Chromium	0.00528	0.00500	0.00500	0	106	80	120			
Lead	0.000929	0.00100	0.00100	0	92.9	80	120			
Magnesium	0.100	0.300	0.100	0	100	80	120			
Nickel	0.00534	0.0100	0.00500	0	107	80	120			
Potassium	0.0987	0.300	0.100	0	98.7	80	120			
Thallium	0.000932	0.00150	0.00100	0	93.2	80	120			
Vanadium	0.000981	0.00100	0.00100	0	98.1	80	120			

Sample ID: **CCV1-191211**	Batch ID: **R107852**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191211A**	Analysis Date: **12/11/2019 11:56:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.22	0.0300	5.00	0	104	90	110			
Antimony	0.203	0.00250	0.200	0	101	90	110			
Arsenic	0.210	0.00500	0.200	0	105	90	110			
Calcium	5.02	0.300	5.00	0	100	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Lead	0.203	0.00100	0.200	0	101	90	110			
Magnesium	5.24	0.300	5.00	0	105	90	110			
Nickel	0.211	0.0100	0.200	0	105	90	110			
Potassium	5.42	0.300	5.00	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191211A

Sample ID: **CCV1-191211**	Batch ID: **R107852**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191211A**	Analysis Date: **12/11/2019 11:56:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.204	0.00150	0.200	0	102	90	110			
Vanadium	0.201	0.00100	0.200	0	100	90	110			

Sample ID: **CCV2-191211**	Batch ID: **R107852**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191211A**	Analysis Date: **12/11/2019 12:27:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.27	0.0300	5.00	0	105	90	110			
Antimony	0.203	0.00250	0.200	0	101	90	110			
Arsenic	0.197	0.00500	0.200	0	98.3	90	110			
Calcium	5.14	0.300	5.00	0	103	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Lead	0.203	0.00100	0.200	0	102	90	110			
Magnesium	5.15	0.300	5.00	0	103	90	110			
Nickel	0.194	0.0100	0.200	0	96.9	90	110			
Thallium	0.203	0.00150	0.200	0	102	90	110			
Vanadium	0.201	0.00100	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191211C

The QC data in batch 94027 applies to the following samples: 1912022-01A, 1912022-02A, 1912022-03A, 1912022-04A, 1912022-05A, 1912022-06A, 1912022-07A, 1912022-08A, 1912022-09A, 1912022-10A, 1912022-11A, 1912022-12A, 1912022-13A, 1912022-14A, 1912022-15A, 1912022-16A, 1912022-17A, 1912022-18A, 1912022-19A

Sample ID: **LCS-94027** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_191211C** Analysis Date: **12/11/2019 11:10:00 A** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.191	0.0100	0.200	0	95.4	80	120			N

Sample ID: **LCSD-94027** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191211C** Analysis Date: **12/11/2019 11:12:00 A** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0	96.6	80	120	1.32	15	N

Sample ID: **MB-94027** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_191211C** Analysis Date: **12/11/2019 11:17:00 A** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **1912022-06A SD** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_191211C** Analysis Date: **12/11/2019 11:21:00 A** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0508	0.0500	0	0.0518				1.83	20	N

Sample ID: **1912022-06A PDS** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_191211C** Analysis Date: **12/11/2019 11:41:00 A** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.251	0.0100	0.200	0.0518	99.6	75	125			N

Sample ID: **1912022-06A MS** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_191211C** Analysis Date: **12/11/2019 11:44:00 A** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.254	0.0100	0.200	0.0518	101	75	125			N

Sample ID: **1912022-06A MSD** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_191211C** Analysis Date: **12/11/2019 11:46:00 A** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.256	0.0100	0.200	0.0518	102	75	125	0.561	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191211C

Sample ID: **ICV-191211**	Batch ID: **R107857**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_191211C**	Analysis Date: **12/11/2019 10:51:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0928	0.0100	0.100	0	92.8	90	110			N

Sample ID: **LCVL-191211**	Batch ID: **R107857**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191211C**	Analysis Date: **12/11/2019 11:02:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00435	0.0100	0.00500	0	86.9	80	120			N

Sample ID: **CCV1-191211**	Batch ID: **R107857**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191211C**	Analysis Date: **12/11/2019 11:56:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0	97.4	90	110			N

Sample ID: **CCV2-191211**	Batch ID: **R107857**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191211C**	Analysis Date: **12/11/2019 12:27:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.197	0.0100	0.200	0	98.3	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

The QC data in batch 94053 applies to the following samples: 1912022-01B, 1912022-02B, 1912022-03B, 1912022-04B, 1912022-05B, 1912022-06B, 1912022-07B, 1912022-08B, 1912022-09B, 1912022-10B, 1912022-11B, 1912022-12B, 1912022-13B, 1912022-14B, 1912022-15B, 1912022-16B, 1912022-17B, 1912022-18B, 1912022-19B

Sample ID: **MB-94053** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 12:21:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-94053** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 12:23:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.18	0.0300	5.00	0	104	80	120			
Antimony	0.200	0.00250	0.200	0	99.9	80	120			
Arsenic	0.202	0.00500	0.200	0	101	80	120			
Chromium	0.194	0.00500	0.200	0	96.9	80	120			
Lead	0.193	0.00100	0.200	0	96.4	80	120			
Nickel	0.191	0.0100	0.200	0	95.4	80	120			
Thallium	0.193	0.00150	0.200	0	96.4	80	120			
Vanadium	0.194	0.00100	0.200	0	96.8	80	120			

Sample ID: **LCSD-94053** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 12:25:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.16	0.0300	5.00	0	103	80	120	0.426	15	
Antimony	0.202	0.00250	0.200	0	101	80	120	1.05	15	
Arsenic	0.198	0.00500	0.200	0	99.2	80	120	1.71	15	
Chromium	0.194	0.00500	0.200	0	97.1	80	120	0.248	15	
Lead	0.198	0.00100	0.200	0	98.9	80	120	2.53	15	
Nickel	0.188	0.0100	0.200	0	94.0	80	120	1.48	15	
Thallium	0.196	0.00150	0.200	0	97.8	80	120	1.39	15	
Vanadium	0.194	0.00100	0.200	0	96.8	80	120	0.021	15	

Sample ID: **1912022-14B SD** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 12:31:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **1912022-14B SD** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 12:31:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0129				0	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00220				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Nickel	<0.0150	0.0500	0	0.00554				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	<0.00250	0.00500	0	0.000720				0	20	

Sample ID: **1912022-14B PDS** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 12:51:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.77	0.0300	5.00	0.0129	95.0	75	125			
Antimony	0.180	0.00250	0.200	0	90.0	75	125			
Arsenic	0.200	0.00500	0.200	0.00220	99.0	75	125			
Chromium	0.155	0.00500	0.200	0	77.5	75	125			
Lead	0.211	0.00100	0.200	0	105	75	125			
Nickel	0.158	0.0100	0.200	0.00554	76.1	75	125			
Thallium	0.216	0.00150	0.200	0	108	75	125			
Vanadium	0.168	0.00100	0.200	0.000720	83.7	75	125			

Sample ID: **1912022-14B MS** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 12:54:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	5.05	0.0300	5.00	0.0129	101	75	125			
Dissolved Antimony	0.181	0.00250	0.200	0	90.7	75	125			
Dissolved Arsenic	0.207	0.00500	0.200	0.00220	102	75	125			
Dissolved Chromium	0.154	0.00500	0.200	0	77.1	75	125			
Dissolved Lead	0.214	0.00100	0.200	0	107	75	125			
Dissolved Nickel	0.158	0.0100	0.200	0.00554	76.1	75	125			
Dissolved Thallium	0.219	0.00150	0.200	0	110	75	125			
Dissolved Vanadium	0.169	0.00100	0.200	0.000720	84.4	75	125			

Sample ID: **1912022-14B MSD** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 12:56:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.99	0.0300	5.00	0.0129	99.5	75	125	1.16	15	
Dissolved Antimony	0.179	0.00250	0.200	0	89.6	75	125	1.22	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **1912022-14B MSD** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 12:56:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Arsenic	0.206	0.00500	0.200	0.00220	102	75	125	0.467	15	
Dissolved Chromium	0.151	0.00500	0.200	0	75.3	75	125	2.39	15	
Dissolved Lead	0.213	0.00100	0.200	0	106	75	125	0.419	15	
Dissolved Nickel	0.155	0.0100	0.200	0.00554	74.6	75	125	1.93	15	
Dissolved Thallium	0.218	0.00150	0.200	0	109	75	125	0.684	15	
Dissolved Vanadium	0.167	0.00100	0.200	0.000720	83.1	75	125	1.54	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **ICV-191212** Batch ID: **R107877** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:19:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.47	0.0300	2.50	0	98.7	90	110			
Antimony	0.103	0.00250	0.100	0	103	90	110			
Arsenic	0.0994	0.00500	0.100	0	99.4	90	110			
Chromium	0.109	0.00500	0.100	0	109	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Nickel	0.106	0.0100	0.100	0	106	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			
Vanadium	0.105	0.00100	0.100	0	105	90	110			

Sample ID: **LCVL-191212** Batch ID: **R107877** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:25:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	80	120			
Antimony	0.00196	0.00250	0.00200	0	98.2	80	120			
Arsenic	0.00511	0.00500	0.00500	0	102	80	120			
Chromium	0.00536	0.00500	0.00500	0	107	80	120			
Lead	0.000961	0.00100	0.00100	0	96.1	80	120			
Nickel	0.00541	0.0100	0.00500	0	108	80	120			
Thallium	0.000954	0.00150	0.00100	0	95.4	80	120			
Vanadium	0.000953	0.00100	0.00100	0	95.3	80	120			

Sample ID: **CCV2-191212** Batch ID: **R107877** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 12:14:00 P** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.24	0.0300	5.00	0	105	90	110			
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.200	0.00500	0.200	0	99.9	90	110			
Chromium	0.192	0.00500	0.200	0	96.2	90	110			
Lead	0.195	0.00100	0.200	0	97.6	90	110			
Nickel	0.191	0.0100	0.200	0	95.6	90	110			
Thallium	0.194	0.00150	0.200	0	97.0	90	110			
Vanadium	0.193	0.00100	0.200	0	96.6	90	110			

Sample ID: **CCV3-191212** Batch ID: **R107877** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 1:03:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.12	0.0300	5.00	0	102	90	110			
Antimony	0.200	0.00250	0.200	0	99.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **CCV3-191212** Batch ID: **R107877** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 1:03:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.197	0.00500	0.200	0	98.5	90	110			
Chromium	0.188	0.00500	0.200	0	93.9	90	110			
Lead	0.191	0.00100	0.200	0	95.3	90	110			
Nickel	0.186	0.0100	0.200	0	93.1	90	110			
Thallium	0.189	0.00150	0.200	0	94.6	90	110			
Vanadium	0.190	0.00100	0.200	0	94.9	90	110			

Sample ID: **CCV4-191212** Batch ID: **R107877** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 1:30:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.09	0.0300	5.00	0	102	90	110			
Antimony	0.196	0.00250	0.200	0	97.8	90	110			
Arsenic	0.196	0.00500	0.200	0	98.0	90	110			
Chromium	0.185	0.00500	0.200	0	92.3	90	110			
Lead	0.192	0.00100	0.200	0	96.0	90	110			
Nickel	0.181	0.0100	0.200	0	90.6	90	110			
Thallium	0.192	0.00150	0.200	0	95.8	90	110			
Vanadium	0.186	0.00100	0.200	0	92.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212D

The QC data in batch 94053 applies to the following samples: 1912022-01B, 1912022-02B, 1912022-03B, 1912022-04B, 1912022-05B, 1912022-06B, 1912022-07B, 1912022-08B, 1912022-09B, 1912022-10B, 1912022-11B, 1912022-12B, 1912022-13B, 1912022-14B, 1912022-15B, 1912022-16B, 1912022-17B, 1912022-18B, 1912022-19B

Sample ID: **MB-94053** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_191212D** Analysis Date: **12/12/2019 12:21:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-94053** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_191212D** Analysis Date: **12/12/2019 12:23:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.192	0.0100	0.200	0	96.0	80	120			N

Sample ID: **LCSD-94053** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191212D** Analysis Date: **12/12/2019 12:25:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.191	0.0100	0.200	0	95.4	80	120	0.587	15	N

Sample ID: **1912022-14B SD** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_191212D** Analysis Date: **12/12/2019 12:31:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.0788	0.0500	0	0.0861				8.88	20	N

Sample ID: **1912022-14B PDS** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_191212D** Analysis Date: **12/12/2019 12:51:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.295	0.0100	0.200	0.0861	104	75	125			N

Sample ID: **1912022-14B MS** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_191212D** Analysis Date: **12/12/2019 12:54:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.300	0.0100	0.200	0.0861	107	75	125			N

Sample ID: **1912022-14B MSD** Batch ID: **94053** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_191212D** Analysis Date: **12/12/2019 12:56:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.297	0.0100	0.200	0.0861	105	75	125	1.14	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212D

Sample ID: **ICV-191212**	Batch ID: **R109095**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_191212D**	Analysis Date: **12/12/2019 10:19:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0957	0.0100	0.100	0	95.7	90	110			N

Sample ID: **LCVL-191212**	Batch ID: **R109095**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191212D**	Analysis Date: **12/12/2019 10:25:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00444	0.0100	0.00500	0	88.9	80	120			N

Sample ID: **CCV2-191212**	Batch ID: **R109095**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212D**	Analysis Date: **12/12/2019 12:14:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.190	0.0100	0.200	0	95.2	90	110			N

Sample ID: **CCV3-191212**	Batch ID: **R109095**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212D**	Analysis Date: **12/12/2019 1:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.188	0.0100	0.200	0	94.0	90	110			N

Sample ID: **CCV4-191212**	Batch ID: **R109095**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212D**	Analysis Date: **12/12/2019 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.180	0.0100	0.200	0	89.8	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190926A

Sample ID: **DCS2-92934** Batch ID: **92934** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS5_190926A** Analysis Date: **9/26/2019 12:44:00 PM** Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.299	0.300	0.300	0	99.8	70	130	0	0	
Magnesium	0.322	0.300	0.300	0	107	70	130	0	0	
Potassium	0.291	0.300	0.300	0	96.9	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191007A

Sample ID: **DCS2-92934** Batch ID: **92934** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS5_191007A** Analysis Date: **10/7/2019 1:30:00 PM** Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	0.331	0.300	0.300	0	110	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191211A

The QC data in batch 94027 applies to the following samples: 1912022-01A, 1912022-02A, 1912022-03A, 1912022-04A, 1912022-05A, 1912022-06A, 1912022-07A, 1912022-08A, 1912022-09A, 1912022-10A, 1912022-11A, 1912022-12A, 1912022-13A, 1912022-14A, 1912022-15A, 1912022-16A, 1912022-17A, 1912022-18A, 1912022-19A

Sample ID: **MB-94027** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_191211A** Analysis Date: **12/11/2019 1:00:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	<0.100	0.300								

Sample ID: **LCS-94027** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_191211A** Analysis Date: **12/11/2019 1:03:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.06	0.300	5.00	0	101	80	120			

Sample ID: **LCSD-94027** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_191211A** Analysis Date: **12/11/2019 1:05:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.01	0.300	5.00	0	100	80	120	0.841	15	

Sample ID: **1912022-06A SD** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_191211A** Analysis Date: **12/11/2019 1:12:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5900	750	0	6110				3.55	20	

Sample ID: **1912022-06A PDS** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_191211A** Analysis Date: **12/11/2019 1:34:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	8560	150	2500	6110	97.9	75	125			

Sample ID: **1912022-06A MS** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_191211A** Analysis Date: **12/11/2019 1:37:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5660	150	5.00	6110	-9030	75	125			S

Sample ID: **1912022-06A MSD** Batch ID: **94027** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_191211A** Analysis Date: **12/11/2019 1:39:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5700	150	5.00	6110	-8260	75	125	0.676	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191211A

Sample ID: **1912022-06A SD**	Batch ID: **94027**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_191211A**	Analysis Date: **12/11/2019 2:15:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	952	75.0	0	976				2.50	20	
Magnesium	865	75.0	0	892				3.14	20	
Potassium	53.6	75.0	0	56.9				5.99	20	

Sample ID: **1912022-06A PDS**	Batch ID: **94027**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_191211A**	Analysis Date: **12/11/2019 2:38:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1230	15.0	250	976	100	75	125			
Magnesium	1170	15.0	250	892	110	75	125			
Potassium	302	15.0	250	56.9	98.1	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191211A

Sample ID: **ICV-191211**	Batch ID: **R107860**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_191211A**	Analysis Date: **12/11/2019 10:30:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.61	0.300	2.50	0	104	90	110			
Magnesium	2.46	0.300	2.50	0	98.2	90	110			
Potassium	2.54	0.300	2.50	0	101	90	110			
Sodium	2.53	0.300	2.50	0	101	90	110			

Sample ID: **LCVL-191211**	Batch ID: **R107860**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_191211A**	Analysis Date: **12/11/2019 10:39:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0963	0.300	0.100	0	96.3	80	120			
Magnesium	0.102	0.300	0.100	0	102	80	120			
Potassium	0.0918	0.300	0.100	0	91.8	80	120			
Sodium	0.102	0.300	0.100	0	102	80	120			

Sample ID: **CCV4-191211**	Batch ID: **R107860**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191211A**	Analysis Date: **12/11/2019 12:54:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.11	0.300	5.00	0	102	90	110			

Sample ID: **CCV5-191211**	Batch ID: **R107860**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191211A**	Analysis Date: **12/11/2019 1:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.13	0.300	5.00	0	103	90	110			

Sample ID: **CCV6-191211**	Batch ID: **R107860**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191211A**	Analysis Date: **12/11/2019 2:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.16	0.300	5.00	0	103	90	110			
Magnesium	5.06	0.300	5.00	0	101	90	110			
Potassium	5.14	0.300	5.00	0	103	90	110			

Sample ID: **CCV7-191211**	Batch ID: **R107860**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191211A**	Analysis Date: **12/11/2019 2:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.20	0.300	5.00	0	104	90	110			
Magnesium	5.12	0.300	5.00	0	102	90	110			
Potassium	5.16	0.300	5.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191211A

Sample ID: **CCV8-191211** Batch ID: **R107860** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_191211A** Analysis Date: **12/11/2019 3:05:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.20	0.300	5.00	0	104	90	110			
Magnesium	5.16	0.300	5.00	0	103	90	110			
Potassium	5.16	0.300	5.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191126A

Sample ID: **DCS2-93877**	Batch ID: **93877**	TestNo: **E300**	Units: **mg/L**
SampType: **DCS2**	Run ID: **IC2_191126A**	Analysis Date: **11/26/2019 12:11:04 P**	Prep Date: **11/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.501	1.00	0.5000	0	100	65	135	0	0	
Fluoride	0.249	0.400	0.2000	0	125	65	135	0	0	
Nitrate-N	0.237	0.0500	0.2500	0	94.9	60	140	0	0	
Sulfate	1.72	3.00	1.500	0	115	65	135	0	0	

Sample ID: **DCS3-93877**	Batch ID: **93877**	TestNo: **E300**	Units: **mg/L**
SampType: **DCS3**	Run ID: **IC2_191126A**	Analysis Date: **11/26/2019 12:27:04 P**	Prep Date: **11/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.943	1.00	1.000	0	94.3	65	135	0	0	
Fluoride	0.518	0.400	0.4000	0	130	65	135	0	0	
Nitrate-N	0.459	0.0500	0.5000	0	91.9	60	140	0	0	
Sulfate	3.08	3.00	3.000	0	103	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191204B

Sample ID: **ICV-191204**	Batch ID: **R107768**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_191204B**	Analysis Date: **12/4/2019 11:05:53 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	10.3	0.400	10.00	0	103	90	110			
Nitrate-N	13.0	0.500	12.50	0	104	90	110			

Sample ID: **CCV4-191204**	Batch ID: **R107768**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191204B**	Analysis Date: **12/5/2019 4:34:38 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.19	0.400	4.000	0	105	90	110			
Nitrate-N	5.04	0.500	5.000	0	101	90	110			

Sample ID: **CCV5-191204**	Batch ID: **R107768**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191204B**	Analysis Date: **12/5/2019 12:19:21 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.12	0.400	4.000	0	103	90	110			
Nitrate-N	5.01	0.500	5.000	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191206B

The QC data in batch 93988 applies to the following samples: 1912022-01D, 1912022-02D, 1912022-03D, 1912022-04D, 1912022-05D, 1912022-06D, 1912022-07D, 1912022-08D, 1912022-09D, 1912022-10D, 1912022-11D, 1912022-12D, 1912022-13D, 1912022-14D, 1912022-15D, 1912022-16D, 1912022-17D, 1912022-18D, 1912022-19D

Sample ID: **MB-93988** Batch ID: **93988** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_191206B** Analysis Date: **12/6/2019 12:20:48 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Sulfate	<1.00	3.00								

Sample ID: **LCS-93988** Batch ID: **93988** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_191206B** Analysis Date: **12/6/2019 12:36:48 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.60	1.00	10.00	0	96.0	90	110			
Sulfate	29.6	3.00	30.00	0	98.7	90	110			

Sample ID: **LCSD-93988** Batch ID: **93988** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_191206B** Analysis Date: **12/6/2019 12:52:48 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.67	1.00	10.00	0	96.7	90	110	0.796	20	
Sulfate	29.6	3.00	30.00	0	98.7	90	110	0.063	20	

Sample ID: **1912022-01DMS** Batch ID: **93988** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_191206B** Analysis Date: **12/6/2019 5:23:42 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	31300	1000	20000	12120	96.0	90	110			
Sulfate	22500	3000	20000	3591	94.6	90	110			

Sample ID: **1912022-01DMSD** Batch ID: **93988** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_191206B** Analysis Date: **12/6/2019 5:39:42 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	31300	1000	20000	12120	95.8	90	110	0.153	20	
Sulfate	22500	3000	20000	3591	94.5	90	110	0.109	20	

Sample ID: **1912022-02DMS** Batch ID: **93988** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_191206B** Analysis Date: **12/6/2019 6:11:42 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	29900	1000	20000	10630	96.4	90	110			
Sulfate	21500	3000	20000	2492	94.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191206B

Sample ID: **1912022-02DMSD** Batch ID: **93988** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_191206B** Analysis Date: **12/6/2019 6:27:42 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	29900	1000	20000	10630	96.6	90	110	0.089	20	
Sulfate	21500	3000	20000	2492	95.1	90	110	0.206	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191206B

Sample ID: **ICV-191206**	Batch ID: **R107795**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_191206B**	Analysis Date: **12/6/2019 10:28:01 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.2	1.00	25.00	0	101	90	110			
Sulfate	77.4	3.00	75.00	0	103	90	110			

Sample ID: **CCV1-191206**	Batch ID: **R107795**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191206B**	Analysis Date: **12/6/2019 4:17:24 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Sulfate	30.0	3.00	30.00	0	99.9	90	110			

Sample ID: **CCV2-191206**	Batch ID: **R107795**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191206B**	Analysis Date: **12/6/2019 9:39:42 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.88	1.00	10.00	0	98.8	90	110			
Sulfate	29.8	3.00	30.00	0	99.4	90	110			

Sample ID: **CCV3-191206**	Batch ID: **R107795**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191206B**	Analysis Date: **12/7/2019 1:39:42 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.91	1.00	10.00	0	99.1	90	110			
Sulfate	29.8	3.00	30.00	0	99.3	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191008B

Sample ID: **DCS2-93136** Batch ID: **93136** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC4_191008B** Analysis Date: **10/8/2019 1:58:25 PM** Prep Date: **10/8/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.249	0.400	0.2000	0	124	65	135	0	0	
Nitrate-N	0.227	0.0500	0.2500	0	90.9	60	140	0	0	
Sulfate	1.73	3.00	1.500	0	115	65	135	0	0	

Sample ID: **DCS3-93136** Batch ID: **93136** TestNo: **E300** Units: **mg/L**
SampType: **DCS3** Run ID: **IC4_191008B** Analysis Date: **10/8/2019 2:14:25 PM** Prep Date: **10/8/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.484	0.400	0.4000	0	121	65	135	0	0	
Nitrate-N	0.404	0.0500	0.5000	0	80.7	60	140	0	0	
Sulfate	3.05	3.00	3.000	0	102	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191204A

The QC data in batch 93954 applies to the following samples: 1912022-01D, 1912022-02D, 1912022-03D, 1912022-04D, 1912022-05D, 1912022-06D, 1912022-07D, 1912022-08D, 1912022-09D, 1912022-10D, 1912022-11D, 1912022-12D, 1912022-13D, 1912022-14D, 1912022-15D, 1912022-16D, 1912022-17D, 1912022-18D, 1912022-19D

Sample ID: **MB-93954** Batch ID: **93954** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_191204A** Analysis Date: **12/4/2019 12:41:35 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-93954** Batch ID: **93954** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_191204A** Analysis Date: **12/4/2019 12:57:35 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.73	0.400	4.000	0	93.3	90	110			
Nitrate-N	5.09	0.500	5.000	0	102	90	110			
Sulfate	28.2	3.00	30.00	0	93.9	90	110			

Sample ID: **LCSD-93954** Batch ID: **93954** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_191204A** Analysis Date: **12/4/2019 1:13:35 PM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.72	0.400	4.000	0	93.0	90	110	0.342	20	
Nitrate-N	4.84	0.500	5.000	0	96.8	90	110	5.02	20	
Sulfate	28.3	3.00	30.00	0	94.2	90	110	0.353	20	

Sample ID: **1912022-01DMS** Batch ID: **93954** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_191204A** Analysis Date: **12/5/2019 9:31:52 AM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	195	4.00	200.0	1.222	96.8	90	110			
Nitrate-N	43.0	5.00	45.16	0	95.2	90	110			
Sulfate	2740	30.0	200.0	2709	13.8	90	110			S

Sample ID: **1912022-01DMSD** Batch ID: **93954** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_191204A** Analysis Date: **12/5/2019 9:47:52 AM** Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	191	4.00	200.0	1.222	95.0	90	110	1.92	20	
Nitrate-N	43.4	5.00	45.16	0	96.0	90	110	0.871	20	
Sulfate	2750	30.0	200.0	2709	18.0	90	110	0.307	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191204A

Sample ID: **1912022-02DMS**	Batch ID: **93954**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_191204A**	Analysis Date: **12/5/2019 10:03:52 AM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	186	4.00	200.0	0	92.9	90	110			
Nitrate-N	41.6	5.00	45.16	0	92.1	90	110			
Sulfate	2260	30.0	200.0	2136	62.7	90	110			S

Sample ID: **1912022-02DMSD**	Batch ID: **93954**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_191204A**	Analysis Date: **12/5/2019 10:33:36 AM**	Prep Date: **12/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	234	4.00	200.0	0	117	90	110	22.9	20	SR
Nitrate-N	42.4	5.00	45.16	0	94.0	90	110	2.04	20	
Sulfate	2230	30.0	200.0	2136	48.5	90	110	1.26	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191204A

Sample ID: **ICV-191204**	Batch ID: **R107767**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_191204A**	Analysis Date: **12/4/2019 9:33:01 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	9.88	0.400	10.00	0	98.8	90	110			
Nitrate-N	12.4	0.500	12.50	0	99.5	90	110			
Sulfate	73.6	3.00	75.00	0	98.1	90	110			

Sample ID: **CCV1-191204**	Batch ID: **R107767**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_191204A**	Analysis Date: **12/5/2019 8:58:03 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.84	0.400	4.000	0	96.0	90	110			
Nitrate-N	4.87	0.500	5.000	0	97.5	90	110			
Sulfate	28.1	3.00	30.00	0	93.6	90	110			

Sample ID: **CCV2-191204**	Batch ID: **R107767**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_191204A**	Analysis Date: **12/5/2019 11:48:42 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.83	0.400	4.000	0	95.8	90	110			
Nitrate-N	4.88	0.500	5.000	0	97.7	90	110			
Sulfate	28.4	3.00	30.00	0	94.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191209B

The QC data in batch 93999 applies to the following samples: 1912022-02D, 1912022-06D, 1912022-08D, 1912022-12D, 1912022-13D, 1912022-16D

Sample ID: **MB-93999**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC4_191209B**	Analysis Date: **12/9/2019 9:42:07 AM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<1.00	3.00								

Sample ID: **LCS-93999**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC4_191209B**	Analysis Date: **12/9/2019 9:58:07 AM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.1	3.00	30.00	0	96.9	90	110			

Sample ID: **LCSD-93999**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC4_191209B**	Analysis Date: **12/9/2019 10:14:07 AM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	28.6	3.00	30.00	0	95.4	90	110	1.49	20	

Sample ID: **1912026-01BMS**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 1:50:34 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	430	30.0	200.0	255.4	87.2	90	110			S

Sample ID: **1912026-01BMSD**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 2:06:34 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	448	30.0	200.0	255.4	96.2	90	110	4.08	20	

Sample ID: **1912035-01AMS**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 2:38:34 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	196	30.0	200.0	57.16	69.7	90	110			S

Sample ID: **1912035-01AMSD**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 3:13:46 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	248	30.0	200.0	57.16	95.4	90	110	23.2	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191209B

Sample ID: **ICV-191209**	Batch ID: **R107841**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_191209B**	Analysis Date: **12/9/2019 9:10:07 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	75.5	3.00	75.00	0	101	90	110			

Sample ID: **CCV1-191209**	Batch ID: **R107841**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 9:02:34 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.2	3.00	30.00	0	97.2	90	110			

Sample ID: **CCV2-191209**	Batch ID: **R107841**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 1:02:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.7	3.00	30.00	0	98.8	90	110			

Sample ID: **CCV3-191209**	Batch ID: **R107841**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 6:41:46 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	30.0	3.00	30.00	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191209A

The QC data in batch 94008 applies to the following samples: 1912022-01D, 1912022-02D, 1912022-03D, 1912022-04D, 1912022-05D, 1912022-06D, 1912022-07D, 1912022-08D, 1912022-09D, 1912022-10D, 1912022-11D, 1912022-12D, 1912022-13D

Sample ID: **MB-94008** Batch ID: **94008** TestNo: **M2320 B** Units: **mg/L @ pH 4.49**
SampType: **MBLK** Run ID: **TITRATOR_191209A** Analysis Date: **12/9/2019 10:29:00 AM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-94008** Batch ID: **94008** TestNo: **M2320 B** Units: **mg/L @ pH 4.22**
SampType: **LCS** Run ID: **TITRATOR_191209A** Analysis Date: **12/9/2019 10:34:00 AM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	50.9	20.0	50.00	0	102	74	129			

Sample ID: **1912021-01F-DUP** Batch ID: **94008** TestNo: **M2320 B** Units: **mg/L @ pH 4.51**
SampType: **DUP** Run ID: **TITRATOR_191209A** Analysis Date: **12/9/2019 11:00:00 AM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	117	20.0	0	117.7				0.511	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	117	20.0	0	117.7				0.511	20	

Sample ID: **1912022-01D-DUP** Batch ID: **94008** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_191209A** Analysis Date: **12/9/2019 11:50:00 AM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	577	20.0	0	582.5				0.989	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	577	20.0	0	582.5				0.989	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191209A

The QC data in batch 94019 applies to the following samples: 1912022-14D, 1912022-15D, 1912022-16D, 1912022-17D, 1912022-18D, 1912022-19D

Sample ID: **MB-94019** Batch ID: **94019** TestNo: **M2320 B** Units: **mg/L @ pH 4.28**
SampType: **MBLK** Run ID: **TITRATOR_191209A** Analysis Date: **12/9/2019 4:17:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-94019** Batch ID: **94019** TestNo: **M2320 B** Units: **mg/L @ pH 4.18**
SampType: **LCS** Run ID: **TITRATOR_191209A** Analysis Date: **12/9/2019 4:21:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	53.4	20.0	50.00	0	107	74	129			

Sample ID: **1912030-01D-DUP** Batch ID: **94019** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_191209A** Analysis Date: **12/9/2019 5:42:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	230	20.0	0	229.7				0.217	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	230	20.0	0	229.7				0.217	20	

Sample ID: **1912030-09D-DUP** Batch ID: **94019** TestNo: **M2320 B** Units: **mg/L @ pH 4.52**
SampType: **DUP** Run ID: **TITRATOR_191209A** Analysis Date: **12/9/2019 6:55:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	219	20.0	0	216.5				0.919	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	219	20.0	0	216.5				0.919	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191209A

Sample ID: **ICV-191209**	Batch ID: **R107845**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.11**
SampType: **ICV**	Run ID: **TITRATOR_191209A**	Analysis Date: **12/9/2019 10:26:00 AM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	13.3	20.0	0							
Alkalinity, Carbonate (As CaCO3)	87.7	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	101	20.0	100.0	0	101	98	102			

Sample ID: **CCV1-191209**	Batch ID: **R107845**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.34**
SampType: **CCV**	Run ID: **TITRATOR_191209A**	Analysis Date: **12/9/2019 12:17:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	23.0	20.0	0							
Alkalinity, Carbonate (As CaCO3)	75.4	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.3	20.0	100.0	0	98.3	90	110			

Sample ID: **CCV2-191209**	Batch ID: **R107845**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.25**
SampType: **CCV**	Run ID: **TITRATOR_191209A**	Analysis Date: **12/9/2019 2:02:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	17.8	20.0	0							
Alkalinity, Carbonate (As CaCO3)	82.4	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Sample ID: **CCV3-191209**	Batch ID: **R107845**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.28**
SampType: **CCV**	Run ID: **TITRATOR_191209A**	Analysis Date: **12/9/2019 6:02:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	25.9	20.0	0							
Alkalinity, Carbonate (As CaCO3)	73.9	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.8	20.0	100.0	0	99.8	90	110			

Sample ID: **CCV4-191209**	Batch ID: **R107845**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.31**
SampType: **CCV**	Run ID: **TITRATOR_191209A**	Analysis Date: **12/9/2019 7:20:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	30.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	69.4	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191209A

Sample ID: **CCV5-191209**	Batch ID: **R107845**	TestNo: **M2320 B**		Units:	**mg/L @ pH 4.3**
SampType: **CCV**	Run ID: **TITRATOR_191209A**	Analysis Date: **12/9/2019 7:33:00 PM**		Prep Date:	**12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	31.4	20.0	0							
Alkalinity, Carbonate (As CaCO3)	68.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.7	20.0	100.0	0	99.7	90	110			

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191202B

Sample ID: **DCS-93917**	Batch ID: **93917**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **DCS**	Run ID: **WC_191202B**	Analysis Date: **12/2/2019 3:30:00 PM**	Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.123	0.100	0.1000	0	123	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191206B

The QC data in batch 93989 applies to the following samples: 1912022-01D, 1912022-02D, 1912022-03D, 1912022-04D, 1912022-05D, 1912022-06D, 1912022-07D, 1912022-08D, 1912022-09D, 1912022-10D, 1912022-11D, 1912022-12D, 1912022-13D, 1912022-14D, 1912022-15D, 1912022-16D, 1912022-17D, 1912022-18D, 1912022-19D

Sample ID: **MB-93989** Batch ID: **93989** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_191206B** Analysis Date: **12/6/2019 5:30:00 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-93989** Batch ID: **93989** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_191206B** Analysis Date: **12/6/2019 5:30:00 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	757	10.0	745.6	0	102	90	113			

Sample ID: **1912022-01D-DUP** Batch ID: **93989** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_191206B** Analysis Date: **12/6/2019 5:30:00 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	26400	1000	0	26300				0.380	5	

Sample ID: **1912022-02D-DUP** Batch ID: **93989** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_191206B** Analysis Date: **12/6/2019 5:30:00 PM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	22000	1000	0	21700				1.37	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191209A

The QC data in batch 94015 applies to the following samples: 1912022-01C, 1912022-02C, 1912022-03C , 1912022-04C, 1912022-05C, 1912022-06C, 1912022-07C, 1912022-08C, 1912022-09C, 1912022-10C, 1912022-11C, 1912022-12C, 1912022-13C, 1912022-14C, 1912022-15C, 1912022-16C, 1912022-17C, 1912022-18C, 1912022-19C

Sample ID: **MB-94015** Batch ID: **94015** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_191209A** Analysis Date: **12/9/2019 5:30:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-94015** Batch ID: **94015** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **LCS** Run ID: **WC_191209A** Analysis Date: **12/9/2019 5:30:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.91	0.250	5.000	0	98.2	80	120			

Sample ID: **1912022-01CMS** Batch ID: **94015** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_191209A** Analysis Date: **12/9/2019 5:30:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.78	0.250	5.000	1.350	88.6	80	120			

Sample ID: **1912022-01CMSD** Batch ID: **94015** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_191209A** Analysis Date: **12/9/2019 5:30:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.86	0.250	5.000	1.350	90.2	80	120	1.37	25	

Sample ID: **1912022-11CMS** Batch ID: **94015** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_191209A** Analysis Date: **12/9/2019 5:30:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.01	0.250	5.000	0	80.2	80	120			

Sample ID: **1912022-11CMSD** Batch ID: **94015** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_191209A** Analysis Date: **12/9/2019 5:30:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.04	0.250	5.000	0	80.8	80	120	0.745	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191209A

Sample ID: **ICV-191209**	Batch ID: **R107815**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_191209A**	Analysis Date: **12/9/2019 5:30:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.87	0.250	2.500	0	115	80	120			

Sample ID: **CCV1-191209**	Batch ID: **R107815**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_191209A**	Analysis Date: **12/9/2019 5:30:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.20	0.250	5.000	0	84.0	80	120			

Sample ID: **CCV2-191209**	Batch ID: **R107815**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_191209A**	Analysis Date: **12/9/2019 5:30:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.10	0.250	5.000	0	82.0	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912022
Project: Copano GW Sampling 4Q19

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.4**	**g/L @ pH 4.4**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

January 10, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1169763
Samples Received:	12/11/2019
Project Number:	1912022
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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MW-6R L1169763-01 Non-Potable Water

Collected by | Collected date/time 12/03/19 08:52 | Received date/time 12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 10:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 10:00	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 14:58	RRE	Mt. Juliet, TN

MW-6RB L1169763-02 Non-Potable Water

Collected by | Collected date/time 12/03/19 09:40 | Received date/time 12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 10:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 10:00	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 14:58	RRE	Mt. Juliet, TN

MW-9 L1169763-03 Non-Potable Water

Collected by | Collected date/time 12/03/19 10:32 | Received date/time 12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/09/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/09/20 10:15	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-8 L1169763-04 Non-Potable Water

Collected by | Collected date/time 12/03/19 11:10 | Received date/time 12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 10:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 10:00	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-5 L1169763-05 Non-Potable Water

Collected by | Collected date/time 12/03/19 11:57 | Received date/time 12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 10:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 10:00	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-5B L1169763-06 Non-Potable Water

Collected by | Collected date/time 12/03/19 12:36 | Received date/time 12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 10:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 10:00	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-4 L1169763-07 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				12/03/19 13:25	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 10:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 10:00	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

DB-5 L1169763-08 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				12/03/19 14:29	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 10:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 10:00	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW4-2A L1169763-09 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				12/03/19 16:18	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 14:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 14:40	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-101 L1169763-10 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				12/03/19 16:28	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 14:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 14:40	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-10 L1169763-11 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				12/03/19 09:06	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 14:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 14:40	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-11 L1169763-12 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				12/03/19 09:52	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 14:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 14:40	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-11B L1169763-13 Non-Potable Water

Collected by | Collected date/time 12/03/19 10:43 | Received date/time 12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 14:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 14:40	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-7 L1169763-14 Non-Potable Water

Collected by | Collected date/time 12/03/19 11:40 | Received date/time 12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 14:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 14:40	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-7B L1169763-15 Non-Potable Water

Collected by | Collected date/time 12/03/19 12:43 | Received date/time 12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 14:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 14:40	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-1 L1169763-16 Non-Potable Water

Collected by | Collected date/time 12/03/19 13:49 | Received date/time 12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 14:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 14:40	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-3R L1169763-17 Non-Potable Water

Collected by | Collected date/time 12/03/19 14:42 | Received date/time 12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 14:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 14:40	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

MW-3RB L1169763-18 Non-Potable Water

Collected by | Collected date/time 12/03/19 15:31 | Received date/time 12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 14:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 14:40	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/02/20 16:43	RRE	Mt. Juliet, TN

	Collected by	Collected date/time	Received date/time
MW-4-1 L1169763-19 Non-Potable Water		12/03/19 16:33	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1401615	1	12/30/19 12:38	01/07/20 14:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402475	1	12/30/19 15:24	01/07/20 14:40	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402475	1	12/30/19 15:24	01/03/20 13:22	RRE	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.48		0.435	0.62	01/07/2020 10:00	WG1401615
(T) Barium	*116*			*62.0-143*	*01/07/2020 10:00*	WG1401615
(T) Yttrium	*104*			*79.0-136*	*01/07/2020 10:00*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.87		0.731	0.975	01/07/2020 10:00	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.393		0.296	0.355	01/02/2020 14:58	WG1402475
(T) Barium-133	*112*			*30.0-143*	*01/02/2020 14:58*	WG1402475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	3.12		0.444	0.589	01/07/2020 10:00	WG1401615
(T) Barium	*117*			*62.0-143*	*01/07/2020 10:00*	WG1401615
(T) Yttrium	*109*			*79.0-136*	*01/07/2020 10:00*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.94		0.797	0.839	01/07/2020 10:00	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.819		0.353	0.25	01/02/2020 14:58	WG1402475
(T) Barium-133	*108*			*30.0-143*	*01/02/2020 14:58*	WG1402475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.770		0.457	0.699	01/09/2020 10:15	WG1401615
(T) Barium	*98.5*			*62.0-143*	*01/09/2020 10:15*	WG1401615
(T) Yttrium	*85.8*			*79.0-136*	*01/09/2020 10:15*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.00		0.670	0.956	01/09/2020 10:15	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.234		0.213	0.257	01/02/2020 16:43	WG1402475
(T) Barium-133	*111*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.03		0.378	0.607	01/07/2020 10:00	WG1401615
(T) Barium	*123*			*62.0-143*	*01/07/2020 10:00*	WG1401615
(T) Yttrium	*100*			*79.0-136*	*01/07/2020 10:00*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.12		0.502	0.787	01/07/2020 10:00	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0926		0.124	0.18	01/02/2020 16:43	WG1402475
(T) Barium-133	*109*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.37		0.462	0.609	01/07/2020 10:00	WG1401615
(T) Barium	*119*			*62.0-143*	*01/07/2020 10:00*	WG1401615
(T) Yttrium	*105*			*79.0-136*	*01/07/2020 10:00*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	3.03		0.767	0.893	01/07/2020 10:00	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.661		0.305	0.284	01/02/2020 16:43	WG1402475
(T) Barium-133	*108*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	6.39		0.513	0.562	01/07/2020 10:00	WG1401615
(T) Barium	*116*			*62.0-143*	*01/07/2020 10:00*	WG1401615
(T) Yttrium	*107*			*79.0-136*	*01/07/2020 10:00*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	7.68		0.955	0.855	01/07/2020 10:00	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.29		0.442	0.293	01/02/2020 16:43	WG1402475
(T) Barium-133	*116*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.01		0.383	0.526	01/07/2020 10:00	WG1401615
(T) Barium	*138*			*62.0-143*	*01/07/2020 10:00*	WG1401615
(T) Yttrium	*114*			*79.0-136*	*01/07/2020 10:00*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.27		0.628	0.844	01/07/2020 10:00	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.262		0.245	0.318	01/02/2020 16:43	WG1402475
(T) Barium-133	*102*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.94		0.412	0.589	01/07/2020 10:00	WG1401615
(T) Barium	*116*			*62.0-143*	*01/07/2020 10:00*	WG1401615
(T) Yttrium	*116*			*79.0-136*	*01/07/2020 10:00*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.36		0.661	0.815	01/07/2020 10:00	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.417		0.249	0.226	01/02/2020 16:43	WG1402475
(T) Barium-133	*113*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.0412		0.400	0.608	01/07/2020 14:40	WG1401615
(T) Barium	*124*			*62.0-143*	*01/07/2020 14:40*	WG1401615
(T) Yttrium	*108*			*79.0-136*	*01/07/2020 14:40*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.0707		0.523	0.808	01/07/2020 14:40	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0707		0.123	0.2	01/02/2020 16:43	WG1402475
(T) Barium-133	*110*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.760		0.368	0.502	01/07/2020 14:40	WG1401615
(T) Barium	*119*			*62.0-143*	*01/07/2020 14:40*	WG1401615
(T) Yttrium	*102*			*79.0-136*	*01/07/2020 14:40*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.936		0.541	0.713	01/07/2020 14:40	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.176		0.173	0.211	01/02/2020 16:43	WG1402475
(T) Barium-133	*108*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.000		0.428	0.62	01/07/2020 14:40	WG1401615
(T) Barium	*120*			*62.0-143*	*01/07/2020 14:40*	WG1401615
(T) Yttrium	*105*			*79.0-136*	*01/07/2020 14:40*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.131		0.649	0.958	01/07/2020 14:40	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.131		0.221	0.338	01/02/2020 16:43	WG1402475
(T) Barium-133	*105*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.800		0.433	0.651	01/07/2020 14:40	WG1401615
(T) Barium	*108*			*62.0-143*	*01/07/2020 14:40*	WG1401615
(T) Yttrium	*91.6*			*79.0-136*	*01/07/2020 14:40*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.869		0.586	0.916	01/07/2020 14:40	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0688		0.153	0.265	01/02/2020 16:43	WG1402475
(T) Barium-133	*102*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	6.82		0.532	0.703	01/07/2020 14:40	WG1401615
(T) Barium	*119*			*62.0-143*	*01/07/2020 14:40*	WG1401615
(T) Yttrium	*96.5*			*79.0-136*	*01/07/2020 14:40*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	8.12		0.978	0.939	01/07/2020 14:40	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.30		0.446	0.236	01/02/2020 16:43	WG1402475
(T) Barium-133	*114*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.81		0.470	0.653	01/07/2020 14:40	WG1401615
(T) Barium	*117*			*62.0-143*	*01/07/2020 14:40*	WG1401615
(T) Yttrium	*94.9*			*79.0-136*	*01/07/2020 14:40*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.32		0.774	0.962	01/07/2020 14:40	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.505		0.304	0.309	01/02/2020 16:43	WG1402475
(T) Barium-133	*103*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	9.02		0.538	0.623	01/07/2020 14:40	WG1401615
(T) Barium	*94.6*			*62.0-143*	*01/07/2020 14:40*	WG1401615
(T) Yttrium	*110*			*79.0-136*	*01/07/2020 14:40*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	9.02		0.999	1.97	01/07/2020 14:40	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	-0.332		0.461	1.35	01/02/2020 16:43	WG1402475
(T) Barium-133	*21.2*	C2		*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.16		0.459	0.701	01/07/2020 14:40	WG1401615
(T) Barium	*108*			*62.0-143*	*01/07/2020 14:40*	WG1401615
(T) Yttrium	*103*			*79.0-136*	*01/07/2020 14:40*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.16		0.898	1.44	01/07/2020 14:40	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	-0.382		0.439	0.735	01/02/2020 16:43	WG1402475
(T) Barium-133	*113*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	7.11		0.485	0.607	01/07/2020 14:40	WG1401615
(T) Barium	*143*			*62.0-143*	*01/07/2020 14:40*	WG1401615
(T) Yttrium	*102*			*79.0-136*	*01/07/2020 14:40*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	7.41		0.765	0.962	01/07/2020 14:40	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.298		0.280	0.355	01/02/2020 16:43	WG1402475
(T) Barium-133	*117*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	11.1		0.606	0.609	01/07/2020 14:40	WG1401615
(T) Barium	*141*			*62.0-143*	*01/07/2020 14:40*	WG1401615
(T) Yttrium	*102*			*79.0-136*	*01/07/2020 14:40*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	12.0		1.02	0.94	01/07/2020 14:40	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.895		0.412	0.331	01/02/2020 16:43	WG1402475
(T) Barium-133	*96.1*			*30.0-143*	*01/02/2020 16:43*	WG1402475

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.98		0.462	0.562	01/07/2020 14:40	WG1401615
(T) Barium	*111*			*62.0-143*	*01/07/2020 14:40*	WG1401615
(T) Yttrium	*102*			*79.0-136*	*01/07/2020 14:40*	WG1401615

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.14		0.713	0.932	01/07/2020 14:40	WG1402475

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.161		0.251	0.37	01/03/2020 13:22	WG1402475
(T) Barium-133	*124*			*30.0-143*	*01/03/2020 13:22*	WG1402475

Method Blank (MB)

(MB) R3489568-1 01/07/20 10:00

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-228	-0.189		0.427
(T) Barium	*125*		
(T) Yttrium	*98.9*		

L1169763-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1169763-01 01/07/20 10:00 • (DUP) R3489568-5 01/07/20 10:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-228	1.48	2.51	1	51.8	1.38		20	3
(T) Barium	*116*	*120*						
(T) Yttrium	*104*	*109*						

Laboratory Control Sample (LCS)

(LCS) R3489568-2 01/07/20 10:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-228	5.00	5.93	119	80.0-120	
(T) Barium			*130*		
(T) Yttrium			*98.6*		

L1170663-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1170663-01 01/07/20 14:40 • (MS) R3489568-3 01/07/20 10:00 • (MSD) R3489568-4 01/07/20 10:00

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-228	10.0	0.233	11.4	11.8	111	115	1	70.0-130			3.46		20
(T) Barium		*113*			*115*	*112*							
(T) Yttrium		*103*			*109*	*112*							

Method Blank (MB)

(MB) R3489712-1 01/02/20 14:58

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	-0.00350		0.0924
(T) Barium-133	*111*		

L1169763-19 Original Sample (OS) • Duplicate (DUP)

(OS) L1169763-19 01/03/20 13:22 • (DUP) R3489712-5 01/02/20 14:58

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.161	0.473	1	98.3	0.820		20	3
(T) Barium-133	*124*	*105*						

Laboratory Control Sample (LCS)

(LCS) R3489712-2 01/02/20 14:58

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.01	99.7	80.0-120	
(T) Barium-133			*111*		

L1169763-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1169763-02 01/02/20 14:58 • (MS) R3489712-3 01/02/20 14:58 • (MSD) R3489712-4 01/02/20 14:58

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	0.819	17.5	17.4	83.2	82.6	1	75.0-125			0.686		20
(T) Barium-133		*108*			*106*	*110*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
C2	Tracer recovery limits have been exceeded; values are outside lower control limits.

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* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

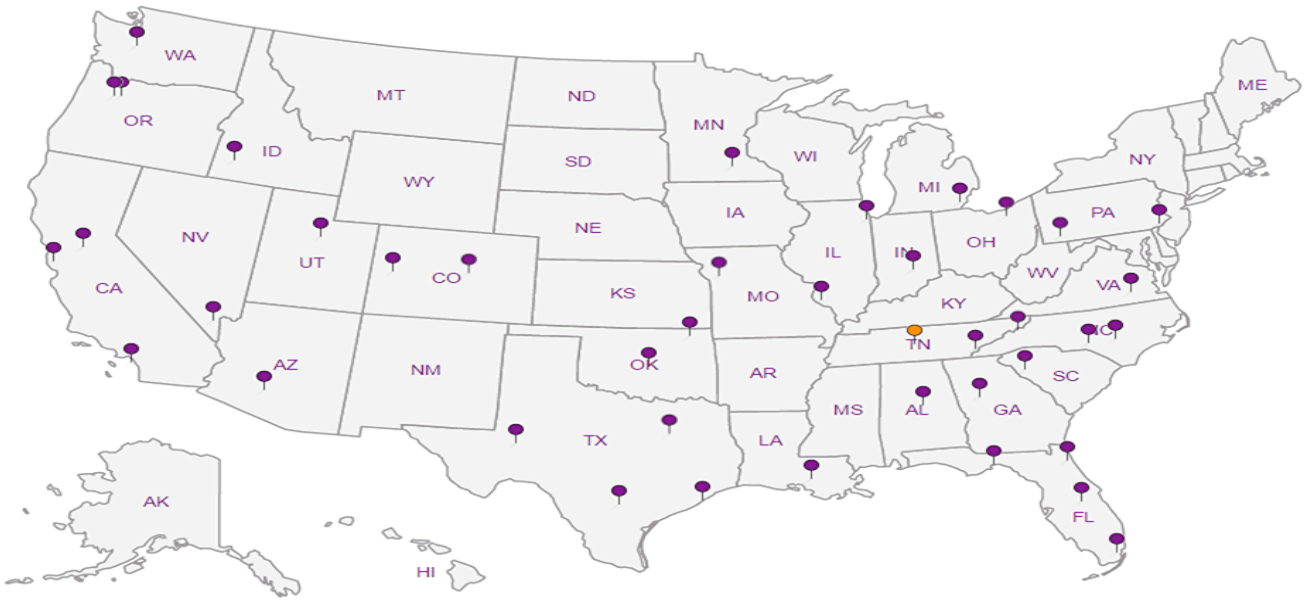
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

1102

Work Order: 1912022

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

169763

09-Dec-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra 228 E904.0	Ra 226 M7500 Ra B M	Requested Tests			
MW-6R	Aqueous	-01E	12/03/19 08:52 AM	1LHDPEHNO3	1					-01
MW-6R	Aqueous	-01F	12/03/19 08:52 AM	1LHDPEHNO3		1				
MW-6RB	Aqueous	-02E	12/03/19 09:40 AM	1LHDPEHNO3	1					02
MW-6RB	Aqueous	-02F	12/03/19 09:40 AM	1LHDPEHNO3		1				
MW-9	Aqueous	-03E	12/03/19 10:32 AM	1LHDPEHNO3	1					03
MW-9	Aqueous	-03F	12/03/19 10:32 AM	1LHDPEHNO3		1				
MW-8	Aqueous	-04E	12/03/19 11:10 AM	1LHDPEHNO3	1					04
MW-8	Aqueous	-04F	12/03/19 11:10 AM	1LHDPEHNO3		1				
MW-5	Aqueous	-05E	12/03/19 11:57 AM	1LHDPEHNO3	1					05
MW-5	Aqueous	-05F	12/03/19 11:57 AM	1LHDPEHNO3		1				
MW-5B	Aqueous	-06E	12/03/19 12:36 PM	1LHDPEHNO3	1					06
MW-5B	Aqueous	-06F	12/03/19 12:36 PM	1LHDPEHNO3		1				
MW-4	Aqueous	-07E	12/03/19 01:25 PM	1LHDPEHNO3	1					07
MW-4	Aqueous	-07F	12/03/19 01:25 PM	1LHDPEHNO3		1				
DB-5	Aqueous	-08E	12/03/19 02:29 PM	1LHDPEHNO3	1					08
DB-5	Aqueous	-08F	12/03/19 02:29 PM	1LHDPEHNO3		1				
MW4-2A	Aqueous	-09E	12/03/19 04:18 PM	1LHDPEHNO3	1					09
MW4-2A	Aqueous	-09F	12/03/19 04:18 PM	1LHDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

pH adj 1825 12/11

		Date/Time			Date/Time
Relinquished by:		12/9/19 1700	Received by:	Carol Kemp	12/11/19 10:25
Relinquished by:			Received by:		

Amb

RAD SCREEN: <0.5 mR/hr

NCF

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1912022

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

1169763

09-Dec-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra 228 E904.0	Ra 226 M7500 Ra B M	Requested Tests			
MW-101	Aqueous	-10E	12/03/19 04:28 PM	1LHDPEHNO3	1					10
MW-101	Aqueous	-10F	12/03/19 04:28 PM	1LHDPEHNO3		1				
MW-10	Aqueous	-11E	12/03/19 09:06 AM	1LHDPEHNO3	1					11
MW-10	Aqueous	-11F	12/03/19 09:06 AM	1LHDPEHNO3		1				
MW-11	Aqueous	-12E	12/03/19 09:52 AM	1LHDPEHNO3	1					12
MW-11	Aqueous	-12F	12/03/19 09:52 AM	1LHDPEHNO3		1				
MW-11B	Aqueous	-13E	12/03/19 10:43 AM	1LHDPEHNO3	1					13
MW-11B	Aqueous	-13F	12/03/19 10:43 AM	1LHDPEHNO3		1				
MW-7	Aqueous	-14E	12/03/19 11:40 AM	1LHDPEHNO3	1					14
MW-7	Aqueous	-14F	12/03/19 11:40 AM	1LHDPEHNO3		1				
MW-7B	Aqueous	-15E	12/03/19 12:43 PM	1LHDPEHNO3	1					15
MW-7B	Aqueous	-15F	12/03/19 12:43 PM	1LHDPEHNO3		1				
MW-1	Aqueous	-16E	12/03/19 01:49 PM	1LHDPEHNO3	1					16
MW-1	Aqueous	-16F	12/03/19 01:49 PM	1LHDPEHNO3		1				
MW-3R	Aqueous	-17E	12/03/19 02:42 PM	1LHDPEHNO3	1					17
MW-3R	Aqueous	-17F	12/03/19 02:42 PM	1LHDPEHNO3		1				
MW-3RB	Aqueous	-18E	12/03/19 03:31 PM	1LHDPEHNO3	1					18
MW-3RB	Aqueous	-18F	12/03/19 03:31 PM	1LHDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		12/9/19 1700	Received by:		12/11/19 1025
Relinquished by:			Received by:		

Amb

RAD SCREEN: <0.5 mR/hr

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1912022

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

184763

09-Dec-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra 228 E904.0	Ra 226 M7500 Ra B M	Requested Tests				
MW-4-1	Aqueous	-19E	12/03/19 04:33 PM	1LHDPEHNO3	1						19
MW-4-1	Aqueous	-19F	12/03/19 04:33 PM	1LHDPEHNO3		1					

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		12/9/19 1700	Received by:	Carol Kemp	12/11/19 1025
Relinquished by:			Received by:		

Dmb

RAD SCREEN: <0.5 mR/hr

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHERRTY	1169763
Cooler Received/Opened On: 2/11/19 Temperature:	Amb
Received By: Carol Kemp	
Signature: Carol Kemp	

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

Pace Analytical®
National Center for Testing & Innovation

Login #: L1169763	Client:DHLRRTX	Date:12/11	Evaluated by:Kelsey S

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Temperature not in range		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	pH not in range.		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courier
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

156

Login Comments: Received MW-6R with a pH of 3 and MW-11 with a pH of 5 and 6. pH adj 1825 12/11

Client informed by:		Call		Email		Voice Mail		Date:	Time:
TSR Initials:	Client Contact:								

Login Instructions:

Noted
DE 12/12/19

February 26, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 1912058

RE: Copano 4Q19

Dear Kevin Dworsky:

DHL Analytical, Inc. received 5 sample(s) on 12/6/2019 for the analyses presented in the following report.

REVISION#1: This revision consists of adding Dissolved Uranium to the list of test parameters for all samples as per the client. Please replace the original report with this revised report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 86645 CHAIN-OF-CUSTOD

CLIENT: Golder Associates
ADDRESS: 620 E. Airline DR Victoria TX 77901
PHONE: (361) 573-6927 FAX/E-MAIL: KevinDworsky@golder.com
DATA REPORTED TO: Kevin Dworsky
ADDITIONAL REPORT COPIES TO: Trey Logan

DATE: 12/5/19 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1912058
PROJECT LOCATION OR NAME: Copano 4019
CLENT PROJECT #: 191255C5 COLLECTOR: J. Fenner / R. Vru

Authorize 5% surcharge for TRRP Report? ☑ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☑ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☑	METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☑	RCRA ☐ TX11 ☐ ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS ☐	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	Total Metals 6020/200.8	FIELD NOTES
MW-3-7	01	12/5/19	1111	W	P	6		X	X	X												X	X		X			X	X	
MW-3-7B	02	12/5/19	1013			C																								
MW-103	03	12/5/19	1116			6																								
MW-3-5	04	12/5/19	0938			6																								
MW-3-6	05	12/5/19	1028		↓	6		↓	↓	↓												↓	↓		↓			↓	↓	

See attached Form for Full List of Analytes

RELINQUISHED BY: (Signature) DATE/TIME 12/5 15:02 RECEIVED BY: (Signature) Fed Ex
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
Fed Ex 12/6/19 0944
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☑ DHL DISPOSAL @ $5.00 each ☐ Return

3

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☑
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 7.2°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB2016



ORIGIN ID:CRPA (936) 230-9176

GOLDERS ASSOCIATES
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 05DEC19
ACTWGT: 56.10 LB
CAD: 6993941/SSFE2021
DIMS: 24x14x14 IN

BILL THIRD PARTY

Part # 156297-435 HAUB EXP 08/20

TO

DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222

INV:
PO:
REF:
DEPT:

FedEx
Express

FRI - 06 DEC 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7786 3506 8298

44 BSMA

78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder

Date Received: 12/6/2019

Work Order Number 1912058

Received by: EL

Checklist completed by: _____ 12/6/2019 (Signature / Date)

Reviewed by CC 12/6/2019 (Initials / Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☐	No ☑	7.2 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: Samples received out of temp.

Corrective Action Per client, proceed & flag data

Page 1 of 1

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano 4Q19	**LRC Date:** 1/14/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1912058
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?		**X**			**R5-04**
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?		**X**			**R5-05**
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano 4Q19	**LRC Date:** 1/14/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1912058
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?		X			**S2-04**
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

02/26/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *26-Feb-20*

CLIENT: Golder
Project: Copano 4Q19
Lab Order: 1912058

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis (total & dissolved)
Method SW6020B - Uranium in Water Analysis (this parameter is not NELACP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 12/6/19. A total of 5 samples were received. The samples arrived at DHL Analytical outside of the temperature control limit (6°C) at 7.2°C. Proceeded with analyses as per the client. The Anions (Nitrate-N & Sulfate), Alkalinity, Ammonia and TDS results for all samples are flagged with a "C" to designate this. The samples arrived in good condition and were properly packaged.

Exception Report R5-04

For Dissolved Metals analysis performed on 12/12/19 (batch 94054) Aluminum and Vanadium were detected below the reporting limits in the method blank (MB-94054).

Exception Report R5-05

For Dissolved Metals analysis (batch 94054) all samples all samples may be biased high for Aluminum and Vanadium. No further corrective actions were taken.

Exception Report R7-03

For Total Metals analysis performed on 12/12/19 (batch 94052) the matrix spike and matrix spike duplicate recoveries were out of control limits for a total of six analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Exception Report R10-01

CLIENT:	Golder
Project:	Copano 4Q19
Lab Order:	1912058

CASE NARRATIVE

For Total and Dissolved Metals analyses some dissolved results were slightly higher than the total results for samples MW-103, MW3-5 and MW3-6. In addition, the Dissolved Uranium result was slightly higher than the Total Uranium result for sample MW3-7B. These are within the acceptable variation limits. No further corrective actions were taken.

For Anions analysis all samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride & Sulfate).

Exception Report S2-04

For Dissolved Metals analysis performed on 12/12/19 Vanadium was detected below the reporting limit in CCB4-191212 and CCB5-191212. All associated samples were QC samples. No further corrective actions were taken.

For Anions analysis performed on 12/6/19 Chloride was detected below the reporting limit in CCB1-191206. All associated samples were QC samples. No further corrective actions were taken.

Exception Report S9-01

For Total Metals analysis performed on 12/12/19 (batch 94052) the PDS recovery was slightly below control limits for Chromium and Nickel. These are flagged accordingly in the QC summary report. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

For Dissolved Metals analysis performed on 12/12/19 (batch 94054) the RPD for the serial dilution was above control limits for Vanadium. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Dissolved Mercury analysis performed on 12/17/19 (batch 94085) the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *14-Jan-20*

CLIENT: Golder
Project: Copano 4Q19
Lab Order: 1912058

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1912058-01	MW3-7		12/05/19 11:11 AM	12/6/2019
1912058-02	MW3-7B		12/05/19 10:13 AM	12/6/2019
1912058-03	MW-103		12/05/19 11:16 AM	12/6/2019
1912058-04	MW3-5		12/05/19 09:38 AM	12/6/2019
1912058-05	MW3-6		12/05/19 10:28 AM	12/6/2019

Lab Order: 1912058
Client: Golder
Project: Copano 4Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912058-01A	MW3-7	12/05/19 11:11 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-7	12/05/19 11:11 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-7	12/05/19 11:11 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-7	12/05/19 11:11 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-7	12/05/19 11:11 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94084
1912058-01B	MW3-7	12/05/19 11:11 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW3-7	12/05/19 11:11 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912058-01C	MW3-7	12/05/19 11:11 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912058-01D	MW3-7	12/05/19 11:11 AM	Aqueous	M2320 B	Alkalinity Preparation	12/11/19 09:38 AM	94061
	MW3-7	12/05/19 11:11 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW3-7	12/05/19 11:11 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW3-7	12/05/19 11:11 AM	Aqueous	M2540C	TDS Preparation	12/11/19 01:51 PM	94067
1912058-02A	MW3-7B	12/05/19 10:13 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-7B	12/05/19 10:13 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-7B	12/05/19 10:13 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-7B	12/05/19 10:13 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-7B	12/05/19 10:13 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94084
1912058-02B	MW3-7B	12/05/19 10:13 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW3-7B	12/05/19 10:13 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912058-02C	MW3-7B	12/05/19 10:13 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912058-02D	MW3-7B	12/05/19 10:13 AM	Aqueous	M2320 B	Alkalinity Preparation	12/11/19 09:38 AM	94061
	MW3-7B	12/05/19 10:13 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW3-7B	12/05/19 10:13 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW3-7B	12/05/19 10:13 AM	Aqueous	M2540C	TDS Preparation	12/11/19 01:51 PM	94067
1912058-03A	MW-103	12/05/19 11:16 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW-103	12/05/19 11:16 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW-103	12/05/19 11:16 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW-103	12/05/19 11:16 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052

Lab Order: 1912058
Client: Golder
Project: Copano 4Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912058-03A	MW-103	12/05/19 11:16 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94084
1912058-03B	MW-103	12/05/19 11:16 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW-103	12/05/19 11:16 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912058-03C	MW-103	12/05/19 11:16 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912058-03D	MW-103	12/05/19 11:16 AM	Aqueous	M2320 B	Alkalinity Preparation	12/11/19 09:38 AM	94061
	MW-103	12/05/19 11:16 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW-103	12/05/19 11:16 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW-103	12/05/19 11:16 AM	Aqueous	M2540C	TDS Preparation	12/11/19 01:51 PM	94067
1912058-04A	MW3-5	12/05/19 09:38 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-5	12/05/19 09:38 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-5	12/05/19 09:38 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-5	12/05/19 09:38 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-5	12/05/19 09:38 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94084
1912058-04B	MW3-5	12/05/19 09:38 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW3-5	12/05/19 09:38 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912058-04C	MW3-5	12/05/19 09:38 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912058-04D	MW3-5	12/05/19 09:38 AM	Aqueous	M2320 B	Alkalinity Preparation	12/11/19 09:38 AM	94061
	MW3-5	12/05/19 09:38 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW3-5	12/05/19 09:38 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW3-5	12/05/19 09:38 AM	Aqueous	M2540C	TDS Preparation	12/11/19 01:51 PM	94067
1912058-05A	MW3-6	12/05/19 10:28 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-6	12/05/19 10:28 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-6	12/05/19 10:28 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-6	12/05/19 10:28 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-6	12/05/19 10:28 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94084
1912058-05B	MW3-6	12/05/19 10:28 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW3-6	12/05/19 10:28 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912058-05C	MW3-6	12/05/19 10:28 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035

Lab Order: 1912058
Client: Golder
Project: Copano 4Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912058-05D	MW3-6	12/05/19 10:28 AM	Aqueous	M2320 B	Alkalinity Preparation	12/11/19 09:38 AM	94061
	MW3-6	12/05/19 10:28 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW3-6	12/05/19 10:28 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW3-6	12/05/19 10:28 AM	Aqueous	M2540C	TDS Preparation	12/11/19 01:51 PM	94067

Lab Order: 1912058
Client: Golder
Project: Copano 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912058-01A	MW3-7	Aqueous	SW7470A	Mercury Total: Aqueous	94084	1	12/17/19 09:45 AM	CETAC2_HG_191217 A
	MW3-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 11:44 AM	ICP-MS4_191212A
	MW3-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:48 PM	ICP-MS5_191212C
	MW3-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:46 PM	ICP-MS5_191212C
	MW3-7	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 11:44 AM	ICP-MS4_191212B
1912058-01B	MW3-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 11:16 AM	CETAC2_HG_191217 B
	MW3-7	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 02:53 PM	ICP-MS5_191212C
1912058-01C	MW3-7	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912058-01D	MW3-7	Aqueous	M2320 B	Alkalinity	94061	1	12/11/19 02:08 PM	TITRATOR_191211A
	MW3-7	Aqueous	E300	Anions by IC method - Water	93986	10	12/06/19 01:37 PM	IC2_191206A
	MW3-7	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 07:15 AM	IC2_191206A
	MW3-7	Aqueous	M2540C	Total Dissolved Solids	94067	1	12/11/19 05:05 PM	WC_191211B
1912058-02A	MW3-7B	Aqueous	SW7470A	Mercury Total: Aqueous	94084	1	12/17/19 09:48 AM	CETAC2_HG_191217 A
	MW3-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:51 PM	ICP-MS5_191212C
	MW3-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:48 PM	ICP-MS5_191212C
	MW3-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 11:46 AM	ICP-MS4_191212A
	MW3-7B	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 11:46 AM	ICP-MS4_191212B
1912058-02B	MW3-7B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 11:19 AM	CETAC2_HG_191217 B
	MW3-7B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 02:55 PM	ICP-MS5_191212C
1912058-02C	MW3-7B	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912058-02D	MW3-7B	Aqueous	M2320 B	Alkalinity	94061	1	12/11/19 02:20 PM	TITRATOR_191211A
	MW3-7B	Aqueous	E300	Anions by IC method - Water	93986	10	12/06/19 01:53 PM	IC2_191206A
	MW3-7B	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 08:03 AM	IC2_191206A
	MW3-7B	Aqueous	M2540C	Total Dissolved Solids	94067	1	12/11/19 05:05 PM	WC_191211B
1912058-03A	MW-103	Aqueous	SW7470A	Mercury Total: Aqueous	94084	1	12/17/19 09:50 AM	CETAC2_HG_191217 A
	MW-103	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 11:48 AM	ICP-MS4_191212A

Lab Order: 1912058
Client: Golder
Project: Copano 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912058-03A	MW-103	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:53 PM	ICP-MS5_191212C
	MW-103	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:51 PM	ICP-MS5_191212C
	MW-103	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 11:48 AM	ICP-MS4_191212B
1912058-03B	MW-103	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 11:21 AM	CETAC2_HG_191217B
	MW-103	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 02:57 PM	ICP-MS5_191212C
1912058-03C	MW-103	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912058-03D	MW-103	Aqueous	M2320 B	Alkalinity	94061	1	12/11/19 02:27 PM	TITRATOR_191211A
	MW-103	Aqueous	E300	Anions by IC method - Water	93986	10	12/06/19 02:09 PM	IC2_191206A
	MW-103	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 08:19 AM	IC2_191206A
	MW-103	Aqueous	M2540C	Total Dissolved Solids	94067	1	12/11/19 05:05 PM	WC_191211B
1912058-04A	MW3-5	Aqueous	SW7470A	Mercury Total: Aqueous	94084	1	12/17/19 09:52 AM	CETAC2_HG_191217A
	MW3-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 11:50 AM	ICP-MS4_191212A
	MW3-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:55 PM	ICP-MS5_191212C
	MW3-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:53 PM	ICP-MS5_191212C
	MW3-5	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 11:50 AM	ICP-MS4_191212B
1912058-04B	MW3-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 11:23 AM	CETAC2_HG_191217B
	MW3-5	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 02:59 PM	ICP-MS5_191212C
1912058-04C	MW3-5	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912058-04D	MW3-5	Aqueous	M2320 B	Alkalinity	94061	1	12/11/19 02:34 PM	TITRATOR_191211A
	MW3-5	Aqueous	E300	Anions by IC method - Water	93986	10	12/06/19 02:25 PM	IC2_191206A
	MW3-5	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 08:35 AM	IC2_191206A
	MW3-5	Aqueous	M2540C	Total Dissolved Solids	94067	1	12/11/19 05:05 PM	WC_191211B
1912058-05A	MW3-6	Aqueous	SW7470A	Mercury Total: Aqueous	94084	1	12/17/19 09:55 AM	CETAC2_HG_191217A
	MW3-6	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 11:52 AM	ICP-MS4_191212A
	MW3-6	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:57 PM	ICP-MS5_191212C
	MW3-6	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:55 PM	ICP-MS5_191212C

Lab Order: 1912058
Client: Golder
Project: Copano 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912058-05A	MW3-6	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 11:52 AM	ICP-MS4_191212B
1912058-05B	MW3-6	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 11:25 AM	CETAC2_HG_191217B
	MW3-6	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 03:02 PM	ICP-MS5_191212C
1912058-05C	MW3-6	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912058-05D	MW3-6	Aqueous	M2320 B	Alkalinity	94061	1	12/11/19 02:41 PM	TITRATOR_191211A
	MW3-6	Aqueous	E300	Anions by IC method - Water	93986	10	12/06/19 02:41 PM	IC2_191206A
	MW3-6	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 08:51 AM	IC2_191206A
	MW3-6	Aqueous	M2540C	Total Dissolved Solids	94067	1	12/11/19 05:05 PM	WC_191211B

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7
Project:	Copano 4Q19	**Lab ID:**	1912058-01
Project No:	19125525	**Collection Date:**	12/05/19 11:11 AM
Lab Order:	1912058	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0106	0.0100	0.0300	J	mg/L	1	12/12/19 02:53 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 02:53 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:53 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:53 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 02:53 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 02:53 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 02:53 PM
Dissolved Vanadium	0.00293	0.000500	0.00100		mg/L	1	12/12/19 02:53 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0150	0.0100	0.0300	J	mg/L	1	12/12/19 11:44 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 11:44 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 11:44 AM
Calcium	1120	10.0	30.0		mg/L	100	12/12/19 01:46 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 11:44 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 11:44 AM
Magnesium	1520	10.0	30.0		mg/L	100	12/12/19 01:46 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 11:44 AM
Potassium	49.7	10.0	30.0		mg/L	100	12/12/19 01:46 PM
Sodium	11800	100	300		mg/L	1000	12/12/19 12:48 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 11:44 AM
Vanadium	0.00294	0.000500	0.00100		mg/L	1	12/12/19 11:44 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 11:16 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 09:45 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.127	0.00300	0.0100	N	mg/L	1	12/12/19 11:44 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.119	0.00300	0.0100	N	mg/L	1	12/12/19 02:53 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21500	300	1000		mg/L	1000	12/07/19 07:15 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/06/19 01:37 PM
Nitrate-N	<1.00	1.00	5.00	C	mg/L	10	12/06/19 01:37 PM
Sulfate	4880	1000	3000	C	mg/L	1000	12/07/19 07:15 AM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7
Project:	Copano 4Q19	**Lab ID:**	1912058-01
Project No:	19125525	**Collection Date:**	12/05/19 11:11 AM
Lab Order:	1912058	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	233	10.0	20.0	C	mg/L @ pH 4.53	1	12/11/19 02:08 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0	C	mg/L @ pH 4.53	1	12/11/19 02:08 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0	C	mg/L @ pH 4.53	1	12/11/19 02:08 PM
Alkalinity, Total (As CaCO3)	233	20.0	20.0	C	mg/L @ pH 4.53	1	12/11/19 02:08 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250	C	mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	46600	1000	1000	C	mg/L	1	12/11/19 05:05 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7B
Project:	Copano 4Q19	**Lab ID:**	1912058-02
Project No:	19125525	**Collection Date:**	12/05/19 10:13 AM
Lab Order:	1912058	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	12/12/19 02:55 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 02:55 PM
Dissolved Arsenic	0.00504	0.00200	0.00500		mg/L	1	12/12/19 02:55 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:55 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 02:55 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 02:55 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 02:55 PM
Dissolved Vanadium	0.000785	0.000500	0.00100	J	mg/L	1	12/12/19 02:55 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0227	0.0100	0.0300	J	mg/L	1	12/12/19 11:46 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 11:46 AM
Arsenic	0.00625	0.00200	0.00500		mg/L	1	12/12/19 11:46 AM
Calcium	1120	10.0	30.0		mg/L	100	12/12/19 01:48 PM
Chromium	0.00409	0.00200	0.00500	J	mg/L	1	12/12/19 11:46 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 11:46 AM
Magnesium	1400	10.0	30.0		mg/L	100	12/12/19 01:48 PM
Nickel	0.00303	0.00300	0.0100	J	mg/L	1	12/12/19 11:46 AM
Potassium	87.1	10.0	30.0		mg/L	100	12/12/19 01:48 PM
Sodium	11300	100	300		mg/L	1000	12/12/19 12:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 11:46 AM
Vanadium	0.000955	0.000500	0.00100	J	mg/L	1	12/12/19 11:46 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 11:19 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 09:48 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0555	0.00300	0.0100	N	mg/L	1	12/12/19 11:46 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0714	0.00300	0.0100	N	mg/L	1	12/12/19 02:55 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	20800	300	1000		mg/L	1000	12/07/19 08:03 AM
Fluoride	1.87	1.00	4.00	J	mg/L	10	12/06/19 01:53 PM
Nitrate-N	<1.00	1.00	5.00	C	mg/L	10	12/06/19 01:53 PM
Sulfate	4050	1000	3000	C	mg/L	1000	12/07/19 08:03 AM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7B
Project:	Copano 4Q19	**Lab ID:**	1912058-02
Project No:	19125525	**Collection Date:**	12/05/19 10:13 AM
Lab Order:	1912058	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	145	10.0	20.0	C	mg/L @ pH 4.52	1	12/11/19 02:20 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0	C	mg/L @ pH 4.52	1	12/11/19 02:20 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0	C	mg/L @ pH 4.52	1	12/11/19 02:20 PM
Alkalinity, Total (As CaCO3)	145	20.0	20.0	C	mg/L @ pH 4.52	1	12/11/19 02:20 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250	C	mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	43400	1000	1000	C	mg/L	1	12/11/19 05:05 PM

Qualifiers:

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DF- Dilution Factor
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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-103
Project:	Copano 4Q19	**Lab ID:**	1912058-03
Project No:	19125525	**Collection Date:**	12/05/19 11:16 AM
Lab Order:	1912058	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0147	0.0100	0.0300	J	mg/L	1	12/12/19 02:57 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 02:57 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:57 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:57 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 02:57 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 02:57 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 02:57 PM
Dissolved Vanadium	0.00293	0.000500	0.00100		mg/L	1	12/12/19 02:57 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0140	0.0100	0.0300	J	mg/L	1	12/12/19 11:48 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 11:48 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 11:48 AM
Calcium	1130	10.0	30.0		mg/L	100	12/12/19 01:51 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 11:48 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 11:48 AM
Magnesium	1530	10.0	30.0		mg/L	100	12/12/19 01:51 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 11:48 AM
Potassium	51.5	10.0	30.0		mg/L	100	12/12/19 01:51 PM
Sodium	12100	100	300		mg/L	1000	12/12/19 12:53 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 11:48 AM
Vanadium	0.00305	0.000500	0.00100		mg/L	1	12/12/19 11:48 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 11:21 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 09:50 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.126	0.00300	0.0100	N	mg/L	1	12/12/19 11:48 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.121	0.00300	0.0100	N	mg/L	1	12/12/19 02:57 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	20900	300	1000		mg/L	1000	12/07/19 08:19 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/06/19 02:09 PM
Nitrate-N	<1.00	1.00	5.00	C	mg/L	10	12/06/19 02:09 PM
Sulfate	4720	1000	3000	C	mg/L	1000	12/07/19 08:19 AM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-103
Project:	Copano 4Q19	**Lab ID:**	1912058-03
Project No:	19125525	**Collection Date:**	12/05/19 11:16 AM
Lab Order:	1912058	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	235	10.0	20.0	C	mg/L @ pH 4.52	1	12/11/19 02:27 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0	C	mg/L @ pH 4.52	1	12/11/19 02:27 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0	C	mg/L @ pH 4.52	1	12/11/19 02:27 PM
Alkalinity, Total (As CaCO3)	235	20.0	20.0	C	mg/L @ pH 4.52	1	12/11/19 02:27 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250	C	mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	48600	1000	1000	C	mg/L	1	12/11/19 05:05 PM

Qualifiers:

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DF- Dilution Factor
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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-5
Project:	Copano 4Q19	**Lab ID:**	1912058-04
Project No:	19125525	**Collection Date:**	12/05/19 09:38 AM
Lab Order:	1912058	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0300	0.0100	0.0300		mg/L	1	12/12/19 02:59 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 02:59 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:59 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:59 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 02:59 PM
Dissolved Nickel	0.00892	0.00300	0.0100	J	mg/L	1	12/12/19 02:59 PM
Dissolved Thallium	0.000535	0.000500	0.00150	J	mg/L	1	12/12/19 02:59 PM
Dissolved Vanadium	0.00298	0.000500	0.00100		mg/L	1	12/12/19 02:59 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0188	0.0100	0.0300	J	mg/L	1	12/12/19 11:50 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 11:50 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 11:50 AM
Calcium	1150	10.0	30.0		mg/L	100	12/12/19 01:53 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 11:50 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 11:50 AM
Magnesium	1470	10.0	30.0		mg/L	100	12/12/19 01:53 PM
Nickel	0.00779	0.00300	0.0100	J	mg/L	1	12/12/19 11:50 AM
Potassium	77.5	10.0	30.0		mg/L	100	12/12/19 01:53 PM
Sodium	11600	100	300		mg/L	1000	12/12/19 12:55 PM
Thallium	0.000565	0.000500	0.00150	J	mg/L	1	12/12/19 11:50 AM
Vanadium	0.00297	0.000500	0.00100		mg/L	1	12/12/19 11:50 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 11:23 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 09:52 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.129	0.00300	0.0100	N	mg/L	1	12/12/19 11:50 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.122	0.00300	0.0100	N	mg/L	1	12/12/19 02:59 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21100	300	1000		mg/L	1000	12/07/19 08:35 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/06/19 02:25 PM
Nitrate-N	<1.00	1.00	5.00	C	mg/L	10	12/06/19 02:25 PM
Sulfate	4800	1000	3000	C	mg/L	1000	12/07/19 08:35 AM

Qualifiers:

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-5
Project:	Copano 4Q19	**Lab ID:**	1912058-04
Project No:	19125525	**Collection Date:**	12/05/19 09:38 AM
Lab Order:	1912058	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	213	10.0	20.0	C	mg/L @ pH 4.52	1	12/11/19 02:34 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0	C	mg/L @ pH 4.52	1	12/11/19 02:34 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0	C	mg/L @ pH 4.52	1	12/11/19 02:34 PM
Alkalinity, Total (As CaCO3)	213	20.0	20.0	C	mg/L @ pH 4.52	1	12/11/19 02:34 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250	C	mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	46800	1000	1000	C	mg/L	1	12/11/19 05:05 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-6
Project:	Copano 4Q19	**Lab ID:**	1912058-05
Project No:	19125525	**Collection Date:**	12/05/19 10:28 AM
Lab Order:	1912058	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0186	0.0100	0.0300	J	mg/L	1	12/12/19 03:02 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 03:02 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 03:02 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 03:02 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 03:02 PM
Dissolved Nickel	0.00322	0.00300	0.0100	J	mg/L	1	12/12/19 03:02 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 03:02 PM
Dissolved Vanadium	0.000947	0.000500	0.00100	J	mg/L	1	12/12/19 03:02 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.139	0.0100	0.0300		mg/L	1	12/12/19 11:52 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 11:52 AM
Arsenic	0.00210	0.00200	0.00500	J	mg/L	1	12/12/19 11:52 AM
Calcium	1150	10.0	30.0		mg/L	100	12/12/19 01:55 PM
Chromium	0.00205	0.00200	0.00500	J	mg/L	1	12/12/19 11:52 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 11:52 AM
Magnesium	1580	10.0	30.0		mg/L	100	12/12/19 01:55 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 11:52 AM
Potassium	60.1	10.0	30.0		mg/L	100	12/12/19 01:55 PM
Sodium	11300	100	300		mg/L	1000	12/12/19 12:57 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 11:52 AM
Vanadium	0.00153	0.000500	0.00100		mg/L	1	12/12/19 11:52 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 11:25 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 09:55 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.117	0.00300	0.0100	N	mg/L	1	12/12/19 11:52 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.112	0.00300	0.0100	N	mg/L	1	12/12/19 03:02 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	19900	300	1000		mg/L	1000	12/07/19 08:51 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/06/19 02:41 PM
Nitrate-N	<1.00	1.00	5.00	C	mg/L	10	12/06/19 02:41 PM
Sulfate	4640	1000	3000	C	mg/L	1000	12/07/19 08:51 AM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-6
Project:	Copano 4Q19	**Lab ID:**	1912058-05
Project No:	19125525	**Collection Date:**	12/05/19 10:28 AM
Lab Order:	1912058	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	221	10.0	20.0	C	mg/L @ pH 4.53	1	12/11/19 02:41 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0	C	mg/L @ pH 4.53	1	12/11/19 02:41 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0	C	mg/L @ pH 4.53	1	12/11/19 02:41 PM
Alkalinity, Total (As CaCO3)	221	20.0	20.0	C	mg/L @ pH 4.53	1	12/11/19 02:41 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250	C	mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	49900	1000	1000	C	mg/L	1	12/11/19 05:05 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191203A

Sample ID: **DCS-93925**	Batch ID: **93925**	TestNo: **SW7470A**	Units: **mg/L**		
SampType: **DCS**	Run ID: **CETAC2_HG_191203A**	Analysis Date: **12/3/2019 2:43:30 PM**	Prep Date: **12/3/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000184	0.000200	0.000200	0	92.0	82	119	0	0	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191217A

The QC data in batch 94084 applies to the following samples: 1912058-01A, 1912058-02A, 1912058-03A, 1912058-04A, 1912058-05A

Sample ID: **MB-94084** Batch ID: **94084** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_191217A** Analysis Date: **12/17/2019 9:18:46 AM** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-94084** Batch ID: **94084** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_191217A** Analysis Date: **12/17/2019 9:21:02 AM** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00214	0.000200	0.00200	0	107	85	115			

Sample ID: **LCSD-94084** Batch ID: **94084** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_191217A** Analysis Date: **12/17/2019 9:23:18 AM** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00208	0.000200	0.00200	0	104	85	115	2.84	15	

Sample ID: **1912033-08A MS** Batch ID: **94084** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_191217A** Analysis Date: **12/17/2019 9:27:51 AM** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	80	120			

Sample ID: **1912033-08A MSD** Batch ID: **94084** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_191217A** Analysis Date: **12/17/2019 9:30:06 AM** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00194	0.000200	0.00200	0	97.0	80	120	3.54	15	

Sample ID: **1912033-08A SD** Batch ID: **94084** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_191217A** Analysis Date: **12/17/2019 9:32:21 AM** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1912033-08A PDS** Batch ID: **94084** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_191217A** Analysis Date: **12/17/2019 9:34:37 AM** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00228	0.000200	0.00250	0	91.2	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191217A

Sample ID: **ICV-191217**	Batch ID: **R107958**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_191217A**	Analysis Date: **12/17/2019 9:14:12 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00393	0.000200	0.00400	0	98.2	90	110			

Sample ID: **CCV1-191217**	Batch ID: **R107958**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191217A**	Analysis Date: **12/17/2019 9:57:19 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191217B

The QC data in batch 94085 applies to the following samples: 1912058-01B, 1912058-02B, 1912058-03B, 1912058-04B, 1912058-05B

Sample ID: **MB-94085**	Batch ID: **94085**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 10:29:12 A**	Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-94085**	Batch ID: **94085**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 10:31:28 A**	Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00197	0.000200	0.00200	0	98.5	85	115			

Sample ID: **LCSD-94085**	Batch ID: **94085**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 10:33:44 A**	Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00199	0.000200	0.00200	0	99.5	85	115	1.01	15	

Sample ID: **1912030-09B SD**	Batch ID: **94085**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 10:58:38 A**	Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1912030-09B PDS**	Batch ID: **94085**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 11:00:55 A**	Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00137	0.000200	0.00250	0	54.8	85	115			S

Sample ID: **1912030-09B MS**	Batch ID: **94085**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 12:00:05 P**	Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00190	0.00100	0.00200	0	95.2	80	120			

Sample ID: **1912030-09B MSD**	Batch ID: **94085**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 12:02:22 P**	Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00190	0.00100	0.00200	0	95.0	80	120	0.263	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191217B

Sample ID: **ICV-191217**	Batch ID: **R107959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 9:14:12 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00393	0.000200	0.00400	0	98.2	90	110			

Sample ID: **CCV2-191217**	Batch ID: **R107959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 10:24:38 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV3-191217**	Batch ID: **R107959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 11:07:45 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV4-191217**	Batch ID: **R107959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 11:37:20 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV5-191217**	Batch ID: **R107959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 12:04:40 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191001C

Sample ID: **DCS1-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_191001C**	Analysis Date: **10/1/2019 10:53:00 AM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0249	0.0300	0.0200	0	124	70	130	0	0	
Antimony	0.00103	0.00250	0.00100	0	103	70	130	0	0	
Lead	0.000538	0.00100	0.000500	0	108	70	130	0	0	
Thallium	0.000502	0.00150	0.000500	0	100	70	130	0	0	
Vanadium	0.000494	0.00100	0.000500	0	98.8	70	130	0	0	

Sample ID: **DCS2-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_191001C**	Analysis Date: **10/1/2019 10:55:00 AM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.291	0.300	0.300	0	97.0	70	130	0	0	
Magnesium	0.319	0.300	0.300	0	106	70	130	0	0	
Potassium	0.324	0.300	0.300	0	108	70	130	0	0	

Sample ID: **DCS3-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_191001C**	Analysis Date: **10/1/2019 10:57:00 AM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00518	0.00500	0.00500	0	104	70	130	0	0	
Chromium	0.00559	0.00500	0.00500	0	112	70	130	0	0	
Nickel	0.00560	0.0100	0.00500	0	112	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191001G

Sample ID: **DCS1-92934**	Batch ID: **92934**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS**	Run ID: **ICP-MS4_191001G**	Analysis Date: **10/1/2019 10:53:00 AM**		Prep Date: **9/25/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.000455	0.0100	0.000500	0	91.0	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

The QC data in batch 94052 applies to the following samples: 1912058-01A, 1912058-02A, 1912058-03A, 1912058-04A, 1912058-05A

Sample ID: **MB-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:32:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:34:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0	99.6	80	120			
Antimony	0.199	0.00250	0.200	0	99.6	80	120			
Arsenic	0.203	0.00500	0.200	0	102	80	120			
Calcium	5.01	0.300	5.00	0	100	80	120			
Chromium	0.208	0.00500	0.200	0	104	80	120			
Lead	0.199	0.00100	0.200	0	99.4	80	120			
Magnesium	5.18	0.300	5.00	0	104	80	120			
Nickel	0.208	0.0100	0.200	0	104	80	120			
Potassium	5.21	0.300	5.00	0	104	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			
Vanadium	0.203	0.00100	0.200	0	102	80	120			

Sample ID: **LCSD-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:36:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.96	0.0300	5.00	0	99.2	80	120	0.428	15	
Antimony	0.201	0.00250	0.200	0	100	80	120	0.788	15	
Arsenic	0.201	0.00500	0.200	0	101	80	120	0.997	15	
Calcium	4.85	0.300	5.00	0	97.1	80	120	3.26	15	
Chromium	0.206	0.00500	0.200	0	103	80	120	1.21	15	
Lead	0.201	0.00100	0.200	0	101	80	120	1.35	15	
Magnesium	5.14	0.300	5.00	0	103	80	120	0.946	15	
Nickel	0.208	0.0100	0.200	0	104	80	120	0.215	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **LCSD-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:36:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	5.08	0.300	5.00	0	102	80	120	2.57	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	0.768	15	
Vanadium	0.201	0.00100	0.200	0	100	80	120	1.30	15	

Sample ID: **1912030-09A SD** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:42:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0554	0.150	0	0.0568				2.54	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0				0	20	
Chromium	<0.0100	0.0250	0	0.00756				0	20	
Lead	<0.00150	0.00500	0	0.000398				0	20	
Nickel	<0.0150	0.0500	0	0.00398				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	<0.00250	0.00500	0	0.00136				0	20	

Sample ID: **1912030-09A PDS** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 11:01:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.96	0.0300	5.00	0.0568	98.0	75	125			
Antimony	0.182	0.00250	0.200	0	90.8	75	125			
Arsenic	0.196	0.00500	0.200	0	98.1	75	125			
Chromium	0.155	0.00500	0.200	0.00756	73.7	75	125			S
Lead	0.209	0.00100	0.200	0.000398	104	75	125			
Nickel	0.151	0.0100	0.200	0.00398	73.7	75	125			S
Thallium	0.216	0.00150	0.200	0	108	75	125			
Vanadium	0.163	0.00100	0.200	0.00136	80.9	75	125			

Sample ID: **1912030-09A MS** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 11:07:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0.0568	102	75	125			
Antimony	0.177	0.00250	0.200	0	88.5	75	125			
Arsenic	0.201	0.00500	0.200	0	100	75	125			
Calcium	1050	0.300	5.00	1070	-298	75	125			S
Chromium	0.156	0.00500	0.200	0.00756	74.3	75	125			S
Lead	0.209	0.00100	0.200	0.000398	104	75	125			
Magnesium	1070	0.300	5.00	1160	-1880	75	125			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **1912030-09A MS**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 11:07:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.152	0.0100	0.200	0.00398	74.2	75	125			S
Potassium	54.4	0.300	5.00	48.0	128	75	125			S
Thallium	0.215	0.00150	0.200	0	107	75	125			
Vanadium	0.164	0.00100	0.200	0.00136	81.6	75	125			

Sample ID: **1912030-09A MSD**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 11:08:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0.0568	102	75	125	0.115	15	
Antimony	0.179	0.00250	0.200	0	89.5	75	125	1.14	15	
Arsenic	0.200	0.00500	0.200	0	100	75	125	0.326	15	
Calcium	1070	0.300	5.00	1070	75.3	75	125	1.76	15	
Chromium	0.155	0.00500	0.200	0.00756	73.7	75	125	0.863	15	S
Lead	0.212	0.00100	0.200	0.000398	106	75	125	1.46	15	
Magnesium	1070	0.300	5.00	1160	-1850	75	125	0.150	15	S
Nickel	0.151	0.0100	0.200	0.00398	73.3	75	125	1.18	15	S
Potassium	55.9	0.300	5.00	48.0	157	75	125	2.66	15	S
Thallium	0.219	0.00150	0.200	0	109	75	125	1.78	15	
Vanadium	0.162	0.00100	0.200	0.00136	80.4	75	125	1.41	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

The QC data in batch 94054 applies to the following samples: 1912058-01B, 1912058-02B, 1912058-03B, 1912058-04B, 1912058-05B

Sample ID: **MB-94054** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 1:35:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0148	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	0.000877	0.00100								

Sample ID: **LCS-94054** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 1:37:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.00	0.0300	5.00	0	99.9	80	120			
Antimony	0.194	0.00250	0.200	0	96.9	80	120			
Arsenic	0.191	0.00500	0.200	0	95.3	80	120			
Chromium	0.189	0.00500	0.200	0	94.4	80	120			
Lead	0.194	0.00100	0.200	0	96.8	80	120			
Nickel	0.175	0.0100	0.200	0	87.5	80	120			
Thallium	0.193	0.00150	0.200	0	96.4	80	120			
Vanadium	0.188	0.00100	0.200	0	93.8	80	120			

Sample ID: **LCSD-94054** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 1:39:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.12	0.0300	5.00	0	102	80	120	2.47	15	
Antimony	0.194	0.00250	0.200	0	97.0	80	120	0.074	15	
Arsenic	0.188	0.00500	0.200	0	93.9	80	120	1.45	15	
Chromium	0.188	0.00500	0.200	0	94.2	80	120	0.172	15	
Lead	0.193	0.00100	0.200	0	96.5	80	120	0.304	15	
Nickel	0.174	0.0100	0.200	0	87.0	80	120	0.503	15	
Thallium	0.191	0.00150	0.200	0	95.6	80	120	0.793	15	
Vanadium	0.189	0.00100	0.200	0	94.4	80	120	0.596	15	

Sample ID: **1912030-09B SD** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 1:45:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0282				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **1912030-09B SD**	Batch ID: **94054**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 1:45:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0				0	20	
Chromium	<0.0100	0.0250	0	0.00764				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Nickel	<0.0150	0.0500	0	0.00556				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	0.00476	0.00500	0	0.00231				69.5	20	R

Sample ID: **1912030-09B PDS**	Batch ID: **94054**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 2:04:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.62	0.0300	5.00	0.0282	91.8	75	125			
Antimony	0.184	0.00250	0.200	0	91.8	75	125			
Arsenic	0.206	0.00500	0.200	0	103	75	125			
Chromium	0.173	0.00500	0.200	0.00764	82.7	75	125			
Lead	0.213	0.00100	0.200	0	107	75	125			
Nickel	0.161	0.0100	0.200	0.00556	77.7	75	125			
Thallium	0.219	0.00150	0.200	0	110	75	125			
Vanadium	0.179	0.00100	0.200	0.00231	88.4	75	125			

Sample ID: **1912030-09B MS**	Batch ID: **94054**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 2:07:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.72	0.0300	5.00	0.0282	93.9	75	125			
Antimony	0.180	0.00250	0.200	0	90.0	75	125			
Arsenic	0.209	0.00500	0.200	0	105	75	125			
Chromium	0.167	0.00500	0.200	0.00764	79.8	75	125			
Lead	0.212	0.00100	0.200	0	106	75	125			
Nickel	0.156	0.0100	0.200	0.00556	75.2	75	125			
Thallium	0.216	0.00150	0.200	0	108	75	125			
Vanadium	0.176	0.00100	0.200	0.00231	86.9	75	125			

Sample ID: **1912030-09B MSD**	Batch ID: **94054**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 2:09:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.83	0.0300	5.00	0.0282	96.0	75	125	2.27	15	
Antimony	0.183	0.00250	0.200	0	91.3	75	125	1.53	15	
Arsenic	0.211	0.00500	0.200	0	105	75	125	0.852	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **1912030-09B MSD** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 2:09:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.170	0.00500	0.200	0.00764	81.3	75	125	1.75	15	
Lead	0.214	0.00100	0.200	0	107	75	125	1.10	15	
Nickel	0.158	0.0100	0.200	0.00556	76.3	75	125	1.32	15	
Thallium	0.220	0.00150	0.200	0	110	75	125	1.56	15	
Vanadium	0.180	0.00100	0.200	0.00231	88.9	75	125	2.16	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **ICV-191212** Batch ID: **R107877** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:19:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.47	0.0300	2.50	0	98.7	90	110			
Antimony	0.103	0.00250	0.100	0	103	90	110			
Arsenic	0.0994	0.00500	0.100	0	99.4	90	110			
Calcium	2.57	0.300	2.50	0	103	90	110			
Chromium	0.109	0.00500	0.100	0	109	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Magnesium	2.55	0.300	2.50	0	102	90	110			
Nickel	0.106	0.0100	0.100	0	106	90	110			
Potassium	2.64	0.300	2.50	0	106	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			
Vanadium	0.105	0.00100	0.100	0	105	90	110			

Sample ID: **LCVL-191212** Batch ID: **R107877** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:25:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	80	120			
Antimony	0.00196	0.00250	0.00200	0	98.2	80	120			
Arsenic	0.00511	0.00500	0.00500	0	102	80	120			
Calcium	0.112	0.300	0.100	0	112	80	120			
Chromium	0.00536	0.00500	0.00500	0	107	80	120			
Lead	0.000961	0.00100	0.00100	0	96.1	80	120			
Magnesium	0.104	0.300	0.100	0	104	80	120			
Nickel	0.00541	0.0100	0.00500	0	108	80	120			
Potassium	0.106	0.300	0.100	0	106	80	120			
Thallium	0.000954	0.00150	0.00100	0	95.4	80	120			
Vanadium	0.000953	0.00100	0.00100	0	95.3	80	120			

Sample ID: **CCV1-191212** Batch ID: **R107877** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 11:33:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.11	0.0300	5.00	0	102	90	110			
Antimony	0.196	0.00250	0.200	0	97.8	90	110			
Arsenic	0.195	0.00500	0.200	0	97.7	90	110			
Calcium	4.94	0.300	5.00	0	98.8	90	110			
Chromium	0.191	0.00500	0.200	0	95.5	90	110			
Lead	0.187	0.00100	0.200	0	93.7	90	110			
Magnesium	4.87	0.300	5.00	0	97.4	90	110			
Nickel	0.190	0.0100	0.200	0	95.0	90	110			
Potassium	5.20	0.300	5.00	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **CCV1-191212**	Batch ID: **R107877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 11:33:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.186	0.00150	0.200	0	92.9	90	110			
Vanadium	0.190	0.00100	0.200	0	95.0	90	110			

Sample ID: **CCV2-191212**	Batch ID: **R107877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 12:14:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.24	0.0300	5.00	0	105	90	110			
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.200	0.00500	0.200	0	99.9	90	110			
Chromium	0.192	0.00500	0.200	0	96.2	90	110			
Lead	0.195	0.00100	0.200	0	97.6	90	110			
Nickel	0.191	0.0100	0.200	0	95.6	90	110			
Thallium	0.194	0.00150	0.200	0	97.0	90	110			
Vanadium	0.193	0.00100	0.200	0	96.6	90	110			

Sample ID: **CCV4-191212**	Batch ID: **R107877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.09	0.0300	5.00	0	102	90	110			
Antimony	0.196	0.00250	0.200	0	97.8	90	110			
Arsenic	0.196	0.00500	0.200	0	98.0	90	110			
Chromium	0.185	0.00500	0.200	0	92.3	90	110			
Lead	0.192	0.00100	0.200	0	96.0	90	110			
Nickel	0.181	0.0100	0.200	0	90.6	90	110			
Thallium	0.192	0.00150	0.200	0	95.8	90	110			
Vanadium	0.186	0.00100	0.200	0	92.8	90	110			

Sample ID: **CCV5-191212**	Batch ID: **R107877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 2:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.02	0.0300	5.00	0	100	90	110			
Antimony	0.194	0.00250	0.200	0	96.9	90	110			
Arsenic	0.200	0.00500	0.200	0	100	90	110			
Chromium	0.183	0.00500	0.200	0	91.7	90	110			
Lead	0.191	0.00100	0.200	0	95.3	90	110			
Nickel	0.179	0.0100	0.200	0	89.5	90	110			
Thallium	0.189	0.00150	0.200	0	94.5	90	110			
Vanadium	0.184	0.00100	0.200	0	91.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212B

The QC data in batch 94052 applies to the following samples: 1912058-01A, 1912058-02A, 1912058-03A, 1912058-04A, 1912058-05A

Sample ID: **MB-94052**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 10:32:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-94052**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 10:34:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.190	0.0100	0.200	0	95.2	80	120			N

Sample ID: **LCSD-94052**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 10:36:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0	96.3	80	120	1.14	15	N

Sample ID: **1912030-09A SD**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 10:42:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.116	0.0500	0	0.124				7.49	20	N

Sample ID: **1912030-09A PDS**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 11:01:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.314	0.0100	0.200	0.125	94.7	75	125			N

Sample ID: **1912030-09A MS**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 11:07:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.320	0.0100	0.200	0.125	97.8	75	125			N

Sample ID: **1912030-09A MSD**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 11:08:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.325	0.0100	0.200	0.125	100	75	125	1.41	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212B

Sample ID: **ICV-191212**	Batch ID: **R107881**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 10:19:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0957	0.0100	0.100	0	95.7	90	110			N

Sample ID: **LCVL-191212**	Batch ID: **R107881**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 10:25:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00444	0.0100	0.00500	0	88.9	80	120			N

Sample ID: **CCV1-191212**	Batch ID: **R107881**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 11:33:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.185	0.0100	0.200	0	92.7	90	110			N

Sample ID: **CCV2-191212**	Batch ID: **R107881**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 12:14:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.190	0.0100	0.200	0	95.2	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212C

The QC data in batch 94054 applies to the following samples: 1912058-01B, 1912058-02B, 1912058-03B, 1912058-04B, 1912058-05B

Sample ID: **MB-94054** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 1:35:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-94054** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 1:37:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.185	0.0100	0.200	0	92.4	80	120			N

Sample ID: **LCSD-94054** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 1:39:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.184	0.0100	0.200	0	91.8	80	120	0.629	15	N

Sample ID: **1912030-09B SD** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 1:45:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.116	0.0500	0	0.131				12.4	20	N

Sample ID: **1912030-09B PDS** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 2:04:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.345	0.0100	0.200	0.131	107	75	125			N

Sample ID: **1912030-09B MS** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 2:07:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.347	0.0100	0.200	0.131	108	75	125			N

Sample ID: **1912030-09B MSD** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 2:09:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.351	0.0100	0.200	0.131	110	75	125	1.08	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212C

Sample ID: **ICV-191212**	Batch ID: **R109088**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_191212C**	Analysis Date: **12/12/2019 10:19:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0957	0.0100	0.100	0	95.7	90	110			N

Sample ID: **LCVL-191212**	Batch ID: **R109088**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191212C**	Analysis Date: **12/12/2019 10:25:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00444	0.0100	0.00500	0	88.9	80	120			N

Sample ID: **CCV4-191212**	Batch ID: **R109088**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212C**	Analysis Date: **12/12/2019 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.180	0.0100	0.200	0	89.8	90	110			N

Sample ID: **CCV5-191212**	Batch ID: **R109088**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212C**	Analysis Date: **12/12/2019 2:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.181	0.0100	0.200	0	90.7	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190926A

Sample ID: **DCS1-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_190926A**	Analysis Date: **9/26/2019 12:41:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00104	0.00250	0.00100	0	104	70	130	0	0	
Lead	0.000553	0.00100	0.000500	0	111	70	130	0	0	
Thallium	0.000516	0.00150	0.000500	0	103	70	130	0	0	
Vanadium	0.000478	0.00100	0.000500	0	95.6	70	130	0	0	

Sample ID: **DCS2-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_190926A**	Analysis Date: **9/26/2019 12:44:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0340	0.0300	0.0300	0	113	70	130	0	0	
Calcium	0.299	0.300	0.300	0	99.8	70	130	0	0	
Magnesium	0.322	0.300	0.300	0	107	70	130	0	0	
Potassium	0.291	0.300	0.300	0	96.9	70	130	0	0	

Sample ID: **DCS3-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_190926A**	Analysis Date: **9/26/2019 12:46:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00494	0.00500	0.00500	0	98.8	70	130	0	0	
Chromium	0.00521	0.00500	0.00500	0	104	70	130	0	0	
Nickel	0.00511	0.0100	0.00500	0	102	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190926B

Sample ID: **DCS1-92934** Batch ID: **92934** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS** Run ID: **ICP-MS5_190926B** Analysis Date: **9/26/2019 12:41:00 PM** Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.000491	0.0100	0.000500	0	98.2	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191212C

The QC data in batch 94052 applies to the following samples: 1912058-01A, 1912058-02A, 1912058-03A, 1912058-04A, 1912058-05A

Sample ID: **MB-94052**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 11:55:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	<0.100	0.300								

Sample ID: **LCS-94052**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 11:57:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	4.94	0.300	5.00	0	98.9	80	120			

Sample ID: **LCSD-94052**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 12:00:00 P**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	4.98	0.300	5.00	0	99.6	80	120	0.764	15	

Sample ID: **1912030-09A SD**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 12:06:00 P**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	1280	750	0	1250				2.21	20	
Sodium	9280	750	0	9430				1.59	20	

Sample ID: **1912030-09A PDS**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 12:29:00 P**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	3740	150	2500	1250	99.3	75	125			
Sodium	12200	150	2500	9430	111	75	125			

Sample ID: **1912030-09A MS**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 12:33:00 P**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	9540	150	5.00	9430	2170	75	125			S

Sample ID: **1912030-09A MSD**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 12:35:00 P**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	9580	150	5.00	9430	2980	75	125	0.423	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191212C

Sample ID: **1912030-09A SD**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 1:06:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1090	75.0	0	1080				1.06	20	
Potassium	39.1	75.0	0	40.4				3.14	20	

Sample ID: **1912030-09A PDS**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 1:29:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1330	15.0	250	1080	101	75	125			
Potassium	286	15.0	250	40.4	98.2	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191212C

Sample ID: **ICV-191212** Batch ID: **R107883** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_191212C** Analysis Date: **12/12/2019 10:26:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.44	0.0300	2.50	0	97.6	90	110			
Antimony	0.103	0.00250	0.100	0	103	90	110			
Arsenic	0.100	0.00500	0.100	0	100	90	110			
Calcium	2.60	0.300	2.50	0	104	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Lead	0.0983	0.00100	0.100	0	98.3	90	110			
Magnesium	2.49	0.300	2.50	0	99.8	90	110			
Nickel	0.106	0.0100	0.100	0	106	90	110			
Potassium	2.54	0.300	2.50	0	102	90	110			
Sodium	2.53	0.300	2.50	0	101	90	110			
Thallium	0.0975	0.00150	0.100	0	97.5	90	110			
Vanadium	0.101	0.00100	0.100	0	101	90	110			

Sample ID: **LCVL-191212** Batch ID: **R107883** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_191212C** Analysis Date: **12/12/2019 10:33:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.101	0.0300	0.100	0	101	80	120			
Antimony	0.00204	0.00250	0.00200	0	102	80	120			
Arsenic	0.00511	0.00500	0.00500	0	102	80	120			
Calcium	0.110	0.300	0.100	0	110	80	120			
Chromium	0.00511	0.00500	0.00500	0	102	80	120			
Lead	0.000991	0.00100	0.00100	0	99.1	80	120			
Magnesium	0.103	0.300	0.100	0	103	80	120			
Nickel	0.00527	0.0100	0.00500	0	105	80	120			
Potassium	0.0983	0.300	0.100	0	98.3	80	120			
Sodium	0.105	0.300	0.100	0	105	80	120			
Thallium	0.00101	0.00150	0.00100	0	101	80	120			
Vanadium	0.000948	0.00100	0.00100	0	94.8	80	120			

Sample ID: **CCV1-191212** Batch ID: **R107883** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_191212C** Analysis Date: **12/12/2019 11:12:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	5.09	0.300	5.00	0	102	90	110			
Sodium	5.06	0.300	5.00	0	101	90	110			

Sample ID: **CCV2-191212** Batch ID: **R107883** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_191212C** Analysis Date: **12/12/2019 12:37:00 P** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191212C

Sample ID: **CCV2-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 12:37:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	5.13	0.300	5.00	0	103	90	110			
Sodium	5.03	0.300	5.00	0	101	90	110			

Sample ID: **CCV3-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 1:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.07	0.300	5.00	0	101	90	110			
Magnesium	5.17	0.300	5.00	0	103	90	110			
Potassium	5.10	0.300	5.00	0	102	90	110			
Sodium	5.09	0.300	5.00	0	102	90	110			

Sample ID: **CCV4-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 1:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.05	0.300	5.00	0	101	90	110			
Magnesium	5.11	0.300	5.00	0	102	90	110			
Potassium	5.07	0.300	5.00	0	101	90	110			

Sample ID: **CCV5-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 1:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.06	0.0300	5.00	0	101	90	110			
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Calcium	5.08	0.300	5.00	0	102	90	110			
Chromium	0.196	0.00500	0.200	0	98.2	90	110			
Lead	0.192	0.00100	0.200	0	95.9	90	110			
Magnesium	5.16	0.300	5.00	0	103	90	110			
Nickel	0.208	0.0100	0.200	0	104	90	110			
Potassium	5.08	0.300	5.00	0	102	90	110			
Thallium	0.191	0.00150	0.200	0	95.6	90	110			
Vanadium	0.197	0.00100	0.200	0	98.5	90	110			

Sample ID: **CCV6-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 3:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.16	0.0300	5.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191212C

Sample ID: **CCV6-191212**	Batch ID: **R107883**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 3:39:00 PM**		Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.5	90	110			
Arsenic	0.203	0.00500	0.200	0	101	90	110			
Chromium	0.185	0.00500	0.200	0	92.7	90	110			
Lead	0.186	0.00100	0.200	0	93.2	90	110			
Nickel	0.201	0.0100	0.200	0	101	90	110			
Thallium	0.186	0.00150	0.200	0	93.0	90	110			
Vanadium	0.188	0.00100	0.200	0	94.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191212D

Sample ID: **ICV-191212**	Batch ID: **R109089**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_191212D**	Analysis Date: **12/12/2019 10:26:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0964	0.0100	0.100	0	96.4	90	110			N

Sample ID: **LCVL-191212**	Batch ID: **R109089**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_191212D**	Analysis Date: **12/12/2019 10:33:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00484	0.0100	0.00500	0	96.7	80	120			N

Sample ID: **CCV5-191212**	Batch ID: **R109089**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212D**	Analysis Date: **12/12/2019 1:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.204	0.0100	0.200	0	102	90	110			N

Sample ID: **CCV6-191212**	Batch ID: **R109089**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212D**	Analysis Date: **12/12/2019 3:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	97.8	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191126A

Sample ID: **DCS2-93877** Batch ID: **93877** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_191126A** Analysis Date: **11/26/2019 12:11:04 P** Prep Date: **11/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.501	1.00	0.5000	0	100	65	135	0	0	
Fluoride	0.249	0.400	0.2000	0	125	65	135	0	0	
Nitrate-N	0.237	0.0500	0.2500	0	94.9	60	140	0	0	
Sulfate	1.72	3.00	1.500	0	115	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191206A

The QC data in batch 93986 applies to the following samples: 1912058-01D, 1912058-02D, 1912058-03D, 1912058-04D, 1912058-05D

Sample ID: **MB-93986** Batch ID: **93986** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_191206A** Analysis Date: **12/6/2019 11:00:01 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-93986** Batch ID: **93986** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_191206A** Analysis Date: **12/6/2019 11:16:01 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.70	1.00	10.00	0	97.0	90	110			
Fluoride	4.03	0.400	4.000	0	101	90	110			
Nitrate-N	4.80	0.500	5.000	0	96.0	90	110			
Sulfate	29.6	3.00	30.00	0	98.6	90	110			

Sample ID: **LCSD-93986** Batch ID: **93986** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_191206A** Analysis Date: **12/6/2019 11:32:01 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.78	1.00	10.00	0	97.8	90	110	0.883	20	
Fluoride	4.06	0.400	4.000	0	101	90	110	0.622	20	
Nitrate-N	4.84	0.500	5.000	0	96.8	90	110	0.811	20	
Sulfate	29.6	3.00	30.00	0	98.7	90	110	0.086	20	

Sample ID: **1912030-09DMS** Batch ID: **93986** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_191206A** Analysis Date: **12/7/2019 4:19:42 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	36900	1000	20000	17510	96.8	90	110			
Fluoride	20800	400	20000	159.2	103	90	110			
Nitrate-N	4380	500	4516	0	96.9	90	110			
Sulfate	23100	3000	20000	4061	95.3	90	110			

Sample ID: **1912030-09DMSD** Batch ID: **93986** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_191206A** Analysis Date: **12/7/2019 4:35:42 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	36800	1000	20000	17510	96.5	90	110	0.160	20	
Fluoride	20800	400	20000	159.2	103	90	110	0.084	20	
Nitrate-N	4370	500	4516	0	96.9	90	110	0.055	20	
Sulfate	23100	3000	20000	4061	95.0	90	110	0.231	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191206A

Sample ID: **1912058-01DMS**	Batch ID: **93986**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_191206A**	Analysis Date: **12/7/2019 7:31:42 AM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	39900	1000	20000	21470	92.1	90	110			
Fluoride	20600	400	20000	138.8	103	90	110			
Nitrate-N	4340	500	4516	0	96.2	90	110			
Sulfate	23900	3000	20000	4881	95.3	90	110			

Sample ID: **1912058-01DMSD**	Batch ID: **93986**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_191206A**	Analysis Date: **12/7/2019 7:47:42 AM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	40000	1000	20000	21470	92.5	90	110	0.196	20	
Fluoride	20700	400	20000	138.8	103	90	110	0.076	20	
Nitrate-N	4350	500	4516	0	96.3	90	110	0.192	20	
Sulfate	24000	3000	20000	4881	95.5	90	110	0.153	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191206A

Sample ID: **ICV-191206**	Batch ID: **R107791**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_191206A**	Analysis Date: **12/6/2019 10:28:01 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.2	1.00	25.00	0	101	90	110			
Fluoride	10.3	0.400	10.00	0	103	90	110			
Nitrate-N	12.6	0.500	12.50	0	101	90	110			
Sulfate	77.4	3.00	75.00	0	103	90	110			

Sample ID: **CCV1-191206**	Batch ID: **R107791**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191206A**	Analysis Date: **12/6/2019 4:17:24 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.14	0.400	4.000	0	103	90	110			
Nitrate-N	4.90	0.500	5.000	0	98.1	90	110			
Sulfate	30.0	3.00	30.00	0	99.9	90	110			

Sample ID: **CCV3-191206**	Batch ID: **R107791**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191206A**	Analysis Date: **12/7/2019 1:39:42 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.91	1.00	10.00	0	99.1	90	110			
Fluoride	4.14	0.400	4.000	0	103	90	110			
Nitrate-N	4.92	0.500	5.000	0	98.4	90	110			
Sulfate	29.8	3.00	30.00	0	99.3	90	110			

Sample ID: **CCV4-191206**	Batch ID: **R107791**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191206A**	Analysis Date: **12/7/2019 6:11:42 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.91	1.00	10.00	0	99.1	90	110			
Fluoride	4.17	0.400	4.000	0	104	90	110			
Nitrate-N	4.94	0.500	5.000	0	98.8	90	110			
Sulfate	30.0	3.00	30.00	0	99.9	90	110			

Sample ID: **CCV5-191206**	Batch ID: **R107791**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191206A**	Analysis Date: **12/7/2019 10:43:42 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	4.21	0.400	4.000	0	105	90	110			
Nitrate-N	4.97	0.500	5.000	0	99.5	90	110			
Sulfate	30.0	3.00	30.00	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191211A

The QC data in batch 94061 applies to the following samples: 1912058-01D, 1912058-02D, 1912058-03D, 1912058-04D, 1912058-05D

Sample ID: **MB-94061** Batch ID: **94061** TestNo: **M2320 B** Units: **mg/L @ pH 4.5**
SampType: **MBLK** Run ID: **TITRATOR_191211A** Analysis Date: **12/11/2019 9:51:00 AM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-94061** Batch ID: **94061** TestNo: **M2320 B** Units: **mg/L @ pH 4.13**
SampType: **LCS** Run ID: **TITRATOR_191211A** Analysis Date: **12/11/2019 9:56:00 AM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	53.3	20.0	50.00	0	107	74	129			

Sample ID: **1912033-01B-DUP** Batch ID: **94061** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_191211A** Analysis Date: **12/11/2019 10:45:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	530	20.0	0	521.1				1.77	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	530	20.0	0	521.1				1.77	20	

Sample ID: **1912058-01D-DUP** Batch ID: **94061** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_191211A** Analysis Date: **12/11/2019 2:15:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	240	20.0	0	233.3				2.71	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	240	20.0	0	233.3				2.71	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191211A

Sample ID: **ICV-191211**	Batch ID: **R107853**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.24**
SampType: **ICV**	Run ID: **TITRATOR_191211A**	Analysis Date: **12/11/2019 9:49:00 AM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	23.6	20.0	0							
Alkalinity, Carbonate (As CaCO3)	75.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.8	20.0	100.0	0	98.8	98	102			

Sample ID: **CCV1-191211**	Batch ID: **R107853**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.42**
SampType: **CCV**	Run ID: **TITRATOR_191211A**	Analysis Date: **12/11/2019 1:07:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	36.6	20.0	0							
Alkalinity, Carbonate (As CaCO3)	65.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	102	20.0	100.0	0	102	90	110			

Sample ID: **CCV2-191211**	Batch ID: **R107853**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.15**
SampType: **CCV**	Run ID: **TITRATOR_191211A**	Analysis Date: **12/11/2019 2:46:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	44.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	56.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	101	20.0	100.0	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191202B

Sample ID: **DCS-93917**	Batch ID: **93917**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **DCS**	Run ID: **WC_191202B**	Analysis Date: **12/2/2019 3:30:00 PM**	Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.123	0.100	0.1000	0	123	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191210A

The QC data in batch 94035 applies to the following samples: 1912058-01C, 1912058-02C, 1912058-03C, 1912058-04C, 1912058-05C

Sample ID: **MB-94035**	Batch ID: **94035**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_191210A**	Analysis Date: **12/10/2019 2:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-94035**	Batch ID: **94035**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_191210A**	Analysis Date: **12/10/2019 2:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.27	0.250	5.000	0	85.4	80	120			

Sample ID: **1912030-09CMSD**	Batch ID: **94035**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_191210A**	Analysis Date: **12/10/2019 2:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.07	0.250	5.000	0	81.4	80	120			

Sample ID: **1912030-09CMSDD**	Batch ID: **94035**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_191210A**	Analysis Date: **12/10/2019 2:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.51	0.250	5.000	0	90.2	80	120	10.3	25	

Sample ID: **1912030-12CMS**	Batch ID: **94035**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_191210A**	Analysis Date: **12/10/2019 2:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.35	0.250	5.000	0	87.0	80	120			

Sample ID: **1912030-12CMSD**	Batch ID: **94035**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_191210A**	Analysis Date: **12/10/2019 2:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.18	0.250	5.000	0	83.6	80	120	3.99	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191210A

Sample ID: **ICV-191210**	Batch ID: **R107826**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_191210A**	Analysis Date: **12/10/2019 2:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.57	0.250	2.500	0	103	80	120			

Sample ID: **CCV1-191210**	Batch ID: **R107826**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_191210A**	Analysis Date: **12/10/2019 2:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.37	0.250	5.000	0	87.4	80	120			

Sample ID: **CCV2-191210**	Batch ID: **R107826**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_191210A**	Analysis Date: **12/10/2019 2:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.13	0.250	5.000	0	82.6	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191211B

The QC data in batch 94067 applies to the following samples: 1912058-01D, 1912058-02D, 1912058-03D, 1912058-04D, 1912058-05D

Sample ID: **MB-94067**	Batch ID: **94067**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_191211B**	Analysis Date: **12/11/2019 5:05:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-94067**	Batch ID: **94067**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_191211B**	Analysis Date: **12/11/2019 5:05:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	757	10.0	745.6	0	102	90	113			

Sample ID: **1912058-01D-DUP**	Batch ID: **94067**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_191211B**	Analysis Date: **12/11/2019 5:05:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	44700	1000	0	46600				4.16	5	

Sample ID: **1912058-02D-DUP**	Batch ID: **94067**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_191211B**	Analysis Date: **12/11/2019 5:05:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	44200	1000	0	43400				1.83	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jan-20*

CLIENT: Golder
Work Order: 1912058
Project: Copano 4Q19

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ng/L @ pH 4.**	**ng/L @ pH 4.**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

January 10, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1169737
Samples Received:	12/11/2019
Project Number:	1912058
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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MW3-7 L1169737-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/05/19 11:11	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398799	1	12/20/19 11:03	12/26/19 13:45	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402473	1	01/02/20 10:18	01/08/20 14:08	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402473	1	01/02/20 10:18	01/08/20 14:08	RGT	Mt. Juliet, TN

MW3-7B L1169737-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/05/19 10:13	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398799	1	12/20/19 11:03	12/26/19 13:45	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402473	1	01/02/20 10:18	01/08/20 14:08	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402473	1	01/02/20 10:18	01/08/20 14:08	RGT	Mt. Juliet, TN

MW-103 L1169737-03 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/05/19 11:16	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398799	1	12/20/19 11:03	12/26/19 13:45	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402473	1	01/02/20 10:18	01/08/20 14:08	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402473	1	01/02/20 10:18	01/08/20 14:08	RGT	Mt. Juliet, TN

MW3-5 L1169737-04 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/05/19 09:38	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398799	1	12/20/19 11:03	12/26/19 13:45	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402473	1	01/02/20 10:18	01/08/20 14:08	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402473	1	01/02/20 10:18	01/08/20 14:08	RGT	Mt. Juliet, TN

MW3-6 L1169737-05 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/05/19 10:28	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398799	1	12/20/19 11:03	12/26/19 13:45	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402473	1	01/02/20 10:18	01/08/20 14:08	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402473	1	01/02/20 10:18	01/08/20 14:08	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.86		0.451	0.757	12/26/2019 13:45	WG1398799
(T) Barium	*131*			*62.0-143*	*12/26/2019 13:45*	WG1398799
(T) Yttrium	*101*			*79.0-136*	*12/26/2019 13:45*	WG1398799

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.02		0.622	0.983	01/08/2020 14:08	WG1402473

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.156		0.171	0.226	01/08/2020 14:08	WG1402473
(T) Barium-133	*112*			*30.0-143*	*01/08/2020 14:08*	WG1402473

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	12.0		0.571	0.623	12/26/2019 13:45	WG1398799
(T) Barium	*128*			*62.0-143*	*12/26/2019 13:45*	WG1398799
(T) Yttrium	*102*			*79.0-136*	*12/26/2019 13:45*	WG1398799

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	13.4		1.05	0.89	01/08/2020 14:08	WG1402473

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.34		0.481	0.267	01/08/2020 14:08	WG1402473
(T) Barium-133	*75.0*			*30.0-143*	*01/08/2020 14:08*	WG1402473

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.0264		0.417	0.625	12/26/2019 13:45	WG1398799
(T) Barium	*133*			*62.0-143*	*12/26/2019 13:45*	WG1398799
(T) Yttrium	*105*			*79.0-136*	*12/26/2019 13:45*	WG1398799

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.820		0.754	0.836	01/08/2020 14:08	WG1402473

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.820		0.337	0.211	01/08/2020 14:08	WG1402473
(T) Barium-133	*110*			*30.0-143*	*01/08/2020 14:08*	WG1402473

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.814		0.438	0.686	12/26/2019 13:45	WG1398799
(T) Barium	*136*			*62.0-143*	*12/26/2019 13:45*	WG1398799
(T) Yttrium	*103*			*79.0-136*	*12/26/2019 13:45*	WG1398799

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.906		0.645	1.02	01/08/2020 14:08	WG1402473

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0922		0.207	0.338	01/08/2020 14:08	WG1402473
(T) Barium-133	*99.9*			*30.0-143*	*01/08/2020 14:08*	WG1402473

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.13		0.401	0.652	12/26/2019 13:45	WG1398799
(T) Barium	*125*			*62.0-143*	*12/26/2019 13:45*	WG1398799
(T) Yttrium	*95.7*			*79.0-136*	*12/26/2019 13:45*	WG1398799

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.43		0.640	0.917	01/08/2020 14:08	WG1402473

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.298		0.239	0.265	01/08/2020 14:08	WG1402473
(T) Barium-133	*102*			*30.0-143*	*01/08/2020 14:08*	WG1402473

Method Blank (MB)

(MB) R3486384-1 12/26/19 09:40

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-228	0.286		0.437
(T) Barium	*114*		
(T) Yttrium	*106*		

L1168179-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1168179-01 12/26/19 09:40 • (DUP) R3486384-5 12/26/19 09:40

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-228	2.15	3.00	1	32.9	1.02		20	3
(T) Barium	*109*	*108*						
(T) Yttrium	*108*	*94.5*						

Laboratory Control Sample (LCS)

(LCS) R3486384-2 12/26/19 09:40

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-228	5.00	5.35	107	80.0-120	
(T) Barium			*116*		
(T) Yttrium			*109*		

L1169079-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1169079-01 12/26/19 09:40 • (MS) R3486384-3 12/26/19 09:40 • (MSD) R3486384-4 12/26/19 09:40

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-228	10.0	1.92	11.8	13.0	98.6	111	1	70.0-130			10.0		20
(T) Barium		*111*			*118*	*119*							
(T) Yttrium		*116*			*103*	*103*							

Method Blank (MB)

(MB) R3489703-1 01/08/20 14:08

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	-0.0144		0.0746
(T) Barium-133	*86.2*		

L1169737-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1169737-02 01/08/20 14:08 • (DUP) R3489703-5 01/08/20 14:08

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	1.34	1.06	1	23.5	0.462		20	3
(T) Barium-133	*75.0*	*107*						

Laboratory Control Sample (LCS)

(LCS) R3489703-2 01/08/20 14:08

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	4.97	99.0	80.0-120	
(T) Barium-133			*88.2*		

L1169737-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1169737-04 01/08/20 14:08 • (MS) R3489703-3 01/08/20 14:08 • (MSD) R3489703-4 01/08/20 14:08

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.0922	16.6	17.7	82.1	87.5	1	75.0-125			6.30		20
(T) Barium-133		*99.9*			*110*	*108*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

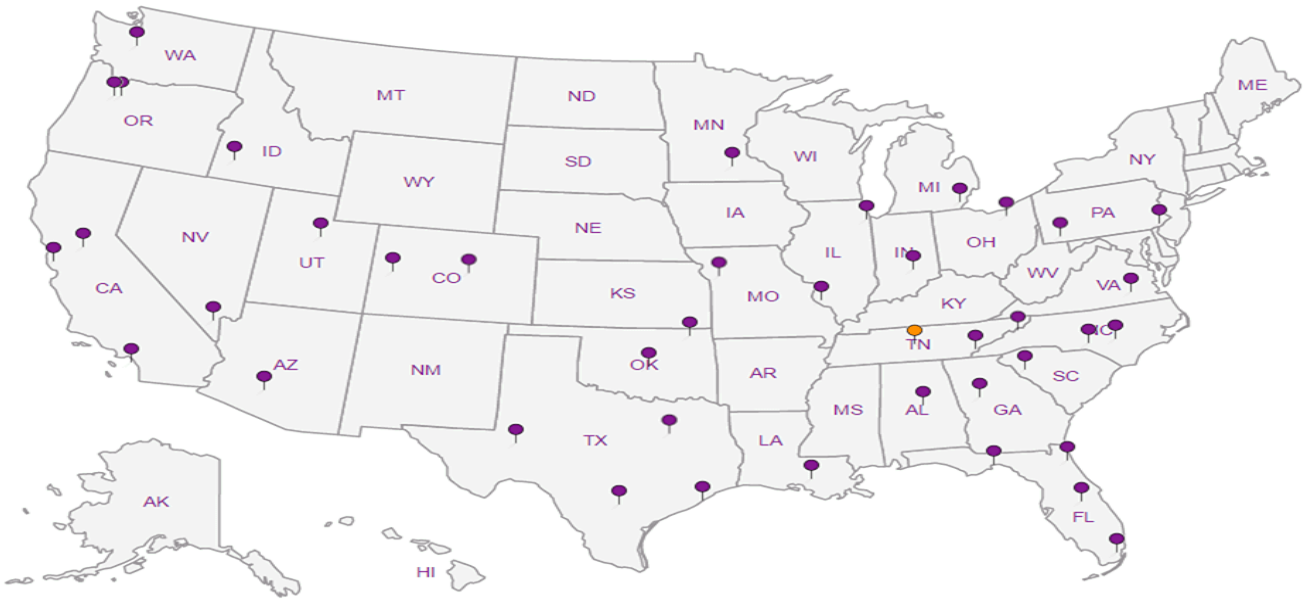
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1912058

1169737

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

09-Dec-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra 228 E904.0	Ra 226 M7500 Ra B M	Requested Tests			
MW3-7	Aqueous	-01E	12/05/19 11:11 AM	1LHDPEHNO3	1					-01
MW3-7	Aqueous	-01F	12/05/19 11:11 AM	1LHDPEHNO3		1				
MW3-7B	Aqueous	-02E	12/05/19 10:13 AM	1LHDPEHNO3	1					02
MW3-7B	Aqueous	-02F	12/05/19 10:13 AM	1LHDPEHNO3		1				
MW-103	Aqueous	-03E	12/05/19 11:16 AM	1LHDPEHNO3	1					03
MW-103	Aqueous	-03F	12/05/19 11:16 AM	1LHDPEHNO3		1				
MW3-5	Aqueous	-04E	12/05/19 09:38 AM	1LHDPEHNO3	1					04
MW3-5	Aqueous	-04F	12/05/19 09:38 AM	1LHDPEHNO3		1				
MW3-6	Aqueous	-05E	12/05/19 10:28 AM	1LHDPEHNO3	1					05
MW3-6	Aqueous	-05F	12/05/19 10:28 AM	1LHDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		12/9/19 1700	Received by:		1025 12/11/19
Relinquished by:			Received by:		

AMB

RAD SCREEN: <0.5 mR/hr

March 11, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 2002045

RE: Copano GW 1Q20

Dear Kevin Dworsky:

DHL Analytical, Inc. received 12 sample(s) on 2/6/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL

2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: *www.dhlanalytical.com*
E-Mail: *login@dhlanalytical.com*

№ 80825
CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Victoria Tx 77901
PHONE: (361) 533-6224 FAX/E-MAIL: Greg_Logan@golder.com
DATA REPORTED TO: Greg Logan
ADDITIONAL REPORT COPIES TO: Scott Fenner, Victor gonzalez

DATE: 2/5/20 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 2002045
PROJECT LOCATION OR NAME: Copano APAR 1Q20
CLENT PROJECT #: ~~19125225 18113041~~ COLLECTOR: S. Fenner *2 coolers

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☒ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☒ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
MW-6R	01	2/5/20	0918	W	P	6		X	X	X	X	See attached form
MW-6RB	02	"	1020	"	"	"		"	"	"	"	for full list of Analytes
MW-10	03	"	1156	"	"	"		"	"	"	"	
MW-11	04	"	1245	"	"	"		"	"	"	"	
MW-11B	05	"	1342	"	"	"		"	"	"	"	
MW-201	06	"	1347	"	"	"		"	"	"	"	
MW-7	07	"	1602	"	"	"		"	"	"	"	

RELINQUISHED BY: (Signature) DATE/TIME 2/5/20 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx DATE/TIME 2.6.2020 0927 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 0.7 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

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DHL ANALYTICAL

2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 80829
CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 6020 E Airline Rd.
PHONE: _____ FAX/E-MAIL: _____
DATA REPORTED TO: Kevin_Dworsky@golder.com Greg_Logan@golder.com
ADDITIONAL REPORT COPIES TO: Victor_Gonzalez@golder.com

DATE: 2/5/20 2002045 PAGE 1 OF 1
PO #: _____ DHL WORK ORDER #: ~~1811309~~ ~~1912553~~ (EC)
PROJECT LOCATION OR NAME: Capano GW 1Q20
CLENT PROJECT #: _____ COLLECTOR: Victor Gonzalez

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ METALS ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
MW-9	08	2/5/20	1000	W	P	6		X	X	X	X	See Attached list for all analysis	
MW-8	09	"	1130	"	"	"		"	"	"	"	"	
MW-5	10	"	1325	"	"	"		"	"	"	"	"	
MW-5B	11	"	1440	"	"	"		"	"	"	"	"	
MW-4	12	↓	1605	↓	↓	↓		↓	↓	↓	↓	↓	

RELINQUISHED BY: (Signature) VnA DATE/TIME 2/5/20 18:30 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx DATE/TIME 2.6.2020 0927 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.1 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

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TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Dissolved Metals[1]	SW6020A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Metals.
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Dissolved Mercury	SW7470A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Mercury.
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	SM7S00Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:

1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium, Uranium
2) From time of sample collection

APAR (Copano GW 1020)

ORIGIN ID:CRPA (956) 735-7260
VICTOR GONZALEZ

2836 OLD CHARCO BLANCO ROAD

RIO GRANDE CITY, TX 78582
UNITED STATES US

SHIP DATE: 05FEB20
ACTWGT: 52.80 LB
CAD: 6893941/SSFE2021
DIMS: 24x15x12 IN

BILL CREDIT CARD

TO **DHL ANALYTICAL**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:

INV: DEPT:

FedEx
Express

J2010200113D1uv

2 of 5

MPS# 0263 **3901 8488 5025**

Mstr# 3901 8488 5014 0201

THU - 06 FEB 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**

CUSTODY SEAL

DATE 2/5/20

SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • www.qecusa.com

ORIGIN ID:CRPA (956) 735-7260
VICTOR GONZALEZ

2936 OLD CHARCO BLANCO RDAD

RIO GRANDE CITY, TX 78582
UNITED STATES US

SHIP DATE: 05FEB20
ACTWGT: 65.00 LB
CAD: 6993841/SSFE2021
DIMS: 24x15x12 IN

BILL CREDIT CARD

TO **DHL ANALYTICAL**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 386-8222 REF:
INV:
PO: DEPT:

FedEx Express

1 of 5

TRK# 0201 **3901 8488 5014**

MASTER

44 BSMA

THU - 06 FEB 10:30A
PRIORITY OVERNIGHT

78664
TX-US **AUS**

CUSTODY SEAL

DATE 02/05/20

SIGNATURE

DHL ANALYTICAL

ORIGIN ID:CRPA (956) 735-7260
VICTOR GONZALEZ

2836 OLD CHARCO BLANCO ROAD

RIO GRANDE CITY, TX 78582
UNITED STATES US

SHIP DATE: 05FEB20
ACTWGT: 51.00 LB
CAD: 6993941/SSFE2021
DIMS: 24x15x12 IN

BILL CREDIT CARD

TO **DHL ANALYTICAL**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx
Express

4 of 5
MPS# 0263 **3901 8488 5047**
Mstr# **3901 8488 5014** 0201

THU - 06 FEB 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**

D 5047 02.06
1 10:30
RT 512
FZ

CUSTODY SEAL

DATE 2/5/20

SIGNATURE

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 2/6/2020

Work Order Number 2002045 | Received by: JH

Checklist completed by: _____ 2/6/2020 (Signature / Date) | Reviewed by (pl) 2/6/2020 (Initials / Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	0.7 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW 1Q20	**LRC Date:** 3/11/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2002045
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW 1Q20	**LRC Date:** 3/11/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2002045
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?		X			**S10-02**
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

03/11/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *11-Mar-20*

CLIENT: Golder
Project: Copano GW 1Q20
Lab Order: 2002045

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis (total & dissolved)
Method SW6020B - Uranium in Water Analysis (total & dissolved) (this parameter is not NELAP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 2/6/20. A total of 12 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Ammonia analysis performed on 2/17/20 (batch 95026) the matrix spike and matrix spike duplicate recoveries (2002059-01 MS/MSD & 2002060-03 MS/MSD) were below control limits. This was due to matrix effect. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates were not from this work order. The LCS was within control limits. No further corrective actions were taken.

For Anions analysis performed on 2/6/20 the matrix spike duplicate recovery (2002010-05 MSD) was slightly below control limits for Chloride. This is flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Total Metals analysis performed on 2/11/20 and 2/12/20 (batch 94917) the matrix spike and matrix spike duplicate recoveries were out of control limits for four analytes. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Total Mercury analysis performed on 2/10/20 (batch 94900) the matrix spike and matrix spike duplicate recoveries were below control limits. This was due to matrix effect. This is flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work

order. The LCS was within control limits. No further corrective actions were taken.

For Dissolved Mercury analysis performed on 2/18/20 (batch 95013) the matrix spike recovery was slightly below control limits. This was due to matrix effect. This is flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits. No further corrective actions were taken.

Exception Report R10-01

For Total and Dissolved Metals and Uranium analyses, some dissolved metals results were slightly greater than the total metals results for several samples. These are within the acceptable variation limits. No further corrective actions were taken.

For Anions analysis all samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride and/or Sulfate).

Exception Report S9-01

For Total Metals analysis performed on 2/11/20 and 2/12/20 (batch 94917) the PDS recovery was out of control limits for Sodium and Nickel. These are flagged accordingly in the QC summary report. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

For Dissolved Mercury analysis performed on 2/18/20 (batch 95013) the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

For Total Mercury analysis performed on 2/10/20 (batch 94900) the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

Exception Report S10-02

For Metals analysis, the recovery of Aluminum for the Detectability Check Standard (DCS1-94341) was slightly above the DHL Analytical internal control limits; the recovery meets TRRP specifications. This is flagged accordingly in the QC summary report. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT: Golder
Project: Copano GW 1Q20
Lab Order: 2002045

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2002045-01	MW-6R		02/05/20 09:18 AM	2/6/2020
2002045-02	MW-6RB		02/05/20 10:20 AM	2/6/2020
2002045-03	MW-10		02/05/20 11:56 AM	2/6/2020
2002045-04	MW-11		02/05/20 12:45 PM	2/6/2020
2002045-05	MW-11B		02/05/20 01:42 PM	2/6/2020
2002045-06	MW-201		02/05/20 01:47 PM	2/6/2020
2002045-07	MW-7		02/05/20 04:02 PM	2/6/2020
2002045-08	MW-9		02/05/20 10:00 AM	2/6/2020
2002045-09	MW-8		02/05/20 11:30 AM	2/6/2020
2002045-10	MW-5		02/05/20 01:25 PM	2/6/2020
2002045-11	MW-5B		02/05/20 02:40 PM	2/6/2020
2002045-12	MW-4		02/05/20 04:05 PM	2/6/2020

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002045-01A	MW-6R	02/05/20 09:18 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-6R	02/05/20 09:18 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-6R	02/05/20 09:18 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-6R	02/05/20 09:18 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-6R	02/05/20 09:18 AM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
	MW-6R	02/05/20 09:18 AM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
2002045-01B	MW-6R	02/05/20 09:18 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-6R	02/05/20 09:18 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-6R	02/05/20 09:18 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
	MW-6R	02/05/20 09:18 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002045-01C	MW-6R	02/05/20 09:18 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/12/20 09:17 AM	94944
2002045-01D	MW-6R	02/05/20 09:18 AM	Aqueous	M2320 B	Alkalinity Preparation	02/07/20 09:59 AM	94905
	MW-6R	02/05/20 09:18 AM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-6R	02/05/20 09:18 AM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-6R	02/05/20 09:18 AM	Aqueous	M2540C	TDS Preparation	02/06/20 09:39 AM	94889
2002045-02A	MW-6RB	02/05/20 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-6RB	02/05/20 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-6RB	02/05/20 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-6RB	02/05/20 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-6RB	02/05/20 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
2002045-02B	MW-6RB	02/05/20 10:20 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-6RB	02/05/20 10:20 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-6RB	02/05/20 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002045-02C	MW-6RB	02/05/20 10:20 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/12/20 09:17 AM	94944
2002045-02D	MW-6RB	02/05/20 10:20 AM	Aqueous	M2320 B	Alkalinity Preparation	02/07/20 09:59 AM	94905
	MW-6RB	02/05/20 10:20 AM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-6RB	02/05/20 10:20 AM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-6RB	02/05/20 10:20 AM	Aqueous	E300	Anion Preparation	02/10/20 09:30 AM	94907

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002045-02D	MW-6RB	02/05/20 10:20 AM	Aqueous	M2540C	TDS Preparation	02/06/20 09:39 AM	94889
2002045-03A	MW-10	02/05/20 11:56 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-10	02/05/20 11:56 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-10	02/05/20 11:56 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-10	02/05/20 11:56 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-10	02/05/20 11:56 AM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
2002045-03B	MW-10	02/05/20 11:56 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-10	02/05/20 11:56 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-10	02/05/20 11:56 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002045-03C	MW-10	02/05/20 11:56 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/12/20 09:17 AM	94944
2002045-03D	MW-10	02/05/20 11:56 AM	Aqueous	M2320 B	Alkalinity Preparation	02/07/20 09:59 AM	94905
	MW-10	02/05/20 11:56 AM	Aqueous	E300	Anion Preparation	02/10/20 09:30 AM	94907
	MW-10	02/05/20 11:56 AM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-10	02/05/20 11:56 AM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-10	02/05/20 11:56 AM	Aqueous	M2540C	TDS Preparation	02/06/20 09:39 AM	94889
2002045-04A	MW-11	02/05/20 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-11	02/05/20 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-11	02/05/20 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-11	02/05/20 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-11	02/05/20 12:45 PM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
2002045-04B	MW-11	02/05/20 12:45 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-11	02/05/20 12:45 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-11	02/05/20 12:45 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002045-04C	MW-11	02/05/20 12:45 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/12/20 09:17 AM	94944
2002045-04D	MW-11	02/05/20 12:45 PM	Aqueous	M2320 B	Alkalinity Preparation	02/07/20 09:59 AM	94905
	MW-11	02/05/20 12:45 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-11	02/05/20 12:45 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-11	02/05/20 12:45 PM	Aqueous	E300	Anion Preparation	02/10/20 09:30 AM	94907

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002045-04D	MW-11	02/05/20 12:45 PM	Aqueous	M2540C	TDS Preparation	02/06/20 09:39 AM	94889
2002045-05A	MW-11B	02/05/20 01:42 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-11B	02/05/20 01:42 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-11B	02/05/20 01:42 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-11B	02/05/20 01:42 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-11B	02/05/20 01:42 PM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
2002045-05B	MW-11B	02/05/20 01:42 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-11B	02/05/20 01:42 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-11B	02/05/20 01:42 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002045-05C	MW-11B	02/05/20 01:42 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/12/20 09:17 AM	94944
2002045-05D	MW-11B	02/05/20 01:42 PM	Aqueous	M2320 B	Alkalinity Preparation	02/07/20 09:59 AM	94905
	MW-11B	02/05/20 01:42 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-11B	02/05/20 01:42 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-11B	02/05/20 01:42 PM	Aqueous	E300	Anion Preparation	02/10/20 09:30 AM	94907
	MW-11B	02/05/20 01:42 PM	Aqueous	M2540C	TDS Preparation	02/06/20 09:39 AM	94889
2002045-06A	MW-201	02/05/20 01:47 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-201	02/05/20 01:47 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-201	02/05/20 01:47 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-201	02/05/20 01:47 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-201	02/05/20 01:47 PM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
2002045-06B	MW-201	02/05/20 01:47 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-201	02/05/20 01:47 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-201	02/05/20 01:47 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002045-06C	MW-201	02/05/20 01:47 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/12/20 09:17 AM	94944
2002045-06D	MW-201	02/05/20 01:47 PM	Aqueous	M2320 B	Alkalinity Preparation	02/07/20 09:59 AM	94905
	MW-201	02/05/20 01:47 PM	Aqueous	E300	Anion Preparation	02/10/20 09:30 AM	94907
	MW-201	02/05/20 01:47 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-201	02/05/20 01:47 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002045-06D	MW-201	02/05/20 01:47 PM	Aqueous	M2540C	TDS Preparation	02/06/20 09:39 AM	94889
2002045-07A	MW-7	02/05/20 04:02 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-7	02/05/20 04:02 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-7	02/05/20 04:02 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-7	02/05/20 04:02 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-7	02/05/20 04:02 PM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
2002045-07B	MW-7	02/05/20 04:02 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-7	02/05/20 04:02 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-7	02/05/20 04:02 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002045-07C	MW-7	02/05/20 04:02 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/12/20 09:17 AM	94944
2002045-07D	MW-7	02/05/20 04:02 PM	Aqueous	M2320 B	Alkalinity Preparation	02/07/20 09:59 AM	94905
	MW-7	02/05/20 04:02 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-7	02/05/20 04:02 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-7	02/05/20 04:02 PM	Aqueous	M2540C	TDS Preparation	02/07/20 02:19 PM	94913
2002045-08A	MW-9	02/05/20 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-9	02/05/20 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-9	02/05/20 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-9	02/05/20 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-9	02/05/20 10:00 AM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
2002045-08B	MW-9	02/05/20 10:00 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-9	02/05/20 10:00 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-9	02/05/20 10:00 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002045-08C	MW-9	02/05/20 10:00 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/12/20 09:17 AM	94944
2002045-08D	MW-9	02/05/20 10:00 AM	Aqueous	M2320 B	Alkalinity Preparation	02/07/20 09:59 AM	94905
	MW-9	02/05/20 10:00 AM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-9	02/05/20 10:00 AM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-9	02/05/20 10:00 AM	Aqueous	M2540C	TDS Preparation	02/07/20 02:19 PM	94913
2002045-09A	MW-8	02/05/20 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002045-09A	MW-8	02/05/20 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-8	02/05/20 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-8	02/05/20 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-8	02/05/20 11:30 AM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
2002045-09B	MW-8	02/05/20 11:30 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-8	02/05/20 11:30 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-8	02/05/20 11:30 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002045-09C	MW-8	02/05/20 11:30 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/17/20 09:18 AM	95026
2002045-09D	MW-8	02/05/20 11:30 AM	Aqueous	M2320 B	Alkalinity Preparation	02/07/20 09:59 AM	94905
	MW-8	02/05/20 11:30 AM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-8	02/05/20 11:30 AM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-8	02/05/20 11:30 AM	Aqueous	M2540C	TDS Preparation	02/07/20 02:19 PM	94913
2002045-10A	MW-5	02/05/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-5	02/05/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-5	02/05/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-5	02/05/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-5	02/05/20 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
2002045-10B	MW-5	02/05/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-5	02/05/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-5	02/05/20 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002045-10C	MW-5	02/05/20 01:25 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/17/20 09:18 AM	95026
2002045-10D	MW-5	02/05/20 01:25 PM	Aqueous	M2320 B	Alkalinity Preparation	02/07/20 09:59 AM	94905
	MW-5	02/05/20 01:25 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-5	02/05/20 01:25 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-5	02/05/20 01:25 PM	Aqueous	M2540C	TDS Preparation	02/07/20 02:19 PM	94913
2002045-11A	MW-5B	02/05/20 02:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-5B	02/05/20 02:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-5B	02/05/20 02:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002045-11A	MW-5B	02/05/20 02:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-5B	02/05/20 02:40 PM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
2002045-11B	MW-5B	02/05/20 02:40 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-5B	02/05/20 02:40 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-5B	02/05/20 02:40 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002045-11C	MW-5B	02/05/20 02:40 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/17/20 09:18 AM	95026
2002045-11D	MW-5B	02/05/20 02:40 PM	Aqueous	M2320 B	Alkalinity Preparation	02/07/20 09:59 AM	94905
	MW-5B	02/05/20 02:40 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-5B	02/05/20 02:40 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-5B	02/05/20 02:40 PM	Aqueous	E300	Anion Preparation	02/10/20 09:30 AM	94907
	MW-5B	02/05/20 02:40 PM	Aqueous	M2540C	TDS Preparation	02/07/20 02:19 PM	94913
2002045-12A	MW-4	02/05/20 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-4	02/05/20 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-4	02/05/20 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-4	02/05/20 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:41 AM	94917
	MW-4	02/05/20 04:05 PM	Aqueous	SW7470A	Mercury Aq Prep	02/07/20 08:36 AM	94900
2002045-12B	MW-4	02/05/20 04:05 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-4	02/05/20 04:05 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:46 AM	94919
	MW-4	02/05/20 04:05 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002045-12C	MW-4	02/05/20 04:05 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/17/20 09:18 AM	95026
2002045-12D	MW-4	02/05/20 04:05 PM	Aqueous	M2320 B	Alkalinity Preparation	02/07/20 09:59 AM	94905
	MW-4	02/05/20 04:05 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-4	02/05/20 04:05 PM	Aqueous	E300	Anion Preparation	02/06/20 10:55 AM	94896
	MW-4	02/05/20 04:05 PM	Aqueous	M2540C	TDS Preparation	02/07/20 02:19 PM	94913

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002045-01A	MW-6R	Aqueous	SW7470A	Mercury Total: Aqueous	94900	5	02/10/20 11:46 AM	CETAC2_HG_200210A
	MW-6R	Aqueous	SW7470A	Mercury Total: Aqueous	94900	1	02/10/20 10:55 AM	CETAC2_HG_200210A
	MW-6R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	500	02/11/20 02:30 PM	ICP-MS4_200211B
	MW-6R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	50	02/11/20 03:09 PM	ICP-MS4_200211B
	MW-6R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1	02/12/20 02:45 PM	ICP-MS5_200212A
	MW-6R	Aqueous	SW6020B	Uranium in Water by ICPMS	94917	1	02/12/20 02:45 PM	ICP-MS5_200212B
2002045-01B	MW-6R	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94919	1	02/11/20 11:15 AM	ICP-MS5_200211B
	MW-6R	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:01 AM	CETAC2_HG_200218B
	MW-6R	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	5	02/18/20 01:32 PM	CETAC2_HG_200218B
	MW-6R	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94919	1	02/11/20 11:15 AM	ICP-MS5_200211A
2002045-01C	MW-6R	Aqueous	M4500-NH3-D	Ammonia aqueous	94944	1	02/12/20 04:16 PM	WC_200212B
2002045-01D	MW-6R	Aqueous	M2320 B	Alkalinity	94905	1	02/07/20 11:16 AM	TITRATOR_200207A
	MW-6R	Aqueous	E300	Anions by IC method - Water	94896	1000	02/06/20 02:48 PM	IC4_200206A
	MW-6R	Aqueous	E300	Anions by IC method - Water	94896	10	02/06/20 08:56 PM	IC4_200206A
	MW-6R	Aqueous	M2540C	Total Dissolved Solids	94889	1	02/06/20 02:30 PM	WC_200206D
2002045-02A	MW-6RB	Aqueous	SW7470A	Mercury Total: Aqueous	94900	1	02/10/20 11:06 AM	CETAC2_HG_200210A
	MW-6RB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	500	02/11/20 02:32 PM	ICP-MS4_200211B
	MW-6RB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	50	02/11/20 03:11 PM	ICP-MS4_200211B
	MW-6RB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1	02/12/20 02:49 PM	ICP-MS5_200212A
	MW-6RB	Aqueous	SW6020B	Uranium in Water by ICPMS	94917	1	02/12/20 02:49 PM	ICP-MS5_200212B
2002045-02B	MW-6RB	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94919	1	02/11/20 11:18 AM	ICP-MS5_200211B
	MW-6RB	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:12 AM	CETAC2_HG_200218B
	MW-6RB	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94919	1	02/11/20 11:18 AM	ICP-MS5_200211A
2002045-02C	MW-6RB	Aqueous	M4500-NH3-D	Ammonia aqueous	94944	1	02/12/20 04:16 PM	WC_200212B
2002045-02D	MW-6RB	Aqueous	M2320 B	Alkalinity	94905	1	02/07/20 11:26 AM	TITRATOR_200207A

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002045-02D	MW-6RB	Aqueous	E300	Anions by IC method - Water	94907	100	02/10/20 12:09 PM	IC2_200210A
	MW-6RB	Aqueous	E300	Anions by IC method - Water	94896	1000	02/06/20 03:04 PM	IC4_200206A
	MW-6RB	Aqueous	E300	Anions by IC method - Water	94896	10	02/06/20 09:12 PM	IC4_200206A
	MW-6RB	Aqueous	M2540C	Total Dissolved Solids	94889	1	02/06/20 02:30 PM	WC_200206D
2002045-03A	MW-10	Aqueous	SW7470A	Mercury Total: Aqueous	94900	1	02/10/20 11:08 AM	CETAC2_HG_200210A
	MW-10	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1	02/12/20 02:53 PM	ICP-MS5_200212A
	MW-10	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	500	02/11/20 02:34 PM	ICP-MS4_200211B
	MW-10	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	50	02/11/20 03:13 PM	ICP-MS4_200211B
	MW-10	Aqueous	SW6020B	Uranium in Water by ICPMS	94917	1	02/12/20 02:53 PM	ICP-MS5_200212B
2002045-03B	MW-10	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94919	1	02/11/20 11:20 AM	ICP-MS5_200211B
	MW-10	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:14 AM	CETAC2_HG_200218B
	MW-10	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94919	1	02/11/20 11:20 AM	ICP-MS5_200211A
2002045-03C	MW-10	Aqueous	M4500-NH3-D	Ammonia aqueous	94944	1	02/12/20 04:16 PM	WC_200212B
2002045-03D	MW-10	Aqueous	M2320 B	Alkalinity	94905	1	02/07/20 11:41 AM	TITRATOR_200207A
	MW-10	Aqueous	E300	Anions by IC method - Water	94896	10	02/06/20 09:28 PM	IC4_200206A
	MW-10	Aqueous	E300	Anions by IC method - Water	94896	1000	02/06/20 03:20 PM	IC4_200206A
	MW-10	Aqueous	E300	Anions by IC method - Water	94907	100	02/10/20 12:25 PM	IC2_200210A
	MW-10	Aqueous	M2540C	Total Dissolved Solids	94889	1	02/06/20 02:30 PM	WC_200206D
2002045-04A	MW-11	Aqueous	SW7470A	Mercury Total: Aqueous	94900	1	02/10/20 11:11 AM	CETAC2_HG_200210A
	MW-11	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	500	02/11/20 02:36 PM	ICP-MS4_200211B
	MW-11	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	50	02/11/20 03:15 PM	ICP-MS4_200211B
	MW-11	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1	02/12/20 02:58 PM	ICP-MS5_200212A
	MW-11	Aqueous	SW6020B	Uranium in Water by ICPMS	94917	1	02/12/20 02:58 PM	ICP-MS5_200212B
2002045-04B	MW-11	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94919	1	02/11/20 11:23 AM	ICP-MS5_200211B
	MW-11	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:17 AM	CETAC2_HG_200218B
	MW-11	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94919	1	02/11/20 11:23 AM	ICP-MS5_200211A

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002045-04C	MW-11	Aqueous	M4500-NH3-D	Ammonia aqueous	94944	1	02/12/20 04:16 PM	WC_200212B
2002045-04D	MW-11	Aqueous	M2320 B	Alkalinity	94905	1	02/07/20 12:13 PM	TITRATOR_200207A
	MW-11	Aqueous	E300	Anions by IC method - Water	94907	100	02/10/20 12:41 PM	IC2_200210A
	MW-11	Aqueous	E300	Anions by IC method - Water	94896	1000	02/06/20 03:36 PM	IC4_200206A
	MW-11	Aqueous	E300	Anions by IC method - Water	94896	10	02/06/20 09:44 PM	IC4_200206A
	MW-11	Aqueous	M2540C	Total Dissolved Solids	94889	1	02/06/20 02:30 PM	WC_200206D
2002045-05A	MW-11B	Aqueous	SW7470A	Mercury Total: Aqueous	94900	1	02/10/20 11:13 AM	CETAC2_HG_200210A
	MW-11B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1	02/12/20 02:36 PM	ICP-MS5_200212A
	MW-11B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	500	02/11/20 02:26 PM	ICP-MS4_200211B
	MW-11B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	50	02/11/20 03:05 PM	ICP-MS4_200211B
	MW-11B	Aqueous	SW6020B	Uranium in Water by ICPMS	94917	1	02/12/20 02:36 PM	ICP-MS5_200212B
2002045-05B	MW-11B	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94919	1	02/11/20 11:10 AM	ICP-MS5_200211B
	MW-11B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:19 AM	CETAC2_HG_200218B
	MW-11B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94919	1	02/11/20 11:10 AM	ICP-MS5_200211A
2002045-05C	MW-11B	Aqueous	M4500-NH3-D	Ammonia aqueous	94944	1	02/12/20 04:16 PM	WC_200212B
2002045-05D	MW-11B	Aqueous	M2320 B	Alkalinity	94905	1	02/07/20 12:24 PM	TITRATOR_200207A
	MW-11B	Aqueous	E300	Anions by IC method - Water	94907	100	02/10/20 12:57 PM	IC2_200210A
	MW-11B	Aqueous	E300	Anions by IC method - Water	94896	1000	02/06/20 03:52 PM	IC4_200206A
	MW-11B	Aqueous	E300	Anions by IC method - Water	94896	10	02/06/20 11:36 PM	IC4_200206A
	MW-11B	Aqueous	M2540C	Total Dissolved Solids	94889	1	02/06/20 02:30 PM	WC_200206D
2002045-06A	MW-201	Aqueous	SW7470A	Mercury Total: Aqueous	94900	1	02/10/20 11:15 AM	CETAC2_HG_200210A
	MW-201	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	50	02/11/20 03:17 PM	ICP-MS4_200211B
	MW-201	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1	02/12/20 03:02 PM	ICP-MS5_200212A
	MW-201	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	500	02/11/20 02:38 PM	ICP-MS4_200211B
	MW-201	Aqueous	SW6020B	Uranium in Water by ICPMS	94917	1	02/12/20 03:02 PM	ICP-MS5_200212B
2002045-06B	MW-201	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94919	1	02/11/20 11:31 AM	ICP-MS5_200211B

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002045-06B	MW-201	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:21 AM	CETAC2_HG_200218B
	MW-201	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94919	1	02/11/20 11:31 AM	ICP-MS5_200211A
2002045-06C	MW-201	Aqueous	M4500-NH3-D	Ammonia aqueous	94944	1	02/12/20 04:16 PM	WC_200212B
2002045-06D	MW-201	Aqueous	M2320 B	Alkalinity	94905	1	02/07/20 12:34 PM	TITRATOR_200207A
	MW-201	Aqueous	E300	Anions by IC method - Water	94896	1000	02/06/20 04:08 PM	IC4_200206A
	MW-201	Aqueous	E300	Anions by IC method - Water	94896	10	02/06/20 11:52 PM	IC4_200206A
	MW-201	Aqueous	E300	Anions by IC method - Water	94907	100	02/10/20 01:13 PM	IC2_200210A
	MW-201	Aqueous	M2540C	Total Dissolved Solids	94889	1	02/06/20 02:30 PM	WC_200206D
2002045-07A	MW-7	Aqueous	SW7470A	Mercury Total: Aqueous	94900	1	02/10/20 11:17 AM	CETAC2_HG_200210A
	MW-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1000	02/11/20 02:40 PM	ICP-MS4_200211B
	MW-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	100	02/11/20 03:19 PM	ICP-MS4_200211B
	MW-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1	02/12/20 03:07 PM	ICP-MS5_200212A
	MW-7	Aqueous	SW6020B	Uranium in Water by ICPMS	94917	1	02/12/20 03:07 PM	ICP-MS5_200212B
2002045-07B	MW-7	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94919	1	02/11/20 11:37 AM	ICP-MS5_200211B
	MW-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:23 AM	CETAC2_HG_200218B
	MW-7	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94919	1	02/11/20 11:37 AM	ICP-MS5_200211A
2002045-07C	MW-7	Aqueous	M4500-NH3-D	Ammonia aqueous	94944	1	02/12/20 04:16 PM	WC_200212B
2002045-07D	MW-7	Aqueous	M2320 B	Alkalinity	94905	1	02/07/20 12:41 PM	TITRATOR_200207A
	MW-7	Aqueous	E300	Anions by IC method - Water	94896	1000	02/06/20 04:24 PM	IC4_200206A
	MW-7	Aqueous	E300	Anions by IC method - Water	94896	10	02/07/20 12:08 AM	IC4_200206A
	MW-7	Aqueous	M2540C	Total Dissolved Solids	94913	1	02/07/20 05:00 PM	WC_200207B
2002045-08A	MW-9	Aqueous	SW7470A	Mercury Total: Aqueous	94900	1	02/10/20 11:20 AM	CETAC2_HG_200210A
	MW-9	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1	02/12/20 03:11 PM	ICP-MS5_200212A
	MW-9	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	500	02/11/20 02:42 PM	ICP-MS4_200211B
	MW-9	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	50	02/11/20 03:21 PM	ICP-MS4_200211B
	MW-9	Aqueous	SW6020B	Uranium in Water by ICPMS	94917	1	02/12/20 03:11 PM	ICP-MS5_200212B

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002045-08B	MW-9	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94919	1	02/11/20 11:53 AM	ICP-MS5_200211B
	MW-9	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:26 AM	CETAC2_HG_200218B
	MW-9	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94919	1	02/11/20 11:53 AM	ICP-MS5_200211A
2002045-08C	MW-9	Aqueous	M4500-NH3-D	Ammonia aqueous	94944	1	02/12/20 04:16 PM	WC_200212B
2002045-08D	MW-9	Aqueous	M2320 B	Alkalinity	94905	1	02/07/20 12:54 PM	TITRATOR_200207A
	MW-9	Aqueous	E300	Anions by IC method - Water	94896	1000	02/06/20 04:40 PM	IC4_200206A
	MW-9	Aqueous	E300	Anions by IC method - Water	94896	10	02/07/20 12:24 AM	IC4_200206A
	MW-9	Aqueous	M2540C	Total Dissolved Solids	94913	1	02/07/20 05:00 PM	WC_200207B
2002045-09A	MW-8	Aqueous	SW7470A	Mercury Total: Aqueous	94900	1	02/10/20 11:22 AM	CETAC2_HG_200210A
	MW-8	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1	02/12/20 03:16 PM	ICP-MS5_200212A
	MW-8	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	500	02/11/20 02:44 PM	ICP-MS4_200211B
	MW-8	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	50	02/11/20 03:33 PM	ICP-MS4_200211B
	MW-8	Aqueous	SW6020B	Uranium in Water by ICPMS	94917	1	02/12/20 03:16 PM	ICP-MS5_200212B
2002045-09B	MW-8	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94919	1	02/11/20 11:58 AM	ICP-MS5_200211B
	MW-8	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:28 AM	CETAC2_HG_200218B
	MW-8	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94919	1	02/11/20 11:58 AM	ICP-MS5_200211A
2002045-09C	MW-8	Aqueous	M4500-NH3-D	Ammonia aqueous	95026	1	02/17/20 03:30 PM	WC_200217A
2002045-09D	MW-8	Aqueous	M2320 B	Alkalinity	94905	1	02/07/20 01:07 PM	TITRATOR_200207A
	MW-8	Aqueous	E300	Anions by IC method - Water	94896	10	02/07/20 12:40 AM	IC4_200206A
	MW-8	Aqueous	E300	Anions by IC method - Water	94896	1000	02/06/20 06:16 PM	IC4_200206A
	MW-8	Aqueous	M2540C	Total Dissolved Solids	94913	1	02/07/20 05:00 PM	WC_200207B
2002045-10A	MW-5	Aqueous	SW7470A	Mercury Total: Aqueous	94900	1	02/10/20 11:24 AM	CETAC2_HG_200210A
	MW-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1000	02/11/20 02:46 PM	ICP-MS4_200211B
	MW-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	100	02/11/20 03:35 PM	ICP-MS4_200211B
	MW-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1	02/12/20 03:46 PM	ICP-MS5_200212A
	MW-5	Aqueous	SW6020B	Uranium in Water by ICPMS	94917	1	02/12/20 03:46 PM	ICP-MS5_200212B

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002045-10B	MW-5	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94919	1	02/11/20 12:03 PM	ICP-MS5_200211B
	MW-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:30 AM	CETAC2_HG_200218B
	MW-5	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94919	1	02/11/20 12:03 PM	ICP-MS5_200211A
2002045-10C	MW-5	Aqueous	M4500-NH3-D	Ammonia aqueous	95026	1	02/17/20 03:30 PM	WC_200217A
2002045-10D	MW-5	Aqueous	M2320 B	Alkalinity	94905	1	02/07/20 01:23 PM	TITRATOR_200207A
	MW-5	Aqueous	E300	Anions by IC method - Water	94896	10	02/07/20 12:56 AM	IC4_200206A
	MW-5	Aqueous	E300	Anions by IC method - Water	94896	1000	02/06/20 06:32 PM	IC4_200206A
	MW-5	Aqueous	M2540C	Total Dissolved Solids	94913	1	02/07/20 05:00 PM	WC_200207B
2002045-11A	MW-5B	Aqueous	SW7470A	Mercury Total: Aqueous	94900	1	02/10/20 11:32 AM	CETAC2_HG_200210A
	MW-5B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1000	02/11/20 02:59 PM	ICP-MS4_200211B
	MW-5B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	100	02/11/20 03:37 PM	ICP-MS4_200211B
	MW-5B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1	02/12/20 04:20 PM	ICP-MS5_200212A
	MW-5B	Aqueous	SW6020B	Uranium in Water by ICPMS	94917	1	02/12/20 04:20 PM	ICP-MS5_200212B
2002045-11B	MW-5B	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94919	1	02/11/20 01:21 PM	ICP-MS5_200211B
	MW-5B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:37 AM	CETAC2_HG_200218B
	MW-5B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94919	1	02/11/20 01:21 PM	ICP-MS5_200211A
2002045-11C	MW-5B	Aqueous	M4500-NH3-D	Ammonia aqueous	95026	1	02/17/20 03:30 PM	WC_200217A
2002045-11D	MW-5B	Aqueous	M2320 B	Alkalinity	94905	1	02/07/20 01:32 PM	TITRATOR_200207A
	MW-5B	Aqueous	E300	Anions by IC method - Water	94907	100	02/10/20 01:29 PM	IC2_200210A
	MW-5B	Aqueous	E300	Anions by IC method - Water	94896	1000	02/06/20 06:48 PM	IC4_200206A
	MW-5B	Aqueous	E300	Anions by IC method - Water	94896	10	02/07/20 01:12 AM	IC4_200206A
	MW-5B	Aqueous	M2540C	Total Dissolved Solids	94913	1	02/07/20 05:00 PM	WC_200207B
2002045-12A	MW-4	Aqueous	SW7470A	Mercury Total: Aqueous	94900	1	02/10/20 11:35 AM	CETAC2_HG_200210A
	MW-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1000	02/11/20 03:01 PM	ICP-MS4_200211B
	MW-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	100	02/11/20 03:39 PM	ICP-MS4_200211B
	MW-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94917	1	02/12/20 04:25 PM	ICP-MS5_200212A

Lab Order: 2002045
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002045-12A	MW-4	Aqueous	SW6020B	Uranium in Water by ICPMS	94917	1	02/12/20 04:25 PM	ICP-MS5_200212B
2002045-12B	MW-4	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94919	1	02/11/20 01:25 PM	ICP-MS5_200211B
	MW-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:39 AM	CETAC2_HG_200218B
	MW-4	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94919	1	02/11/20 01:25 PM	ICP-MS5_200211A
2002045-12C	MW-4	Aqueous	M4500-NH3-D	Ammonia aqueous	95026	1	02/17/20 03:30 PM	WC_200217A
2002045-12D	MW-4	Aqueous	M2320 B	Alkalinity	94905	1	02/07/20 01:43 PM	TITRATOR_200207A
	MW-4	Aqueous	E300	Anions by IC method - Water	94896	1000	02/06/20 07:04 PM	IC4_200206A
	MW-4	Aqueous	E300	Anions by IC method - Water	94896	10	02/07/20 01:28 AM	IC4_200206A
	MW-4	Aqueous	M2540C	Total Dissolved Solids	94913	1	02/07/20 05:00 PM	WC_200207B

DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6R
Project:	Copano GW 1Q20	**Lab ID:**	2002045-01
Project No:	19125525	**Collection Date:**	02/05/20 09:18 AM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0222	0.0100	0.0300	J	mg/L	1	02/11/20 11:15 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/11/20 11:15 AM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:15 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:15 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/11/20 11:15 AM
Dissolved Nickel	0.00629	0.00300	0.0100	J	mg/L	1	02/11/20 11:15 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/11/20 11:15 AM
Dissolved Vanadium	0.00654	0.000500	0.00100		mg/L	1	02/11/20 11:15 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0136	0.0100	0.0300	J	mg/L	1	02/12/20 02:45 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 02:45 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 02:45 PM
Calcium	577	5.00	15.0		mg/L	50	02/11/20 03:09 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 02:45 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 02:45 PM
Magnesium	556	5.00	15.0		mg/L	50	02/11/20 03:09 PM
Nickel	0.00562	0.00300	0.0100	J	mg/L	1	02/12/20 02:45 PM
Potassium	23.2	5.00	15.0		mg/L	50	02/11/20 03:09 PM
Sodium	7540	50.0	150		mg/L	500	02/11/20 02:30 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 02:45 PM
Vanadium	0.00685	0.000500	0.00100		mg/L	1	02/12/20 02:45 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:01 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/10/20 10:55 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.451	0.00300	0.0100	N	mg/L	1	02/12/20 02:45 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.453	0.00300	0.0100	N	mg/L	1	02/11/20 11:15 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	12200	300	1000		mg/L	1000	02/06/20 02:48 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/06/20 08:56 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/06/20 08:56 PM
Sulfate	3310	1000	3000		mg/L	1000	02/06/20 02:48 PM

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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6R
Project:	Copano GW 1Q20	**Lab ID:**	2002045-01
Project No:	19125525	**Collection Date:**	02/05/20 09:18 AM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	598	10.0	20.0		mg/L @ pH 4.54	1	02/07/20 11:16 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	02/07/20 11:16 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	02/07/20 11:16 AM
Alkalinity, Total (As CaCO3)	598	20.0	20.0		mg/L @ pH 4.54	1	02/07/20 11:16 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.311	0.100	0.250		mg/L	1	02/12/20 04:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	25900	1000	1000		mg/L	1	02/06/20 02:30 PM

Qualifiers:

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DF- Dilution Factor
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6RB
Project:	Copano GW 1Q20	**Lab ID:**	2002045-02
Project No:	19125525	**Collection Date:**	02/05/20 10:20 AM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0197	0.0100	0.0300	J	mg/L	1	02/11/20 11:18 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/11/20 11:18 AM
Dissolved Arsenic	0.00275	0.00200	0.00500	J	mg/L	1	02/11/20 11:18 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:18 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/11/20 11:18 AM
Dissolved Nickel	0.0100	0.00300	0.0100		mg/L	1	02/11/20 11:18 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/11/20 11:18 AM
Dissolved Vanadium	0.00102	0.000500	0.00100		mg/L	1	02/11/20 11:18 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0623	0.0100	0.0300		mg/L	1	02/12/20 02:49 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 02:49 PM
Arsenic	0.00255	0.00200	0.00500	J	mg/L	1	02/12/20 02:49 PM
Calcium	558	5.00	15.0		mg/L	50	02/11/20 03:11 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 02:49 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 02:49 PM
Magnesium	597	5.00	15.0		mg/L	50	02/11/20 03:11 PM
Nickel	0.00902	0.00300	0.0100	J	mg/L	1	02/12/20 02:49 PM
Potassium	33.7	5.00	15.0		mg/L	50	02/11/20 03:11 PM
Sodium	6260	50.0	150		mg/L	500	02/11/20 02:32 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 02:49 PM
Vanadium	0.00167	0.000500	0.00100		mg/L	1	02/12/20 02:49 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:12 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/10/20 11:06 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0852	0.00300	0.0100	N	mg/L	1	02/12/20 02:49 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0861	0.00300	0.0100	N	mg/L	1	02/11/20 11:18 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	10800	300	1000		mg/L	1000	02/06/20 03:04 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/06/20 09:12 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/06/20 09:12 PM
Sulfate	2420	100	300		mg/L	100	02/10/20 12:09 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6RB
Project:	Copano GW 1Q20	**Lab ID:**	2002045-02
Project No:	19125525	**Collection Date:**	02/05/20 10:20 AM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	308	10.0	20.0		mg/L @ pH 4.52	1	02/07/20 11:26 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/07/20 11:26 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/07/20 11:26 AM
Alkalinity, Total (As CaCO3)	308	20.0	20.0		mg/L @ pH 4.52	1	02/07/20 11:26 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.973	0.100	0.250		mg/L	1	02/12/20 04:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	21600	1000	1000		mg/L	1	02/06/20 02:30 PM

Qualifiers:

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-10
Project:	Copano GW 1Q20	**Lab ID:**	2002045-03
Project No:	19125525	**Collection Date:**	02/05/20 11:56 AM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0136	0.0100	0.0300	J	mg/L	1	02/11/20 11:20 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/11/20 11:20 AM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:20 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:20 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/11/20 11:20 AM
Dissolved Nickel	0.00930	0.00300	0.0100	J	mg/L	1	02/11/20 11:20 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/11/20 11:20 AM
Dissolved Vanadium	0.00314	0.000500	0.00100		mg/L	1	02/11/20 11:20 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0104	0.0100	0.0300	J	mg/L	1	02/12/20 02:53 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 02:53 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 02:53 PM
Calcium	571	5.00	15.0		mg/L	50	02/11/20 03:13 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 02:53 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 02:53 PM
Magnesium	646	5.00	15.0		mg/L	50	02/11/20 03:13 PM
Nickel	0.00909	0.00300	0.0100	J	mg/L	1	02/12/20 02:53 PM
Potassium	19.1	0.100	0.300		mg/L	1	02/12/20 02:53 PM
Sodium	5550	50.0	150		mg/L	500	02/11/20 02:34 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 02:53 PM
Vanadium	0.00352	0.000500	0.00100		mg/L	1	02/12/20 02:53 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:14 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/10/20 11:08 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.197	0.00300	0.0100	N	mg/L	1	02/12/20 02:53 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.197	0.00300	0.0100	N	mg/L	1	02/11/20 11:20 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	9360	300	1000		mg/L	1000	02/06/20 03:20 PM
Fluoride	2.35	1.00	4.00	J	mg/L	10	02/06/20 09:28 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/06/20 09:28 PM
Sulfate	3190	100	300		mg/L	100	02/10/20 12:25 PM

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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-10
Project:	Copano GW 1Q20	**Lab ID:**	2002045-03
Project No:	19125525	**Collection Date:**	02/05/20 11:56 AM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	510	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 11:41 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 11:41 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 11:41 AM
Alkalinity, Total (As CaCO3)	510	20.0	20.0		mg/L @ pH 4.53	1	02/07/20 11:41 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.313	0.100	0.250		mg/L	1	02/12/20 04:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	20600	1000	1000		mg/L	1	02/06/20 02:30 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11
Project:	Copano GW 1Q20	**Lab ID:**	2002045-04
Project No:	19125525	**Collection Date:**	02/05/20 12:45 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0216	0.0100	0.0300	J	mg/L	1	02/11/20 11:23 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/11/20 11:23 AM
Dissolved Arsenic	0.00291	0.00200	0.00500	J	mg/L	1	02/11/20 11:23 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:23 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/11/20 11:23 AM
Dissolved Nickel	0.0153	0.00300	0.0100		mg/L	1	02/11/20 11:23 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/11/20 11:23 AM
Dissolved Vanadium	0.0260	0.000500	0.00100		mg/L	1	02/11/20 11:23 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0126	0.0100	0.0300	J	mg/L	1	02/12/20 02:58 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 02:58 PM
Arsenic	0.00262	0.00200	0.00500	J	mg/L	1	02/12/20 02:58 PM
Calcium	294	5.00	15.0		mg/L	50	02/11/20 03:15 PM
Chromium	0.00214	0.00200	0.00500	J	mg/L	1	02/12/20 02:58 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 02:58 PM
Magnesium	568	5.00	15.0		mg/L	50	02/11/20 03:15 PM
Nickel	0.0145	0.00300	0.0100		mg/L	1	02/12/20 02:58 PM
Potassium	19.9	0.100	0.300		mg/L	1	02/12/20 02:58 PM
Sodium	5220	50.0	150		mg/L	500	02/11/20 02:36 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 02:58 PM
Vanadium	0.0258	0.000500	0.00100		mg/L	1	02/12/20 02:58 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:17 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/10/20 11:11 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0828	0.00300	0.0100	N	mg/L	1	02/12/20 02:58 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0831	0.00300	0.0100	N	mg/L	1	02/11/20 11:23 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	8670	300	1000		mg/L	1000	02/06/20 03:36 PM
Fluoride	2.59	1.00	4.00	J	mg/L	10	02/06/20 09:44 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/06/20 09:44 PM
Sulfate	1600	100	300		mg/L	100	02/10/20 12:41 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11
Project:	Copano GW 1Q20	**Lab ID:**	2002045-04
Project No:	19125525	**Collection Date:**	02/05/20 12:45 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	991	10.0	20.0		mg/L @ pH 4.54	1	02/07/20 12:13 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	02/07/20 12:13 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	02/07/20 12:13 PM
Alkalinity, Total (As CaCO3)	991	20.0	20.0		mg/L @ pH 4.54	1	02/07/20 12:13 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/12/20 04:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	17200	200	200		mg/L	1	02/06/20 02:30 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11B
Project:	Copano GW 1Q20	**Lab ID:**	2002045-05
Project No:	19125525	**Collection Date:**	02/05/20 01:42 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0118	0.0100	0.0300	J	mg/L	1	02/11/20 11:10 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/11/20 11:10 AM
Dissolved Arsenic	0.00235	0.00200	0.00500	J	mg/L	1	02/11/20 11:10 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:10 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/11/20 11:10 AM
Dissolved Nickel	0.00423	0.00300	0.0100	J	mg/L	1	02/11/20 11:10 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/11/20 11:10 AM
Dissolved Vanadium	0.00417	0.000500	0.00100		mg/L	1	02/11/20 11:10 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0151	0.0100	0.0300	J	mg/L	1	02/12/20 02:36 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 02:36 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 02:36 PM
Calcium	557	5.00	15.0		mg/L	50	02/11/20 03:05 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 02:36 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 02:36 PM
Magnesium	857	5.00	15.0		mg/L	50	02/11/20 03:05 PM
Nickel	0.00362	0.00300	0.0100	J	mg/L	1	02/12/20 02:36 PM
Potassium	40.5	5.00	15.0		mg/L	50	02/11/20 03:05 PM
Sodium	5460	50.0	150		mg/L	500	02/11/20 02:26 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 02:36 PM
Vanadium	0.00498	0.000500	0.00100		mg/L	1	02/12/20 02:36 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:19 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/10/20 11:13 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0880	0.00300	0.0100	N	mg/L	1	02/12/20 02:36 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0900	0.00300	0.0100	N	mg/L	1	02/11/20 11:10 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	11200	300	1000		mg/L	1000	02/06/20 03:52 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/06/20 11:36 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/06/20 11:36 PM
Sulfate	2440	100	300		mg/L	100	02/10/20 12:57 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-11B
Project:	Copano GW 1Q20	**Lab ID:**	2002045-05
Project No:	19125525	**Collection Date:**	02/05/20 01:42 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	327	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 12:24 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 12:24 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 12:24 PM
Alkalinity, Total (As CaCO3)	327	20.0	20.0		mg/L @ pH 4.53	1	02/07/20 12:24 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.118	0.100	0.250	J	mg/L	1	02/12/20 04:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	19900	1000	1000		mg/L	1	02/06/20 02:30 PM

Qualifiers:

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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-201
Project:	Copano GW 1Q20	**Lab ID:**	2002045-06
Project No:	19125525	**Collection Date:**	02/05/20 01:47 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/11/20 11:31 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/11/20 11:31 AM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:31 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:31 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/11/20 11:31 AM
Dissolved Nickel	0.00372	0.00300	0.0100	J	mg/L	1	02/11/20 11:31 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/11/20 11:31 AM
Dissolved Vanadium	0.00438	0.000500	0.00100		mg/L	1	02/11/20 11:31 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0149	0.0100	0.0300	J	mg/L	1	02/12/20 03:02 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 03:02 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 03:02 PM
Calcium	555	5.00	15.0		mg/L	50	02/11/20 03:17 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 03:02 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 03:02 PM
Magnesium	835	5.00	15.0		mg/L	50	02/11/20 03:17 PM
Nickel	0.00350	0.00300	0.0100	J	mg/L	1	02/12/20 03:02 PM
Potassium	39.8	5.00	15.0		mg/L	50	02/11/20 03:17 PM
Sodium	5580	50.0	150		mg/L	500	02/11/20 02:38 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 03:02 PM
Vanadium	0.00431	0.000500	0.00100		mg/L	1	02/12/20 03:02 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:21 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/10/20 11:15 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0833	0.00300	0.0100	N	mg/L	1	02/12/20 03:02 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0849	0.00300	0.0100	N	mg/L	1	02/11/20 11:31 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	11300	300	1000		mg/L	1000	02/06/20 04:08 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/06/20 11:52 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/06/20 11:52 PM
Sulfate	2320	100	300		mg/L	100	02/10/20 01:13 PM

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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-201
Project:	Copano GW 1Q20	**Lab ID:**	2002045-06
Project No:	19125525	**Collection Date:**	02/05/20 01:47 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	325	10.0	20.0		mg/L @ pH 4.52	1	02/07/20 12:34 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/07/20 12:34 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/07/20 12:34 PM
Alkalinity, Total (As CaCO3)	325	20.0	20.0		mg/L @ pH 4.52	1	02/07/20 12:34 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/12/20 04:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	20500	1000	1000		mg/L	1	02/06/20 02:30 PM

Qualifiers:

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7
Project:	Copano GW 1Q20	**Lab ID:**	2002045-07
Project No:	19125525	**Collection Date:**	02/05/20 04:02 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0162	0.0100	0.0300	J	mg/L	1	02/11/20 11:37 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/11/20 11:37 AM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:37 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:37 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/11/20 11:37 AM
Dissolved Nickel	0.00451	0.00300	0.0100	J	mg/L	1	02/11/20 11:37 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/11/20 11:37 AM
Dissolved Vanadium	<0.000500	0.000500	0.00100		mg/L	1	02/11/20 11:37 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0306	0.0100	0.0300		mg/L	1	02/12/20 03:07 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 03:07 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 03:07 PM
Calcium	977	10.0	30.0		mg/L	100	02/11/20 03:19 PM
Chromium	0.00251	0.00200	0.00500	J	mg/L	1	02/12/20 03:07 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 03:07 PM
Magnesium	1170	10.0	30.0		mg/L	100	02/11/20 03:19 PM
Nickel	0.00475	0.00300	0.0100	J	mg/L	1	02/12/20 03:07 PM
Potassium	47.6	10.0	30.0		mg/L	100	02/11/20 03:19 PM
Sodium	11700	100	300		mg/L	1000	02/11/20 02:40 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 03:07 PM
Vanadium	0.000655	0.000500	0.00100	J	mg/L	1	02/12/20 03:07 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:23 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/10/20 11:17 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0772	0.00300	0.0100	N	mg/L	1	02/12/20 03:07 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0774	0.00300	0.0100	N	mg/L	1	02/11/20 11:37 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21800	300	1000		mg/L	1000	02/06/20 04:24 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 12:08 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 12:08 AM
Sulfate	3160	1000	3000		mg/L	1000	02/06/20 04:24 PM

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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7
Project:	Copano GW 1Q20	**Lab ID:**	2002045-07
Project No:	19125525	**Collection Date:**	02/05/20 04:02 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	183	10.0	20.0		mg/L @ pH 4.52	1	02/07/20 12:41 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/07/20 12:41 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/07/20 12:41 PM
Alkalinity, Total (As CaCO3)	183	20.0	20.0		mg/L @ pH 4.52	1	02/07/20 12:41 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/12/20 04:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	43700	1000	1000		mg/L	1	02/07/20 05:00 PM

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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-9
Project:	Copano GW 1Q20	**Lab ID:**	2002045-08
Project No:	19125525	**Collection Date:**	02/05/20 10:00 AM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0163	0.0100	0.0300	J	mg/L	1	02/11/20 11:53 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/11/20 11:53 AM
Dissolved Arsenic	0.00396	0.00200	0.00500	J	mg/L	1	02/11/20 11:53 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:53 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/11/20 11:53 AM
Dissolved Nickel	0.0107	0.00300	0.0100		mg/L	1	02/11/20 11:53 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/11/20 11:53 AM
Dissolved Vanadium	0.0178	0.000500	0.00100		mg/L	1	02/11/20 11:53 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0133	0.0100	0.0300	J	mg/L	1	02/12/20 03:11 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 03:11 PM
Arsenic	0.00385	0.00200	0.00500	J	mg/L	1	02/12/20 03:11 PM
Calcium	919	5.00	15.0		mg/L	50	02/11/20 03:21 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 03:11 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 03:11 PM
Magnesium	677	5.00	15.0		mg/L	50	02/11/20 03:21 PM
Nickel	0.00990	0.00300	0.0100	J	mg/L	1	02/12/20 03:11 PM
Potassium	27.8	5.00	15.0		mg/L	50	02/11/20 03:21 PM
Sodium	4590	50.0	150		mg/L	500	02/11/20 02:42 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 03:11 PM
Vanadium	0.0174	0.000500	0.00100		mg/L	1	02/12/20 03:11 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:26 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/10/20 11:20 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0242	0.00300	0.0100	N	mg/L	1	02/12/20 03:11 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0241	0.00300	0.0100	N	mg/L	1	02/11/20 11:53 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	10800	300	1000		mg/L	1000	02/06/20 04:40 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 12:24 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 12:24 AM
Sulfate	1240	10.0	30.0		mg/L	10	02/07/20 12:24 AM

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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-9
Project:	Copano GW 1Q20	**Lab ID:**	2002045-08
Project No:	19125525	**Collection Date:**	02/05/20 10:00 AM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	395	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 12:54 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 12:54 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 12:54 PM
Alkalinity, Total (As CaCO3)	395	20.0	20.0		mg/L @ pH 4.53	1	02/07/20 12:54 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/12/20 04:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	18400	200	200		mg/L	1	02/07/20 05:00 PM

Qualifiers:

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DF- Dilution Factor
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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-8
Project:	Copano GW 1Q20	**Lab ID:**	2002045-09
Project No:	19125525	**Collection Date:**	02/05/20 11:30 AM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/11/20 11:58 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/11/20 11:58 AM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 11:58 AM
Dissolved Chromium	0.00228	0.00200	0.00500	J	mg/L	1	02/11/20 11:58 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/11/20 11:58 AM
Dissolved Nickel	0.00832	0.00300	0.0100	J	mg/L	1	02/11/20 11:58 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/11/20 11:58 AM
Dissolved Vanadium	0.00260	0.000500	0.00100		mg/L	1	02/11/20 11:58 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0120	0.0100	0.0300	J	mg/L	1	02/12/20 03:16 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 03:16 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 03:16 PM
Calcium	787	5.00	15.0		mg/L	50	02/11/20 03:33 PM
Chromium	0.00242	0.00200	0.00500	J	mg/L	1	02/12/20 03:16 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 03:16 PM
Magnesium	767	5.00	15.0		mg/L	50	02/11/20 03:33 PM
Nickel	0.00740	0.00300	0.0100	J	mg/L	1	02/12/20 03:16 PM
Potassium	24.6	5.00	15.0		mg/L	50	02/11/20 03:33 PM
Sodium	7150	50.0	150		mg/L	500	02/11/20 02:44 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 03:16 PM
Vanadium	0.00259	0.000500	0.00100		mg/L	1	02/12/20 03:16 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:28 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/10/20 11:22 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.265	0.00300	0.0100	N	mg/L	1	02/12/20 03:16 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.273	0.00300	0.0100	N	mg/L	1	02/11/20 11:58 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	12000	300	1000		mg/L	1000	02/06/20 06:16 PM
Fluoride	3.03	1.00	4.00	J	mg/L	10	02/07/20 12:40 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 12:40 AM
Sulfate	3890	1000	3000		mg/L	1000	02/06/20 06:16 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-8
Project:	Copano GW 1Q20	**Lab ID:**	2002045-09
Project No:	19125525	**Collection Date:**	02/05/20 11:30 AM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	413	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:07 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:07 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:07 PM
Alkalinity, Total (As CaCO3)	413	20.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:07 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.456	0.100	0.250		mg/L	1	02/17/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	25900	1000	1000		mg/L	1	02/07/20 05:00 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5
Project:	Copano GW 1Q20	**Lab ID:**	2002045-10
Project No:	19125525	**Collection Date:**	02/05/20 01:25 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/11/20 12:03 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/11/20 12:03 PM
Dissolved Arsenic	0.00238	0.00200	0.00500	J	mg/L	1	02/11/20 12:03 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 12:03 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/11/20 12:03 PM
Dissolved Nickel	0.0189	0.00300	0.0100		mg/L	1	02/11/20 12:03 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/11/20 12:03 PM
Dissolved Vanadium	0.0113	0.000500	0.00100		mg/L	1	02/11/20 12:03 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0102	0.0100	0.0300	J	mg/L	1	02/12/20 03:46 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 03:46 PM
Arsenic	0.00234	0.00200	0.00500	J	mg/L	1	02/12/20 03:46 PM
Calcium	867	10.0	30.0		mg/L	100	02/11/20 03:35 PM
Chromium	0.00904	0.00200	0.00500		mg/L	1	02/12/20 03:46 PM
Lead	0.000391	0.000300	0.00100	J	mg/L	1	02/12/20 03:46 PM
Magnesium	1160	10.0	30.0		mg/L	100	02/11/20 03:35 PM
Nickel	0.0186	0.00300	0.0100		mg/L	1	02/12/20 03:46 PM
Potassium	47.5	10.0	30.0		mg/L	100	02/11/20 03:35 PM
Sodium	6880	100	300		mg/L	1000	02/11/20 02:46 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 03:46 PM
Vanadium	0.0117	0.000500	0.00100		mg/L	1	02/12/20 03:46 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:30 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/10/20 11:24 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.109	0.00300	0.0100	N	mg/L	1	02/12/20 03:46 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.108	0.00300	0.0100	N	mg/L	1	02/11/20 12:03 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	14300	300	1000		mg/L	1000	02/06/20 06:32 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 12:56 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 12:56 AM
Sulfate	3090	1000	3000		mg/L	1000	02/06/20 06:32 PM

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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5
Project:	Copano GW 1Q20	**Lab ID:**	2002045-10
Project No:	19125525	**Collection Date:**	02/05/20 01:25 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	491	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:23 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:23 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:23 PM
Alkalinity, Total (As CaCO3)	491	20.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:23 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.121	0.100	0.250	J	mg/L	1	02/17/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	27500	1000	1000		mg/L	1	02/07/20 05:00 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5B
Project:	Copano GW 1Q20	**Lab ID:**	2002045-11
Project No:	19125525	**Collection Date:**	02/05/20 02:40 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0112	0.0100	0.0300	J	mg/L	1	02/11/20 01:21 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/11/20 01:21 PM
Dissolved Arsenic	0.00276	0.00200	0.00500	J	mg/L	1	02/11/20 01:21 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 01:21 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/11/20 01:21 PM
Dissolved Nickel	0.00679	0.00300	0.0100	J	mg/L	1	02/11/20 01:21 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/11/20 01:21 PM
Dissolved Vanadium	0.00123	0.000500	0.00100		mg/L	1	02/11/20 01:21 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0211	0.0100	0.0300	J	mg/L	1	02/12/20 04:20 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 04:20 PM
Arsenic	0.00284	0.00200	0.00500	J	mg/L	1	02/12/20 04:20 PM
Calcium	883	10.0	30.0		mg/L	100	02/11/20 03:37 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 04:20 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 04:20 PM
Magnesium	905	10.0	30.0		mg/L	100	02/11/20 03:37 PM
Nickel	0.00642	0.00300	0.0100	J	mg/L	1	02/12/20 04:20 PM
Potassium	56.2	10.0	30.0		mg/L	100	02/11/20 03:37 PM
Sodium	5870	100	300		mg/L	1000	02/11/20 02:59 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 04:20 PM
Vanadium	0.00153	0.000500	0.00100		mg/L	1	02/12/20 04:20 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:37 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/10/20 11:32 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0486	0.00300	0.0100	N	mg/L	1	02/12/20 04:20 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0481	0.00300	0.0100	N	mg/L	1	02/11/20 01:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	12700	300	1000		mg/L	1000	02/06/20 06:48 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 01:12 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 01:12 AM
Sulfate	2050	100	300		mg/L	100	02/10/20 01:29 PM

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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-5B
Project:	Copano GW 1Q20	**Lab ID:**	2002045-11
Project No:	19125525	**Collection Date:**	02/05/20 02:40 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	286	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:32 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:32 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:32 PM
Alkalinity, Total (As CaCO3)	286	20.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:32 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.122	0.100	0.250	J	mg/L	1	02/17/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	23200	1000	1000		mg/L	1	02/07/20 05:00 PM

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-4
Project:	Copano GW 1Q20	**Lab ID:**	2002045-12
Project No:	19125525	**Collection Date:**	02/05/20 04:05 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/11/20 01:25 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/11/20 01:25 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 01:25 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/11/20 01:25 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/11/20 01:25 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/11/20 01:25 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/11/20 01:25 PM
Dissolved Vanadium	<0.000500	0.000500	0.00100		mg/L	1	02/11/20 01:25 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0455	0.0100	0.0300		mg/L	1	02/12/20 04:25 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 04:25 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 04:25 PM
Calcium	915	10.0	30.0		mg/L	100	02/11/20 03:39 PM
Chromium	0.00281	0.00200	0.00500	J	mg/L	1	02/12/20 04:25 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 04:25 PM
Magnesium	1980	10.0	30.0		mg/L	100	02/11/20 03:39 PM
Nickel	0.00362	0.00300	0.0100	J	mg/L	1	02/12/20 04:25 PM
Potassium	64.4	10.0	30.0		mg/L	100	02/11/20 03:39 PM
Sodium	11400	100	300		mg/L	1000	02/11/20 03:01 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 04:25 PM
Vanadium	<0.000500	0.000500	0.00100		mg/L	1	02/12/20 04:25 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:39 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/10/20 11:35 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.113	0.00300	0.0100	N	mg/L	1	02/12/20 04:25 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.115	0.00300	0.0100	N	mg/L	1	02/11/20 01:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21600	300	1000		mg/L	1000	02/06/20 07:04 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 01:28 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 01:28 AM
Sulfate	5830	1000	3000		mg/L	1000	02/06/20 07:04 PM

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DHL Analytical, Inc.

Date: *11-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-4
Project:	Copano GW 1Q20	**Lab ID:**	2002045-12
Project No:	19125525	**Collection Date:**	02/05/20 04:05 PM
Lab Order:	2002045	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	277	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:43 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:43 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:43 PM
Alkalinity, Total (As CaCO3)	277	20.0	20.0		mg/L @ pH 4.53	1	02/07/20 01:43 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.665	0.100	0.250		mg/L	1	02/17/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	44800	1000	1000		mg/L	1	02/07/20 05:00 PM

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SDL - Sample Detection Limit
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CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191203A

Sample ID: **DCS-93925**	Batch ID: **93925**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **DCS**	Run ID: **CETAC2_HG_191203A**	Analysis Date: **12/3/2019 2:43:30 PM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000184	0.000200	0.000200	0	92.0	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200210A

The QC data in batch 94900 applies to the following samples: 2002045-01A, 2002045-02A, 2002045-03A, 2002045-04A, 2002045-05A, 2002045-06A, 2002045-07A, 2002045-08A, 2002045-09A, 2002045-10A, 2002045-11A, 2002045-12A

Sample ID: **MB-94900** Batch ID: **94900** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_200210A** Analysis Date: **2/10/2020 10:48:22 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-94900** Batch ID: **94900** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_200210A** Analysis Date: **2/10/2020 10:50:38 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00184	0.000200	0.00200	0	92.0	85	115			

Sample ID: **LCSD-94900** Batch ID: **94900** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_200210A** Analysis Date: **2/10/2020 10:52:54 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	85	115	2.15	15	

Sample ID: **2002045-01A SD** Batch ID: **94900** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_200210A** Analysis Date: **2/10/2020 11:01:58 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2002045-01A PDS** Batch ID: **94900** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_200210A** Analysis Date: **2/10/2020 11:04:14 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000129	0.000200	0.00250	0	5.16	85	115			S

Sample ID: **2002045-01A MS** Batch ID: **94900** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_200210A** Analysis Date: **2/10/2020 11:48:42 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00154	0.00100	0.00200	0	76.8	80	120			S

Sample ID: **2002045-01A MSD** Batch ID: **94900** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_200210A** Analysis Date: **2/10/2020 11:50:58 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00154	0.00100	0.00200	0	76.8	80	120	0	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200210A

Sample ID: **ICV-200210**	Batch ID: **R108864**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200210A**	Analysis Date: **2/10/2020 9:33:22 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00366	0.000200	0.00400	0	91.5	90	110			

Sample ID: **CCV2-200210**	Batch ID: **R108864**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200210A**	Analysis Date: **2/10/2020 10:43:48 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00206	0.000200	0.00200	0	103	90	110			

Sample ID: **CCV3-200210**	Batch ID: **R108864**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200210A**	Analysis Date: **2/10/2020 11:28:14 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Sample ID: **CCV4-200210**	Batch ID: **R108864**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200210A**	Analysis Date: **2/10/2020 11:53:16 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218B

The QC data in batch 95013 applies to the following samples: 2002045-01B, 2002045-02B, 2002045-03B, 2002045-04B, 2002045-05B, 2002045-06B, 2002045-07B, 2002045-08B, 2002045-09B, 2002045-10B, 2002045-11B, 2002045-12B

Sample ID: **MB-95013** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 10:54:32 AM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-95013** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 10:56:48 AM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	85	115			

Sample ID: **LCSD-95013** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 10:59:04 AM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00198	0.000200	0.00200	0	99.0	85	115	2.56	15	

Sample ID: **2002045-01B SD** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 11:08:07 AM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2002045-01B PDS** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 11:10:23 AM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000377	0.000200	0.00250	0	15.1	85	115			S

Sample ID: **2002045-01B MS** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 1:35:07 PM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00154	0.00100	0.00200	0	77.2	80	120			S

Sample ID: **2002045-01B MSD** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 1:37:24 PM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00163	0.00100	0.00200	0	81.2	80	120	5.05	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218B

Sample ID: **ICV-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 10:49:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00401	0.000200	0.00400	0	100	90	110			

Sample ID: **CCV1-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 11:33:05 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Sample ID: **CCV2-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 12:00:24 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV4-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 1:08:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV5-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 1:46:30 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200103A

Sample ID: **DCS2-94341**	Batch ID: **94341**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS2**	Run ID: **ICP-MS4_200103A**	Analysis Date: **1/3/2020 12:53:00 PM**		Prep Date: **12/31/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.277	0.300	0.300	0	92.3	70	130	0	0	
Magnesium	0.324	0.300	0.300	0	108	70	130	0	0	
Potassium	0.317	0.300	0.300	0	106	70	130	0	0	
Sodium	0.316	0.300	0.300	0	105	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_200211B**

The QC data in batch 94917 applies to the following samples: 2002045-01A, 2002045-02A, 2002045-03A, 2002045-04A, 2002045-05A, 2002045-06A, 2002045-07A, 2002045-08A, 2002045-09A, 2002045-10A, 2002045-11A, 2002045-12A

Sample ID: **MB-94917** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_200211B** Analysis Date: **2/11/2020 2:18:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	<0.100	0.300								

Sample ID: **LCS-94917** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_200211B** Analysis Date: **2/11/2020 2:20:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.19	0.300	5.00	0	104	80	120			

Sample ID: **LCSD-94917** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_200211B** Analysis Date: **2/11/2020 2:22:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.15	0.300	5.00	0	103	80	120	0.665	15	

Sample ID: **2002045-05A SD** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_200211B** Analysis Date: **2/11/2020 2:28:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5370	750	0	5460				1.54	20	

Sample ID: **2002045-05A PDS** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_200211B** Analysis Date: **2/11/2020 2:48:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	8700	150	2500	5460	130	75	125			S

Sample ID: **2002045-05A MS** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_200211B** Analysis Date: **2/11/2020 2:50:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5280	150	5.00	5460	-3600	75	125			S

Sample ID: **2002045-05A MSD** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_200211B** Analysis Date: **2/11/2020 2:52:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5470	150	5.00	5460	303	75	125	3.63	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200211B

Sample ID: **2002045-05A SD**	Batch ID: **94917**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200211B**	Analysis Date: **2/11/2020 3:07:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	537	75.0	0	557				3.81	20	
Magnesium	862	75.0	0	857				0.610	20	
Potassium	40.6	75.0	0	40.5				0.293	20	

Sample ID: **2002045-05A PDS**	Batch ID: **94917**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200211B**	Analysis Date: **2/11/2020 3:23:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	785	15.0	250	557	90.9	75	125			
Magnesium	1090	15.0	250	857	92.2	75	125			
Potassium	276	15.0	250	40.5	94.1	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200211B

Sample ID: **ICV-200211**	Batch ID: **R108906**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200211B**	Analysis Date: **2/11/2020 10:53:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.34	0.300	2.50	0	93.7	90	110			
Magnesium	2.40	0.300	2.50	0	96.0	90	110			
Potassium	2.38	0.300	2.50	0	95.1	90	110			
Sodium	2.48	0.300	2.50	0	99.2	90	110			

Sample ID: **LCVL-200211**	Batch ID: **R108906**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200211B**	Analysis Date: **2/11/2020 10:59:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.108	0.300	0.100	0	108	80	120			
Magnesium	0.103	0.300	0.100	0	103	80	120			
Potassium	0.0997	0.300	0.100	0	99.7	80	120			
Sodium	0.103	0.300	0.100	0	103	80	120			

Sample ID: **CCV4-200211**	Batch ID: **R108906**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200211B**	Analysis Date: **2/11/2020 2:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.13	0.300	5.00	0	103	90	110			

Sample ID: **CCV5-200211**	Batch ID: **R108906**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200211B**	Analysis Date: **2/11/2020 2:54:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.56	0.300	5.00	0	91.2	90	110			
Magnesium	5.13	0.300	5.00	0	103	90	110			
Potassium	4.87	0.300	5.00	0	97.3	90	110			
Sodium	5.09	0.300	5.00	0	102	90	110			

Sample ID: **CCV6-200211**	Batch ID: **R108906**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200211B**	Analysis Date: **2/11/2020 3:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.67	0.300	5.00	0	93.4	90	110			
Magnesium	5.16	0.300	5.00	0	103	90	110			
Potassium	4.91	0.300	5.00	0	98.1	90	110			
Sodium	5.13	0.300	5.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200211B

Sample ID: **CCV7-200211**	Batch ID: **R108906**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **CCV**	Run ID: **ICP-MS4_200211B**	Analysis Date: **2/11/2020 3:41:00 PM**		Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.61	0.300	5.00	0	92.2	90	110			
Magnesium	5.19	0.300	5.00	0	104	90	110			
Potassium	4.91	0.300	5.00	0	98.3	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200107A

Sample ID: **DCS1-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:14:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0276	0.0300	0.0200	0	138	70	130	0	0	S
Antimony	0.00107	0.00250	0.00100	0	107	70	130	0	0	
Lead	0.000537	0.00100	0.000500	0	107	70	130	0	0	
Thallium	0.000503	0.00150	0.000500	0	101	70	130	0	0	
Vanadium	0.000494	0.00100	0.000500	0	98.8	70	130	0	0	

Sample ID: **DCS2-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:16:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	
Magnesium	0.309	0.300	0.300	0	103	70	130	0	0	
Potassium	0.309	0.300	0.300	0	103	70	130	0	0	

Sample ID: **DCS3-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:19:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00538	0.00500	0.00500	0	108	70	130	0	0	
Chromium	0.00528	0.00500	0.00500	0	106	70	130	0	0	
Nickel	0.00533	0.0100	0.00500	0	107	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200107C**

Sample ID: **DCS1-94341**	Batch ID: **94341**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS**	Run ID: **ICP-MS5_200107C**	Analysis Date: **1/7/2020 11:14:00 AM**		Prep Date: **12/31/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.000491	0.0100	0.000500	0	98.2	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200211A**

The QC data in batch 94919 applies to the following samples: 2002045-01B, 2002045-02B, 2002045-03B, 2002045-04B, 2002045-05B, 2002045-06B, 2002045-07B, 2002045-08B, 2002045-09B, 2002045-10B, 2002045-11B, 2002045-12B

Sample ID: **MB-94919** Batch ID: **94919** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200211A** Analysis Date: **2/11/2020 11:01:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-94919** Batch ID: **94919** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200211A** Analysis Date: **2/11/2020 11:03:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.08	0.0300	5.00	0	102	80	120			
Antimony	0.198	0.00250	0.200	0	99.2	80	120			
Arsenic	0.211	0.00500	0.200	0	105	80	120			
Chromium	0.205	0.00500	0.200	0	103	80	120			
Lead	0.199	0.00100	0.200	0	99.6	80	120			
Nickel	0.204	0.0100	0.200	0	102	80	120			
Thallium	0.203	0.00150	0.200	0	101	80	120			
Vanadium	0.203	0.00100	0.200	0	102	80	120			

Sample ID: **LCSD-94919** Batch ID: **94919** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200211A** Analysis Date: **2/11/2020 11:06:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.06	0.0300	5.00	0	101	80	120	0.367	15	
Antimony	0.198	0.00250	0.200	0	98.9	80	120	0.314	15	
Arsenic	0.208	0.00500	0.200	0	104	80	120	1.21	15	
Chromium	0.204	0.00500	0.200	0	102	80	120	0.567	15	
Lead	0.197	0.00100	0.200	0	98.7	80	120	0.930	15	
Nickel	0.203	0.0100	0.200	0	102	80	120	0.269	15	
Thallium	0.201	0.00150	0.200	0	101	80	120	0.721	15	
Vanadium	0.202	0.00100	0.200	0	101	80	120	0.638	15	

Sample ID: **2002045-05B SD** Batch ID: **94919** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200211A** Analysis Date: **2/11/2020 11:12:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200211A

Sample ID: **2002045-05B SD**	Batch ID: **94919**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200211A**	Analysis Date: **2/11/2020 11:12:00 AM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0118				0	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00235				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Nickel	<0.0150	0.0500	0	0.00423				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	0.00357	0.00500	0	0.00417				15.5	20	

Sample ID: **2002045-05B PDS**	Batch ID: **94919**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200211A**	Analysis Date: **2/11/2020 12:56:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.60	0.0300	5.00	0.0118	91.9	75	125			
Antimony	0.182	0.00250	0.200	0	91.0	75	125			
Arsenic	0.177	0.00500	0.200	0.00235	87.2	75	125			
Chromium	0.175	0.00500	0.200	0	87.7	75	125			
Lead	0.189	0.00100	0.200	0	94.6	75	125			
Nickel	0.161	0.0100	0.200	0.00423	78.4	75	125			
Thallium	0.191	0.00150	0.200	0	95.4	75	125			
Vanadium	0.186	0.00100	0.200	0.00417	91.1	75	125			

Sample ID: **2002045-05B MS**	Batch ID: **94919**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200211A**	Analysis Date: **2/11/2020 1:00:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.84	0.0300	5.00	0.0118	96.5	75	125			
Dissolved Antimony	0.182	0.00250	0.200	0	91.1	75	125			
Dissolved Arsenic	0.182	0.00500	0.200	0.00235	89.9	75	125			
Dissolved Chromium	0.172	0.00500	0.200	0	86.2	75	125			
Dissolved Lead	0.194	0.00100	0.200	0	96.8	75	125			
Dissolved Nickel	0.161	0.0100	0.200	0.00423	78.5	75	125			
Dissolved Thallium	0.195	0.00150	0.200	0	97.4	75	125			
Dissolved Vanadium	0.187	0.00100	0.200	0.00417	91.5	75	125			

Sample ID: **2002045-05B MSD**	Batch ID: **94919**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200211A**	Analysis Date: **2/11/2020 1:05:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.94	0.0300	5.00	0.0118	98.5	75	125	2.02	15	
Dissolved Antimony	0.184	0.00250	0.200	0	92.0	75	125	1.07	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200211A

Sample ID: **2002045-05B MSD** Batch ID: **94919** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200211A** Analysis Date: **2/11/2020 1:05:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Arsenic	0.185	0.00500	0.200	0.00235	91.4	75	125	1.64	15	
Dissolved Chromium	0.174	0.00500	0.200	0	87.1	75	125	1.02	15	
Dissolved Lead	0.195	0.00100	0.200	0	97.5	75	125	0.688	15	
Dissolved Nickel	0.163	0.0100	0.200	0.00423	79.5	75	125	1.25	15	
Dissolved Thallium	0.197	0.00150	0.200	0	98.3	75	125	0.859	15	
Dissolved Vanadium	0.189	0.00100	0.200	0.00417	92.6	75	125	1.17	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200211A

Sample ID: **ICV-200211** Batch ID: **R108896** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_200211A** Analysis Date: **2/11/2020 10:48:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.45	0.0300	2.50	0	98.2	90	110			
Antimony	0.0989	0.00250	0.100	0	98.9	90	110			
Arsenic	0.100	0.00500	0.100	0	100	90	110			
Chromium	0.103	0.00500	0.100	0	103	90	110			
Lead	0.0971	0.00100	0.100	0	97.1	90	110			
Nickel	0.100	0.0100	0.100	0	100	90	110			
Thallium	0.0959	0.00150	0.100	0	95.9	90	110			
Vanadium	0.101	0.00100	0.100	0	101	90	110			

Sample ID: **LCVL-200211** Batch ID: **R108896** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_200211A** Analysis Date: **2/11/2020 10:54:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0996	0.0300	0.100	0	99.6	80	120			
Antimony	0.00216	0.00250	0.00200	0	108	80	120			
Arsenic	0.00514	0.00500	0.00500	0	103	80	120			
Chromium	0.00511	0.00500	0.00500	0	102	80	120			
Lead	0.000980	0.00100	0.00100	0	98.0	80	120			
Nickel	0.00500	0.0100	0.00500	0	100	80	120			
Thallium	0.000988	0.00150	0.00100	0	98.8	80	120			
Vanadium	0.000865	0.00100	0.00100	0	86.5	80	120			

Sample ID: **CCV1-200211** Batch ID: **R108896** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200211A** Analysis Date: **2/11/2020 1:16:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.85	0.0300	5.00	0	96.9	90	110			
Antimony	0.184	0.00250	0.200	0	91.8	90	110			
Arsenic	0.200	0.00500	0.200	0	100	90	110			
Chromium	0.188	0.00500	0.200	0	94.1	90	110			
Lead	0.182	0.00100	0.200	0	91.1	90	110			
Nickel	0.193	0.0100	0.200	0	96.4	90	110			
Thallium	0.199	0.00150	0.200	0	99.4	90	110			
Vanadium	0.189	0.00100	0.200	0	94.7	90	110			

Sample ID: **CCV2-200211** Batch ID: **R108896** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200211A** Analysis Date: **2/11/2020 1:55:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.78	0.0300	5.00	0	95.6	90	110			
Antimony	0.185	0.00250	0.200	0	92.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200211A**

Sample ID: **CCV2-200211**	Batch ID: **R108896**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **CCV**	Run ID: **ICP-MS5_200211A**	Analysis Date: **2/11/2020 1:55:00 PM**		Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.197	0.00500	0.200	0	98.3	90	110			
Chromium	0.190	0.00500	0.200	0	95.2	90	110			
Lead	0.185	0.00100	0.200	0	92.4	90	110			
Nickel	0.190	0.0100	0.200	0	95.0	90	110			
Thallium	0.199	0.00150	0.200	0	99.7	90	110			
Vanadium	0.191	0.00100	0.200	0	95.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200211B

The QC data in batch 94919 applies to the following samples: 2002045-01B, 2002045-02B, 2002045-03B, 2002045-04B, 2002045-05B, 2002045-06B, 2002045-07B, 2002045-08B, 2002045-09B, 2002045-10B, 2002045-11B, 2002045-12B

Sample ID: **MB-94919** Batch ID: **94919** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200211B** Analysis Date: **2/11/2020 11:01:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-94919** Batch ID: **94919** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200211B** Analysis Date: **2/11/2020 11:03:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.205	0.0100	0.200	0	103	80	120			N

Sample ID: **LCSD-94919** Batch ID: **94919** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200211B** Analysis Date: **2/11/2020 11:06:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	103	80	120	0.825	15	N

Sample ID: **2002045-05B SD** Batch ID: **94919** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200211B** Analysis Date: **2/11/2020 11:12:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.0850	0.0500	0	0.0900				5.72	20	N

Sample ID: **2002045-05B PDS** Batch ID: **94919** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200211B** Analysis Date: **2/11/2020 12:56:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.303	0.0100	0.200	0.0900	107	75	125			N

Sample ID: **2002045-05B MS** Batch ID: **94919** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_200211B** Analysis Date: **2/11/2020 1:00:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.307	0.0100	0.200	0.0900	108	75	125			N

Sample ID: **2002045-05B MSD** Batch ID: **94919** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200211B** Analysis Date: **2/11/2020 1:05:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.311	0.0100	0.200	0.0900	111	75	125	1.45	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200211B

Sample ID: **ICV-200211**	Batch ID: **R109112**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200211B**	Analysis Date: **2/11/2020 10:48:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0948	0.0100	0.100	0	94.8	90	110			N

Sample ID: **LCVL-200211**	Batch ID: **R109112**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200211B**	Analysis Date: **2/11/2020 10:54:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00478	0.0100	0.00500	0	95.5	80	120			N

Sample ID: **CCV1-200211**	Batch ID: **R109112**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200211B**	Analysis Date: **2/11/2020 1:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.190	0.0100	0.200	0	95.0	90	110			N

Sample ID: **CCV2-200211**	Batch ID: **R109112**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200211B**	Analysis Date: **2/11/2020 1:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.194	0.0100	0.200	0	97.0	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200212A

The QC data in batch 94917 applies to the following samples: 2002045-01A, 2002045-02A, 2002045-03A, 2002045-04A, 2002045-05A, 2002045-06A, 2002045-07A, 2002045-08A, 2002045-09A, 2002045-10A, 2002045-11A, 2002045-12A

Sample ID: **MB-94917** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200212A** Analysis Date: **2/12/2020 2:27:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-94917** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200212A** Analysis Date: **2/12/2020 2:29:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.99	0.0300	5.00	0	99.7	80	120			
Antimony	0.181	0.00250	0.200	0	90.7	80	120			
Arsenic	0.200	0.00500	0.200	0	100	80	120			
Calcium	4.80	0.300	5.00	0	96.0	80	120			
Chromium	0.198	0.00500	0.200	0	99.1	80	120			
Lead	0.190	0.00100	0.200	0	95.2	80	120			
Magnesium	4.93	0.300	5.00	0	98.6	80	120			
Nickel	0.194	0.0100	0.200	0	96.9	80	120			
Potassium	4.92	0.300	5.00	0	98.4	80	120			
Thallium	0.208	0.00150	0.200	0	104	80	120			
Vanadium	0.196	0.00100	0.200	0	97.8	80	120			

Sample ID: **LCSD-94917** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200212A** Analysis Date: **2/12/2020 2:31:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.97	0.0300	5.00	0	99.4	80	120	0.309	15	
Antimony	0.183	0.00250	0.200	0	91.5	80	120	0.963	15	
Arsenic	0.199	0.00500	0.200	0	99.7	80	120	0.528	15	
Calcium	4.76	0.300	5.00	0	95.2	80	120	0.824	15	
Chromium	0.198	0.00500	0.200	0	99.0	80	120	0.073	15	
Lead	0.190	0.00100	0.200	0	95.2	80	120	0.026	15	
Magnesium	4.92	0.300	5.00	0	98.4	80	120	0.216	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200212A

Sample ID: **LCSD-94917**	Batch ID: **94917**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 2:31:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.193	0.0100	0.200	0	96.3	80	120	0.650	15	
Potassium	4.90	0.300	5.00	0	98.1	80	120	0.378	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	0.910	15	
Vanadium	0.196	0.00100	0.200	0	97.8	80	120	0.027	15	

Sample ID: **2002045-05A SD**	Batch ID: **94917**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 2:40:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0151				0	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Nickel	<0.0150	0.0500	0	0.00362				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	0.00541	0.00500	0	0.00498				8.22	20	

Sample ID: **2002045-05A PDS**	Batch ID: **94917**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 3:51:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.44	0.0300	5.00	0.0151	88.4	75	125			
Antimony	0.161	0.00250	0.200	0	80.4	75	125			
Arsenic	0.166	0.00500	0.200	0	83.0	75	125			
Chromium	0.164	0.00500	0.200	0	82.1	75	125			
Lead	0.185	0.00100	0.200	0	92.4	75	125			
Nickel	0.151	0.0100	0.200	0.00362	73.5	75	125			S
Thallium	0.184	0.00150	0.200	0	92.1	75	125			
Vanadium	0.175	0.00100	0.200	0.00498	84.9	75	125			

Sample ID: **2002045-05A MS**	Batch ID: **94917**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 3:55:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.71	0.0300	5.00	0.0151	93.8	75	125			
Antimony	0.163	0.00250	0.200	0	81.3	75	125			
Arsenic	0.171	0.00500	0.200	0	85.6	75	125			
Calcium	554	0.300	5.00	579	-486	75	125			S
Chromium	0.163	0.00500	0.200	0	81.3	75	125			
Lead	0.187	0.00100	0.200	0	93.4	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200212A

Sample ID: **2002045-05A MS**	Batch ID: **94917**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 3:55:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	738	0.300	5.00	788	-991	75	125			S
Nickel	0.150	0.0100	0.200	0.00362	73.3	75	125			S
Potassium	47.2	0.300	5.00	42.8	88.1	75	125			
Thallium	0.187	0.00150	0.200	0	93.3	75	125			
Vanadium	0.176	0.00100	0.200	0.00498	85.7	75	125			

Sample ID: **2002045-05A MSD**	Batch ID: **94917**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 4:00:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.54	0.0300	5.00	0.0151	90.5	75	125	3.55	15	
Antimony	0.158	0.00250	0.200	0	79.2	75	125	2.64	15	
Arsenic	0.166	0.00500	0.200	0	83.1	75	125	2.93	15	
Calcium	545	0.300	5.00	579	-666	75	125	1.64	15	S
Chromium	0.157	0.00500	0.200	0	78.3	75	125	3.74	15	
Lead	0.182	0.00100	0.200	0	91.0	75	125	2.55	15	
Magnesium	725	0.300	5.00	788	-1270	75	125	1.88	15	S
Nickel	0.145	0.0100	0.200	0.00362	70.5	75	125	3.88	15	S
Potassium	46.6	0.300	5.00	42.8	77.7	75	125	1.11	15	
Thallium	0.182	0.00150	0.200	0	91.0	75	125	2.56	15	
Vanadium	0.170	0.00100	0.200	0.00498	82.3	75	125	4.00	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200212A

Sample ID: **ICV-200212**	Batch ID: **R108924**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 10:40:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.42	0.0300	2.50	0	96.9	90	110			
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.0993	0.00500	0.100	0	99.3	90	110			
Calcium	2.50	0.300	2.50	0	100	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Lead	0.0983	0.00100	0.100	0	98.3	90	110			
Magnesium	2.38	0.300	2.50	0	95.3	90	110			
Nickel	0.100	0.0100	0.100	0	100	90	110			
Potassium	2.42	0.300	2.50	0	96.6	90	110			
Thallium	0.0964	0.00150	0.100	0	96.4	90	110			
Vanadium	0.0987	0.00100	0.100	0	98.7	90	110			

Sample ID: **LCVL-200212**	Batch ID: **R108924**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 10:44:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.101	0.0300	0.100	0	101	80	120			
Antimony	0.00212	0.00250	0.00200	0	106	80	120			
Arsenic	0.00506	0.00500	0.00500	0	101	80	120			
Calcium	0.102	0.300	0.100	0	102	80	120			
Chromium	0.00526	0.00500	0.00500	0	105	80	120			
Lead	0.000989	0.00100	0.00100	0	98.9	80	120			
Magnesium	0.0964	0.300	0.100	0	96.4	80	120			
Nickel	0.00505	0.0100	0.00500	0	101	80	120			
Potassium	0.0940	0.300	0.100	0	94.0	80	120			
Thallium	0.000982	0.00150	0.00100	0	98.2	80	120			
Vanadium	0.000928	0.00100	0.00100	0	92.8	80	120			

Sample ID: **CCV2-200212**	Batch ID: **R108924**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 2:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.95	0.0300	5.00	0	98.9	90	110			
Antimony	0.182	0.00250	0.200	0	90.8	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Calcium	4.73	0.300	5.00	0	94.6	90	110			
Chromium	0.194	0.00500	0.200	0	97.2	90	110			
Lead	0.193	0.00100	0.200	0	96.4	90	110			
Magnesium	4.86	0.300	5.00	0	97.3	90	110			
Nickel	0.194	0.0100	0.200	0	96.8	90	110			
Potassium	4.94	0.300	5.00	0	98.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200212A

Sample ID: **CCV2-200212**	Batch ID: **R108924**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 2:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.208	0.00150	0.200	0	104	90	110			
Vanadium	0.193	0.00100	0.200	0	96.4	90	110			

Sample ID: **CCV3-200212**	Batch ID: **R108924**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 4:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.01	0.0300	5.00	0	100	90	110			
Antimony	0.181	0.00250	0.200	0	90.5	90	110			
Arsenic	0.204	0.00500	0.200	0	102	90	110			
Calcium	4.75	0.300	5.00	0	95.0	90	110			
Chromium	0.194	0.00500	0.200	0	96.8	90	110			
Lead	0.192	0.00100	0.200	0	95.8	90	110			
Magnesium	4.92	0.300	5.00	0	98.4	90	110			
Nickel	0.194	0.0100	0.200	0	96.9	90	110			
Potassium	5.01	0.300	5.00	0	100	90	110			
Thallium	0.210	0.00150	0.200	0	105	90	110			
Vanadium	0.193	0.00100	0.200	0	96.5	90	110			

Sample ID: **CCV4-200212**	Batch ID: **R108924**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 4:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.93	0.0300	5.00	0	98.7	90	110			
Antimony	0.180	0.00250	0.200	0	90.1	90	110			
Arsenic	0.201	0.00500	0.200	0	100	90	110			
Chromium	0.193	0.00500	0.200	0	96.5	90	110			
Lead	0.188	0.00100	0.200	0	94.0	90	110			
Nickel	0.191	0.0100	0.200	0	95.4	90	110			
Thallium	0.207	0.00150	0.200	0	103	90	110			
Vanadium	0.192	0.00100	0.200	0	96.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200212B**

The QC data in batch 94917 applies to the following samples: 2002045-01A, 2002045-02A, 2002045-03A, 2002045-04A, 2002045-05A, 2002045-06A, 2002045-07A, 2002045-08A, 2002045-09A, 2002045-10A, 2002045-11A, 2002045-12A

Sample ID: **MB-94917** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200212B** Analysis Date: **2/12/2020 2:27:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-94917** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200212B** Analysis Date: **2/12/2020 2:29:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0	101	80	120			N

Sample ID: **LCSD-94917** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200212B** Analysis Date: **2/12/2020 2:31:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.200	0.0100	0.200	0	100	80	120	0.302	15	N

Sample ID: **2002045-05A SD** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200212B** Analysis Date: **2/12/2020 2:40:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0833	0.0500	0	0.0880				5.51	20	N

Sample ID: **2002045-05A PDS** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200212B** Analysis Date: **2/12/2020 3:51:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.293	0.0100	0.200	0.0880	102	75	125			N

Sample ID: **2002045-05A MS** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_200212B** Analysis Date: **2/12/2020 3:55:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.296	0.0100	0.200	0.0880	104	75	125			N

Sample ID: **2002045-05A MSD** Batch ID: **94917** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200212B** Analysis Date: **2/12/2020 4:00:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.288	0.0100	0.200	0.0880	100	75	125	2.63	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200212B

Sample ID: **ICV-200212**	Batch ID: **R108929**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200212B**	Analysis Date: **2/12/2020 10:40:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0959	0.0100	0.100	0	95.9	90	110			N

Sample ID: **LCVL-200212**	Batch ID: **R108929**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200212B**	Analysis Date: **2/12/2020 10:44:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00486	0.0100	0.00500	0	97.1	80	120			N

Sample ID: **CCV2-200212**	Batch ID: **R108929**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200212B**	Analysis Date: **2/12/2020 2:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0	101	90	110			N

Sample ID: **CCV3-200212**	Batch ID: **R108929**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200212B**	Analysis Date: **2/12/2020 4:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.200	0.0100	0.200	0	99.9	90	110			N

Sample ID: **CCV4-200212**	Batch ID: **R108929**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200212B**	Analysis Date: **2/12/2020 4:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	98.0	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200129A

Sample ID: **DCS2-94743**	Batch ID: **94743**	TestNo: **E300**	Units: **mg/L**		
SampType: **DCS2**	Run ID: **IC2_200129A**	Analysis Date: **1/29/2020 1:16:36 PM**	Prep Date: **1/29/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	1.49	3.00	1.500	0	99.0	70	130	0	0	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	Page 27 of 42
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200210A

The QC data in batch 94907 applies to the following samples: 2002045-02D, 2002045-03D, 2002045-04D, 2002045-05D, 2002045-06D, 2002045-11D

Sample ID: **MB-94907**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 10:48:15 AM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<1.00	3.00								

Sample ID: **LCS-94907**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 11:04:15 AM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.6	3.00	30.00	0	98.8	90	110			

Sample ID: **LCSD-94907**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 11:20:15 AM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.7	3.00	30.00	0	98.9	90	110	0.118	20	

Sample ID: **2002057-01BMS**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 3:55:10 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	3560	300	2000	1632	96.2	90	110			

Sample ID: **2002057-01BMSD**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 4:11:11 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	3550	300	2000	1632	95.8	90	110	0.193	20	

Sample ID: **2002075-01AMS**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 4:43:10 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	247	30.0	200.0	52.95	96.9	90	110			

Sample ID: **2002075-01AMSD**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 4:59:10 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	246	30.0	200.0	52.95	96.6	90	110	0.228	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200210A

Sample ID: **ICV-200210**	Batch ID: **R108887**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 10:16:15 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	79.9	3.00	75.00	0	107	90	110			

Sample ID: **CCV1-200210**	Batch ID: **R108887**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 6:19:10 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.9	3.00	30.00	0	99.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200205A

Sample ID: **DCS2-94859** Batch ID: **94859** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC4_200205A** Analysis Date: **2/5/2020 10:45:34 AM** Prep Date: **2/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.443	1.00	0.5000	0	88.7	65	135	0	0	
Fluoride	0.232	0.400	0.2000	0	116	65	135	0	0	
Nitrate-N	0.238	0.500	0.2500	0	95.0	65	135	0	0	
Sulfate	1.43	3.00	1.500	0	95.5	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200206A

The QC data in batch 94896 applies to the following samples: 2002045-01D, 2002045-02D, 2002045-03D, 2002045-04D, 2002045-05D, 2002045-06D, 2002045-07D, 2002045-08D, 2002045-09D, 2002045-10D, 2002045-11D, 2002045-12D

Sample ID: **MB-94896** Batch ID: **94896** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_200206A** Analysis Date: **2/6/2020 11:52:53 AM** Prep Date: **2/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-94896** Batch ID: **94896** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_200206A** Analysis Date: **2/6/2020 12:08:53 PM** Prep Date: **2/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.82	0.400	4.000	0	95.6	90	110			
Nitrate-N	5.14	0.500	5.000	0	103	90	110			
Sulfate	29.5	3.00	30.00	0	98.2	90	110			

Sample ID: **LCSD-94896** Batch ID: **94896** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_200206A** Analysis Date: **2/6/2020 12:24:53 PM** Prep Date: **2/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110	0.709	20	
Fluoride	3.89	0.400	4.000	0	97.2	90	110	1.66	20	
Nitrate-N	5.16	0.500	5.000	0	103	90	110	0.382	20	
Sulfate	29.8	3.00	30.00	0	99.3	90	110	1.13	20	

Sample ID: **2002010-05CMS** Batch ID: **94896** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_200206A** Analysis Date: **2/6/2020 7:36:17 PM** Prep Date: **2/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	388	10.0	200.0	209.0	89.7	90	110			
Fluoride	205	4.00	200.0	0	102	90	110			
Nitrate-N	45.7	5.00	45.16	0	101	90	110			
Sulfate	257	30.0	200.0	62.29	97.5	90	110			

Sample ID: **2002010-05CMSD** Batch ID: **94896** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_200206A** Analysis Date: **2/6/2020 7:52:17 PM** Prep Date: **2/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	386	10.0	200.0	209.0	88.3	90	110	0.715	20	S
Fluoride	202	4.00	200.0	0	101	90	110	1.46	20	
Nitrate-N	45.0	5.00	45.16	0	99.7	90	110	1.48	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200206A

Sample ID: **2002010-05CMSD**	Batch ID: **94896**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_200206A**	Analysis Date: **2/6/2020 7:52:17 PM**	Prep Date: **2/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	257	30.0	200.0	62.29	97.4	90	110	0.012	20	

Sample ID: **2002010-06CMS**	Batch ID: **94896**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_200206A**	Analysis Date: **2/6/2020 8:24:17 PM**	Prep Date: **2/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	348	10.0	200.0	158.1	94.8	90	110			
Fluoride	204	4.00	200.0	0	102	90	110			
Nitrate-N	67.7	5.00	45.16	23.96	96.9	90	110			
Sulfate	252	30.0	200.0	55.09	98.5	90	110			

Sample ID: **2002010-06CMSD**	Batch ID: **94896**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_200206A**	Analysis Date: **2/6/2020 8:40:17 PM**	Prep Date: **2/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	350	10.0	200.0	158.1	95.8	90	110	0.600	20	
Fluoride	206	4.00	200.0	0	103	90	110	0.789	20	
Nitrate-N	68.2	5.00	45.16	23.96	97.9	90	110	0.686	20	
Sulfate	255	30.0	200.0	55.09	100	90	110	1.28	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200206A

Sample ID: **ICV-200206**	Batch ID: **R108829**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_200206A**	Analysis Date: **2/6/2020 11:20:53 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.2	1.00	25.00	0	105	90	110			
Fluoride	10.3	0.400	10.00	0	103	90	110			
Nitrate-N	13.1	0.500	12.50	0	104	90	110			
Sulfate	78.7	3.00	75.00	0	105	90	110			

Sample ID: **CCV1-200206**	Batch ID: **R108829**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200206A**	Analysis Date: **2/6/2020 5:44:17 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.82	0.400	4.000	0	95.6	90	110			
Nitrate-N	5.18	0.500	5.000	0	104	90	110			
Sulfate	29.8	3.00	30.00	0	99.4	90	110			

Sample ID: **CCV2-200206**	Batch ID: **R108829**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200206A**	Analysis Date: **2/6/2020 11:04:17 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	3.93	0.400	4.000	0	98.3	90	110			
Nitrate-N	5.25	0.500	5.000	0	105	90	110			
Sulfate	30.5	3.00	30.00	0	102	90	110			

Sample ID: **CCV3-200206**	Batch ID: **R108829**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200206A**	Analysis Date: **2/7/2020 2:48:17 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.96	0.400	4.000	0	98.9	90	110			
Nitrate-N	5.28	0.500	5.000	0	106	90	110			
Sulfate	30.4	3.00	30.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200207A

The QC data in batch 94905 applies to the following samples: 2002045-01D, 2002045-02D, 2002045-03D, 2002045-04D, 2002045-05D, 2002045-06D, 2002045-07D, 2002045-08D, 2002045-09D, 2002045-10D, 2002045-11D, 2002045-12D

Sample ID: **MB-94905** Batch ID: **94905** TestNo: **M2320 B** Units: **mg/L @ pH 4.38**
SampType: **MBLK** Run ID: **TITRATOR_200207A** Analysis Date: **2/7/2020 10:22:00 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-94905** Batch ID: **94905** TestNo: **M2320 B** Units: **mg/L @ pH 4.11**
SampType: **LCS** Run ID: **TITRATOR_200207A** Analysis Date: **2/7/2020 10:26:00 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	55.5	20.0	50.00	0	111	74	129			

Sample ID: **2001250-19A-DUP** Batch ID: **94905** TestNo: **M2320 B** Units: **mg/L @ pH 4.08**
SampType: **DUP** Run ID: **TITRATOR_200207A** Analysis Date: **2/7/2020 10:49:00 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Carbonate (As CaCO3)	43.0	20.0	0	44.20				2.75	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	48.2	20.0	0	48.00				0.416	20	

Sample ID: **2002016-01D-DUP** Batch ID: **94905** TestNo: **M2320 B** Units: **mg/L @ pH 3.43**
SampType: **DUP** Run ID: **TITRATOR_200207A** Analysis Date: **2/7/2020 10:51:00 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	<20.0	20.0	0	0				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200207A

Sample ID: **ICV-200207**	Batch ID: **R108882**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.34**
SampType: **ICV**	Run ID: **TITRATOR_200207A**	Analysis Date: **2/7/2020 10:18:00 AM**	Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	6.08	20.0	0							
Alkalinity, Carbonate (As CaCO3)	94.9	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	101	20.0	100.0	0	101	98	102			

Sample ID: **CCV1-200207**	Batch ID: **R108882**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.32**
SampType: **CCV**	Run ID: **TITRATOR_200207A**	Analysis Date: **2/7/2020 11:47:00 AM**	Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	14.0	20.0	0							
Alkalinity, Carbonate (As CaCO3)	86.4	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Sample ID: **CCV2-200207**	Batch ID: **R108882**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.23**
SampType: **CCV**	Run ID: **TITRATOR_200207A**	Analysis Date: **2/7/2020 1:48:00 PM**	Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	27.3	20.0	0							
Alkalinity, Carbonate (As CaCO3)	73.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200131C

Sample ID: **DCS-94791**	Batch ID: **94791**	TestNo: **M4500-NH3-D**	Units: **mg/L**		
SampType: **DCS**	Run ID: **WC_200131C**	Analysis Date: **1/31/2020 3:45:00 PM**	Prep Date: **1/31/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.122	0.250	0.1000	0	122	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200206D

The QC data in batch 94889 applies to the following samples: 2002045-01D, 2002045-02D, 2002045-03D, 2002045-04D, 2002045-05D, 2002045-06D

Sample ID: **MB-94889**	Batch ID: **94889**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200206D**	Analysis Date: **2/6/2020 2:30:00 PM**	Prep Date: **2/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-94889**	Batch ID: **94889**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200206D**	Analysis Date: **2/6/2020 2:30:00 PM**	Prep Date: **2/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	754	10.0	745.6	0	101	90	113			

Sample ID: **2002016-01D-DUP**	Batch ID: **94889**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200206D**	Analysis Date: **2/6/2020 2:30:00 PM**	Prep Date: **2/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	9020	200	0	9100				0.883	5	

Sample ID: **2002016-04D-DUP**	Batch ID: **94889**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200206D**	Analysis Date: **2/6/2020 2:30:00 PM**	Prep Date: **2/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	8520	200	0	8740				2.55	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200207B

The QC data in batch 94913 applies to the following samples: 2002045-07D, 2002045-08D, 2002045-09D, 2002045-10D, 2002045-11D, 2002045-12D

Sample ID: **MB-94913**	Batch ID: **94913**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200207B**	Analysis Date: **2/7/2020 5:00:00 PM**	Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-94913**	Batch ID: **94913**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200207B**	Analysis Date: **2/7/2020 5:00:00 PM**	Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	757	10.0	745.6	0	102	90	113			

Sample ID: **2002045-07D-DUP**	Batch ID: **94913**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200207B**	Analysis Date: **2/7/2020 5:00:00 PM**	Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	42600	1000	0	43700				2.55	5	

Sample ID: **2002045-08D-DUP**	Batch ID: **94913**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200207B**	Analysis Date: **2/7/2020 5:00:00 PM**	Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	18000	200	0	18400				1.98	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200212B

The QC data in batch 94944 applies to the following samples: 2002045-01C, 2002045-02C, 2002045-03C, 2002045-04C, 2002045-05C, 2002045-06C, 2002045-07C, 2002045-08C

Sample ID: **MB-94944**	Batch ID: **94944**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200212B**	Analysis Date: **2/12/2020 4:16:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-94944**	Batch ID: **94944**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200212B**	Analysis Date: **2/12/2020 4:16:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.78	0.250	5.000	0	95.6	80	120			

Sample ID: **2002045-01CMS**	Batch ID: **94944**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_200212B**	Analysis Date: **2/12/2020 4:16:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.00	0.250	5.000	0.3110	93.8	80	120			

Sample ID: **2002045-01CMSD**	Batch ID: **94944**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_200212B**	Analysis Date: **2/12/2020 4:16:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.96	0.250	5.000	0.3110	93.0	80	120	0.803	25	

Sample ID: **2002046-03BMS**	Batch ID: **94944**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_200212B**	Analysis Date: **2/12/2020 4:16:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.77	0.250	5.000	0	95.4	80	120			

Sample ID: **2002046-03BMSD**	Batch ID: **94944**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_200212B**	Analysis Date: **2/12/2020 4:16:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.45	0.250	5.000	0	89.0	80	120	6.94	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200212B

Sample ID: **ICV-200212**	Batch ID: **R108940**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_200212B**	Analysis Date: **2/12/2020 4:16:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.89	0.250	2.500	0	116	80	120			

Sample ID: **CCV1-200212**	Batch ID: **R108940**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_200212B**	Analysis Date: **2/12/2020 4:16:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.33	0.250	5.000	0	86.6	80	120			

Sample ID: **CCV2-200212**	Batch ID: **R108940**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_200212B**	Analysis Date: **2/12/2020 4:16:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.29	0.250	5.000	0	85.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200217A

The QC data in batch 95026 applies to the following samples: 2002045-09C, 2002045-10C, 2002045-11C, 2002045-12C

Sample ID: **MB-95026**	Batch ID: **95026**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-95026**	Batch ID: **95026**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.46	0.250	5.000	0	89.2	80	120			

Sample ID: **2002059-01BMS**	Batch ID: **95026**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.64	0.250	5.000	0.7700	77.4	80	120			S

Sample ID: **2002059-01BMSD**	Batch ID: **95026**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.54	0.250	5.000	0.7700	75.4	80	120	2.18	25	S

Sample ID: **2002060-03CMS**	Batch ID: **95026**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	3.59	0.250	5.000	0	71.8	80	120			S

Sample ID: **2002060-03CMSD**	Batch ID: **95026**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	3.47	0.250	5.000	0	69.4	80	120	3.40	25	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200217A

Sample ID: **ICV-200217**	Batch ID: **R108999**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.94	0.250	2.500	0	118	80	120			

Sample ID: **CCV1-200217**	Batch ID: **R108999**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.07	0.250	5.000	0	81.4	80	120			

Sample ID: **CCV2-200217**	Batch ID: **R108999**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.11	0.250	5.000	0	82.2	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002045
Project: Copano GW 1Q20

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.3**	**g/L @ pH 4.3**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

March 09, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1187690
Samples Received:	02/10/2020
Project Number:	2002045
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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MW-6R L1187690-01 Non-Potable Water

Collected by | Collected date/time 02/05/20 09:18 | Received date/time 02/10/20 11:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431735	1	02/24/20 10:03	03/02/20 09:40	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1426613	1	02/12/20 13:39	03/02/20 09:40	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1426613	1	02/12/20 13:39	02/17/20 10:31	RGT	Mt. Juliet, TN

MW-6RB L1187690-02 Non-Potable Water

Collected by | Collected date/time 02/05/20 10:20 | Received date/time 02/10/20 11:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431735	1	02/24/20 10:03	03/02/20 09:40	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1426613	1	02/12/20 13:39	03/02/20 09:40	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1426613	1	02/12/20 13:39	02/17/20 10:31	RGT	Mt. Juliet, TN

MW-10 L1187690-03 Non-Potable Water

Collected by | Collected date/time 02/05/20 11:56 | Received date/time 02/10/20 11:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431735	1	02/24/20 10:03	03/02/20 09:40	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1426613	1	02/12/20 13:39	03/02/20 09:40	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1426613	1	02/12/20 13:39	02/17/20 10:31	RGT	Mt. Juliet, TN

MW-11 L1187690-04 Non-Potable Water

Collected by | Collected date/time 02/05/20 12:45 | Received date/time 02/10/20 11:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431735	1	02/24/20 10:03	03/02/20 13:25	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1426613	1	02/12/20 13:39	03/02/20 13:25	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1426613	1	02/12/20 13:39	02/17/20 10:31	RGT	Mt. Juliet, TN

MW-11B L1187690-05 Non-Potable Water

Collected by | Collected date/time 02/05/20 13:42 | Received date/time 02/10/20 11:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431735	1	02/24/20 10:03	03/02/20 13:25	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1426613	1	02/12/20 13:39	03/02/20 13:25	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1426613	1	02/12/20 13:39	02/17/20 10:31	RGT	Mt. Juliet, TN

MW-201 L1187690-06 Non-Potable Water

Collected by | Collected date/time 02/05/20 13:47 | Received date/time 02/10/20 11:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431735	1	02/24/20 10:03	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1426613	1	02/12/20 13:39	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1426613	1	02/12/20 13:39	02/17/20 10:31	RGT	Mt. Juliet, TN

MW-7 L1187690-07 Non-Potable Water

Collected by | Collected date/time 02/05/20 16:02 | Received date/time 02/10/20 11:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431735	1	02/24/20 10:03	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1426613	1	02/12/20 13:39	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1426613	1	02/12/20 13:39	02/17/20 10:31	RGT	Mt. Juliet, TN

MW-9 L1187690-08 Non-Potable Water

Collected by | Collected date/time 02/05/20 10:00 | Received date/time 02/10/20 11:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431735	1	02/24/20 10:03	03/02/20 13:25	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1426613	1	02/12/20 13:39	03/02/20 13:25	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1426613	1	02/12/20 13:39	02/17/20 10:31	RGT	Mt. Juliet, TN

MW-8 L1187690-09 Non-Potable Water

Collected by | Collected date/time 02/05/20 11:30 | Received date/time 02/10/20 11:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431735	1	02/24/20 10:03	03/02/20 13:25	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1426613	1	02/12/20 13:39	03/02/20 13:25	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1426613	1	02/12/20 13:39	02/17/20 10:31	RGT	Mt. Juliet, TN

MW-5 L1187690-10 Non-Potable Water

Collected by | Collected date/time 02/05/20 13:25 | Received date/time 02/10/20 11:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431735	1	02/24/20 10:03	03/02/20 13:25	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1426613	1	02/12/20 13:39	03/02/20 13:25	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1426613	1	02/12/20 13:39	02/17/20 10:31	RGT	Mt. Juliet, TN

MW-5B L1187690-11 Non-Potable Water

Collected by | Collected date/time 02/05/20 14:40 | Received date/time 02/10/20 11:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431735	1	02/24/20 10:03	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1426613	1	02/12/20 13:39	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1426613	1	02/12/20 13:39	02/17/20 10:31	RGT	Mt. Juliet, TN

MW-4 L1187690-12 Non-Potable Water

Collected by | Collected date/time 02/05/20 16:05 | Received date/time 02/10/20 11:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431735	1	02/24/20 10:03	03/06/20 09:50	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1426613	1	02/12/20 13:39	03/06/20 09:50	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1426613	1	02/12/20 13:39	02/17/20 10:31	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.11		0.507	0.73	03/02/2020 09:40	WG1431735
(T) Barium	*121*			*62.0-143*	*03/02/2020 09:40*	WG1431735
(T) Yttrium	*110*			*79.0-136*	*03/02/2020 09:40*	WG1431735

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.73		0.896	1.14	03/02/2020 09:40	WG1426613

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.621		0.389	0.41	02/17/2020 10:31	WG1426613
(T) Barium-133	*87.8*			*30.0-143*	*02/17/2020 10:31*	WG1426613

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	3.60		0.443	0.565	03/02/2020 09:40	WG1431735
(T) Barium	*116*			*62.0-143*	*03/02/2020 09:40*	WG1431735
(T) Yttrium	*111*			*79.0-136*	*03/02/2020 09:40*	WG1431735

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	5.78		1.08	0.953	03/02/2020 09:40	WG1426613

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	2.18		0.638	0.388	02/17/2020 10:31	WG1426613
(T) Barium-133	*87.4*			*30.0-143*	*02/17/2020 10:31*	WG1426613

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.279		0.560	0.884	03/02/2020 09:40	WG1431735
(T) Barium	*119*			*62.0-143*	*03/02/2020 09:40*	WG1431735
(T) Yttrium	*112*			*79.0-136*	*03/02/2020 09:40*	WG1431735

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.219		0.800	1.2	03/02/2020 09:40	WG1426613

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.219		0.240	0.317	02/17/2020 10:31	WG1426613
(T) Barium-133	*84.0*			*30.0-143*	*02/17/2020 10:31*	WG1426613

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.0272		0.366	0.574	03/02/2020 13:25	WG1431735
(T) Barium	*105*			*62.0-143*	*03/02/2020 13:25*	WG1431735
(T) Yttrium	*115*			*79.0-136*	*03/02/2020 13:25*	WG1431735

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.179		0.613	0.932	03/02/2020 13:25	WG1426613

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.179		0.247	0.358	02/17/2020 10:31	WG1426613
(T) Barium-133	*86.6*			*30.0-143*	*02/17/2020 10:31*	WG1426613

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	5.47		0.454	0.496	03/02/2020 13:25	WG1431735
(T) Barium	*112*			*62.0-143*	*03/02/2020 13:25*	WG1431735
(T) Yttrium	*110*			*79.0-136*	*03/02/2020 13:25*	WG1431735

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	9.78		1.37	0.879	03/02/2020 13:25	WG1426613

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	4.31		0.917	0.383	02/17/2020 10:31	WG1426613
(T) Barium-133	*82.8*			*30.0-143*	*02/17/2020 10:31*	WG1426613

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	4.75		0.453	0.617	03/05/2020 13:30	WG1431735
(T) Barium	*92.7*			*62.0-143*	*03/05/2020 13:30*	WG1431735
(T) Yttrium	*107*			*79.0-136*	*03/05/2020 13:30*	WG1431735

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	7.67		1.16	0.905	03/05/2020 13:30	WG1426613

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	2.92		0.711	0.288	02/17/2020 10:31	WG1426613
(T) Barium-133	*93.8*			*30.0-143*	*02/17/2020 10:31*	WG1426613

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	3.23		0.445	0.698	03/05/2020 13:30	WG1431735
(T) Barium	*83.3*			*62.0-143*	*03/05/2020 13:30*	WG1431735
(T) Yttrium	*107*			*79.0-136*	*03/05/2020 13:30*	WG1431735

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	4.14		0.814	0.96	03/05/2020 13:30	WG1426613

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.914		0.369	0.262	02/17/2020 10:31	WG1426613
(T) Barium-133	*95.7*			*30.0-143*	*02/17/2020 10:31*	WG1426613

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.488		0.507	0.852	03/02/2020 13:25	WG1431735
(T) Barium	*109*			*62.0-143*	*03/02/2020 13:25*	WG1431735
(T) Yttrium	*85.8*			*79.0-136*	*03/02/2020 13:25*	WG1431735

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.567		0.662	1.11	03/02/2020 13:25	WG1426613

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0791		0.155	0.261	02/17/2020 10:31	WG1426613
(T) Barium-133	*84.7*			*30.0-143*	*02/17/2020 10:31*	WG1426613

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.93		0.371	0.536	03/02/2020 13:25	WG1431735
(T) Barium	*116*			*62.0-143*	*03/02/2020 13:25*	WG1431735
(T) Yttrium	*108*			*79.0-136*	*03/02/2020 13:25*	WG1431735

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.03		0.593	0.897	03/02/2020 13:25	WG1426613

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0984		0.222	0.361	02/17/2020 10:31	WG1426613
(T) Barium-133	*90.0*			*30.0-143*	*02/17/2020 10:31*	WG1426613

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.77		0.631	0.879	03/02/2020 13:25	WG1431735
(T) Barium	*101*			*62.0-143*	*03/02/2020 13:25*	WG1431735
(T) Yttrium	*123*			*79.0-136*	*03/02/2020 13:25*	WG1431735

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.94		1.02	1.03	03/02/2020 13:25	WG1426613

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.17		0.387	0.151	02/17/2020 10:31	WG1426613
(T) Barium-133	*100*			*30.0-143*	*02/17/2020 10:31*	WG1426613

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	9.09		0.526	0.698	03/05/2020 13:30	WG1431735
(T) Barium	*86.3*			*62.0-143*	*03/05/2020 13:30*	WG1431735
(T) Yttrium	*103*			*79.0-136*	*03/05/2020 13:30*	WG1431735

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	11.8		1.13	0.878	03/05/2020 13:30	WG1426613

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	2.71		0.599	0.18	02/17/2020 10:31	WG1426613
(T) Barium-133	*92.0*			*30.0-143*	*02/17/2020 10:31*	WG1426613

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.77		0.594	0.836	03/06/2020 09:50	WG1431735
(T) Barium	*110*			*62.0-143*	*03/06/2020 09:50*	WG1431735
(T) Yttrium	*98.1*			*79.0-136*	*03/06/2020 09:50*	WG1431735

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.21		0.897	1.17	03/06/2020 09:50	WG1426613

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.438		0.303	0.337	02/17/2020 10:31	WG1426613
(T) Barium-133	*100*			*30.0-143*	*02/17/2020 10:31*	WG1426613

Method Blank (MB)

(MB) R3504882-1 03/02/20 09:40

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.311		0.399
(T) Barium	*120*		
(T) Yttrium	*116*		

L1185672-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1185672-01 03/02/20 09:40 • (DUP) R3504882-5 03/02/20 09:40

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	1.11	0.957	1	14.3	0.195		20	3
(T) Barium	*100*	*103*						
(T) Yttrium	*118*	*121*						

Laboratory Control Sample (LCS)

(LCS) R3504882-2 03/02/20 09:40

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.34	107	80.0-120	
(T) Barium			*111*		
(T) Yttrium			*119*		

L1187484-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1187484-01 03/02/20 09:40 • (MS) R3504882-3 03/02/20 09:40 • (MSD) R3504882-4 03/02/20 09:40

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	1.15	11.9	12.9	108	117	1	70.0-130			7.90		20
(T) Barium		*98.6*			*110*	*104*							
(T) Yttrium		*91.6*			*125*	*110*							

Method Blank (MB)

(MB) R3501189-5 02/17/20 14:59

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	0.00157		0.0490
(T) Barium-133	*92.5*		

L1187690-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1187690-05 02/17/20 10:31 • (DUP) R3501189-4 02/17/20 10:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	4.31	3.86	1	11.0	0.380		20	3
(T) Barium-133	*82.8*	*86.8*						

Laboratory Control Sample (LCS)

(LCS) R3501189-1 02/17/20 10:31

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.35	107	80.0-120	
(T) Barium-133			*89.5*		

L1187690-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1187690-06 02/17/20 10:31 • (MS) R3501189-2 02/17/20 10:31 • (MSD) R3501189-3 02/17/20 10:31

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	2.92	22.4	19.5	96.6	82.3	1	75.0-125			13.8		20
(T) Barium-133		*93.8*			*80.0*	*82.7*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

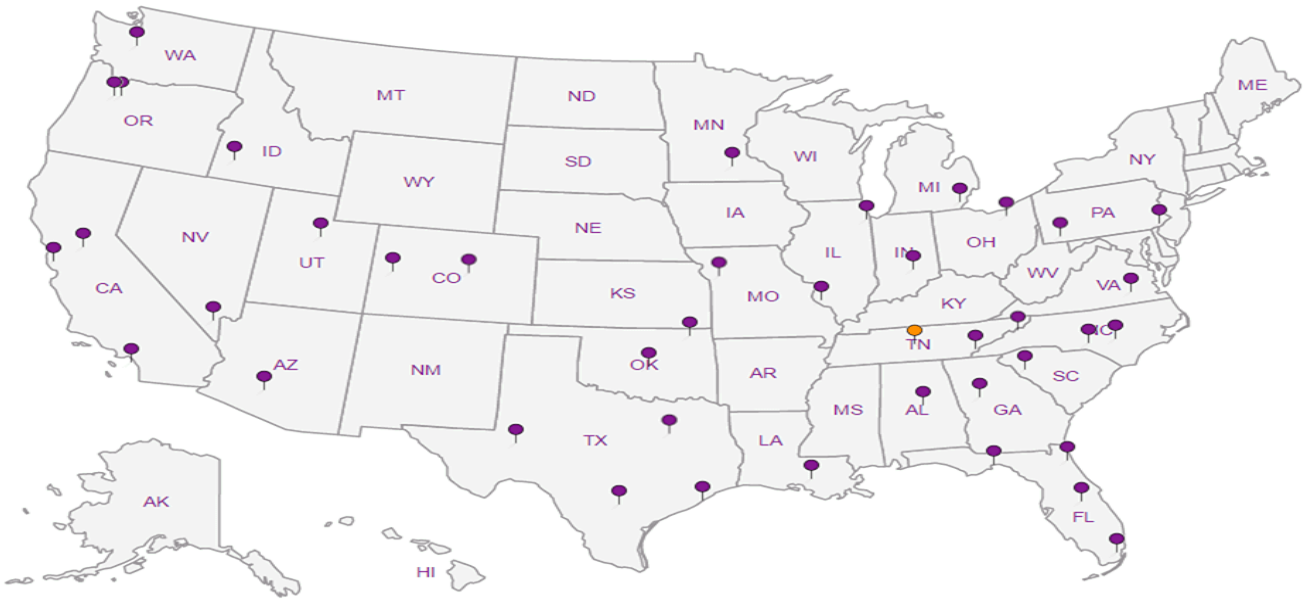
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

G167

Work Order: 2002045

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

L1187690

06-Feb-20

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra 228 E904.0	Ra 226 M7500 Ra B M	Requested Tests			
MW-6R	Aqueous	6-01E	02/05/20 09:18 AM	1LHDPEHNO3	1					-01
MW-6R	Aqueous	6-01F	02/05/20 09:18 AM	1LHDPEHNO3		1				-01
MW-6RB	Aqueous	6-02E	02/05/20 10:20 AM	1LHDPEHNO3	1					-02
MW-6RB	Aqueous	6-02F	02/05/20 10:20 AM	1LHDPEHNO3		1				-02
MW-10	Aqueous	6-03E	02/05/20 11:56 AM	1LHDPEHNO3	1					-03
MW-10	Aqueous	6-03F	02/05/20 11:56 AM	1LHDPEHNO3		1				-03
MW-11	Aqueous	6-04E	02/05/20 12:45 PM	1LHDPEHNO3	1					-04
MW-11	Aqueous	6-04F	02/05/20 12:45 PM	1LHDPEHNO3		1				-04
MW-11B	Aqueous	6-05E	02/05/20 01:42 PM	1LHDPEHNO3	1					-05
MW-11B	Aqueous	6-05F	02/05/20 01:42 PM	1LHDPEHNO3		1				-05
MW-201	Aqueous	6-06E	02/05/20 01:47 PM	1LHDPEHNO3	1					-06
MW-201	Aqueous	6-06F	02/05/20 01:47 PM	1LHDPEHNO3		1				-06
MW-7	Aqueous	6-07E	02/05/20 04:02 PM	1LHDPEHNO3	1					-07
MW-7	Aqueous	6-07F	02/05/20 04:02 PM	1LHDPEHNO3		1				-07
MW-9	Aqueous	6-08E	02/05/20 10:00 AM	1LHDPEHNO3	1					-08
MW-9	Aqueous	6-08F	02/05/20 10:00 AM	1LHDPEHNO3		1				-08
MW-8	Aqueous	6-09E	02/05/20 11:30 AM	1LHDPEHNO3	1					-09
MW-8	Aqueous	6-09F	02/05/20 11:30 AM	1LHDPEHNO3		1				-09

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

OK

		Date/Time			Date/Time
Relinquished by:		2/6/20 1700	Received by:		2/10/20 11:10
Relinquished by:			Received by:		

Amb

COC5I

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 2002045

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

L1187690

06-Feb-20

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra 228 E904.0	Ra 226 M7500 Ra B M	Requested Tests			
MW-5	Aqueous	-10E	02/05/20 01:25 PM	1LHDPEHNO3	1					-10
MW-5	Aqueous	-10F	02/05/20 01:25 PM	1LHDPEHNO3		1				-10
MW-5B	Aqueous	-11E	02/05/20 02:40 PM	1LHDPEHNO3	1					-11
MW-5B	Aqueous	-11F	02/05/20 02:40 PM	1LHDPEHNO3		1				-11
MW-4	Aqueous	-12E	02/05/20 04:05 PM	1LHDPEHNO3	1					-12
MW-4	Aqueous	-12F	02/05/20 04:05 PM	1LHDPEHNO3		1				-12

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

OK

		Date/Time			Date/Time
Relinquished by:		2/6/20 1700	Received by:	Carol Kemp	2/10/20 11:10
Relinquished by:			Received by:		

Amb

COC5I

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLBRTX		L1187690
Cooler Received/Opened On: 2/10/20	Temperature:	Amb
Received By: Carol Kemp		
Signature: Carol Kemp		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		–	
COC Signed / Accurate?		–	
Bottles arrive intact?		–	
Correct bottles used?		–	
Sufficient volume sent?		–	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		–	

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002045

Sample ID: **MW-6R**
Lab ID Number: **2002045-01**

PARAMETER	RESULT	UNITS	METHOD
Calcium	577	mg/L	SW6020B
Magnesium	556	mg/L	SW6020B
Sodium	7540	mg/L	SW6020B
Potassium	23.2	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.54	M2320 B
Bicarbonate	598	mg/L @ pH 4.54	M2320 B
Sulfate	3310	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	598	mg/L @ pH 4.54	M2320 B
Hardness	3730	mg/L	SM 2340B
Chloride	12200	mg/L	E300
TDS	25900	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	11.95
Calcium	28.79
Chloride	344.15
Fluoride	0.00
Magnesium	45.72
Nitrate-N	0.00
Potassium	0.59
Sodium	327.97
Sulfate	68.92
TOTAL ANIONS	425
TOTAL CATIONS	403
CATION/ANION (% DIFF)	-2.65
Calculated TDS	24505
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.06
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/11/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002045

Sample ID: **MW-6RB**
Lab ID Number: **2002045-02**

PARAMETER	RESULT	UNITS	METHOD
Calcium	558	mg/L	SW6020B
Magnesium	597	mg/L	SW6020B
Sodium	6260	mg/L	SW6020B
Potassium	33.7	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.52	M2320 B
Bicarbonate	308	mg/L @ pH 4.52	M2320 B
Sulfate	2420	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	308	mg/L @ pH 4.52	M2320 B
Hardness	3852	mg/L	SM 2340B
Chloride	10800	mg/L	E300
TDS	21600	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	6.15
Calcium	27.84
Chloride	304.65
Fluoride	0.00
Magnesium	49.10
Nitrate-N	0.00
Potassium	0.86
Sodium	272.29
Sulfate	50.39
TOTAL ANIONS	361
TOTAL CATIONS	350
CATION/ANION (% DIFF)	-1.56
Calculated TDS	20823
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.04
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/11/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002045

Sample ID: **MW-10**
Lab ID Number: **2002045-03**

PARAMETER	RESULT	UNITS	METHOD
Calcium	571	mg/L	SW6020B
Magnesium	646	mg/L	SW6020B
Sodium	5550	mg/L	SW6020B
Potassium	19.1	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	510	mg/L @ pH 4.53	M2320 B
Sulfate	3190	mg/L	E300
Fluoride	2.35	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	510	mg/L @ pH 4.53	M2320 B
Hardness	4086	mg/L	SM 2340B
Chloride	9360	mg/L	E300
TDS	20600	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	10.19
Calcium	28.49
Chloride	264.03
Fluoride	0.12
Magnesium	53.13
Nitrate-N	0.00
Potassium	0.49
Sodium	241.41
Sulfate	66.42
TOTAL ANIONS	341
TOTAL CATIONS	324
CATION/ANION (% DIFF)	-2.60
Calculated TDS	19593
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.05
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/11/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002045

Sample ID: **MW-11**
Lab ID Number: **2002045-04**

PARAMETER	RESULT	UNITS	METHOD
Calcium	294	mg/L	SW6020B
Magnesium	568	mg/L	SW6020B
Sodium	5220	mg/L	SW6020B
Potassium	19.9	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.54	M2320 B
Bicarbonate	991	mg/L @ pH 4.54	M2320 B
Sulfate	1600	mg/L	E300
Fluoride	2.59	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	991	mg/L @ pH 4.54	M2320 B
Hardness	3073	mg/L	SM 2340B
Chloride	8670	mg/L	E300
TDS	17200	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	19.80
Calcium	14.67
Chloride	244.57
Fluoride	0.14
Magnesium	46.71
Nitrate-N	0.00
Potassium	0.51
Sodium	227.06
Sulfate	33.31
TOTAL ANIONS	298
TOTAL CATIONS	289
CATION/ANION (% DIFF)	-1.51
Calculated TDS	16870
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.02
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/11/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002045

Sample ID: **MW-11B**
Lab ID Number: **2002045-05**

PARAMETER	RESULT	UNITS	METHOD
Calcium	557	mg/L	SW6020B
Magnesium	857	mg/L	SW6020B
Sodium	5460	mg/L	SW6020B
Potassium	40.5	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	327	mg/L @ pH 4.53	M2320 B
Sulfate	2440	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	327	mg/L @ pH 4.53	M2320 B
Hardness	4920	mg/L	SM 2340B
Chloride	11200	mg/L	E300
TDS	19900	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	6.53
Calcium	27.79
Chloride	315.94
Fluoride	0.00
Magnesium	70.48
Nitrate-N	0.00
Potassium	1.04
Sodium	237.49
Sulfate	50.80
TOTAL ANIONS	373
TOTAL CATIONS	337
CATION/ANION (% DIFF)	-5.14
Calculated TDS	20718
TDS Ratio (Meas/Calc) (0.85 - 1.15)	0.96
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/11/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002045

Sample ID: **MW-201**
Lab ID Number: **2002045-06**

PARAMETER	RESULT	UNITS	METHOD
Calcium	555	mg/L	SW6020B
Magnesium	835	mg/L	SW6020B
Sodium	5580	mg/L	SW6020B
Potassium	39.8	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.52	M2320 B
Bicarbonate	325	mg/L @ pH 4.52	M2320 B
Sulfate	2320	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	325	mg/L @ pH 4.52	M2320 B
Hardness	4824	mg/L	SM 2340B
Chloride	11300	mg/L	E300
TDS	20500	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	6.49
Calcium	27.69
Chloride	318.76
Fluoride	0.00
Magnesium	68.67
Nitrate-N	0.00
Potassium	1.02
Sodium	242.71
Sulfate	48.30
TOTAL ANIONS	374
TOTAL CATIONS	340
CATION/ANION (% DIFF)	-4.69
Calculated TDS	20792
TDS Ratio (Meas/Calc) (0.85 - 1.15)	0.99
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/11/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002045

Sample ID: **MW-7**
Lab ID Number: **2002045-07**

PARAMETER	RESULT	UNITS	METHOD
Calcium	977	mg/L	SW6020B
Magnesium	1170	mg/L	SW6020B
Sodium	11700	mg/L	SW6020B
Potassium	47.6	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.52	M2320 B
Bicarbonate	183	mg/L @ pH 4.52	M2320 B
Sulfate	3160	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	183	mg/L @ pH 4.52	M2320 B
Hardness	7258	mg/L	SM 2340B
Chloride	21800	mg/L	E300
TDS	43700	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	3.66
Calcium	48.75
Chloride	614.95
Fluoride	0.00
Magnesium	96.22
Nitrate-N	0.00
Potassium	1.22
Sodium	508.92
Sulfate	65.79
TOTAL ANIONS	684
TOTAL CATIONS	655
CATION/ANION (% DIFF)	-2.19
Calculated TDS	38946
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.12
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/11/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002045

Sample ID: **MW-9**
Lab ID Number: **2002045-08**

PARAMETER	RESULT	UNITS	METHOD
Calcium	919	mg/L	SW6020B
Magnesium	677	mg/L	SW6020B
Sodium	4590	mg/L	SW6020B
Potassium	27.8	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	395	mg/L @ pH 4.53	M2320 B
Sulfate	1240	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	395	mg/L @ pH 4.53	M2320 B
Hardness	5083	mg/L	SM 2340B
Chloride	10800	mg/L	E300
TDS	18400	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	7.89
Calcium	45.86
Chloride	304.65
Fluoride	0.00
Magnesium	55.67
Nitrate-N	0.00
Potassium	0.71
Sodium	199.65
Sulfate	25.82
TOTAL ANIONS	338
TOTAL CATIONS	302
CATION/ANION (% DIFF)	-5.70
Calculated TDS	18452
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.00
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/11/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002045

Sample ID: **MW-8**
Lab ID Number: **2002045-09**

PARAMETER	RESULT	UNITS	METHOD
Calcium	787	mg/L	SW6020B
Magnesium	767	mg/L	SW6020B
Sodium	7150	mg/L	SW6020B
Potassium	24.6	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	413	mg/L @ pH 4.53	M2320 B
Sulfate	3890	mg/L	E300
Fluoride	3.03	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	413	mg/L @ pH 4.53	M2320 B
Hardness	5124	mg/L	SM 2340B
Chloride	12000	mg/L	E300
TDS	25900	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	8.25
Calcium	39.27
Chloride	338.50
Fluoride	0.16
Magnesium	63.08
Nitrate-N	0.00
Potassium	0.63
Sodium	311.00
Sulfate	80.99
TOTAL ANIONS	428
TOTAL CATIONS	414
CATION/ANION (% DIFF)	-1.65
Calculated TDS	24828
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.04
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/11/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002045

Sample ID: **MW-5**
Lab ID Number: **2002045-10**

PARAMETER	RESULT	UNITS	METHOD
Calcium	867	mg/L	SW6020B
Magnesium	1160	mg/L	SW6020B
Sodium	6880	mg/L	SW6020B
Potassium	47.5	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	491	mg/L @ pH 4.53	M2320 B
Sulfate	3090	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	491	mg/L @ pH 4.53	M2320 B
Hardness	6942	mg/L	SM 2340B
Chloride	14300	mg/L	E300
TDS	27500	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	9.81
Calcium	43.26
Chloride	403.39
Fluoride	0.00
Magnesium	95.39
Nitrate-N	0.00
Potassium	1.22
Sodium	299.26
Sulfate	64.33
TOTAL ANIONS	478
TOTAL CATIONS	439
CATION/ANION (% DIFF)	-4.19
Calculated TDS	26590
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.03
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments:

Lab Rep Name/Signature:

Date: 03/11/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002045

Sample ID: **MW-5B**
Lab ID Number: **2002045-11**

PARAMETER	RESULT	UNITS	METHOD
Calcium	883	mg/L	SW6020B
Magnesium	905	mg/L	SW6020B
Sodium	5870	mg/L	SW6020B
Potassium	56.2	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	286	mg/L @ pH 4.53	M2320 B
Sulfate	2050	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	286	mg/L @ pH 4.53	M2320 B
Hardness	5932	mg/L	SM 2340B
Chloride	12700	mg/L	E300
TDS	23200	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	5.71
Calcium	44.06
Chloride	358.25
Fluoride	0.00
Magnesium	74.42
Nitrate-N	0.00
Potassium	1.44
Sodium	255.33
Sulfate	42.68
TOTAL ANIONS	407
TOTAL CATIONS	375
CATION/ANION (% DIFF)	-4.01
Calculated TDS	22607
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.03
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/11/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002045

Sample ID: **MW-4**
Lab ID Number: **2002045-12**

PARAMETER	RESULT	UNITS	METHOD
Calcium	915	mg/L	SW6020B
Magnesium	1980	mg/L	SW6020B
Sodium	11400	mg/L	SW6020B
Potassium	64.4	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	277	mg/L @ pH 4.53	M2320 B
Sulfate	5830	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	277	mg/L @ pH 4.53	M2320 B
Hardness	10438	mg/L	SM 2340B
Chloride	21600	mg/L	E300
TDS	44800	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	5.53
Calcium	45.66
Chloride	609.31
Fluoride	0.00
Magnesium	162.83
Nitrate-N	0.00
Potassium	1.65
Sodium	495.87
Sulfate	121.38
TOTAL ANIONS	736
TOTAL CATIONS	706
CATION/ANION (% DIFF)	-2.10
Calculated TDS	41928
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.07
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/11/20

Cation/Anion % Difference calculated per SM1030E.

March 09, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 2002060

RE: Copano GW 1Q20

Dear Kevin Dworsky:

DHL Analytical, Inc. received 11 sample(s) on 2/7/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

Nº 80818
CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Rd.
PHONE: (361) 573-6442 FAX/E-MAIL:
DATA REPORTED TO: Kevin_Dwarsky@golder.com, Greg_Lasagna@golder.com
ADDITIONAL REPORT COPIES TO: Victor_Gonzalez@golder.com

DATE: 2/6/20 2002060 PAGE 1 OF 1
PO #: DHL WORK ORDER #: ~~1912555~~ 1912555 (a)
PROJECT LOCATION OR NAME: Copano GW 1Q20
CLENT PROJECT #: 1912555 COLLECTOR: Victor Gonzalez

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☒ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
MW4-1	01	2/6/20	9:50	W	P	6		X	X	X	X	See attached list for all analysis	
MW4-2A	02		11:05										
MW4-2	03		12:25										
MW4-3B	04		13:25										
MW4-3	05		14:35										

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ 8082 PCB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 2008 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ CYANIDE ☐ TDS ☐ TSS ☐ % MOISTURE ☐

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	2/6/20 18:30	FedEX
FedEX	2.7.20 0909	[signature]
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

3

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 2.4 | 1.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 80827

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Victoria, Tx 77901
PHONE: (361) 543-6442 FAX/E-MAIL: Greg_Logan@golder.com
DATA REPORTED TO: Greg Logan
ADDITIONAL REPORT COPIES TO: Scott Fenner & Victor Gonzalez

DATE: 2/6/20 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 20020600
PROJECT LOCATION OR NAME: Cooper AFB 1020
CLENT PROJECT #: 19125525 COLLECTOR: S. Fenner

Authorize 5% surcharge for TRRP Report? ☑ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION HCl	HNO_3	H_2SO_4 ☒ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
MW-7B	06	2/6/20	0851	W	P	6		X	X	X	X	See attached list for full analytes	
MW-1	07		1055										
OB-5	08		1150										
MW-3R	09		1324										
MW-202	10		1329										
MW-3RB	11		1437										

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC8270 ☐ PAH8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ ___ ☐ RCRA ☐ TX11 ☐ ___ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ___ ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Scott Fenner	2/6/20 1730	FedEx
FedEx	2.7.20 0909	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

4

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☑
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 2.9 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☑ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☑ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Dissolved Metals[1]	SW6020A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Metals.
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Dissolved Mercury	SW7470A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Mercury.
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	SM7S00Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:

1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium, Uranium

2) From time of sample collection

APAR
(Copano GW 1Q20)

ORIGIN ID:VCTA (361) 541-0723
VICTOR GONZALEZ
GOLDER ASSOCIATES
620 E. AIRLINE

VICTORIA, TX 77901
UNITED STATES US

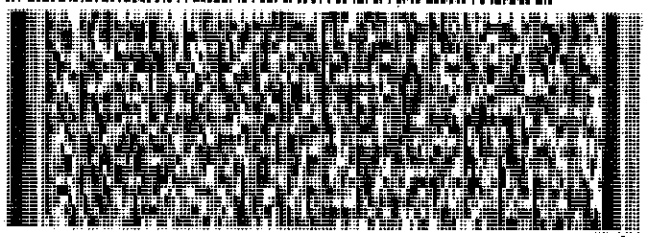
SHIP DATE: 05FEB20
ACTWGT: 65.00 LB
CAD: 2806631/INET4220
DIMS: 24x12x15 IN

BILL RECIPIENT

TO **SAMPLE RECEIVING**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF: COPANO APAR 1Q20 - VG
INV:
PO: 19125525 DEPT:

56BJ2049EFE4A



FedEx Express

J291820911301ur

FedEx Ship Manager - Print Your Label(s)

8 of 8

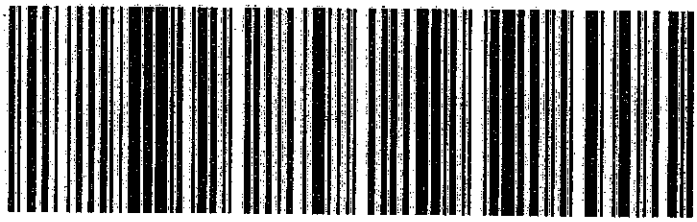
THU - 06 FEB 10:30A
PRIORITY OVERNIGHT

MPS# 0263 **7776 9918 7198**
Mstr# 7776 9918 7051

0201

78664
AUS
TX-US

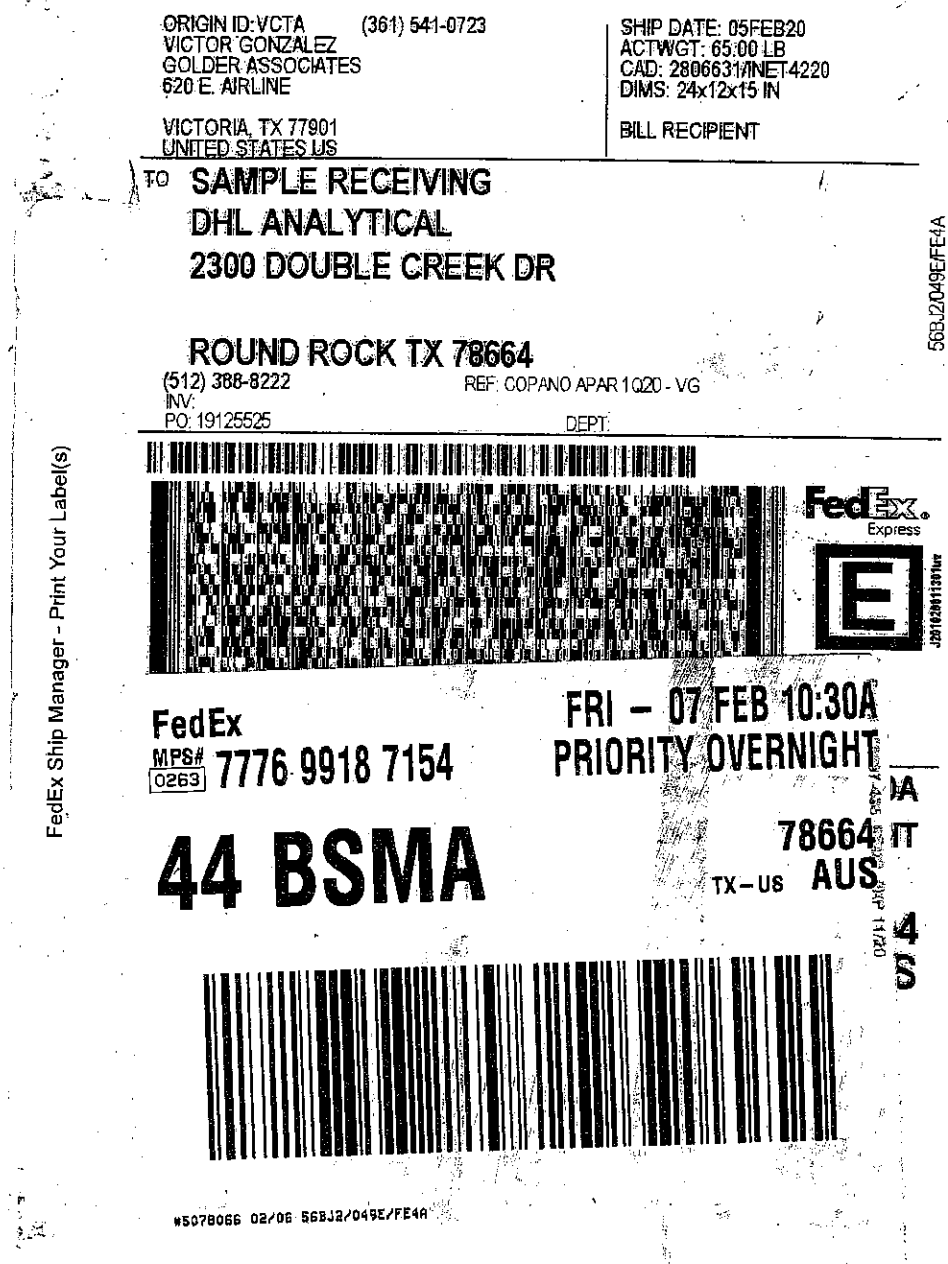
44 BSMA



2/5/2020

CUSTODY SEAL
DATE 2/6/20
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • www.qecusa.com



ORIGIN ID:VCTA (361) 541-0723
VICTOR GONZALEZ
GOLDER ASSOCIATES
620 E. AIRLINE

VICTORIA, TX 77901
UNITED STATES US

SHIP DATE: 05FEB20
ACTWGT: 65.00 LB
CAD: 2806631/INET4220
DIMS: 24x12x15 IN

BILL RECIPIENT

TO SAMPLE RECEIVING
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222
INV:
PO: 19125525

REF: COPANO APAR 1Q20 - VG
DEPT:

56BJ2049E/FE4A

FedEx Express

FedEx
MPS# 0263 7776 9918 7154

FRI - 07 FEB 10:30A
PRIORITY OVERNIGHT

78664
TX-US AUS

44 BSMA

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#5078066 02/06 56BJ2/049E/FE4A

CUSTODY SEAL

DATE 2/6/20

SIGNATURE

DHL ANALYTICAL

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ORIGIN ID:VCTA (361) 541-0723
VICTOR GONZALEZ
GOLDER ASSOCIATES
620 E. AIRLINE

VICTORIA, TX 77901
UNITED STATES US

SHIP DATE: 05FEB20
ACTWGT: 65.00 LB
CAD: 2806631/INET4220
DIMS: 24x12x15 IN

BILL RECIPIENT

TO **SAMPLE RECEIVING**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222
INV:
PO: 19125525

REF: COPANO APAR 1Q20 - VG
DEPT:

568J2049E/FE4A

FedEx Express

FedEx
MPS# 0263 7776 9918 7305

FRI – 07 FEB 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX – US AUS

#5078066 02/06 568J2/049E/FE4A

2/5/2020

CUSTODY SEAL

DATE 2/6/20

SIGNATURE

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder

Date Received: 2/7/2020

Work Order Number 2002060

Received by: JH

Checklist completed by: _____ 2/7/2020
Signature | Date

Reviewed by _____ 2/7/2020
Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.4 °C /1.8/2.9°C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW 1Q20	**LRC Date:** 3/9/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2002060
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW 1Q20	**LRC Date:** 3/9/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2002060
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?		X			**S10-02**
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

03/09/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *09-Mar-20*

CLIENT: Golder
Project: Copano GW 1Q20
Lab Order: 2002060

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis (total & dissolved)
Method SW6020B - Uranium in Water Analysis (this parameter is not NELAP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 2/7/20. A total of 11 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Ammonia analysis performed on 2/17/20 (batch 95026) the matrix spike and matrix spike duplicate recoveries (2002059-01 MS/MSD & 2002060-03 MS/MSD) were below control limits. This was due to matrix effect. In addition, on 2/19/20 (batch 95070) the matrix spike duplicate (2002060-08 MSD) was slightly below control limits. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate (2002059-01 MS/MSD) was not from this work order. The samples selected for the matrix spikes and matrix spike duplicates (2002060-03 MS/MSD & 2002060-08 MSD) were from this work order. The LCSs were within control limits. No further corrective actions were taken.

For Anions analysis performed on 2/7/20 (batch 94904) the matrix spikes and matrix spike duplicate recoveries (2002060-01 MS/MSD & 2002060-02 MS/MSD) were slightly below control limits for Chloride. These are flagged accordingly. The samples selected for the matrix spikes and matrix spike duplicates were from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Total Metals analysis performed on 2/12/20 and 2/13/20 (batch 94918) the matrix spike and matrix spike duplicate recoveries were out of control limits for five analytes. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Dissolved Metals analysis performed on 2/12/20 (batch 94920) the matrix spike and matrix spike duplicate recoveries were slightly below control limits for Nickel. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Dissolved Mercury analysis performed on 2/18/20 (batch 95013) the matrix spike recovery was slightly below control limits. This was due to matrix effect. This is flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits. No further corrective actions were taken.

Exception Report R10-01

For Total and Dissolved Metals, Uranium and Mercury analyses, some dissolved metals results were slightly greater than the total metals results for several samples. These are within the acceptable variation limits. No further corrective actions were taken.

For Anions analysis all samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride and Sulfate).

Exception Report S9-01

For Dissolved Metals analysis performed on 2/12/20 (batch 94920) the PDS recovery was slightly below control limits for Nickel. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

For Total Metals analysis performed on 2/13/20 (batch 94918) the PDS recovery was out of control limits for three analytes. These are flagged accordingly. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

For Dissolved Mercury analysis performed on 2/18/20 (batches 95013, 95015 & 95018) the PDS recoveries were below control limits. This was due to matrix effect. These are flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

For Total Mercury analysis performed on 2/18/20 (batch 95013) the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

Exception Report S10-02

For Metals analysis, the recovery of Aluminum for the Detectability Check Standard (DCS1-94341) was slightly above the DHL Analytical internal control limits; the recovery meets TRRP specifications. This is flagged accordingly in the QC summary report. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT: Golder
Project: Copano GW 1Q20
Lab Order: 2002060

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2002060-01	MW4-1		02/06/20 09:50 AM	2/7/2020
2002060-02	MW4-2A		02/06/20 11:05 AM	2/7/2020
2002060-03	MW4-2		02/06/20 12:25 PM	2/7/2020
2002060-04	MW4-3B		02/06/20 01:25 PM	2/7/2020
2002060-05	MW4-3		02/06/20 02:35 PM	2/7/2020
2002060-06	MW-7B		02/06/20 08:57 AM	2/7/2020
2002060-07	MW-1		02/06/20 10:55 AM	2/7/2020
2002060-08	DB-5		02/06/20 11:50 AM	2/7/2020
2002060-09	MW-3R		02/06/20 01:24 PM	2/7/2020
2002060-10	MW-202		02/06/20 01:29 PM	2/7/2020
2002060-11	MW-3RB		02/06/20 02:37 PM	2/7/2020

Lab Order: 2002060
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002060-01A	MW4-1	02/06/20 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-1	02/06/20 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-1	02/06/20 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-1	02/06/20 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-1	02/06/20 09:50 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:56 PM	95015
2002060-01B	MW4-1	02/06/20 09:50 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW4-1	02/06/20 09:50 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW4-1	02/06/20 09:50 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002060-01C	MW4-1	02/06/20 09:50 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/17/20 09:18 AM	95026
2002060-01D	MW4-1	02/06/20 09:50 AM	Aqueous	M2320 B	Alkalinity Preparation	02/10/20 08:00 AM	94916
	MW4-1	02/06/20 09:50 AM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW4-1	02/06/20 09:50 AM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW4-1	02/06/20 09:50 AM	Aqueous	M2540C	TDS Preparation	02/10/20 02:59 PM	94933
2002060-02A	MW4-2A	02/06/20 11:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-2A	02/06/20 11:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-2A	02/06/20 11:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-2A	02/06/20 11:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-2A	02/06/20 11:05 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:56 PM	95015
2002060-02B	MW4-2A	02/06/20 11:05 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW4-2A	02/06/20 11:05 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW4-2A	02/06/20 11:05 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002060-02C	MW4-2A	02/06/20 11:05 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/17/20 09:18 AM	95026
2002060-02D	MW4-2A	02/06/20 11:05 AM	Aqueous	M2320 B	Alkalinity Preparation	02/10/20 08:00 AM	94916
	MW4-2A	02/06/20 11:05 AM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW4-2A	02/06/20 11:05 AM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW4-2A	02/06/20 11:05 AM	Aqueous	M2540C	TDS Preparation	02/10/20 02:59 PM	94933
2002060-03A	MW4-2	02/06/20 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-2	02/06/20 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918

Lab Order: 2002060
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002060-03A	MW4-2	02/06/20 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-2	02/06/20 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-2	02/06/20 12:25 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:56 PM	95015
2002060-03B	MW4-2	02/06/20 12:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW4-2	02/06/20 12:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW4-2	02/06/20 12:25 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002060-03C	MW4-2	02/06/20 12:25 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/17/20 09:18 AM	95026
2002060-03D	MW4-2	02/06/20 12:25 PM	Aqueous	M2320 B	Alkalinity Preparation	02/10/20 08:00 AM	94916
	MW4-2	02/06/20 12:25 PM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW4-2	02/06/20 12:25 PM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW4-2	02/06/20 12:25 PM	Aqueous	M2540C	TDS Preparation	02/10/20 02:59 PM	94933
2002060-04A	MW4-3B	02/06/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-3B	02/06/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-3B	02/06/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-3B	02/06/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-3B	02/06/20 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:56 PM	95015
2002060-04B	MW4-3B	02/06/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW4-3B	02/06/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW4-3B	02/06/20 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002060-04C	MW4-3B	02/06/20 01:25 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/17/20 09:18 AM	95026
2002060-04D	MW4-3B	02/06/20 01:25 PM	Aqueous	M2320 B	Alkalinity Preparation	02/10/20 08:00 AM	94916
	MW4-3B	02/06/20 01:25 PM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW4-3B	02/06/20 01:25 PM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW4-3B	02/06/20 01:25 PM	Aqueous	M2540C	TDS Preparation	02/10/20 02:59 PM	94933
2002060-05A	MW4-3	02/06/20 02:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-3	02/06/20 02:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-3	02/06/20 02:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW4-3	02/06/20 02:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918

Lab Order: 2002060
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002060-05A	MW4-3	02/06/20 02:35 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:56 PM	95015
2002060-05B	MW4-3	02/06/20 02:35 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW4-3	02/06/20 02:35 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW4-3	02/06/20 02:35 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002060-05C	MW4-3	02/06/20 02:35 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/17/20 09:18 AM	95026
2002060-05D	MW4-3	02/06/20 02:35 PM	Aqueous	M2320 B	Alkalinity Preparation	02/10/20 08:00 AM	94916
	MW4-3	02/06/20 02:35 PM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW4-3	02/06/20 02:35 PM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW4-3	02/06/20 02:35 PM	Aqueous	M2540C	TDS Preparation	02/10/20 02:59 PM	94933
2002060-06A	MW-7B	02/06/20 08:57 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-7B	02/06/20 08:57 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-7B	02/06/20 08:57 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-7B	02/06/20 08:57 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-7B	02/06/20 08:57 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:56 PM	95015
2002060-06B	MW-7B	02/06/20 08:57 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW-7B	02/06/20 08:57 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW-7B	02/06/20 08:57 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002060-06C	MW-7B	02/06/20 08:57 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/17/20 09:18 AM	95026
2002060-06D	MW-7B	02/06/20 08:57 AM	Aqueous	M2320 B	Alkalinity Preparation	02/10/20 08:00 AM	94916
	MW-7B	02/06/20 08:57 AM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW-7B	02/06/20 08:57 AM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW-7B	02/06/20 08:57 AM	Aqueous	E300	Anion Preparation	02/10/20 09:30 AM	94907
	MW-7B	02/06/20 08:57 AM	Aqueous	M2540C	TDS Preparation	02/10/20 02:59 PM	94933
2002060-07A	MW-1	02/06/20 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-1	02/06/20 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-1	02/06/20 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-1	02/06/20 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-1	02/06/20 10:55 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:56 PM	95015

Lab Order: 2002060
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002060-07B	MW-1	02/06/20 10:55 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW-1	02/06/20 10:55 AM	Aqueous	SW9056A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW-1	02/06/20 10:55 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002060-07C	MW-1	02/06/20 10:55 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/17/20 09:18 AM	95026
2002060-07D	MW-1	02/06/20 10:55 AM	Aqueous	M2320 B	Alkalinity Preparation	02/10/20 08:00 AM	94916
	MW-1	02/06/20 10:55 AM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW-1	02/06/20 10:55 AM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW-1	02/06/20 10:55 AM	Aqueous	M2540C	TDS Preparation	02/10/20 02:59 PM	94933
2002060-08A	DB-5	02/06/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	DB-5	02/06/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	DB-5	02/06/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	DB-5	02/06/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	DB-5	02/06/20 11:50 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:56 PM	95015
2002060-08B	DB-5	02/06/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	DB-5	02/06/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	DB-5	02/06/20 11:50 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:55 PM	95013
2002060-08C	DB-5	02/06/20 11:50 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/19/20 09:08 AM	95070
2002060-08D	DB-5	02/06/20 11:50 AM	Aqueous	M2320 B	Alkalinity Preparation	02/10/20 08:00 AM	94916
	DB-5	02/06/20 11:50 AM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	DB-5	02/06/20 11:50 AM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	DB-5	02/06/20 11:50 AM	Aqueous	M2540C	TDS Preparation	02/10/20 02:59 PM	94933
2002060-09A	MW-3R	02/06/20 01:24 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-3R	02/06/20 01:24 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-3R	02/06/20 01:24 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-3R	02/06/20 01:24 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-3R	02/06/20 01:24 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:56 PM	95015
2002060-09B	MW-3R	02/06/20 01:24 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW-3R	02/06/20 01:24 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920

Lab Order: 2002060
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002060-09B	MW-3R	02/06/20 01:24 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002060-09C	MW-3R	02/06/20 01:24 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/19/20 09:08 AM	95070
2002060-09D	MW-3R	02/06/20 01:24 PM	Aqueous	M2320 B	Alkalinity Preparation	02/10/20 08:00 AM	94916
	MW-3R	02/06/20 01:24 PM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW-3R	02/06/20 01:24 PM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW-3R	02/06/20 01:24 PM	Aqueous	M2540C	TDS Preparation	02/10/20 02:59 PM	94933
2002060-10A	MW-202	02/06/20 01:29 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-202	02/06/20 01:29 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-202	02/06/20 01:29 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-202	02/06/20 01:29 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-202	02/06/20 01:29 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:56 PM	95015
2002060-10B	MW-202	02/06/20 01:29 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW-202	02/06/20 01:29 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW-202	02/06/20 01:29 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002060-10C	MW-202	02/06/20 01:29 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/19/20 09:08 AM	95070
2002060-10D	MW-202	02/06/20 01:29 PM	Aqueous	M2320 B	Alkalinity Preparation	02/10/20 08:00 AM	94916
	MW-202	02/06/20 01:29 PM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW-202	02/06/20 01:29 PM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW-202	02/06/20 01:29 PM	Aqueous	M2540C	TDS Preparation	02/10/20 02:59 PM	94933
2002060-11A	MW-3RB	02/06/20 02:37 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-3RB	02/06/20 02:37 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-3RB	02/06/20 02:37 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-3RB	02/06/20 02:37 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/10/20 08:43 AM	94918
	MW-3RB	02/06/20 02:37 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016
2002060-11B	MW-3RB	02/06/20 02:37 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW-3RB	02/06/20 02:37 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/10/20 08:48 AM	94920
	MW-3RB	02/06/20 02:37 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002060-11C	MW-3RB	02/06/20 02:37 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/19/20 09:08 AM	95070

Lab Order: 2002060
Client: Golder
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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002060-11D	MW-3RB	02/06/20 02:37 PM	Aqueous	M2320 B	Alkalinity Preparation	02/10/20 08:00 AM	94916
	MW-3RB	02/06/20 02:37 PM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW-3RB	02/06/20 02:37 PM	Aqueous	E300	Anion Preparation	02/07/20 09:31 AM	94904
	MW-3RB	02/06/20 02:37 PM	Aqueous	M2540C	TDS Preparation	02/10/20 02:59 PM	94933

Lab Order: 2002060
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002060-01A	MW4-1	Aqueous	SW7470A	Mercury Total: Aqueous	95015	1	02/18/20 12:41 PM	CETAC2_HG_200218A
	MW4-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1000	02/12/20 03:03 PM	ICP-MS4_200212C
	MW4-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	100	02/12/20 03:48 PM	ICP-MS4_200212C
	MW4-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1	02/13/20 12:22 PM	ICP-MS5_200213A
	MW4-1	Aqueous	SW6020B	Uranium in Water by ICPMS	94918	1	02/13/20 12:22 PM	ICP-MS5_200213B
2002060-01B	MW4-1	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94920	1	02/12/20 11:11 AM	ICP-MS5_200212C
	MW4-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:42 AM	CETAC2_HG_200218B
	MW4-1	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94920	1	02/12/20 11:11 AM	ICP-MS5_200212A
2002060-01C	MW4-1	Aqueous	M4500-NH3-D	Ammonia aqueous	95026	1	02/17/20 03:30 PM	WC_200217A
2002060-01D	MW4-1	Aqueous	M2320 B	Alkalinity	94916	1	02/10/20 10:56 AM	TITRATOR_200210A
	MW4-1	Aqueous	E300	Anions by IC method - Water	94904	500	02/07/20 09:28 PM	IC4_200207A
	MW4-1	Aqueous	E300	Anions by IC method - Water	94904	10	02/07/20 03:01 PM	IC4_200207A
	MW4-1	Aqueous	M2540C	Total Dissolved Solids	94933	1	02/10/20 04:45 PM	WC_200210A
2002060-02A	MW4-2A	Aqueous	SW7470A	Mercury Total: Aqueous	95015	1	02/18/20 12:48 PM	CETAC2_HG_200218A
	MW4-2A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1000	02/12/20 03:05 PM	ICP-MS4_200212C
	MW4-2A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	100	02/12/20 03:50 PM	ICP-MS4_200212C
	MW4-2A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1	02/13/20 01:43 PM	ICP-MS5_200213A
	MW4-2A	Aqueous	SW6020B	Uranium in Water by ICPMS	94918	1	02/13/20 01:43 PM	ICP-MS5_200213B
2002060-02B	MW4-2A	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94920	1	02/12/20 11:13 AM	ICP-MS5_200212C
	MW4-2A	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:44 AM	CETAC2_HG_200218B
	MW4-2A	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94920	1	02/12/20 11:13 AM	ICP-MS5_200212A
2002060-02C	MW4-2A	Aqueous	M4500-NH3-D	Ammonia aqueous	95026	1	02/17/20 03:30 PM	WC_200217A
2002060-02D	MW4-2A	Aqueous	M2320 B	Alkalinity	94916	1	02/10/20 11:28 AM	TITRATOR_200210A
	MW4-2A	Aqueous	E300	Anions by IC method - Water	94904	10	02/07/20 05:12 PM	IC4_200207A
	MW4-2A	Aqueous	E300	Anions by IC method - Water	94904	500	02/07/20 09:44 PM	IC4_200207A
	MW4-2A	Aqueous	M2540C	Total Dissolved Solids	94933	1	02/10/20 04:45 PM	WC_200210A

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Client: Golder
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002060-03A	MW4-2	Aqueous	SW7470A	Mercury Total: Aqueous	95015	1	02/18/20 12:50 PM	CETAC2_HG_200218A
	MW4-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1	02/13/20 01:48 PM	ICP-MS5_200213A
	MW4-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1000	02/12/20 03:07 PM	ICP-MS4_200212C
	MW4-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	100	02/12/20 03:52 PM	ICP-MS4_200212C
	MW4-2	Aqueous	SW6020B	Uranium in Water by ICPMS	94918	1	02/13/20 01:48 PM	ICP-MS5_200213B
2002060-03B	MW4-2	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94920	1	02/12/20 11:16 AM	ICP-MS5_200212C
	MW4-2	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:46 AM	CETAC2_HG_200218B
	MW4-2	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94920	1	02/12/20 11:16 AM	ICP-MS5_200212A
2002060-03C	MW4-2	Aqueous	M4500-NH3-D	Ammonia aqueous	95026	1	02/17/20 03:30 PM	WC_200217A
2002060-03D	MW4-2	Aqueous	M2320 B	Alkalinity	94916	1	02/10/20 11:51 AM	TITRATOR_200210A
	MW4-2	Aqueous	E300	Anions by IC method - Water	94904	500	02/07/20 10:00 PM	IC4_200207A
	MW4-2	Aqueous	E300	Anions by IC method - Water	94904	10	02/07/20 05:28 PM	IC4_200207A
	MW4-2	Aqueous	M2540C	Total Dissolved Solids	94933	1	02/10/20 04:45 PM	WC_200210A
2002060-04A	MW4-3B	Aqueous	SW7470A	Mercury Total: Aqueous	95015	1	02/18/20 12:52 PM	CETAC2_HG_200218A
	MW4-3B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1000	02/12/20 03:09 PM	ICP-MS4_200212C
	MW4-3B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	100	02/12/20 03:54 PM	ICP-MS4_200212C
	MW4-3B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1	02/13/20 01:52 PM	ICP-MS5_200213A
	MW4-3B	Aqueous	SW6020B	Uranium in Water by ICPMS	94918	1	02/13/20 01:52 PM	ICP-MS5_200213B
2002060-04B	MW4-3B	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94920	1	02/12/20 11:18 AM	ICP-MS5_200212C
	MW4-3B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:49 AM	CETAC2_HG_200218B
	MW4-3B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94920	1	02/12/20 11:18 AM	ICP-MS5_200212A
2002060-04C	MW4-3B	Aqueous	M4500-NH3-D	Ammonia aqueous	95026	1	02/17/20 03:30 PM	WC_200217A
2002060-04D	MW4-3B	Aqueous	M2320 B	Alkalinity	94916	1	02/10/20 12:03 PM	TITRATOR_200210A
	MW4-3B	Aqueous	E300	Anions by IC method - Water	94904	10	02/07/20 05:44 PM	IC4_200207A
	MW4-3B	Aqueous	E300	Anions by IC method - Water	94904	500	02/07/20 10:16 PM	IC4_200207A
	MW4-3B	Aqueous	M2540C	Total Dissolved Solids	94933	1	02/10/20 04:45 PM	WC_200210A

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Client: Golder
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002060-05A	MW4-3	Aqueous	SW7470A	Mercury Total: Aqueous	95015	1	02/18/20 12:54 PM	CETAC2_HG_200218A
	MW4-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1000	02/12/20 03:11 PM	ICP-MS4_200212C
	MW4-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1	02/13/20 01:57 PM	ICP-MS5_200213A
	MW4-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	100	02/12/20 03:56 PM	ICP-MS4_200212C
	MW4-3	Aqueous	SW6020B	Uranium in Water by ICPMS	94918	1	02/13/20 01:57 PM	ICP-MS5_200213B
2002060-05B	MW4-3	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94920	1	02/12/20 11:20 AM	ICP-MS5_200212C
	MW4-3	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:51 AM	CETAC2_HG_200218B
	MW4-3	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94920	1	02/12/20 11:20 AM	ICP-MS5_200212A
2002060-05C	MW4-3	Aqueous	M4500-NH3-D	Ammonia aqueous	95026	1	02/17/20 03:30 PM	WC_200217A
2002060-05D	MW4-3	Aqueous	M2320 B	Alkalinity	94916	1	02/10/20 12:13 PM	TITRATOR_200210A
	MW4-3	Aqueous	E300	Anions by IC method - Water	94904	10	02/07/20 06:00 PM	IC4_200207A
	MW4-3	Aqueous	E300	Anions by IC method - Water	94904	500	02/07/20 10:32 PM	IC4_200207A
	MW4-3	Aqueous	M2540C	Total Dissolved Solids	94933	1	02/10/20 04:45 PM	WC_200210A
2002060-06A	MW-7B	Aqueous	SW7470A	Mercury Total: Aqueous	95015	1	02/18/20 12:57 PM	CETAC2_HG_200218A
	MW-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1000	02/12/20 03:13 PM	ICP-MS4_200212C
	MW-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	100	02/12/20 03:58 PM	ICP-MS4_200212C
	MW-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1	02/13/20 02:01 PM	ICP-MS5_200213A
	MW-7B	Aqueous	SW6020B	Uranium in Water by ICPMS	94918	1	02/13/20 02:01 PM	ICP-MS5_200213B
2002060-06B	MW-7B	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94920	1	02/12/20 11:06 AM	ICP-MS5_200212C
	MW-7B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:53 AM	CETAC2_HG_200218B
	MW-7B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94920	1	02/12/20 11:06 AM	ICP-MS5_200212A
2002060-06C	MW-7B	Aqueous	M4500-NH3-D	Ammonia aqueous	95026	1	02/17/20 03:30 PM	WC_200217A
2002060-06D	MW-7B	Aqueous	M2320 B	Alkalinity	94916	1	02/10/20 12:24 PM	TITRATOR_200210A
	MW-7B	Aqueous	E300	Anions by IC method - Water	94907	1000	02/10/20 11:53 AM	IC2_200210A
	MW-7B	Aqueous	E300	Anions by IC method - Water	94904	10	02/07/20 06:16 PM	IC4_200207A
	MW-7B	Aqueous	E300	Anions by IC method - Water	94904	500	02/07/20 10:48 PM	IC4_200207A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002060-06D	MW-7B	Aqueous	M2540C	Total Dissolved Solids	94933	1	02/10/20 04:45 PM	WC_200210A
2002060-07A	MW-1	Aqueous	SW7470A	Mercury Total: Aqueous	95015	1	02/18/20 12:59 PM	CETAC2_HG_200218A
	MW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1000	02/12/20 03:15 PM	ICP-MS4_200212C
	MW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	100	02/12/20 04:00 PM	ICP-MS4_200212C
	MW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1	02/13/20 02:38 PM	ICP-MS5_200213A
	MW-1	Aqueous	SW6020B	Uranium in Water by ICPMS	94918	1	02/13/20 02:38 PM	ICP-MS5_200213B
2002060-07B	MW-1	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94920	1	02/12/20 12:26 PM	ICP-MS5_200212C
	MW-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:55 AM	CETAC2_HG_200218B
	MW-1	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94920	1	02/12/20 12:26 PM	ICP-MS5_200212A
2002060-07C	MW-1	Aqueous	M4500-NH3-D	Ammonia aqueous	95026	1	02/17/20 03:30 PM	WC_200217A
2002060-07D	MW-1	Aqueous	M2320 B	Alkalinity	94916	1	02/10/20 12:37 PM	TITRATOR_200210A
	MW-1	Aqueous	E300	Anions by IC method - Water	94904	10	02/07/20 06:32 PM	IC4_200207A
	MW-1	Aqueous	E300	Anions by IC method - Water	94904	500	02/07/20 11:04 PM	IC4_200207A
	MW-1	Aqueous	M2540C	Total Dissolved Solids	94933	1	02/10/20 04:45 PM	WC_200210A
2002060-08A	DB-5	Aqueous	SW7470A	Mercury Total: Aqueous	95015	1	02/18/20 01:01 PM	CETAC2_HG_200218A
	DB-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1000	02/12/20 03:17 PM	ICP-MS4_200212C
	DB-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	100	02/12/20 04:09 PM	ICP-MS4_200212C
	DB-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1	02/13/20 02:42 PM	ICP-MS5_200213A
	DB-5	Aqueous	SW6020B	Uranium in Water by ICPMS	94918	1	02/13/20 02:42 PM	ICP-MS5_200213B
2002060-08B	DB-5	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94920	1	02/12/20 12:30 PM	ICP-MS5_200212C
	DB-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95013	1	02/18/20 11:58 AM	CETAC2_HG_200218B
	DB-5	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94920	1	02/12/20 12:30 PM	ICP-MS5_200212A
2002060-08C	DB-5	Aqueous	M4500-NH3-D	Ammonia aqueous	95070	1	02/19/20 02:45 PM	WC_200219A
2002060-08D	DB-5	Aqueous	M2320 B	Alkalinity	94916	1	02/10/20 12:55 PM	TITRATOR_200210A
	DB-5	Aqueous	E300	Anions by IC method - Water	94904	10	02/07/20 06:48 PM	IC4_200207A
	DB-5	Aqueous	E300	Anions by IC method - Water	94904	500	02/07/20 11:20 PM	IC4_200207A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002060-08D	DB-5	Aqueous	M2540C	Total Dissolved Solids	94933	1	02/10/20 04:45 PM	WC_200210A
2002060-09A	MW-3R	Aqueous	SW7470A	Mercury Total: Aqueous	95015	1	02/18/20 01:03 PM	CETAC2_HG_200218A
	MW-3R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1	02/13/20 02:47 PM	ICP-MS5_200213A
	MW-3R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	100	02/12/20 04:11 PM	ICP-MS4_200212C
	MW-3R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1000	02/12/20 03:19 PM	ICP-MS4_200212C
	MW-3R	Aqueous	SW6020B	Uranium in Water by ICPMS	94918	1	02/13/20 02:47 PM	ICP-MS5_200213B
2002060-09B	MW-3R	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94920	1	02/12/20 12:35 PM	ICP-MS5_200212C
	MW-3R	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:08 PM	CETAC2_HG_200218B
	MW-3R	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94920	1	02/12/20 12:35 PM	ICP-MS5_200212A
2002060-09C	MW-3R	Aqueous	M4500-NH3-D	Ammonia aqueous	95070	1	02/19/20 02:45 PM	WC_200219A
2002060-09D	MW-3R	Aqueous	M2320 B	Alkalinity	94916	1	02/10/20 01:11 PM	TITRATOR_200210A
	MW-3R	Aqueous	E300	Anions by IC method - Water	94904	500	02/07/20 11:36 PM	IC4_200207A
	MW-3R	Aqueous	E300	Anions by IC method - Water	94904	10	02/07/20 07:04 PM	IC4_200207A
	MW-3R	Aqueous	M2540C	Total Dissolved Solids	94933	1	02/10/20 04:45 PM	WC_200210A
2002060-10A	MW-202	Aqueous	SW7470A	Mercury Total: Aqueous	95015	1	02/18/20 01:06 PM	CETAC2_HG_200218A
	MW-202	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1000	02/12/20 03:38 PM	ICP-MS4_200212C
	MW-202	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	100	02/12/20 04:13 PM	ICP-MS4_200212C
	MW-202	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1	02/13/20 02:51 PM	ICP-MS5_200213A
	MW-202	Aqueous	SW6020B	Uranium in Water by ICPMS	94918	1	02/13/20 02:51 PM	ICP-MS5_200213B
2002060-10B	MW-202	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94920	1	02/12/20 12:39 PM	ICP-MS5_200212C
	MW-202	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:10 PM	CETAC2_HG_200218B
	MW-202	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94920	1	02/12/20 12:39 PM	ICP-MS5_200212A
2002060-10C	MW-202	Aqueous	M4500-NH3-D	Ammonia aqueous	95070	1	02/19/20 02:45 PM	WC_200219A
2002060-10D	MW-202	Aqueous	M2320 B	Alkalinity	94916	1	02/10/20 01:21 PM	TITRATOR_200210A
	MW-202	Aqueous	E300	Anions by IC method - Water	94904	10	02/07/20 07:20 PM	IC4_200207A
	MW-202	Aqueous	E300	Anions by IC method - Water	94904	500	02/07/20 11:52 PM	IC4_200207A

Lab Order: 2002060
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002060-10D	MW-202	Aqueous	M2540C	Total Dissolved Solids	94933	1	02/10/20 04:45 PM	WC_200210A
2002060-11A	MW-3RB	Aqueous	SW7470A	Mercury Total: Aqueous	95016	1	02/18/20 01:57 PM	CETAC2_HG_200218A
	MW-3RB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1	02/13/20 02:56 PM	ICP-MS5_200213A
	MW-3RB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	1000	02/12/20 03:40 PM	ICP-MS4_200212C
	MW-3RB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94918	100	02/12/20 04:15 PM	ICP-MS4_200212C
	MW-3RB	Aqueous	SW6020B	Uranium in Water by ICPMS	94918	1	02/13/20 02:56 PM	ICP-MS5_200213B
2002060-11B	MW-3RB	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	94920	1	02/12/20 02:03 PM	ICP-MS5_200212C
	MW-3RB	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:12 PM	CETAC2_HG_200218B
	MW-3RB	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94920	1	02/12/20 02:03 PM	ICP-MS5_200212A
2002060-11C	MW-3RB	Aqueous	M4500-NH3-D	Ammonia aqueous	95070	1	02/19/20 02:45 PM	WC_200219A
2002060-11D	MW-3RB	Aqueous	M2320 B	Alkalinity	94916	1	02/10/20 01:31 PM	TITRATOR_200210A
	MW-3RB	Aqueous	E300	Anions by IC method - Water	94904	10	02/07/20 07:36 PM	IC4_200207A
	MW-3RB	Aqueous	E300	Anions by IC method - Water	94904	500	02/08/20 01:28 AM	IC4_200207A
	MW-3RB	Aqueous	M2540C	Total Dissolved Solids	94933	1	02/10/20 04:45 PM	WC_200210A

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-1
Project:	Copano GW 1Q20	**Lab ID:**	2002060-01
Project No:	19125525	**Collection Date:**	02/06/20 09:50 AM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0167	0.0100	0.0300	J	mg/L	1	02/12/20 11:11 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 11:11 AM
Dissolved Arsenic	0.00252	0.00200	0.00500	J	mg/L	1	02/12/20 11:11 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 11:11 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 11:11 AM
Dissolved Nickel	0.00754	0.00300	0.0100	J	mg/L	1	02/12/20 11:11 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 11:11 AM
Dissolved Vanadium	0.000653	0.000500	0.00100	J	mg/L	1	02/12/20 11:11 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0924	0.0100	0.0300		mg/L	1	02/13/20 12:22 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/13/20 12:22 PM
Arsenic	0.00262	0.00200	0.00500	J	mg/L	1	02/13/20 12:22 PM
Calcium	993	10.0	30.0		mg/L	100	02/12/20 03:48 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/13/20 12:22 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/13/20 12:22 PM
Magnesium	1000	10.0	30.0		mg/L	100	02/12/20 03:48 PM
Nickel	0.00725	0.00300	0.0100	J	mg/L	1	02/13/20 12:22 PM
Potassium	36.1	10.0	30.0		mg/L	100	02/12/20 03:48 PM
Sodium	7100	100	300		mg/L	1000	02/12/20 03:03 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/13/20 12:22 PM
Vanadium	0.00106	0.000500	0.00100		mg/L	1	02/13/20 12:22 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:42 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 12:41 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.260	0.00300	0.0100	N	mg/L	1	02/13/20 12:22 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.267	0.00300	0.0100	N	mg/L	1	02/12/20 11:11 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	14400	150	500		mg/L	500	02/07/20 09:28 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 03:01 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 03:01 PM
Sulfate	3610	500	1500		mg/L	500	02/07/20 09:28 PM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-1
Project:	Copano GW 1Q20	**Lab ID:**	2002060-01
Project No:	19125525	**Collection Date:**	02/06/20 09:50 AM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	439	10.0	20.0		mg/L @ pH 4.54	1	02/10/20 10:56 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	02/10/20 10:56 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	02/10/20 10:56 AM
Alkalinity, Total (As CaCO3)	439	20.0	20.0		mg/L @ pH 4.54	1	02/10/20 10:56 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.150	0.100	0.250	J	mg/L	1	02/17/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	29600	1000	1000		mg/L	1	02/10/20 04:45 PM

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DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2A
Project:	Copano GW 1Q20	**Lab ID:**	2002060-02
Project No:	19125525	**Collection Date:**	02/06/20 11:05 AM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/12/20 11:13 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 11:13 AM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 11:13 AM
Dissolved Chromium	0.00220	0.00200	0.00500	J	mg/L	1	02/12/20 11:13 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 11:13 AM
Dissolved Nickel	0.00428	0.00300	0.0100	J	mg/L	1	02/12/20 11:13 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 11:13 AM
Dissolved Vanadium	0.00788	0.000500	0.00100		mg/L	1	02/12/20 11:13 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0657	0.0100	0.0300		mg/L	1	02/13/20 01:43 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/13/20 01:43 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/13/20 01:43 PM
Calcium	1150	10.0	30.0		mg/L	100	02/12/20 03:50 PM
Chromium	0.00577	0.00200	0.00500		mg/L	1	02/13/20 01:43 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/13/20 01:43 PM
Magnesium	1250	10.0	30.0		mg/L	100	02/12/20 03:50 PM
Nickel	0.00509	0.00300	0.0100	J	mg/L	1	02/13/20 01:43 PM
Potassium	57.0	10.0	30.0		mg/L	100	02/12/20 03:50 PM
Sodium	8460	100	300		mg/L	1000	02/12/20 03:05 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/13/20 01:43 PM
Vanadium	0.00860	0.000500	0.00100		mg/L	1	02/13/20 01:43 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	0.0000877	0.0000800	0.000200	J	mg/L	1	02/18/20 11:44 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 12:48 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0870	0.00300	0.0100	N	mg/L	1	02/13/20 01:43 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0889	0.00300	0.0100	N	mg/L	1	02/12/20 11:13 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	17800	150	500		mg/L	500	02/07/20 09:44 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 05:12 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 05:12 PM
Sulfate	4410	500	1500		mg/L	500	02/07/20 09:44 PM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2A
Project:	Copano GW 1Q20	**Lab ID:**	2002060-02
Project No:	19125525	**Collection Date:**	02/06/20 11:05 AM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	286	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 11:28 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 11:28 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 11:28 AM
Alkalinity, Total (As CaCO3)	286	20.0	20.0		mg/L @ pH 4.53	1	02/10/20 11:28 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.145	0.100	0.250	J	mg/L	1	02/17/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	35600	1000	1000		mg/L	1	02/10/20 04:45 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2
Project:	Copano GW 1Q20	**Lab ID:**	2002060-03
Project No:	19125525	**Collection Date:**	02/06/20 12:25 PM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/12/20 11:16 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 11:16 AM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 11:16 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 11:16 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 11:16 AM
Dissolved Nickel	0.00323	0.00300	0.0100	J	mg/L	1	02/12/20 11:16 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 11:16 AM
Dissolved Vanadium	0.00327	0.000500	0.00100		mg/L	1	02/12/20 11:16 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0983	0.0100	0.0300		mg/L	1	02/13/20 01:48 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/13/20 01:48 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/13/20 01:48 PM
Calcium	1200	10.0	30.0		mg/L	100	02/12/20 03:52 PM
Chromium	0.00486	0.00200	0.00500	J	mg/L	1	02/13/20 01:48 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/13/20 01:48 PM
Magnesium	1620	10.0	30.0		mg/L	100	02/12/20 03:52 PM
Nickel	0.00410	0.00300	0.0100	J	mg/L	1	02/13/20 01:48 PM
Potassium	80.3	10.0	30.0		mg/L	100	02/12/20 03:52 PM
Sodium	11700	100	300		mg/L	1000	02/12/20 03:07 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/13/20 01:48 PM
Vanadium	0.00355	0.000500	0.00100		mg/L	1	02/13/20 01:48 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:46 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 12:50 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.109	0.00300	0.0100	N	mg/L	1	02/13/20 01:48 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.113	0.00300	0.0100	N	mg/L	1	02/12/20 11:16 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	22400	150	500		mg/L	500	02/07/20 10:00 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 05:28 PM
Nitrate-N	1.71	1.00	5.00	J	mg/L	10	02/07/20 05:28 PM
Sulfate	4890	500	1500		mg/L	500	02/07/20 10:00 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2
Project:	Copano GW 1Q20	**Lab ID:**	2002060-03
Project No:	19125525	**Collection Date:**	02/06/20 12:25 PM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	220	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 11:51 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 11:51 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 11:51 AM
Alkalinity, Total (As CaCO3)	220	20.0	20.0		mg/L @ pH 4.53	1	02/10/20 11:51 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/17/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	46900	1000	1000		mg/L	1	02/10/20 04:45 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3B
Project:	Copano GW 1Q20	**Lab ID:**	2002060-04
Project No:	19125525	**Collection Date:**	02/06/20 01:25 PM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0104	0.0100	0.0300	J	mg/L	1	02/12/20 11:18 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 11:18 AM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 11:18 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 11:18 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 11:18 AM
Dissolved Nickel	0.00649	0.00300	0.0100	J	mg/L	1	02/12/20 11:18 AM
Dissolved Thallium	0.000709	0.000500	0.00150	J	mg/L	1	02/12/20 11:18 AM
Dissolved Vanadium	<0.000500	0.000500	0.00100		mg/L	1	02/12/20 11:18 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0219	0.0100	0.0300	J	mg/L	1	02/13/20 01:52 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/13/20 01:52 PM
Arsenic	0.00213	0.00200	0.00500	J	mg/L	1	02/13/20 01:52 PM
Calcium	1260	10.0	30.0		mg/L	100	02/12/20 03:54 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/13/20 01:52 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/13/20 01:52 PM
Magnesium	1490	10.0	30.0		mg/L	100	02/12/20 03:54 PM
Nickel	0.00628	0.00300	0.0100	J	mg/L	1	02/13/20 01:52 PM
Potassium	89.9	10.0	30.0		mg/L	100	02/12/20 03:54 PM
Sodium	10300	100	300		mg/L	1000	02/12/20 03:09 PM
Thallium	0.000688	0.000500	0.00150	J	mg/L	1	02/13/20 01:52 PM
Vanadium	0.000582	0.000500	0.00100	J	mg/L	1	02/13/20 01:52 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:49 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 12:52 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0608	0.00300	0.0100	N	mg/L	1	02/13/20 01:52 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0615	0.00300	0.0100	N	mg/L	1	02/12/20 11:18 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	20700	150	500		mg/L	500	02/07/20 10:16 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 05:44 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 05:44 PM
Sulfate	3750	500	1500		mg/L	500	02/07/20 10:16 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3B
Project:	Copano GW 1Q20	**Lab ID:**	2002060-04
Project No:	19125525	**Collection Date:**	02/06/20 01:25 PM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	252	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:03 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:03 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:03 PM
Alkalinity, Total (As CaCO3)	252	20.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:03 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	1.58	0.100	0.250		mg/L	1	02/17/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	41600	1000	1000		mg/L	1	02/10/20 04:45 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3
Project:	Copano GW 1Q20	**Lab ID:**	2002060-05
Project No:	19125525	**Collection Date:**	02/06/20 02:35 PM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0103	0.0100	0.0300	J	mg/L	1	02/12/20 11:20 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 11:20 AM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 11:20 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 11:20 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 11:20 AM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/12/20 11:20 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 11:20 AM
Dissolved Vanadium	0.00166	0.000500	0.00100		mg/L	1	02/12/20 11:20 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0348	0.0100	0.0300		mg/L	1	02/13/20 01:57 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/13/20 01:57 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/13/20 01:57 PM
Calcium	1200	10.0	30.0		mg/L	100	02/12/20 03:56 PM
Chromium	0.00390	0.00200	0.00500	J	mg/L	1	02/13/20 01:57 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/13/20 01:57 PM
Magnesium	1500	10.0	30.0		mg/L	100	02/12/20 03:56 PM
Nickel	0.00656	0.00300	0.0100	J	mg/L	1	02/13/20 01:57 PM
Potassium	63.2	10.0	30.0		mg/L	100	02/12/20 03:56 PM
Sodium	10300	100	300		mg/L	1000	02/12/20 03:11 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/13/20 01:57 PM
Vanadium	0.00172	0.000500	0.00100		mg/L	1	02/13/20 01:57 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:51 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 12:54 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0994	0.00300	0.0100	N	mg/L	1	02/13/20 01:57 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.106	0.00300	0.0100	N	mg/L	1	02/12/20 11:20 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21300	150	500		mg/L	500	02/07/20 10:32 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 06:00 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 06:00 PM
Sulfate	3700	500	1500		mg/L	500	02/07/20 10:32 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
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DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3
Project:	Copano GW 1Q20	**Lab ID:**	2002060-05
Project No:	19125525	**Collection Date:**	02/06/20 02:35 PM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	214	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:13 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:13 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:13 PM
Alkalinity, Total (As CaCO3)	214	20.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:13 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.982	0.100	0.250		mg/L	1	02/17/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	42800	1000	1000		mg/L	1	02/10/20 04:45 PM

Qualifiers:

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S - Spike Recovery outside control limits
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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7B
Project:	Copano GW 1Q20	**Lab ID:**	2002060-06
Project No:	19125525	**Collection Date:**	02/06/20 08:57 AM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0320	0.0100	0.0300		mg/L	1	02/12/20 11:06 AM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 11:06 AM
Dissolved Arsenic	0.00315	0.00200	0.00500	J	mg/L	1	02/12/20 11:06 AM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 11:06 AM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 11:06 AM
Dissolved Nickel	0.00726	0.00300	0.0100	J	mg/L	1	02/12/20 11:06 AM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 11:06 AM
Dissolved Vanadium	0.00347	0.000500	0.00100		mg/L	1	02/12/20 11:06 AM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0420	0.0100	0.0300		mg/L	1	02/13/20 02:01 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/13/20 02:01 PM
Arsenic	0.00351	0.00200	0.00500	J	mg/L	1	02/13/20 02:01 PM
Calcium	1430	10.0	30.0		mg/L	100	02/12/20 03:58 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/13/20 02:01 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/13/20 02:01 PM
Magnesium	1720	10.0	30.0		mg/L	100	02/12/20 03:58 PM
Nickel	0.00659	0.00300	0.0100	J	mg/L	1	02/13/20 02:01 PM
Potassium	81.7	10.0	30.0		mg/L	100	02/12/20 03:58 PM
Sodium	14400	100	300		mg/L	1000	02/12/20 03:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/13/20 02:01 PM
Vanadium	0.00307	0.000500	0.00100		mg/L	1	02/13/20 02:01 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:53 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 12:57 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0894	0.00300	0.0100	N	mg/L	1	02/13/20 02:01 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0960	0.00300	0.0100	N	mg/L	1	02/12/20 11:06 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	28200	300	1000		mg/L	1000	02/10/20 11:53 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 06:16 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 06:16 PM
Sulfate	3940	500	1500		mg/L	500	02/07/20 10:48 PM

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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-7B
Project:	Copano GW 1Q20	**Lab ID:**	2002060-06
Project No:	19125525	**Collection Date:**	02/06/20 08:57 AM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	227	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:24 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:24 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:24 PM
Alkalinity, Total (As CaCO3)	227	20.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:24 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.547	0.100	0.250		mg/L	1	02/17/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	54400	1000	1000		mg/L	1	02/10/20 04:45 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-1
Project:	Copano GW 1Q20	**Lab ID:**	2002060-07
Project No:	19125525	**Collection Date:**	02/06/20 10:55 AM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/12/20 12:26 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 12:26 PM
Dissolved Arsenic	0.00314	0.00200	0.00500	J	mg/L	1	02/12/20 12:26 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 12:26 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 12:26 PM
Dissolved Nickel	0.00675	0.00300	0.0100	J	mg/L	1	02/12/20 12:26 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 12:26 PM
Dissolved Vanadium	0.00222	0.000500	0.00100		mg/L	1	02/12/20 12:26 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.177	0.0100	0.0300		mg/L	1	02/13/20 02:38 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/13/20 02:38 PM
Arsenic	0.00463	0.00200	0.00500	J	mg/L	1	02/13/20 02:38 PM
Calcium	917	10.0	30.0		mg/L	100	02/12/20 04:00 PM
Chromium	0.00418	0.00200	0.00500	J	mg/L	1	02/13/20 02:38 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/13/20 02:38 PM
Magnesium	1490	10.0	30.0		mg/L	100	02/12/20 04:00 PM
Nickel	0.00684	0.00300	0.0100	J	mg/L	1	02/13/20 02:38 PM
Potassium	65.5	10.0	30.0		mg/L	100	02/12/20 04:00 PM
Sodium	11800	100	300		mg/L	1000	02/12/20 03:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/13/20 02:38 PM
Vanadium	0.00292	0.000500	0.00100		mg/L	1	02/13/20 02:38 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:55 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 12:59 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0221	0.00300	0.0100	N	mg/L	1	02/13/20 02:38 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0235	0.00300	0.0100	N	mg/L	1	02/12/20 12:26 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	23300	150	500		mg/L	500	02/07/20 11:04 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 06:32 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 06:32 PM
Sulfate	2570	500	1500		mg/L	500	02/07/20 11:04 PM

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DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-1
Project:	Copano GW 1Q20	**Lab ID:**	2002060-07
Project No:	19125525	**Collection Date:**	02/06/20 10:55 AM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	293	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:37 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:37 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:37 PM
Alkalinity, Total (As CaCO3)	293	20.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:37 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.540	0.100	0.250		mg/L	1	02/17/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	43500	1000	1000		mg/L	1	02/10/20 04:45 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	DB-5
Project:	Copano GW 1Q20	**Lab ID:**	2002060-08
Project No:	19125525	**Collection Date:**	02/06/20 11:50 AM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0149	0.0100	0.0300	J	mg/L	1	02/12/20 12:30 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 12:30 PM
Dissolved Arsenic	0.00218	0.00200	0.00500	J	mg/L	1	02/12/20 12:30 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 12:30 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 12:30 PM
Dissolved Nickel	0.00526	0.00300	0.0100	J	mg/L	1	02/12/20 12:30 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 12:30 PM
Dissolved Vanadium	0.00632	0.000500	0.00100		mg/L	1	02/12/20 12:30 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.237	0.0100	0.0300		mg/L	1	02/13/20 02:42 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/13/20 02:42 PM
Arsenic	0.00279	0.00200	0.00500	J	mg/L	1	02/13/20 02:42 PM
Calcium	674	10.0	30.0		mg/L	100	02/12/20 04:09 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/13/20 02:42 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/13/20 02:42 PM
Magnesium	930	10.0	30.0		mg/L	100	02/12/20 04:09 PM
Nickel	0.00438	0.00300	0.0100	J	mg/L	1	02/13/20 02:42 PM
Potassium	51.5	10.0	30.0		mg/L	100	02/12/20 04:09 PM
Sodium	8340	100	300		mg/L	1000	02/12/20 03:17 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/13/20 02:42 PM
Vanadium	0.00576	0.000500	0.00100		mg/L	1	02/13/20 02:42 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 11:58 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 01:01 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0994	0.00300	0.0100	N	mg/L	1	02/13/20 02:42 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.109	0.00300	0.0100	N	mg/L	1	02/12/20 12:30 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	15900	150	500		mg/L	500	02/07/20 11:20 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 06:48 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 06:48 PM
Sulfate	2960	500	1500		mg/L	500	02/07/20 11:20 PM

Qualifiers:

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N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	DB-5
Project:	Copano GW 1Q20	**Lab ID:**	2002060-08
Project No:	19125525	**Collection Date:**	02/06/20 11:50 AM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	432	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:55 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:55 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:55 PM
Alkalinity, Total (As CaCO3)	432	20.0	20.0		mg/L @ pH 4.53	1	02/10/20 12:55 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	2.15	0.100	0.250		mg/L	1	02/19/20 02:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	32600	1000	1000		mg/L	1	02/10/20 04:45 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3R
Project:	Copano GW 1Q20	**Lab ID:**	2002060-09
Project No:	19125525	**Collection Date:**	02/06/20 01:24 PM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0165	0.0100	0.0300	J	mg/L	1	02/12/20 12:35 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 12:35 PM
Dissolved Arsenic	0.00341	0.00200	0.00500	J	mg/L	1	02/12/20 12:35 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 12:35 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 12:35 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/12/20 12:35 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 12:35 PM
Dissolved Vanadium	0.0165	0.000500	0.00100		mg/L	1	02/12/20 12:35 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.151	0.0100	0.0300		mg/L	1	02/13/20 02:47 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/13/20 02:47 PM
Arsenic	0.00350	0.00200	0.00500	J	mg/L	1	02/13/20 02:47 PM
Calcium	1110	10.0	30.0		mg/L	100	02/12/20 04:11 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/13/20 02:47 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/13/20 02:47 PM
Magnesium	1530	10.0	30.0		mg/L	100	02/12/20 04:11 PM
Nickel	0.00302	0.00300	0.0100	J	mg/L	1	02/13/20 02:47 PM
Potassium	77.7	10.0	30.0		mg/L	100	02/12/20 04:11 PM
Sodium	12800	100	300		mg/L	1000	02/12/20 03:19 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/13/20 02:47 PM
Vanadium	0.0164	0.000500	0.00100		mg/L	1	02/13/20 02:47 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:08 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	0.000186	0.0000800	0.000200	J	mg/L	1	02/18/20 01:03 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.102	0.00300	0.0100	N	mg/L	1	02/13/20 02:47 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.108	0.00300	0.0100	N	mg/L	1	02/12/20 12:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	23200	150	500		mg/L	500	02/07/20 11:36 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 07:04 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 07:04 PM
Sulfate	5660	500	1500		mg/L	500	02/07/20 11:36 PM

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- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3R
Project:	Copano GW 1Q20	**Lab ID:**	2002060-09
Project No:	19125525	**Collection Date:**	02/06/20 01:24 PM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	217	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 01:11 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 01:11 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 01:11 PM
Alkalinity, Total (As CaCO3)	217	20.0	20.0		mg/L @ pH 4.53	1	02/10/20 01:11 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	1.11	0.100	0.250		mg/L	1	02/19/20 02:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	48600	1000	1000		mg/L	1	02/10/20 04:45 PM

Qualifiers:

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-202
Project:	Copano GW 1Q20	**Lab ID:**	2002060-10
Project No:	19125525	**Collection Date:**	02/06/20 01:29 PM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0133	0.0100	0.0300	J	mg/L	1	02/12/20 12:39 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 12:39 PM
Dissolved Arsenic	0.00335	0.00200	0.00500	J	mg/L	1	02/12/20 12:39 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/12/20 12:39 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 12:39 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/12/20 12:39 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 12:39 PM
Dissolved Vanadium	0.0164	0.000500	0.00100		mg/L	1	02/12/20 12:39 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0200	0.0100	0.0300	J	mg/L	1	02/13/20 02:51 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/13/20 02:51 PM
Arsenic	0.00354	0.00200	0.00500	J	mg/L	1	02/13/20 02:51 PM
Calcium	1110	10.0	30.0		mg/L	100	02/12/20 04:13 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/13/20 02:51 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/13/20 02:51 PM
Magnesium	1530	10.0	30.0		mg/L	100	02/12/20 04:13 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/13/20 02:51 PM
Potassium	78.0	10.0	30.0		mg/L	100	02/12/20 04:13 PM
Sodium	12800	100	300		mg/L	1000	02/12/20 03:38 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/13/20 02:51 PM
Vanadium	0.0166	0.000500	0.00100		mg/L	1	02/13/20 02:51 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:10 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	0.000188	0.0000800	0.000200	J	mg/L	1	02/18/20 01:06 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.104	0.00300	0.0100	N	mg/L	1	02/13/20 02:51 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.108	0.00300	0.0100	N	mg/L	1	02/12/20 12:39 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	23500	150	500		mg/L	500	02/07/20 11:52 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 07:20 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 07:20 PM
Sulfate	5730	500	1500		mg/L	500	02/07/20 11:52 PM

Qualifiers:

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-202
Project:	Copano GW 1Q20	**Lab ID:**	2002060-10
Project No:	19125525	**Collection Date:**	02/06/20 01:29 PM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	226	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 01:21 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 01:21 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 01:21 PM
Alkalinity, Total (As CaCO3)	226	20.0	20.0		mg/L @ pH 4.53	1	02/10/20 01:21 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.555	0.100	0.250		mg/L	1	02/19/20 02:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	48700	1000	1000		mg/L	1	02/10/20 04:45 PM

Qualifiers:

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DF- Dilution Factor
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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3RB
Project:	Copano GW 1Q20	**Lab ID:**	2002060-11
Project No:	19125525	**Collection Date:**	02/06/20 02:37 PM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0206	0.0100	0.0300	J	mg/L	1	02/12/20 02:03 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/12/20 02:03 PM
Dissolved Arsenic	0.00472	0.00200	0.00500	J	mg/L	1	02/12/20 02:03 PM
Dissolved Chromium	0.00499	0.00200	0.00500	J	mg/L	1	02/12/20 02:03 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/12/20 02:03 PM
Dissolved Nickel	0.0101	0.00300	0.0100		mg/L	1	02/12/20 02:03 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/12/20 02:03 PM
Dissolved Vanadium	0.0181	0.000500	0.00100		mg/L	1	02/12/20 02:03 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0730	0.0100	0.0300		mg/L	1	02/13/20 02:56 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/13/20 02:56 PM
Arsenic	0.00520	0.00200	0.00500		mg/L	1	02/13/20 02:56 PM
Calcium	1110	10.0	30.0		mg/L	100	02/12/20 04:15 PM
Chromium	0.00581	0.00200	0.00500		mg/L	1	02/13/20 02:56 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/13/20 02:56 PM
Magnesium	1490	10.0	30.0		mg/L	100	02/12/20 04:15 PM
Nickel	0.00642	0.00300	0.0100	J	mg/L	1	02/13/20 02:56 PM
Potassium	78.8	10.0	30.0		mg/L	100	02/12/20 04:15 PM
Sodium	12400	100	300		mg/L	1000	02/12/20 03:40 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/13/20 02:56 PM
Vanadium	0.0181	0.000500	0.00100		mg/L	1	02/13/20 02:56 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:12 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	0.0000803	0.0000800	0.000200	J	mg/L	1	02/18/20 01:57 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0984	0.00300	0.0100	N	mg/L	1	02/13/20 02:56 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.106	0.00300	0.0100	N	mg/L	1	02/12/20 02:03 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	23100	150	500		mg/L	500	02/08/20 01:28 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/07/20 07:36 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/07/20 07:36 PM
Sulfate	5710	500	1500		mg/L	500	02/08/20 01:28 AM

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C - Sample Result or QC discussed in Case Narrative
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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *09-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-3RB
Project:	Copano GW 1Q20	**Lab ID:**	2002060-11
Project No:	19125525	**Collection Date:**	02/06/20 02:37 PM
Lab Order:	2002060	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	229	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 01:31 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 01:31 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/10/20 01:31 PM
Alkalinity, Total (As CaCO3)	229	20.0	20.0		mg/L @ pH 4.53	1	02/10/20 01:31 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.273	0.100	0.250		mg/L	1	02/19/20 02:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	49700	1000	1000		mg/L	1	02/10/20 04:45 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191203A

Sample ID: **DCS-93925** Batch ID: **93925** TestNo: **SW7470A** Units: **mg/L**
SampType: **DCS** Run ID: **CETAC2_HG_191203A** Analysis Date: **12/3/2019 2:43:30 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000184	0.000200	0.000200	0	92.0	82	119	0	0	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	Page 1 of 45
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218A

The QC data in batch 95015 applies to the following samples: 2002060-01A, 2002060-02A, 2002060-03A, 2002060-04A, 2002060-05A, 2002060-06A, 2002060-07A, 2002060-08A, 2002060-09A, 2002060-10A

Sample ID: **MB-95015** Batch ID: **95015** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_200218A** Analysis Date: **2/18/2020 12:04:58 PM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-95015** Batch ID: **95015** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_200218A** Analysis Date: **2/18/2020 12:07:13 PM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00195	0.000200	0.00200	0	97.5	85	115			

Sample ID: **LCSD-95015** Batch ID: **95015** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_200218A** Analysis Date: **2/18/2020 12:09:29 PM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	85	115	3.03	15	

Sample ID: **2002059-01A SD** Batch ID: **95015** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_200218A** Analysis Date: **2/18/2020 12:18:34 PM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2002059-01A PDS** Batch ID: **95015** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_200218A** Analysis Date: **2/18/2020 12:20:49 PM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00157	0.000200	0.00250	0	62.8	85	115			S

Sample ID: **2002059-01A MS** Batch ID: **95015** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_200218A** Analysis Date: **2/18/2020 1:41:56 PM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00195	0.00100	0.00200	0	97.5	80	120			

Sample ID: **2002059-01A MSD** Batch ID: **95015** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_200218A** Analysis Date: **2/18/2020 1:44:12 PM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00183	0.00100	0.00200	0	91.5	80	120	6.35	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218A

The QC data in batch 95016 applies to the following samples: 2002060-11A

Sample ID: **MB-95016**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 1:51:04 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-95016**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 1:53:20 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	85	115			

Sample ID: **LCSD-95016**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 1:55:36 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00196	0.000200	0.00200	0	98.0	85	115	1.54	15	

Sample ID: **2002097-04A SD**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 2:34:11 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2002097-04A PDS**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 2:36:27 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00174	0.000200	0.00250	0	69.6	85	115			S

Sample ID: **2002097-04A MS**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 4:15:52 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00192	0.00100	0.00200	0	96.0	80	120			

Sample ID: **2002097-04A MSD**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 4:18:09 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00208	0.00100	0.00200	0	104	80	120	7.76	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218A

Sample ID: **ICV-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 10:49:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00401	0.000200	0.00400	0	100	90	110			

Sample ID: **CCV2-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 12:00:24 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV3-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 12:43:31 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00191	0.000200	0.00200	0	95.5	90	110			

Sample ID: **CCV4-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 1:08:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV5-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 1:46:30 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	90	110			

Sample ID: **CCV6-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 2:20:33 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	90	110			

Sample ID: **CCV7-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 2:56:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00185	0.000200	0.00200	0	92.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218A

Sample ID: **CCV9-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 4:05:06 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00187	0.000200	0.00200	0	93.5	90	110			

Sample ID: **CCV10-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 4:29:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00191	0.000200	0.00200	0	95.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218B

The QC data in batch 95013 applies to the following samples: 2002060-01B, 2002060-02B, 2002060-03B, 2002060-04B, 2002060-05B, 2002060-06B, 2002060-07B, 2002060-08B

Sample ID: **MB-95013** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 10:54:32 AM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-95013** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 10:56:48 AM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	85	115			

Sample ID: **LCSD-95013** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 10:59:04 AM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00198	0.000200	0.00200	0	99.0	85	115	2.56	15	

Sample ID: **2002045-01B SD** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 11:08:07 AM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2002045-01B PDS** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 11:10:23 AM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000377	0.000200	0.00250	0	15.1	85	115			S

Sample ID: **2002045-01B MS** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 1:35:07 PM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00154	0.00100	0.00200	0	77.2	80	120			S

Sample ID: **2002045-01B MSD** Batch ID: **95013** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_200218B** Analysis Date: **2/18/2020 1:37:24 PM** Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00163	0.00100	0.00200	0	81.2	80	120	5.05	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218B

The QC data in batch 95018 applies to the following samples: 2002060-09B, 2002060-10B, 2002060-11B

Sample ID: **MB-95018**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:01:31 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-95018**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:03:46 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00195	0.000200	0.00200	0	97.5	85	115			

Sample ID: **LCSD-95018**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:06:02 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	85	115	1.03	15	

Sample ID: **2002097-04B SD**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:44:38 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2002097-04B PDS**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:46:54 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00174	0.000200	0.00250	0	69.6	85	115			S

Sample ID: **2002097-04B MS**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:24:33 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00192	0.00100	0.00200	0	95.8	80	120			

Sample ID: **2002097-04B MSD**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:26:50 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00197	0.00100	0.00200	0	98.5	80	120	2.83	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218B

Sample ID: **ICV-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 10:49:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00401	0.000200	0.00400	0	100	90	110			

Sample ID: **CCV1-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 11:33:05 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Sample ID: **CCV2-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 12:00:24 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV4-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 1:08:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV5-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 1:46:30 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	90	110			

Sample ID: **CCV7-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 2:56:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00185	0.000200	0.00200	0	92.5	90	110			

Sample ID: **CCV8-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:30:59 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218B

Sample ID: **CCV9-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:05:06 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00187	0.000200	0.00200	0	93.5	90	110			

Sample ID: **CCV10-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:29:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00191	0.000200	0.00200	0	95.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200103A

Sample ID: **DCS2-94341**	Batch ID: **94341**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS2**	Run ID: **ICP-MS4_200103A**	Analysis Date: **1/3/2020 12:53:00 PM**		Prep Date: **12/31/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.277	0.300	0.300	0	92.3	70	130	0	0	
Magnesium	0.324	0.300	0.300	0	108	70	130	0	0	
Potassium	0.317	0.300	0.300	0	106	70	130	0	0	
Sodium	0.316	0.300	0.300	0	105	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_200212C**

The QC data in batch 94918 applies to the following samples: 2002060-01A, 2002060-02A, 2002060-03A, 2002060-04A, 2002060-05A, 2002060-06A, 2002060-07A, 2002060-08A, 2002060-09A, 2002060-10A, 2002060-11A

Sample ID: **MB-94918** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_200212C** Analysis Date: **2/12/2020 2:51:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	<0.100	0.300								

Sample ID: **LCS-94918** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_200212C** Analysis Date: **2/12/2020 2:53:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.12	0.300	5.00	0	102	80	120			

Sample ID: **LCSD-94918** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_200212C** Analysis Date: **2/12/2020 2:55:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	4.99	0.300	5.00	0	99.8	80	120	2.60	15	

Sample ID: **2002059-05A SD** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_200212C** Analysis Date: **2/12/2020 3:01:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	8500	750	0	8880				4.37	20	

Sample ID: **2002059-05A PDS** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_200212C** Analysis Date: **2/12/2020 3:21:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	11300	150	2500	8880	95.1	75	125			

Sample ID: **2002059-05A MS** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_200212C** Analysis Date: **2/12/2020 3:23:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	8790	150	5.00	8880	-1740	75	125			S

Sample ID: **2002059-05A MSD** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_200212C** Analysis Date: **2/12/2020 3:25:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	8540	150	5.00	8880	-6820	75	125	2.93	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200212C

Sample ID: **2002059-05A SD**	Batch ID: **94918**	TestNo: **SW6020B**				Units: **mg/L**	
SampType: **SD**	Run ID: **ICP-MS4_200212C**	Analysis Date: **2/12/2020 3:46:00 PM**				Prep Date: **2/10/2020**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	58.0	75.0	0	56.6				2.37	20	

Sample ID: **2002059-05A PDS**	Batch ID: **94918**	TestNo: **SW6020B**				Units: **mg/L**	
SampType: **PDS**	Run ID: **ICP-MS4_200212C**	Analysis Date: **2/12/2020 4:02:00 PM**				Prep Date: **2/10/2020**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	299	15.0	250	56.6	96.8	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200212C

Sample ID: **ICV-200212**	Batch ID: **R108923**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200212C**	Analysis Date: **2/12/2020 10:34:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.56	0.300	2.50	0	102	90	110			
Magnesium	2.46	0.300	2.50	0	98.5	90	110			
Potassium	2.45	0.300	2.50	0	98.1	90	110			
Sodium	2.56	0.300	2.50	0	102	90	110			

Sample ID: **LCVL-200212**	Batch ID: **R108923**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200212C**	Analysis Date: **2/12/2020 10:39:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.102	0.300	0.100	0	102	80	120			
Magnesium	0.102	0.300	0.100	0	102	80	120			
Potassium	0.104	0.300	0.100	0	104	80	120			
Sodium	0.108	0.300	0.100	0	108	80	120			

Sample ID: **CCV3-200212**	Batch ID: **R108923**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200212C**	Analysis Date: **2/12/2020 1:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	4.89	0.300	5.00	0	97.8	90	110			

Sample ID: **CCV4-200212**	Batch ID: **R108923**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200212C**	Analysis Date: **2/12/2020 3:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.75	0.300	5.00	0	95.0	90	110			
Magnesium	4.98	0.300	5.00	0	99.5	90	110			
Potassium	4.90	0.300	5.00	0	98.1	90	110			
Sodium	4.92	0.300	5.00	0	98.3	90	110			

Sample ID: **CCV5-200212**	Batch ID: **R108923**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200212C**	Analysis Date: **2/12/2020 4:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.79	0.300	5.00	0	95.7	90	110			
Magnesium	4.93	0.300	5.00	0	98.5	90	110			
Potassium	4.92	0.300	5.00	0	98.5	90	110			

Sample ID: **CCV6-200212**	Batch ID: **R108923**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200212C**	Analysis Date: **2/12/2020 4:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_200212C**

Sample ID: **CCV6-200212**	Batch ID: **R108923**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **CCV**	Run ID: **ICP-MS4_200212C**	Analysis Date: **2/12/2020 4:17:00 PM**		Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.78	0.300	5.00	0	95.5	90	110			
Magnesium	4.97	0.300	5.00	0	99.4	90	110			
Potassium	4.93	0.300	5.00	0	98.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200107A**

Sample ID: **DCS1-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:14:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0276	0.0300	0.0200	0	138	70	130	0	0	S
Antimony	0.00107	0.00250	0.00100	0	107	70	130	0	0	
Lead	0.000537	0.00100	0.000500	0	107	70	130	0	0	
Thallium	0.000503	0.00150	0.000500	0	101	70	130	0	0	
Vanadium	0.000494	0.00100	0.000500	0	98.8	70	130	0	0	

Sample ID: **DCS2-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:16:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	
Magnesium	0.309	0.300	0.300	0	103	70	130	0	0	
Potassium	0.309	0.300	0.300	0	103	70	130	0	0	
Sodium	0.242	0.300	0.300	0	80.8	70	130	0	0	

Sample ID: **DCS3-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:19:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00538	0.00500	0.00500	0	108	70	130	0	0	
Chromium	0.00528	0.00500	0.00500	0	106	70	130	0	0	
Nickel	0.00533	0.0100	0.00500	0	107	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200107C**

Sample ID: **DCS1-94341**	Batch ID: **94341**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS**	Run ID: **ICP-MS5_200107C**	Analysis Date: **1/7/2020 11:14:00 AM**		Prep Date: **12/31/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.000491	0.0100	0.000500	0	98.2	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200212A

The QC data in batch 94920 applies to the following samples: 2002060-01B, 2002060-02B, 2002060-03B, 2002060-04B, 2002060-05B, 2002060-06B, 2002060-07B, 2002060-08B, 2002060-09B, 2002060-10B, 2002060-11B

Sample ID: **LCS-94920** Batch ID: **94920** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200212A** Analysis Date: **2/12/2020 10:54:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.04	0.0300	5.00	0	101	80	120			
Antimony	0.199	0.00250	0.200	0	99.4	80	120			
Arsenic	0.205	0.00500	0.200	0	102	80	120			
Chromium	0.203	0.00500	0.200	0	101	80	120			
Lead	0.197	0.00100	0.200	0	98.3	80	120			
Nickel	0.200	0.0100	0.200	0	99.8	80	120			
Thallium	0.208	0.00150	0.200	0	104	80	120			
Vanadium	0.199	0.00100	0.200	0	99.3	80	120			

Sample ID: **LCSD-94920** Batch ID: **94920** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200212A** Analysis Date: **2/12/2020 10:56:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.02	0.0300	5.00	0	100	80	120	0.284	15	
Antimony	0.199	0.00250	0.200	0	99.3	80	120	0.045	15	
Arsenic	0.206	0.00500	0.200	0	103	80	120	0.485	15	
Chromium	0.202	0.00500	0.200	0	101	80	120	0.419	15	
Lead	0.200	0.00100	0.200	0	100	80	120	1.73	15	
Nickel	0.200	0.0100	0.200	0	100	80	120	0.198	15	
Thallium	0.209	0.00150	0.200	0	105	80	120	0.369	15	
Vanadium	0.199	0.00100	0.200	0	99.6	80	120	0.292	15	

Sample ID: **MB-94920** Batch ID: **94920** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200212A** Analysis Date: **2/12/2020 11:02:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **2002060-06B SD** Batch ID: **94920** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200212A** Analysis Date: **2/12/2020 11:09:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200212A

Sample ID: **2002060-06B SD**	Batch ID: **94920**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 11:09:00 AM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0320				0	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00315				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Nickel	<0.0150	0.0500	0	0.00726				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	0.00337	0.00500	0	0.00347				3.04	20	

Sample ID: **2002060-06B PDS**	Batch ID: **94920**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 12:53:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.83	0.0300	5.00	0.0320	96.0	75	125			
Antimony	0.168	0.00250	0.200	0	84.1	75	125			
Arsenic	0.160	0.00500	0.200	0.00315	78.6	75	125			
Chromium	0.159	0.00500	0.200	0	79.6	75	125			
Lead	0.200	0.00100	0.200	0	100	75	125			
Nickel	0.141	0.0100	0.200	0.00726	67.0	75	125			S
Thallium	0.201	0.00150	0.200	0	100	75	125			
Vanadium	0.172	0.00100	0.200	0.00347	84.4	75	125			

Sample ID: **2002060-06B MS**	Batch ID: **94920**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 12:57:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.96	0.0300	5.00	0.0320	98.7	75	125			
Dissolved Antimony	0.165	0.00250	0.200	0	82.6	75	125			
Dissolved Arsenic	0.165	0.00500	0.200	0.00315	80.7	75	125			
Dissolved Chromium	0.155	0.00500	0.200	0	77.3	75	125			
Dissolved Lead	0.200	0.00100	0.200	0	99.9	75	125			
Dissolved Nickel	0.139	0.0100	0.200	0.00726	65.8	75	125			S
Dissolved Thallium	0.200	0.00150	0.200	0	99.8	75	125			
Dissolved Vanadium	0.170	0.00100	0.200	0.00347	83.4	75	125			

Sample ID: **2002060-06B MSD**	Batch ID: **94920**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200212A**	Analysis Date: **2/12/2020 1:01:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	5.03	0.0300	5.00	0.0320	100	75	125	1.39	15	
Dissolved Antimony	0.170	0.00250	0.200	0	84.9	75	125	2.78	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200212A

Sample ID: **2002060-06B MSD** Batch ID: **94920** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200212A** Analysis Date: **2/12/2020 1:01:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Arsenic	0.166	0.00500	0.200	0.00315	81.5	75	125	0.933	15	
Dissolved Chromium	0.157	0.00500	0.200	0	78.3	75	125	1.30	15	
Dissolved Lead	0.202	0.00100	0.200	0	101	75	125	0.935	15	
Dissolved Nickel	0.139	0.0100	0.200	0.00726	65.7	75	125	0.165	15	S
Dissolved Thallium	0.201	0.00150	0.200	0	100	75	125	0.671	15	
Dissolved Vanadium	0.172	0.00100	0.200	0.00347	84.2	75	125	0.980	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200212A

Sample ID: **ICV-200212** Batch ID: **R108924** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_200212A** Analysis Date: **2/12/2020 10:40:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.42	0.0300	2.50	0	96.9	90	110			
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.0993	0.00500	0.100	0	99.3	90	110			
Calcium	2.50	0.300	2.50	0	100	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Lead	0.0983	0.00100	0.100	0	98.3	90	110			
Magnesium	2.38	0.300	2.50	0	95.3	90	110			
Nickel	0.100	0.0100	0.100	0	100	90	110			
Potassium	2.42	0.300	2.50	0	96.6	90	110			
Thallium	0.0964	0.00150	0.100	0	96.4	90	110			
Vanadium	0.0987	0.00100	0.100	0	98.7	90	110			

Sample ID: **LCVL-200212** Batch ID: **R108924** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_200212A** Analysis Date: **2/12/2020 10:44:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.101	0.0300	0.100	0	101	80	120			
Antimony	0.00212	0.00250	0.00200	0	106	80	120			
Arsenic	0.00506	0.00500	0.00500	0	101	80	120			
Calcium	0.102	0.300	0.100	0	102	80	120			
Chromium	0.00526	0.00500	0.00500	0	105	80	120			
Lead	0.000989	0.00100	0.00100	0	98.9	80	120			
Magnesium	0.0964	0.300	0.100	0	96.4	80	120			
Nickel	0.00505	0.0100	0.00500	0	101	80	120			
Potassium	0.0940	0.300	0.100	0	94.0	80	120			
Thallium	0.000982	0.00150	0.00100	0	98.2	80	120			
Vanadium	0.000928	0.00100	0.00100	0	92.8	80	120			

Sample ID: **CCV1-200212** Batch ID: **R108924** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200212A** Analysis Date: **2/12/2020 1:58:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.01	0.0300	5.00	0	100	90	110			
Antimony	0.183	0.00250	0.200	0	91.5	90	110			
Arsenic	0.203	0.00500	0.200	0	101	90	110			
Chromium	0.198	0.00500	0.200	0	99.0	90	110			
Lead	0.191	0.00100	0.200	0	95.5	90	110			
Nickel	0.194	0.0100	0.200	0	97.2	90	110			
Thallium	0.208	0.00150	0.200	0	104	90	110			
Vanadium	0.195	0.00100	0.200	0	97.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200212A

Sample ID: **CCV2-200212** Batch ID: **R108924** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200212A** Analysis Date: **2/12/2020 2:15:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.95	0.0300	5.00	0	98.9	90	110			
Antimony	0.182	0.00250	0.200	0	90.8	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Calcium	4.73	0.300	5.00	0	94.6	90	110			
Chromium	0.194	0.00500	0.200	0	97.2	90	110			
Lead	0.193	0.00100	0.200	0	96.4	90	110			
Magnesium	4.86	0.300	5.00	0	97.3	90	110			
Nickel	0.194	0.0100	0.200	0	96.8	90	110			
Potassium	4.94	0.300	5.00	0	98.8	90	110			
Thallium	0.208	0.00150	0.200	0	104	90	110			
Vanadium	0.193	0.00100	0.200	0	96.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200212C**

The QC data in batch 94920 applies to the following samples: 2002060-01B, 2002060-02B, 2002060-03B, 2002060-04B, 2002060-05B, 2002060-06B, 2002060-07B, 2002060-08B, 2002060-09B, 2002060-10B, 2002060-11B

Sample ID: **LCS-94920** Batch ID: **94920** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200212C** Analysis Date: **2/12/2020 10:54:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.203	0.0100	0.200	0	101	80	120			N

Sample ID: **LCSD-94920** Batch ID: **94920** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200212C** Analysis Date: **2/12/2020 10:56:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.206	0.0100	0.200	0	103	80	120	1.82	15	N

Sample ID: **MB-94920** Batch ID: **94920** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200212C** Analysis Date: **2/12/2020 11:02:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **2002060-06B SD** Batch ID: **94920** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200212C** Analysis Date: **2/12/2020 11:09:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.0887	0.0500	0	0.0960				7.90	20	N

Sample ID: **2002060-06B PDS** Batch ID: **94920** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200212C** Analysis Date: **2/12/2020 12:53:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.322	0.0100	0.200	0.0960	113	75	125			N

Sample ID: **2002060-06B MS** Batch ID: **94920** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_200212C** Analysis Date: **2/12/2020 12:57:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.320	0.0100	0.200	0.0960	112	75	125			N

Sample ID: **2002060-06B MSD** Batch ID: **94920** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200212C** Analysis Date: **2/12/2020 1:01:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.320	0.0100	0.200	0.0960	112	75	125	0.036	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200212C

Sample ID: **ICV-200212**	Batch ID: **R109083**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200212C**	Analysis Date: **2/12/2020 10:40:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0959	0.0100	0.100	0	95.9	90	110			N

Sample ID: **LCVL-200212**	Batch ID: **R109083**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200212C**	Analysis Date: **2/12/2020 10:44:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00486	0.0100	0.00500	0	97.1	80	120			N

Sample ID: **CCV1-200212**	Batch ID: **R109083**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200212C**	Analysis Date: **2/12/2020 1:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.200	0.0100	0.200	0	100	90	110			N

Sample ID: **CCV2-200212**	Batch ID: **R109083**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200212C**	Analysis Date: **2/12/2020 2:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0	101	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200213A**

The QC data in batch 94918 applies to the following samples: 2002060-01A, 2002060-02A, 2002060-03A, 2002060-04A, 2002060-05A, 2002060-06A, 2002060-07A, 2002060-08A, 2002060-09A, 2002060-10A, 2002060-11A

Sample ID: **MB-94918** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200213A** Analysis Date: **2/13/2020 10:53:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-94918** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200213A** Analysis Date: **2/13/2020 10:55:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.10	0.0300	5.00	0	102	80	120			
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.205	0.00500	0.200	0	103	80	120			
Calcium	5.13	0.300	5.00	0	103	80	120			
Chromium	0.203	0.00500	0.200	0	101	80	120			
Lead	0.196	0.00100	0.200	0	97.8	80	120			
Magnesium	5.09	0.300	5.00	0	102	80	120			
Nickel	0.201	0.0100	0.200	0	100	80	120			
Potassium	5.06	0.300	5.00	0	101	80	120			
Thallium	0.206	0.00150	0.200	0	103	80	120			
Vanadium	0.200	0.00100	0.200	0	99.8	80	120			

Sample ID: **LCSD-94918** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200213A** Analysis Date: **2/13/2020 10:57:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.08	0.0300	5.00	0	102	80	120	0.389	15	
Antimony	0.199	0.00250	0.200	0	99.3	80	120	1.43	15	
Arsenic	0.204	0.00500	0.200	0	102	80	120	0.473	15	
Calcium	5.08	0.300	5.00	0	102	80	120	0.848	15	
Chromium	0.204	0.00500	0.200	0	102	80	120	0.492	15	
Lead	0.196	0.00100	0.200	0	98.1	80	120	0.289	15	
Magnesium	5.00	0.300	5.00	0	100	80	120	1.81	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200213A

Sample ID: **LCSD-94918**	Batch ID: **94918**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200213A**	Analysis Date: **2/13/2020 10:57:00 AM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.199	0.0100	0.200	0	99.5	80	120	0.762	15	
Potassium	4.96	0.300	5.00	0	99.2	80	120	1.92	15	
Thallium	0.207	0.00150	0.200	0	103	80	120	0.489	15	
Vanadium	0.200	0.00100	0.200	0	100	80	120	0.450	15	

Sample ID: **2002059-05A SD**	Batch ID: **94918**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200213A**	Analysis Date: **2/13/2020 11:06:00 AM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0728	0.150	0	0.0706				3.06	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0				0	20	
Calcium	1220	1.50	0	1180				3.04	20	
Chromium	0.0115	0.0250	0	0.0107				7.30	20	
Lead	<0.00150	0.00500	0	0				0	20	
Magnesium	1210	1.50	0	1160				4.04	20	
Nickel	<0.0150	0.0500	0	0.00892				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	0.00845	0.00500	0	0.00841				0.451	20	

Sample ID: **2002059-05A PDS**	Batch ID: **94918**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200213A**	Analysis Date: **2/13/2020 12:57:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.84	0.0300	5.00	0.0707	95.4	75	125			
Antimony	0.181	0.00250	0.200	0	90.5	75	125			
Arsenic	0.169	0.00500	0.200	0	84.3	75	125			
Calcium	1140	0.300	5.00	1180	-911	75	125			S
Chromium	0.180	0.00500	0.200	0.0107	84.6	75	125			
Lead	0.191	0.00100	0.200	0	95.5	75	125			
Magnesium	1120	0.300	5.00	1160	-779	75	125			S
Nickel	0.157	0.0100	0.200	0.00892	74.1	75	125			S
Thallium	0.188	0.00150	0.200	0	94.1	75	125			
Vanadium	0.186	0.00100	0.200	0.00841	88.7	75	125			

Sample ID: **2002059-05A MS**	Batch ID: **94918**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200213A**	Analysis Date: **2/13/2020 1:01:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.04	0.0300	5.00	0.0707	99.5	75	125			
Antimony	0.181	0.00250	0.200	0	90.7	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200213A

Sample ID: **2002059-05A MS**	Batch ID: **94918**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200213A**	Analysis Date: **2/13/2020 1:01:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.172	0.00500	0.200	0	86.2	75	125			
Calcium	1210	0.300	5.00	1180	498	75	125			S
Chromium	0.176	0.00500	0.200	0.0107	82.8	75	125			
Lead	0.196	0.00100	0.200	0	98.1	75	125			
Magnesium	1180	0.300	5.00	1160	307	75	125			S
Nickel	0.155	0.0100	0.200	0.00892	73.2	75	125			S
Potassium	66.0	0.300	5.00	58.5	150	75	125			S
Thallium	0.194	0.00150	0.200	0	96.8	75	125			
Vanadium	0.185	0.00100	0.200	0.00841	88.4	75	125			

Sample ID: **2002059-05A MSD**	Batch ID: **94918**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200213A**	Analysis Date: **2/13/2020 1:06:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.10	0.0300	5.00	0.0707	101	75	125	1.04	15	
Antimony	0.179	0.00250	0.200	0	89.6	75	125	1.24	15	
Arsenic	0.177	0.00500	0.200	0	88.4	75	125	2.53	15	
Calcium	1220	0.300	5.00	1180	744	75	125	1.02	15	S
Chromium	0.176	0.00500	0.200	0.0107	82.5	75	125	0.377	15	
Lead	0.198	0.00100	0.200	0	98.9	75	125	0.855	15	
Magnesium	1190	0.300	5.00	1160	455	75	125	0.625	15	S
Nickel	0.156	0.0100	0.200	0.00892	73.7	75	125	0.688	15	S
Potassium	67.5	0.300	5.00	58.5	179	75	125	2.18	15	S
Thallium	0.195	0.00150	0.200	0	97.7	75	125	0.922	15	
Vanadium	0.186	0.00100	0.200	0.00841	88.7	75	125	0.341	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200213A

Sample ID: **ICV-200213** Batch ID: **R108949** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_200213A** Analysis Date: **2/13/2020 10:39:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.47	0.0300	2.50	0	98.7	90	110			
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.100	0.00500	0.100	0	100	90	110			
Calcium	2.56	0.300	2.50	0	102	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Lead	0.0989	0.00100	0.100	0	98.9	90	110			
Magnesium	2.44	0.300	2.50	0	97.7	90	110			
Nickel	0.102	0.0100	0.100	0	102	90	110			
Potassium	2.44	0.300	2.50	0	97.5	90	110			
Thallium	0.0957	0.00150	0.100	0	95.7	90	110			
Vanadium	0.101	0.00100	0.100	0	101	90	110			

Sample ID: **LCVL-200213** Batch ID: **R108949** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_200213A** Analysis Date: **2/13/2020 10:45:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.105	0.0300	0.100	0	105	80	120			
Antimony	0.00193	0.00250	0.00200	0	96.4	80	120			
Arsenic	0.00513	0.00500	0.00500	0	103	80	120			
Calcium	0.0981	0.300	0.100	0	98.1	80	120			
Chromium	0.00511	0.00500	0.00500	0	102	80	120			
Lead	0.000988	0.00100	0.00100	0	98.8	80	120			
Magnesium	0.0982	0.300	0.100	0	98.2	80	120			
Nickel	0.00498	0.0100	0.00500	0	99.6	80	120			
Potassium	0.0911	0.300	0.100	0	91.1	80	120			
Thallium	0.000933	0.00150	0.00100	0	93.3	80	120			
Vanadium	0.00101	0.00100	0.00100	0	101	80	120			

Sample ID: **CCV1-200213** Batch ID: **R108949** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200213A** Analysis Date: **2/13/2020 1:37:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.08	0.0300	5.00	0	102	90	110			
Antimony	0.192	0.00250	0.200	0	96.2	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Calcium	4.94	0.300	5.00	0	98.9	90	110			
Chromium	0.196	0.00500	0.200	0	98.0	90	110			
Lead	0.189	0.00100	0.200	0	94.5	90	110			
Magnesium	5.01	0.300	5.00	0	100	90	110			
Nickel	0.197	0.0100	0.200	0	98.4	90	110			
Potassium	4.99	0.300	5.00	0	99.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200213A

Sample ID: **CCV1-200213**	Batch ID: **R108949**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200213A**	Analysis Date: **2/13/2020 1:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.205	0.00150	0.200	0	102	90	110			
Vanadium	0.196	0.00100	0.200	0	98.0	90	110			

Sample ID: **CCV2-200213**	Batch ID: **R108949**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200213A**	Analysis Date: **2/13/2020 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.99	0.0300	5.00	0	99.7	90	110			
Antimony	0.189	0.00250	0.200	0	94.4	90	110			
Arsenic	0.198	0.00500	0.200	0	98.8	90	110			
Chromium	0.190	0.00500	0.200	0	94.8	90	110			
Lead	0.183	0.00100	0.200	0	91.6	90	110			
Nickel	0.187	0.0100	0.200	0	93.7	90	110			
Thallium	0.200	0.00150	0.200	0	99.8	90	110			
Vanadium	0.190	0.00100	0.200	0	95.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200213B**

The QC data in batch 94918 applies to the following samples: 2002060-01A, 2002060-02A, 2002060-03A, 2002060-04A, 2002060-05A, 2002060-06A, 2002060-07A, 2002060-08A, 2002060-09A, 2002060-10A, 2002060-11A

Sample ID: **MB-94918** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200213B** Analysis Date: **2/13/2020 10:53:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-94918** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200213B** Analysis Date: **2/13/2020 10:55:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.203	0.0100	0.200	0	102	80	120			N

Sample ID: **LCSD-94918** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200213B** Analysis Date: **2/13/2020 10:57:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.204	0.0100	0.200	0	102	80	120	0.300	15	N

Sample ID: **2002059-05A SD** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200213B** Analysis Date: **2/13/2020 11:06:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0873	0.0500	0	0.0914				4.66	20	N

Sample ID: **2002059-05A PDS** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200213B** Analysis Date: **2/13/2020 12:57:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.312	0.0100	0.200	0.0914	110	75	125			N

Sample ID: **2002059-05A MS** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_200213B** Analysis Date: **2/13/2020 1:01:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.321	0.0100	0.200	0.0914	115	75	125			N

Sample ID: **2002059-05A MSD** Batch ID: **94918** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200213B** Analysis Date: **2/13/2020 1:06:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.322	0.0100	0.200	0.0914	115	75	125	0.279	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200213B

Sample ID: **ICV-200213**	Batch ID: **R108951**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200213B**	Analysis Date: **2/13/2020 10:39:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0956	0.0100	0.100	0	95.6	90	110			N

Sample ID: **LCVL-200213**	Batch ID: **R108951**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200213B**	Analysis Date: **2/13/2020 10:45:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00472	0.0100	0.00500	0	94.4	80	120			N

Sample ID: **CCV1-200213**	Batch ID: **R108951**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200213B**	Analysis Date: **2/13/2020 1:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.199	0.0100	0.200	0	99.5	90	110			N

Sample ID: **CCV2-200213**	Batch ID: **R108951**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200213B**	Analysis Date: **2/13/2020 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0	96.5	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200129A

Sample ID: **DCS2-94743** Batch ID: **94743** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_200129A** Analysis Date: **1/29/2020 1:16:36 PM** Prep Date: **1/29/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.454	1.00	0.5000	0	90.8	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200210A

The QC data in batch 94907 applies to the following samples: 2002060-06D

Sample ID: **MB-94907**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 10:48:15 AM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-94907**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 11:04:15 AM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			

Sample ID: **LCSD-94907**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 11:20:15 AM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110	0.145	20	

Sample ID: **2002057-01BMS**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 3:55:10 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2310	100	2000	316.2	99.5	90	110			

Sample ID: **2002057-01BMSD**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 4:11:11 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2300	100	2000	316.2	99.4	90	110	0.092	20	

Sample ID: **2002075-01AMS**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 4:43:10 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	329	10.0	200.0	139.4	94.9	90	110			

Sample ID: **2002075-01AMSD**	Batch ID: **94907**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 4:59:10 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	328	10.0	200.0	139.4	94.1	90	110	0.489	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200210A

Sample ID: **ICV-200210**	Batch ID: **R108887**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 10:16:15 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.2	1.00	25.00	0	101	90	110			

Sample ID: **CCV1-200210**	Batch ID: **R108887**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200210A**	Analysis Date: **2/10/2020 6:19:10 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200205A

Sample ID: **DCS2-94859** Batch ID: **94859** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC4_200205A** Analysis Date: **2/5/2020 10:45:34 AM** Prep Date: **2/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.443	1.00	0.5000	0	88.7	65	135	0	0	
Fluoride	0.232	0.400	0.2000	0	116	65	135	0	0	
Nitrate-N	0.238	0.500	0.2500	0	95.0	65	135	0	0	
Sulfate	1.43	3.00	1.500	0	95.5	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200207A

The QC data in batch 94904 applies to the following samples: 2002060-01D, 2002060-02D, 2002060-03D, 2002060-04D, 2002060-05D, 2002060-06D, 2002060-07D, 2002060-08D, 2002060-09D, 2002060-10D, 2002060-11D

Sample ID: **MB-94904** Batch ID: **94904** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_200207A** Analysis Date: **2/7/2020 10:22:45 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-94904** Batch ID: **94904** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_200207A** Analysis Date: **2/7/2020 10:38:45 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	3.86	0.400	4.000	0	96.4	90	110			
Nitrate-N	5.16	0.500	5.000	0	103	90	110			
Sulfate	30.0	3.00	30.00	0	100	90	110			

Sample ID: **LCSD-94904** Batch ID: **94904** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_200207A** Analysis Date: **2/7/2020 10:54:45 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110	1.22	20	
Fluoride	3.95	0.400	4.000	0	98.7	90	110	2.36	20	
Nitrate-N	5.24	0.500	5.000	0	105	90	110	1.57	20	
Sulfate	30.4	3.00	30.00	0	101	90	110	1.06	20	

Sample ID: **2002060-01DMS** Batch ID: **94904** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_200207A** Analysis Date: **2/8/2020 1:44:27 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	23100	500	10000	14360	87.9	90	110			S
Fluoride	10500	200	10000	0	105	90	110			
Nitrate-N	2330	250	2258	0	103	90	110			
Sulfate	13800	1500	10000	3609	101	90	110			

Sample ID: **2002060-01DMSD** Batch ID: **94904** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_200207A** Analysis Date: **2/8/2020 2:00:27 AM** Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	23100	500	10000	14360	87.7	90	110	0.060	20	S
Fluoride	10500	200	10000	0	105	90	110	0.037	20	
Nitrate-N	2340	250	2258	0	103	90	110	0.258	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200207A

Sample ID: **2002060-01DMSD**	Batch ID: **94904**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_200207A**	Analysis Date: **2/8/2020 2:00:27 AM**	Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	13800	1500	10000	3609	102	90	110	0.352	20	

Sample ID: **2002060-02DMS**	Batch ID: **94904**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_200207A**	Analysis Date: **2/8/2020 2:16:27 AM**	Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26100	500	10000	17830	82.7	90	110			S
Fluoride	10500	200	10000	0	105	90	110			
Nitrate-N	2330	250	2258	0	103	90	110			
Sulfate	14500	1500	10000	4406	101	90	110			

Sample ID: **2002060-02DMSD**	Batch ID: **94904**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_200207A**	Analysis Date: **2/8/2020 2:32:27 AM**	Prep Date: **2/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26200	500	10000	17830	83.4	90	110	0.270	20	S
Fluoride	10500	200	10000	0	105	90	110	0.583	20	
Nitrate-N	2330	250	2258	0	103	90	110	0.031	20	
Sulfate	14600	1500	10000	4406	102	90	110	0.881	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200207A

Sample ID: **ICV-200207**	Batch ID: **R108854**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_200207A**	Analysis Date: **2/7/2020 9:50:45 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.5	1.00	25.00	0	102	90	110			
Fluoride	10.0	0.400	10.00	0	100	90	110			
Nitrate-N	12.6	0.500	12.50	0	101	90	110			
Sulfate	76.5	3.00	75.00	0	102	90	110			

Sample ID: **CCV1-200207**	Batch ID: **R108854**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200207A**	Analysis Date: **2/7/2020 4:40:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	3.96	0.400	4.000	0	99.0	90	110			
Nitrate-N	5.26	0.500	5.000	0	105	90	110			
Sulfate	30.5	3.00	30.00	0	102	90	110			

Sample ID: **CCV2-200207**	Batch ID: **R108854**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200207A**	Analysis Date: **2/7/2020 8:56:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	3.89	0.400	4.000	0	97.2	90	110			
Nitrate-N	5.21	0.500	5.000	0	104	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

Sample ID: **CCV3-200207**	Batch ID: **R108854**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200207A**	Analysis Date: **2/8/2020 12:56:27 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	3.95	0.400	4.000	0	98.8	90	110			
Nitrate-N	5.26	0.500	5.000	0	105	90	110			
Sulfate	30.6	3.00	30.00	0	102	90	110			

Sample ID: **CCV4-200207**	Batch ID: **R108854**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200207A**	Analysis Date: **2/8/2020 3:36:26 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.86	0.400	4.000	0	96.5	90	110			
Nitrate-N	5.14	0.500	5.000	0	103	90	110			
Sulfate	29.9	3.00	30.00	0	99.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200210A

The QC data in batch 94916 applies to the following samples: 2002060-01D, 2002060-02D, 2002060-03D, 2002060-04D, 2002060-05D, 2002060-06D, 2002060-07D, 2002060-08D, 2002060-09D, 2002060-10D, 2002060-11D

Sample ID: **MB-94916** Batch ID: **94916** TestNo: **M2320 B** Units: **mg/L @ pH 4.51**
SampType: **MBLK** Run ID: **TITRATOR_200210A** Analysis Date: **2/10/2020 9:53:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-94916** Batch ID: **94916** TestNo: **M2320 B** Units: **mg/L @ pH 4.12**
SampType: **LCS** Run ID: **TITRATOR_200210A** Analysis Date: **2/10/2020 9:57:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.4	20.0	50.00	0	105	74	129			

Sample ID: **2002060-01D-DUP** Batch ID: **94916** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_200210A** Analysis Date: **2/10/2020 11:15:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	431	20.0	0	438.7				1.84	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	431	20.0	0	438.7				1.84	20	

Sample ID: **2002060-02D-DUP** Batch ID: **94916** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_200210A** Analysis Date: **2/10/2020 11:40:00 AM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	286	20.0	0	286.5				0.140	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	286	20.0	0	286.5				0.140	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200210A

Sample ID: **ICV-200210**	Batch ID: **R108917**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.12**
SampType: **ICV**	Run ID: **TITRATOR_200210A**	Analysis Date: **2/10/2020 9:51:00 AM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	6.80	20.0	0							
Alkalinity, Carbonate (As CaCO3)	94.7	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	102	20.0	100.0	0	102	98	102			

Sample ID: **CCV1-200210**	Batch ID: **R108917**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.26**
SampType: **CCV**	Run ID: **TITRATOR_200210A**	Analysis Date: **2/10/2020 1:00:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	26.6	20.0	0							
Alkalinity, Carbonate (As CaCO3)	73.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.8	20.0	100.0	0	99.8	90	110			

Sample ID: **CCV2-200210**	Batch ID: **R108917**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.1**
SampType: **CCV**	Run ID: **TITRATOR_200210A**	Analysis Date: **2/10/2020 2:15:00 PM**	Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	7.68	20.0	0							
Alkalinity, Carbonate (As CaCO3)	96.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	104	20.0	100.0	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200131C

Sample ID: **DCS-94791**	Batch ID: **94791**	TestNo: **M4500-NH3-D**		Units: **mg/L**	
SampType: **DCS**	Run ID: **WC_200131C**	Analysis Date: **1/31/2020 3:45:00 PM**		Prep Date: **1/31/2020**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.122	0.250	0.1000	0	122	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200210A

The QC data in batch 94933 applies to the following samples: 2002060-01D, 2002060-02D, 2002060-03D, 2002060-04D, 2002060-05D, 2002060-06D, 2002060-07D, 2002060-08D, 2002060-09D, 2002060-10D, 2002060-11D

Sample ID: **MB-94933** Batch ID: **94933** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_200210A** Analysis Date: **2/10/2020 4:45:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-94933** Batch ID: **94933** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_200210A** Analysis Date: **2/10/2020 4:45:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	739	10.0	745.6	0	99.1	90	113			

Sample ID: **2002059-05C-DUP** Batch ID: **94933** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_200210A** Analysis Date: **2/10/2020 4:45:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	33000	1000	0	33800				2.40	5	

Sample ID: **2002059-06C-DUP** Batch ID: **94933** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_200210A** Analysis Date: **2/10/2020 4:45:00 PM** Prep Date: **2/10/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	43300	1000	0	44500				2.73	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200217A

The QC data in batch 95026 applies to the following samples: 2002060-01C, 2002060-02C, 2002060-03C, 2002060-04C, 2002060-05C, 2002060-06C, 2002060-07C

Sample ID: **MB-95026**	Batch ID: **95026**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-95026**	Batch ID: **95026**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.46	0.250	5.000	0	89.2	80	120			

Sample ID: **2002059-01BMS**	Batch ID: **95026**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.64	0.250	5.000	0.7700	77.4	80	120			S

Sample ID: **2002059-01BMSD**	Batch ID: **95026**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.54	0.250	5.000	0.7700	75.4	80	120	2.18	25	S

Sample ID: **2002060-03CMS**	Batch ID: **95026**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	3.59	0.250	5.000	0	71.8	80	120			S

Sample ID: **2002060-03CMSD**	Batch ID: **95026**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	3.47	0.250	5.000	0	69.4	80	120	3.40	25	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200217A

Sample ID: **ICV-200217**	Batch ID: **R108999**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.94	0.250	2.500	0	118	80	120			

Sample ID: **CCV1-200217**	Batch ID: **R108999**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.07	0.250	5.000	0	81.4	80	120			

Sample ID: **CCV2-200217**	Batch ID: **R108999**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_200217A**	Analysis Date: **2/17/2020 3:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.11	0.250	5.000	0	82.2	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200219A

The QC data in batch 95070 applies to the following samples: 2002060-08C, 2002060-09C, 2002060-10C, 2002060-11C

Sample ID: **MB-95070**	Batch ID: **95070**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200219A**	Analysis Date: **2/19/2020 2:45:00 PM**	Prep Date: **2/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-95070**	Batch ID: **95070**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200219A**	Analysis Date: **2/19/2020 2:45:00 PM**	Prep Date: **2/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.75	0.250	5.000	0	95.0	80	120			

Sample ID: **2002060-08CMS**	Batch ID: **95070**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_200219A**	Analysis Date: **2/19/2020 2:45:00 PM**	Prep Date: **2/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	6.17	0.250	5.000	2.150	80.4	80	120			

Sample ID: **2002060-08CMSD**	Batch ID: **95070**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_200219A**	Analysis Date: **2/19/2020 2:45:00 PM**	Prep Date: **2/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	6.08	0.250	5.000	2.150	78.6	80	120	1.47	25	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200219A

Sample ID: **ICV-200219**	Batch ID: **R109055**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_200219A**	Analysis Date: **2/19/2020 2:45:00 PM**	Prep Date: **2/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.92	0.250	2.500	0	117	80	120			

Sample ID: **CCV1-200219**	Batch ID: **R109055**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_200219A**	Analysis Date: **2/19/2020 2:45:00 PM**	Prep Date: **2/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.37	0.250	5.000	0	87.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002060
Project: Copano GW 1Q20

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.5**	**g/L @ pH 4.5**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

March 06, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1188203
Samples Received:	02/11/2020
Project Number:	2002060
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Jason Romer
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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MW4-1 L1188203-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
	02/06/20 09:50	02/11/20 10:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 16:58	RGT	Mt. Juliet, TN

MW4-2A L1188203-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
	02/06/20 11:05	02/11/20 10:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 14:35	RGT	Mt. Juliet, TN

MW4-2 L1188203-03 Non-Potable Water

Collected by	Collected date/time	Received date/time
	02/06/20 12:25	02/11/20 10:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 14:35	RGT	Mt. Juliet, TN

MW4-3B L1188203-04 Non-Potable Water

Collected by	Collected date/time	Received date/time
	02/06/20 13:25	02/11/20 10:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 14:35	RGT	Mt. Juliet, TN

MW4-3 L1188203-05 Non-Potable Water

Collected by	Collected date/time	Received date/time
	02/06/20 14:35	02/11/20 10:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 14:35	RGT	Mt. Juliet, TN

MW-7B L1188203-06 Non-Potable Water

Collected by	Collected date/time	Received date/time
	02/06/20 08:57	02/11/20 10:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 14:35	RGT	Mt. Juliet, TN

MW-1 L1188203-07 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				02/06/20 10:55	02/11/20 10:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 14:35	RGT	Mt. Juliet, TN

DB-5 L1188203-08 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				02/06/20 11:50	02/11/20 10:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 14:35	RGT	Mt. Juliet, TN

MW-3R L1188203-09 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				02/06/20 13:24	02/11/20 10:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/05/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 14:35	RGT	Mt. Juliet, TN

MW-202 L1188203-10 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				02/06/20 13:29	02/11/20 10:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 14:35	RGT	Mt. Juliet, TN

MW-3RB L1188203-11 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				02/06/20 14:37	02/11/20 10:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/27/20 08:25	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Jason Romer
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	3.78		0.593	0.841	03/05/2020 09:45	WG1431736
(T) Barium	*112*			*62.0-143*	*03/05/2020 09:45*	WG1431736
(T) Yttrium	*108*			*79.0-136*	*03/05/2020 09:45*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	4.18		0.888	1.18	03/05/2020 09:45	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.401		0.295	0.337	02/26/2020 16:58	WG1431739
(T) Barium-133	*105*			*30.0-143*	*02/26/2020 16:58*	WG1431739

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.107		0.438	0.656	03/05/2020 09:45	WG1431736
(T) Barium	*106*			*62.0-143*	*03/05/2020 09:45*	WG1431736
(T) Yttrium	*105*			*79.0-136*	*03/05/2020 09:45*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.271		0.653	0.963	03/05/2020 09:45	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.165		0.215	0.307	02/26/2020 14:35	WG1431739
(T) Barium-133	*82.6*			*30.0-143*	*02/26/2020 14:35*	WG1431739

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	3.58		0.466	0.636	03/05/2020 09:45	WG1431736
(T) Barium	*115*			*62.0-143*	*03/05/2020 09:45*	WG1431736
(T) Yttrium	*103*			*79.0-136*	*03/05/2020 09:45*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.61		0.559	0.848	03/05/2020 09:45	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0241		0.0932	0.212	02/26/2020 14:35	WG1431739
(T) Barium-133	*88.6*			*30.0-143*	*02/26/2020 14:35*	WG1431739

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.04		0.403	0.616	03/05/2020 09:45	WG1431736
(T) Barium	*94.2*			*62.0-143*	*03/05/2020 09:45*	WG1431736
(T) Yttrium	*96.5*			*79.0-136*	*03/05/2020 09:45*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.04		0.455	0.799	03/05/2020 09:45	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	-0.0235		0.0515	0.183	02/26/2020 14:35	WG1431739
(T) Barium-133	*99.2*			*30.0-143*	*02/26/2020 14:35*	WG1431739

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	3.54		0.603	0.799	03/05/2020 09:45	WG1431736
(T) Barium	*98.8*			*62.0-143*	*03/05/2020 09:45*	WG1431736
(T) Yttrium	*113*			*79.0-136*	*03/05/2020 09:45*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	3.89		0.885	1.15	03/05/2020 09:45	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.353		0.282	0.349	02/26/2020 14:35	WG1431739
(T) Barium-133	*95.2*			*30.0-143*	*02/26/2020 14:35*	WG1431739

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	10.8		0.588	0.564	03/05/2020 09:45	WG1431736
(T) Barium	*112*			*62.0-143*	*03/05/2020 09:45*	WG1431736
(T) Yttrium	*101*			*79.0-136*	*03/05/2020 09:45*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	12.6		1.11	0.824	03/05/2020 09:45	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.82		0.524	0.26	02/26/2020 14:35	WG1431739
(T) Barium-133	*94.8*			*30.0-143*	*02/26/2020 14:35*	WG1431739

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.35		0.416	0.572	03/05/2020 09:45	WG1431736
(T) Barium	*101*			*62.0-143*	*03/05/2020 09:45*	WG1431736
(T) Yttrium	*103*			*79.0-136*	*03/05/2020 09:45*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.59		0.647	0.873	03/05/2020 09:45	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.237		0.231	0.301	02/26/2020 14:35	WG1431739
(T) Barium-133	*105*			*30.0-143*	*02/26/2020 14:35*	WG1431739

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.40		0.439	0.581	03/05/2020 09:45	WG1431736
(T) Barium	*105*			*62.0-143*	*03/05/2020 09:45*	WG1431736
(T) Yttrium	*101*			*79.0-136*	*03/05/2020 09:45*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.86		0.694	0.785	03/05/2020 09:45	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.465		0.255	0.204	02/26/2020 14:35	WG1431739
(T) Barium-133	*101*			*30.0-143*	*02/26/2020 14:35*	WG1431739

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	9.15		0.554	0.621	03/05/2020 09:45	WG1431736
(T) Barium	*117*			*62.0-143*	*03/05/2020 09:45*	WG1431736
(T) Yttrium	*113*			*79.0-136*	*03/05/2020 09:45*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	9.31		0.731	0.855	03/05/2020 09:45	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.162		0.177	0.234	02/26/2020 14:35	WG1431739
(T) Barium-133	*95.6*			*30.0-143*	*02/26/2020 14:35*	WG1431739

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	10.1		0.532	0.558	03/05/2020 13:30	WG1431736
(T) Barium	*122*			*62.0-143*	*03/05/2020 13:30*	WG1431736
(T) Yttrium	*106*			*79.0-136*	*03/05/2020 13:30*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	11.5		0.977	0.725	03/05/2020 13:30	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.41		0.445	0.167	02/26/2020 14:35	WG1431739
(T) Barium-133	*94.3*			*30.0-143*	*02/26/2020 14:35*	WG1431739

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	10.8		0.564	0.533	03/05/2020 13:30	WG1431736
(T) Barium	*121*			*62.0-143*	*03/05/2020 13:30*	WG1431736
(T) Yttrium	*99.2*			*79.0-136*	*03/05/2020 13:30*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	12.3		1.07	0.893	03/05/2020 13:30	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.44		0.501	0.36	02/27/2020 08:25	WG1431739
(T) Barium-133	*101*			*30.0-143*	*02/27/2020 08:25*	WG1431739

Method Blank (MB)

(MB) R3506008-1 03/05/20 09:45

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.542		0.388
(T) Barium	*101*		
(T) Yttrium	*105*		

L1188203-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1188203-04 03/05/20 09:45 • (DUP) R3506008-5 03/05/20 09:45

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	1.04	1.98	1	62.2	1.24		20	3
(T) Barium	*94.2*	*118*						
(T) Yttrium	*96.5*	*103*						

Laboratory Control Sample (LCS)

(LCS) R3506008-2 03/05/20 09:45

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.13	103	80.0-120	
(T) Barium			*111*		
(T) Yttrium			*111*		

L1188203-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1188203-01 03/05/20 09:45 • (MS) R3506008-3 03/05/20 09:45 • (MSD) R3506008-4 03/05/20 09:45

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	12.5	3.78	17.2	16.2	107	99.0	1	70.0-130			6.12		20
(T) Barium		*112*			*119*	*111*							
(T) Yttrium		*108*			*106*	*97.5*							

Method Blank (MB)

(MB) R3504615-1 02/26/20 16:58

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	0.00338		0.0639
(T) Barium-133	*97.9*		

L1190096-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1190096-02 02/26/20 16:58 • (DUP) R3504615-5 02/26/20 16:58

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.337	0.408	1	19.0	0.207		20	3
(T) Barium-133	*107*	*96.8*						

Laboratory Control Sample (LCS)

(LCS) R3504615-2 02/26/20 16:58

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.48	109	80.0-120	
(T) Barium-133			*94.9*		

L1190096-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1190096-04 02/26/20 16:58 • (MS) R3504615-3 02/26/20 16:58 • (MSD) R3504615-4 02/26/20 16:58

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	2.83	19.9	22.3	84.9	96.8	1	75.0-125			11.4		20
(T) Barium-133		*97.5*			*87.6*	*91.9*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

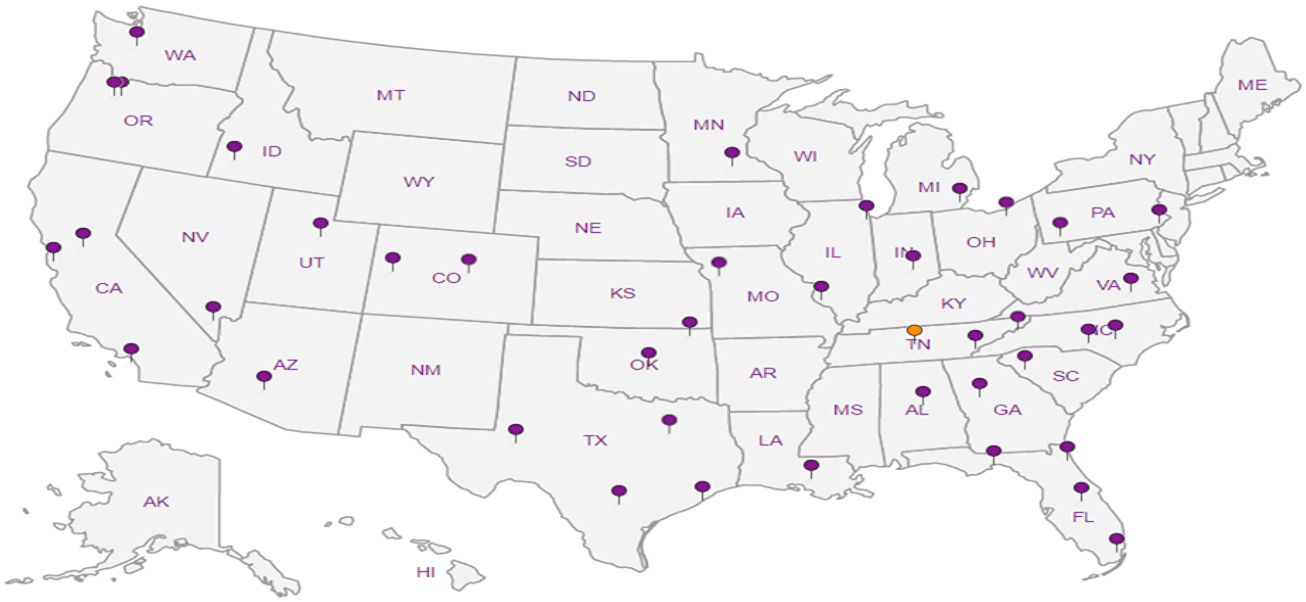
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

G189

Work Order: 2002060

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

1180203

07-Feb-20

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra228 E904.0	Ra226 M7500 Ra B M	Requested Tests				
MW4-1	Aqueous	)-01E	02/06/20 09:50 AM	1LHDPEHNO3	1						-01
MW4-1	Aqueous	)-01F	02/06/20 09:50 AM	1LHDPEHNO3		1					
MW4-2A	Aqueous	)-02E	02/06/20 11:05 AM	1LHDPEHNO3	1						02
MW4-2A	Aqueous	)-02F	02/06/20 11:05 AM	1LHDPEHNO3		1					
MW4-2	Aqueous	)-03E	02/06/20 12:25 PM	1LHDPEHNO3	1						03
MW4-2	Aqueous	)-03F	02/06/20 12:25 PM	1LHDPEHNO3		1					
MW4-3B	Aqueous	)-04E	02/06/20 01:25 PM	1LHDPEHNO3	1						04
MW4-3B	Aqueous	)-04F	02/06/20 01:25 PM	1LHDPEHNO3		1					
MW4-3	Aqueous	)-05E	02/06/20 02:35 PM	1LHDPEHNO3	1						05
MW4-3	Aqueous	)-05F	02/06/20 02:35 PM	1LHDPEHNO3		1					
MW-7B	Aqueous	)-06E	02/06/20 08:57 AM	1LHDPEHNO3	1						06
MW-7B	Aqueous	)-06F	02/06/20 08:57 AM	1LHDPEHNO3		1					
MW-1	Aqueous	)-07E	02/06/20 10:55 AM	1LHDPEHNO3	1						07
MW-1	Aqueous	)-07F	02/06/20 10:55 AM	1LHDPEHNO3		1					
DB-5	Aqueous	)-08E	02/06/20 11:50 AM	1LHDPEHNO3	1						08
DB-5	Aqueous	)-08F	02/06/20 11:50 AM	1LHDPEHNO3		1					
MW-3R	Aqueous	)-09E	02/06/20 01:24 PM	1LHDPEHNO3	1						09
MW-3R	Aqueous	)-09F	02/06/20 01:24 PM	1LHDPEHNO3		1					

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: TRRP - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

	Date/Time		Date/Time
Relinquished by:	2/7/2020 1700	Received by: UPS	2/7/2020 1700
Relinquished by:		Received by:	2/11/20 10:40

AMb CK

RAD SCREEN: <0.5 mR/hr

NCF

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 2002060

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

11 83203

07-Feb-20

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra 228 E904.0	Ra 226 M7500 Ra B M	Requested Tests			
MW-202	Aqueous	-10E	02/06/20 01:29 PM	1LHDPEHNO3	1					10
MW-202	Aqueous	-10F	02/06/20 01:29 PM	1LHDPEHNO3		1				
MW-3RB	Aqueous	-11E	02/06/20 02:37 PM	1LHDPEHNO3	1					11
MW-3RB	Aqueous	-11F	02/06/20 02:37 PM	1LHDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: TRRP - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		2/7/2020 1700	Received by:	UPS	2/7/2020 1700
Relinquished by:			Received by:		2/11/20 10:40

RAD SCREEN: <0.5 mR/hr AMB

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHCRRTX	1180203	
Cooler Received/Opened On: 2/11/20 Temperature:	Amb	
Received By: Carol Kemp		
Signature: Carol Kemp		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

Pace Analytical®
National Center for Testing & Innovation

Login #: L1188203	Client:DHLRRTX	Date:02/11	Evaluated by:Kelsey S

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Temperature not in range		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
X	pH not in range.		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courie
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments: DB-5 received with a pH of 5

pH adj 1620 02/11 HNO3 Lot# 221802

Client informed by:		Call		Email		Voice Mail		Date:	Time:
TSR Initials:DE	Client Contact:								

Login Instructions:

Will hold 16 and proceed with analysis.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002060

Sample ID: **MW4-1**
Lab ID Number: **2002060-01**

PARAMETER	RESULT	UNITS	METHOD
Calcium	993	mg/L	SW6020B
Magnesium	1000	mg/L	SW6020B
Sodium	7100	mg/L	SW6020B
Potassium	36.1	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.54	M2320 B
Bicarbonate	439	mg/L @ pH 4.54	M2320 B
Sulfate	3610	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	439	mg/L @ pH 4.54	M2320 B
Hardness	6598	mg/L	SM 2340B
Chloride	14400	mg/L	E300
TDS	29600	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	8.77
Calcium	49.55
Chloride	406.21
Fluoride	0.00
Magnesium	82.24
Nitrate-N	0.00
Potassium	0.93
Sodium	308.83
Sulfate	75.16
TOTAL ANIONS	490
TOTAL CATIONS	442
CATION/ANION (% DIFF)	-5.22
Calculated TDS	27358
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.08
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/09/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002060

Sample ID: **MW4-2A**
Lab ID Number: **2002060-02**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1150	mg/L	SW6020B
Magnesium	1250	mg/L	SW6020B
Sodium	8460	mg/L	SW6020B
Potassium	57.0	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	286	mg/L @ pH 4.53	M2320 B
Sulfate	4410	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	286	mg/L @ pH 4.53	M2320 B
Hardness	8019	mg/L	SM 2340B
Chloride	17800	mg/L	E300
TDS	35600	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	5.71
Calcium	57.39
Chloride	502.12
Fluoride	0.00
Magnesium	102.80
Nitrate-N	0.00
Potassium	1.46
Sodium	367.99
Sulfate	91.82
TOTAL ANIONS	600
TOTAL CATIONS	530
CATION/ANION (% DIFF)	-6.20
Calculated TDS	33270
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.07
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/09/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002060

Sample ID: **MW4-2**
Lab ID Number: **2002060-03**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1200	mg/L	SW6020B
Magnesium	1620	mg/L	SW6020B
Sodium	11700	mg/L	SW6020B
Potassium	80.3	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	220	mg/L @ pH 4.53	M2320 B
Sulfate	4890	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	1.71	mg/L	E300
T-Alkalinity	220	mg/L @ pH 4.53	M2320 B
Hardness	9668	mg/L	SM 2340B
Chloride	22400	mg/L	E300
TDS	46900	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.40
Calcium	59.88
Chloride	631.88
Fluoride	0.00
Magnesium	133.22
Nitrate-N	0.12
Potassium	2.06
Sodium	508.92
Sulfate	101.81
TOTAL ANIONS	738
TOTAL CATIONS	704
CATION/ANION (% DIFF)	-2.37
Calculated TDS	42002
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.12
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/09/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002060

Sample ID: **MW4-3B**
Lab ID Number: **2002060-04**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1260	mg/L	SW6020B
Magnesium	1490	mg/L	SW6020B
Sodium	10300	mg/L	SW6020B
Potassium	89.9	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	252	mg/L @ pH 4.53	M2320 B
Sulfate	3750	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	252	mg/L @ pH 4.53	M2320 B
Hardness	9282	mg/L	SM 2340B
Chloride	20700	mg/L	E300
TDS	41600	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	5.03
Calcium	62.87
Chloride	583.92
Fluoride	0.00
Magnesium	122.53
Nitrate-N	0.00
Potassium	2.30
Sodium	448.02
Sulfate	78.08
TOTAL ANIONS	667
TOTAL CATIONS	636
CATION/ANION (% DIFF)	-2.40
Calculated TDS	37716
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.10
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/09/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002060

Sample ID: **MW4-3**
Lab ID Number: **2002060-05**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1200	mg/L	SW6020B
Magnesium	1500	mg/L	SW6020B
Sodium	10300	mg/L	SW6020B
Potassium	63.2	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	214	mg/L @ pH 4.53	M2320 B
Sulfate	3700	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	214	mg/L @ pH 4.53	M2320 B
Hardness	9173	mg/L	SM 2340B
Chloride	21300	mg/L	E300
TDS	42800	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.28
Calcium	59.88
Chloride	600.85
Fluoride	0.00
Magnesium	123.36
Nitrate-N	0.00
Potassium	1.62
Sodium	448.02
Sulfate	77.04
TOTAL ANIONS	682
TOTAL CATIONS	633
CATION/ANION (% DIFF)	-3.75
Calculated TDS	38170
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.12
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/09/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002060

Sample ID: **MW-7B**
Lab ID Number: **2002060-06**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1430	mg/L	SW6020B
Magnesium	1720	mg/L	SW6020B
Sodium	14400	mg/L	SW6020B
Potassium	81.7	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	227	mg/L @ pH 4.53	M2320 B
Sulfate	3940	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	227	mg/L @ pH 4.53	M2320 B
Hardness	10654	mg/L	SM 2340B
Chloride	28200	mg/L	E300
TDS	54400	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.54
Calcium	71.36
Chloride	795.49
Fluoride	0.00
Magnesium	141.45
Nitrate-N	0.00
Potassium	2.09
Sodium	626.36
Sulfate	82.03
TOTAL ANIONS	882
TOTAL CATIONS	841
CATION/ANION (% DIFF)	-2.37
Calculated TDS	49886
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.09
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments:

Lab Rep Name/Signature:

Date: 03/09/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002060

Sample ID: **MW-1**
Lab ID Number: **2002060-07**

PARAMETER	RESULT	UNITS	METHOD
Calcium	917	mg/L	SW6020B
Magnesium	1490	mg/L	SW6020B
Sodium	11800	mg/L	SW6020B
Potassium	65.5	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	293	mg/L @ pH 4.53	M2320 B
Sulfate	2570	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	293	mg/L @ pH 4.53	M2320 B
Hardness	8426	mg/L	SM 2340B
Chloride	23300	mg/L	E300
TDS	43500	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	5.85
Calcium	45.76
Chloride	657.26
Fluoride	0.00
Magnesium	122.53
Nitrate-N	0.00
Potassium	1.68
Sodium	513.27
Sulfate	53.51
TOTAL ANIONS	717
TOTAL CATIONS	683
CATION/ANION (% DIFF)	-2.39
Calculated TDS	40290
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.08
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/09/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002060

Sample ID: **DB-5**
Lab ID Number: **2002060-08**

PARAMETER	RESULT	UNITS	METHOD
Calcium	674	mg/L	SW6020B
Magnesium	930	mg/L	SW6020B
Sodium	8340	mg/L	SW6020B
Potassium	51.5	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	432	mg/L @ pH 4.53	M2320 B
Sulfate	2960	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	432	mg/L @ pH 4.53	M2320 B
Hardness	5513	mg/L	SM 2340B
Chloride	15900	mg/L	E300
TDS	32600	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	8.63
Calcium	33.63
Chloride	448.52
Fluoride	0.00
Magnesium	76.48
Nitrate-N	0.00
Potassium	1.32
Sodium	362.77
Sulfate	61.63
TOTAL ANIONS	519
TOTAL CATIONS	474
CATION/ANION (% DIFF)	-4.49
Calculated TDS	29072
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.12
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/09/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002060

Sample ID: **MW-3R**
Lab ID Number: **2002060-09**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1110	mg/L	SW6020B
Magnesium	1530	mg/L	SW6020B
Sodium	12800	mg/L	SW6020B
Potassium	77.7	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	217	mg/L @ pH 4.53	M2320 B
Sulfate	5660	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	217	mg/L @ pH 4.53	M2320 B
Hardness	9072	mg/L	SM 2340B
Chloride	23200	mg/L	E300
TDS	48600	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.34
Calcium	55.39
Chloride	654.44
Fluoride	0.00
Magnesium	125.82
Nitrate-N	0.00
Potassium	1.99
Sodium	556.76
Sulfate	117.84
TOTAL ANIONS	777
TOTAL CATIONS	740
CATION/ANION (% DIFF)	-2.42
Calculated TDS	44486
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.09
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments:

Lab Rep Name/Signature:

Date: 03/09/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002060

Sample ID: **MW-202**
Lab ID Number: **2002060-10**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1110	mg/L	SW6020B
Magnesium	1530	mg/L	SW6020B
Sodium	12800	mg/L	SW6020B
Potassium	78.0	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	226	mg/L @ pH 4.53	M2320 B
Sulfate	5730	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	226	mg/L @ pH 4.53	M2320 B
Hardness	9072	mg/L	SM 2340B
Chloride	23500	mg/L	E300
TDS	48700	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.52
Calcium	55.39
Chloride	662.91
Fluoride	0.00
Magnesium	125.82
Nitrate-N	0.00
Potassium	2.00
Sodium	556.76
Sulfate	119.30
TOTAL ANIONS	787
TOTAL CATIONS	740
CATION/ANION (% DIFF)	-3.06
Calculated TDS	44861
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.09
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/09/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002060

Sample ID: **MW-3RB**
Lab ID Number: **2002060-11**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1110	mg/L	SW6020B
Magnesium	1490	mg/L	SW6020B
Sodium	12400	mg/L	SW6020B
Potassium	78.8	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	229	mg/L @ pH 4.53	M2320 B
Sulfate	5710	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	229	mg/L @ pH 4.53	M2320 B
Hardness	8907	mg/L	SM 2340B
Chloride	23100	mg/L	E300
TDS	49700	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.58
Calcium	55.39
Chloride	651.62
Fluoride	0.00
Magnesium	122.53
Nitrate-N	0.00
Potassium	2.02
Sodium	539.36
Sulfate	118.88
TOTAL ANIONS	775
TOTAL CATIONS	719
CATION/ANION (% DIFF)	-3.73
Calculated TDS	44004
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.13
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/09/20

Cation/Anion % Difference calculated per SM1030E.

March 16, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 2002082

RE: Copano GW 1Q20

Dear Kevin Dworsky:

DHL Analytical, Inc. received 5 sample(s) on 2/11/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

Nº 80826
CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Rd.
PHONE: (361) 573-1442 FAX/E-MAIL:
DATA REPORTED TO: Kevin Dvorsky, Greg Logan
ADDITIONAL REPORT COPIES TO: Victor Gonzalez

DATE: 2/10/20 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 2002082
PROJECT LOCATION OR NAME: Copano GW 1920
CLENT PROJECT #: 19125525 COLLECTOR: Victor Gonzalez

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☒ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
MW4-4	01	2/10/20	10:50	W	P	6		X	X	X	X	See attached list for all analysis
MW4-7	02		12:05									
MW4-7B	03		13:25									
MW4-7A	04		14:32									
MW-203	05		13:10									

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ _____ ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS _____ ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
VA	2/10/20 17:30	FedEX
FedEX	2.11.2020 0910	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 0.5 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Dissolved Metals[1]	SW6020A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Metals.
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Dissolved Mercury	SW7470A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Mercury.
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:
1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium, Uranium
2) From time of sample collection

APAR (Copano GW 1Q20)

ORIGIN ID:VCTA (361) 541-0723
VICTOR GONZALEZ
GOLDER ASSOCIATES
620 E. AIRLINE

VICTORIA, TX 77901
UNITED STATES US

SHIP DATE: 05FEB20
ACTWGT: 65.00 LB
CAD: 2806631/INET4220
DIMS: 24x12x15 IN

BILL RECIPIENT

TO SAMPLE RECEIVING
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF: COPANO APAR 1Q20 - VG
INV:
PO: 19125525 DEPT:

56BJ2049E/FE4A

FedEx Express

FedEx Ship Manager - Print Your Label(s)

FedEx
MPS# 0263 7776 9918 7496

TUE – 11 FEB 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX – US AUS

#258552 02/10 56BJ2/049E/FE4A

2/5/2020

CUSTODY SEAL

DATE 2/10/20

SIGNATURE

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 2/11/2020

Work Order Number 2002082 | Received by: JH

Checklist completed by: Signature 2/11/2020 Date | Reviewed by Initials 2/11/2020 Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	0.5 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted?		Checked by
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW 1Q20	**LRC Date:** 3/16/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2002082
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW 1Q20	**LRC Date:** 3/16/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2002082
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?		X			**S10-02**
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

03/16/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *16-Mar-20*

CLIENT: Golder
Project: Copano GW 1Q20
Lab Order: 2002082

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis (total & dissolved)
Method SW6020B - Uranium in Water Analysis (this parameter is not NELAP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 2/11/20. A total of 5 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions analysis performed on 2/11/20 the matrix spike recovery was below control limits for Chloride. This is flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Total Metals analysis performed on 2/14/20 (batch 94959) the matrix spike and matrix spike duplicate recoveries were out of control limits for five analytes. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Dissolved Metals analysis performed on 2/18/20 (batch 95024) the matrix spike and matrix spike duplicate recoveries were below control limits for Nickel. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Exception Report R10-01

For Total and Dissolved Metals some dissolved metals results were slightly greater than the total metals results for all samples. These are within the acceptable variation limits. No further corrective actions were taken.

For Anions analysis all samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride and Sulfate).

Exception Report S9-01

For Dissolved Metals analysis performed on 2/14/20 (batch 94959) the PDS recovery was slightly below control limits for Nickel. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

For Total Metals analysis performed on 2/18/20 (batch 95024) the PDS recovery was below control limits for Nickel. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

For Dissolved Mercury analysis performed on 2/18/20 (batch 95018) the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

For Total Mercury analysis performed on 2/18/20 (batch 95016) the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

Exception Report S10-02

For Metals analysis, the recovery of Aluminum for the Detectability Check Standard (DCS1-94341) was slightly above the DHL Analytical internal control limits; the recovery meets TRRP specifications. This is flagged accordingly in the QC summary report. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *16-Mar-20*

CLIENT: Golder
Project: Copano GW 1Q20
Lab Order: 2002082

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2002082-01	MW4-4		02/10/20 10:50 AM	2/11/2020
2002082-02	MW4-7		02/10/20 12:05 PM	2/11/2020
2002082-03	MW4-7B		02/10/20 01:25 PM	2/11/2020
2002082-04	MW4-7A		02/10/20 02:32 PM	2/11/2020
2002082-05	MW- 203		02/10/20 01:10 PM	2/11/2020

Lab Order: 2002082
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002082-01A	MW4-4	02/10/20 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW4-4	02/10/20 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW4-4	02/10/20 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW4-4	02/10/20 10:50 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016
2002082-01B	MW4-4	02/10/20 10:50 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW4-4	02/10/20 10:50 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW4-4	02/10/20 10:50 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002082-01C	MW4-4	02/10/20 10:50 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/21/20 09:11 AM	95116
2002082-01D	MW4-4	02/10/20 10:50 AM	Aqueous	M2320 B	Alkalinity Preparation	02/18/20 08:29 AM	95038
	MW4-4	02/10/20 10:50 AM	Aqueous	E300	Anion Preparation	02/11/20 09:20 AM	94927
	MW4-4	02/10/20 10:50 AM	Aqueous	E300	Anion Preparation	02/11/20 09:20 AM	94927
	MW4-4	02/10/20 10:50 AM	Aqueous	E300	Anion Preparation	02/11/20 09:20 AM	94927
	MW4-4	02/10/20 10:50 AM	Aqueous	M2540C	TDS Preparation	02/12/20 01:31 PM	94970
2002082-02A	MW4-7	02/10/20 12:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW4-7	02/10/20 12:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW4-7	02/10/20 12:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW4-7	02/10/20 12:05 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016
2002082-02B	MW4-7	02/10/20 12:05 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW4-7	02/10/20 12:05 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW4-7	02/10/20 12:05 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002082-02C	MW4-7	02/10/20 12:05 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/21/20 09:11 AM	95116
2002082-02D	MW4-7	02/10/20 12:05 PM	Aqueous	M2320 B	Alkalinity Preparation	02/18/20 08:29 AM	95038
	MW4-7	02/10/20 12:05 PM	Aqueous	E300	Anion Preparation	02/11/20 09:20 AM	94927
	MW4-7	02/10/20 12:05 PM	Aqueous	E300	Anion Preparation	02/11/20 09:20 AM	94927
	MW4-7	02/10/20 12:05 PM	Aqueous	M2540C	TDS Preparation	02/12/20 01:31 PM	94970
2002082-03A	MW4-7B	02/10/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW4-7B	02/10/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW4-7B	02/10/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959

Lab Order: 2002082
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002082-03A	MW4-7B	02/10/20 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016
2002082-03B	MW4-7B	02/10/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW4-7B	02/10/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW4-7B	02/10/20 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002082-03C	MW4-7B	02/10/20 01:25 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/21/20 09:11 AM	95116
2002082-03D	MW4-7B	02/10/20 01:25 PM	Aqueous	M2320 B	Alkalinity Preparation	02/18/20 08:29 AM	95038
	MW4-7B	02/10/20 01:25 PM	Aqueous	E300	Anion Preparation	02/11/20 09:20 AM	94927
	MW4-7B	02/10/20 01:25 PM	Aqueous	E300	Anion Preparation	02/11/20 09:20 AM	94927
	MW4-7B	02/10/20 01:25 PM	Aqueous	M2540C	TDS Preparation	02/12/20 01:31 PM	94970
2002082-04A	MW4-7A	02/10/20 02:32 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW4-7A	02/10/20 02:32 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW4-7A	02/10/20 02:32 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW4-7A	02/10/20 02:32 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016
2002082-04B	MW4-7A	02/10/20 02:32 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW4-7A	02/10/20 02:32 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW4-7A	02/10/20 02:32 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002082-04C	MW4-7A	02/10/20 02:32 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/21/20 09:11 AM	95116
2002082-04D	MW4-7A	02/10/20 02:32 PM	Aqueous	M2320 B	Alkalinity Preparation	02/18/20 08:29 AM	95038
	MW4-7A	02/10/20 02:32 PM	Aqueous	E300	Anion Preparation	02/11/20 09:20 AM	94927
	MW4-7A	02/10/20 02:32 PM	Aqueous	E300	Anion Preparation	02/11/20 09:20 AM	94927
	MW4-7A	02/10/20 02:32 PM	Aqueous	M2540C	TDS Preparation	02/12/20 01:31 PM	94970
2002082-05A	MW- 203	02/10/20 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW- 203	02/10/20 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW- 203	02/10/20 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/12/20 08:59 AM	94959
	MW- 203	02/10/20 01:10 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016
2002082-05B	MW- 203	02/10/20 01:10 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW- 203	02/10/20 01:10 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW- 203	02/10/20 01:10 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018

Lab Order: 2002082
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002082-05C	MW- 203	02/10/20 01:10 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/21/20 09:11 AM	95116
2002082-05D	MW- 203	02/10/20 01:10 PM	Aqueous	M2320 B	Alkalinity Preparation	02/18/20 08:29 AM	95038
	MW- 203	02/10/20 01:10 PM	Aqueous	E300	Anion Preparation	02/11/20 09:20 AM	94927
	MW- 203	02/10/20 01:10 PM	Aqueous	E300	Anion Preparation	02/11/20 09:20 AM	94927
	MW- 203	02/10/20 01:10 PM	Aqueous	E300	Anion Preparation	02/11/20 09:20 AM	94927
	MW- 203	02/10/20 01:10 PM	Aqueous	M2540C	TDS Preparation	02/12/20 01:31 PM	94970

Lab Order: 2002082
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002082-01A	MW4-4	Aqueous	SW7470A	Mercury Total: Aqueous	95016	1	02/18/20 02:00 PM	CETAC2_HG_200218A
	MW4-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	1000	02/14/20 01:06 PM	ICP-MS4_200214A
	MW4-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	100	02/14/20 01:26 PM	ICP-MS4_200214A
	MW4-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	1	02/14/20 12:31 PM	ICP-MS5_200214A
	MW4-4	Aqueous	SW6020B	Uranium in Water by ICPMS	94959	1	02/14/20 12:31 PM	ICP-MS5_200214B
2002082-01B	MW4-4	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 01:04 PM	ICP-MS5_200218C
	MW4-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:15 PM	CETAC2_HG_200218B
	MW4-4	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 01:04 PM	ICP-MS5_200218B
2002082-01C	MW4-4	Aqueous	M4500-NH3-D	Ammonia aqueous	95116	1	02/21/20 01:20 PM	WC_200221A
2002082-01D	MW4-4	Aqueous	M2320 B	Alkalinity	95038	1	02/18/20 10:12 AM	TITRATOR_200218A
	MW4-4	Aqueous	E300	Anions by IC method - Water	94927	500	02/11/20 12:23 PM	IC4_200211A
	MW4-4	Aqueous	E300	Anions by IC method - Water	94927	10	02/11/20 02:31 PM	IC4_200211A
	MW4-4	Aqueous	E300	Anions by IC method - Water	94927	10	02/12/20 09:51 AM	IC4_200211A
	MW4-4	Aqueous	M2540C	Total Dissolved Solids	94970	1	02/12/20 05:15 PM	WC_200212D
2002082-02A	MW4-7	Aqueous	SW7470A	Mercury Total: Aqueous	95016	1	02/18/20 02:02 PM	CETAC2_HG_200218A
	MW4-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	1000	02/14/20 01:08 PM	ICP-MS4_200214A
	MW4-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	1	02/14/20 12:35 PM	ICP-MS5_200214A
	MW4-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	100	02/14/20 01:28 PM	ICP-MS4_200214A
	MW4-7	Aqueous	SW6020B	Uranium in Water by ICPMS	94959	1	02/14/20 12:35 PM	ICP-MS5_200214B
2002082-02B	MW4-7	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 01:17 PM	ICP-MS5_200218C
	MW4-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:17 PM	CETAC2_HG_200218B
	MW4-7	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 01:17 PM	ICP-MS5_200218B
2002082-02C	MW4-7	Aqueous	M4500-NH3-D	Ammonia aqueous	95116	1	02/21/20 01:20 PM	WC_200221A
2002082-02D	MW4-7	Aqueous	M2320 B	Alkalinity	95038	1	02/18/20 10:31 AM	TITRATOR_200218A
	MW4-7	Aqueous	E300	Anions by IC method - Water	94927	500	02/11/20 12:39 PM	IC4_200211A
	MW4-7	Aqueous	E300	Anions by IC method - Water	94927	10	02/11/20 04:55 PM	IC4_200211A

Lab Order: 2002082
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002082-02D	MW4-7	Aqueous	M2540C	Total Dissolved Solids	94970	1	02/12/20 05:15 PM	WC_200212D
2002082-03A	MW4-7B	Aqueous	SW7470A	Mercury Total: Aqueous	95016	1	02/18/20 02:04 PM	CETAC2_HG_200218A
	MW4-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	1000	02/14/20 01:02 PM	ICP-MS4_200214A
	MW4-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	100	02/14/20 01:22 PM	ICP-MS4_200214A
	MW4-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	1	02/14/20 12:24 PM	ICP-MS5_200214A
	MW4-7B	Aqueous	SW6020B	Uranium in Water by ICPMS	94959	1	02/14/20 12:24 PM	ICP-MS5_200214B
2002082-03B	MW4-7B	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 01:35 PM	ICP-MS5_200218C
	MW4-7B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:19 PM	CETAC2_HG_200218B
	MW4-7B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 01:35 PM	ICP-MS5_200218B
2002082-03C	MW4-7B	Aqueous	M4500-NH3-D	Ammonia aqueous	95116	1	02/21/20 01:20 PM	WC_200221A
2002082-03D	MW4-7B	Aqueous	M2320 B	Alkalinity	95038	1	02/18/20 10:43 AM	TITRATOR_200218A
	MW4-7B	Aqueous	E300	Anions by IC method - Water	94927	500	02/11/20 12:55 PM	IC4_200211A
	MW4-7B	Aqueous	E300	Anions by IC method - Water	94927	10	02/11/20 05:11 PM	IC4_200211A
	MW4-7B	Aqueous	M2540C	Total Dissolved Solids	94970	1	02/12/20 05:15 PM	WC_200212D
2002082-04A	MW4-7A	Aqueous	SW7470A	Mercury Total: Aqueous	95016	1	02/18/20 02:06 PM	CETAC2_HG_200218A
	MW4-7A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	1	02/14/20 12:42 PM	ICP-MS5_200214A
	MW4-7A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	1000	02/14/20 01:10 PM	ICP-MS4_200214A
	MW4-7A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	100	02/14/20 01:30 PM	ICP-MS4_200214A
	MW4-7A	Aqueous	SW6020B	Uranium in Water by ICPMS	94959	1	02/14/20 12:42 PM	ICP-MS5_200214B
2002082-04B	MW4-7A	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 01:49 PM	ICP-MS5_200218C
	MW4-7A	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:21 PM	CETAC2_HG_200218B
	MW4-7A	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 01:49 PM	ICP-MS5_200218B
2002082-04C	MW4-7A	Aqueous	M4500-NH3-D	Ammonia aqueous	95116	1	02/21/20 01:20 PM	WC_200221A
2002082-04D	MW4-7A	Aqueous	M2320 B	Alkalinity	95038	1	02/18/20 10:56 AM	TITRATOR_200218A
	MW4-7A	Aqueous	E300	Anions by IC method - Water	94927	10	02/11/20 05:27 PM	IC4_200211A
	MW4-7A	Aqueous	E300	Anions by IC method - Water	94927	500	02/11/20 01:11 PM	IC4_200211A

Lab Order: 2002082
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002082-04D	MW4-7A	Aqueous	M2540C	Total Dissolved Solids	94970	1	02/12/20 05:15 PM	WC_200212D
2002082-05A	MW- 203	Aqueous	SW7470A	Mercury Total: Aqueous	95016	1	02/18/20 02:09 PM	CETAC2_HG_200218A
	MW- 203	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	1000	02/14/20 01:12 PM	ICP-MS4_200214A
	MW- 203	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	100	02/14/20 01:32 PM	ICP-MS4_200214A
	MW- 203	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94959	1	02/14/20 12:48 PM	ICP-MS5_200214A
	MW- 203	Aqueous	SW6020B	Uranium in Water by ICPMS	94959	1	02/14/20 12:48 PM	ICP-MS5_200214B
2002082-05B	MW- 203	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 02:02 PM	ICP-MS5_200218C
	MW- 203	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:24 PM	CETAC2_HG_200218B
	MW- 203	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 02:02 PM	ICP-MS5_200218B
2002082-05C	MW- 203	Aqueous	M4500-NH3-D	Ammonia aqueous	95116	1	02/21/20 01:20 PM	WC_200221A
2002082-05D	MW- 203	Aqueous	M2320 B	Alkalinity	95038	1	02/18/20 11:09 AM	TITRATOR_200218A
	MW- 203	Aqueous	E300	Anions by IC method - Water	94927	500	02/11/20 01:27 PM	IC4_200211A
	MW- 203	Aqueous	E300	Anions by IC method - Water	94927	10	02/11/20 05:43 PM	IC4_200211A
	MW- 203	Aqueous	E300	Anions by IC method - Water	94927	10	02/12/20 10:07 AM	IC4_200211A
	MW- 203	Aqueous	M2540C	Total Dissolved Solids	94970	1	02/12/20 05:15 PM	WC_200212D

DHL Analytical, Inc.

Date: *16-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-4
Project:	Copano GW 1Q20	**Lab ID:**	2002082-01
Project No:	19125525	**Collection Date:**	02/10/20 10:50 AM
Lab Order:	2002082	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/18/20 01:04 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 01:04 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 01:04 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 01:04 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 01:04 PM
Dissolved Nickel	0.00307	0.00300	0.0100	J	mg/L	1	02/18/20 01:04 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 01:04 PM
Dissolved Vanadium	0.00161	0.000500	0.00100		mg/L	1	02/18/20 01:04 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/14/20 12:31 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/14/20 12:31 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/14/20 12:31 PM
Calcium	1110	10.0	30.0		mg/L	100	02/14/20 01:26 PM
Chromium	0.00213	0.00200	0.00500	J	mg/L	1	02/14/20 12:31 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/14/20 12:31 PM
Magnesium	1170	10.0	30.0		mg/L	100	02/14/20 01:26 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/14/20 12:31 PM
Potassium	48.1	10.0	30.0		mg/L	100	02/14/20 01:26 PM
Sodium	8490	100	300		mg/L	1000	02/14/20 01:06 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/14/20 12:31 PM
Vanadium	0.00146	0.000500	0.00100		mg/L	1	02/14/20 12:31 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:15 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 02:00 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.100	0.00300	0.0100	N	mg/L	1	02/14/20 12:31 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0959	0.00300	0.0100	N	mg/L	1	02/18/20 01:04 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	16500	150	500		mg/L	500	02/11/20 12:23 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/12/20 09:51 AM
Nitrate-N	1.43	1.00	5.00	J	mg/L	10	02/12/20 09:51 AM
Sulfate	4080	500	1500		mg/L	500	02/11/20 12:23 PM

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See Final Page of Report for MQLs and MDLs
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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *16-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-4
Project:	Copano GW 1Q20	**Lab ID:**	2002082-01
Project No:	19125525	**Collection Date:**	02/10/20 10:50 AM
Lab Order:	2002082	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	176	10.0	20.0		mg/L @ pH 4.52	1	02/18/20 10:12 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/18/20 10:12 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/18/20 10:12 AM
Alkalinity, Total (As CaCO3)	176	20.0	20.0		mg/L @ pH 4.52	1	02/18/20 10:12 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.248	0.100	0.250	J	mg/L	1	02/21/20 01:20 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	32500	1000	1000		mg/L	1	02/12/20 05:15 PM

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *16-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7
Project:	Copano GW 1Q20	**Lab ID:**	2002082-02
Project No:	19125525	**Collection Date:**	02/10/20 12:05 PM
Lab Order:	2002082	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/18/20 01:17 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 01:17 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 01:17 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 01:17 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 01:17 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/18/20 01:17 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 01:17 PM
Dissolved Vanadium	0.00109	0.000500	0.00100		mg/L	1	02/18/20 01:17 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0108	0.0100	0.0300	J	mg/L	1	02/14/20 12:35 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/14/20 12:35 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/14/20 12:35 PM
Calcium	742	10.0	30.0		mg/L	100	02/14/20 01:28 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/14/20 12:35 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/14/20 12:35 PM
Magnesium	865	10.0	30.0		mg/L	100	02/14/20 01:28 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/14/20 12:35 PM
Potassium	46.8	10.0	30.0		mg/L	100	02/14/20 01:28 PM
Sodium	7440	100	300		mg/L	1000	02/14/20 01:08 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/14/20 12:35 PM
Vanadium	0.000928	0.000500	0.00100	J	mg/L	1	02/14/20 12:35 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:17 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 02:02 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0655	0.00300	0.0100	N	mg/L	1	02/14/20 12:35 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0647	0.00300	0.0100	N	mg/L	1	02/18/20 01:17 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	14200	150	500		mg/L	500	02/11/20 12:39 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/11/20 04:55 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/11/20 04:55 PM
Sulfate	2470	500	1500		mg/L	500	02/11/20 12:39 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *16-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7
Project:	Copano GW 1Q20	**Lab ID:**	2002082-02
Project No:	19125525	**Collection Date:**	02/10/20 12:05 PM
Lab Order:	2002082	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	259	10.0	20.0		mg/L @ pH 4.52	1	02/18/20 10:31 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/18/20 10:31 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/18/20 10:31 AM
Alkalinity, Total (As CaCO3)	259	20.0	20.0		mg/L @ pH 4.52	1	02/18/20 10:31 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/21/20 01:20 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	26500	1000	1000		mg/L	1	02/12/20 05:15 PM

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DF- Dilution Factor
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *16-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7B
Project:	Copano GW 1Q20	**Lab ID:**	2002082-03
Project No:	19125525	**Collection Date:**	02/10/20 01:25 PM
Lab Order:	2002082	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/18/20 01:35 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 01:35 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 01:35 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 01:35 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 01:35 PM
Dissolved Nickel	0.00378	0.00300	0.0100	J	mg/L	1	02/18/20 01:35 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 01:35 PM
Dissolved Vanadium	0.00425	0.000500	0.00100		mg/L	1	02/18/20 01:35 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0729	0.0100	0.0300		mg/L	1	02/14/20 12:24 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/14/20 12:24 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/14/20 12:24 PM
Calcium	1280	10.0	30.0		mg/L	100	02/14/20 01:22 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/14/20 12:24 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/14/20 12:24 PM
Magnesium	1810	10.0	30.0		mg/L	100	02/14/20 01:22 PM
Nickel	0.00371	0.00300	0.0100	J	mg/L	1	02/14/20 12:24 PM
Potassium	101	10.0	30.0		mg/L	100	02/14/20 01:22 PM
Sodium	12200	100	300		mg/L	1000	02/14/20 01:02 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/14/20 12:24 PM
Vanadium	0.00408	0.000500	0.00100		mg/L	1	02/14/20 12:24 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:19 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 02:04 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0614	0.00300	0.0100	N	mg/L	1	02/14/20 12:24 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0594	0.00300	0.0100	N	mg/L	1	02/18/20 01:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	24200	150	500		mg/L	500	02/11/20 12:55 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/11/20 05:11 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/11/20 05:11 PM
Sulfate	3850	500	1500		mg/L	500	02/11/20 12:55 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *16-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7B
Project:	Copano GW 1Q20	**Lab ID:**	2002082-03
Project No:	19125525	**Collection Date:**	02/10/20 01:25 PM
Lab Order:	2002082	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	254	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 10:43 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 10:43 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 10:43 AM
Alkalinity, Total (As CaCO3)	254	20.0	20.0		mg/L @ pH 4.53	1	02/18/20 10:43 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/21/20 01:20 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	45900	1000	1000		mg/L	1	02/12/20 05:15 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *16-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7A
Project:	Copano GW 1Q20	**Lab ID:**	2002082-04
Project No:	19125525	**Collection Date:**	02/10/20 02:32 PM
Lab Order:	2002082	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0113	0.0100	0.0300	J	mg/L	1	02/18/20 01:49 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 01:49 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 01:49 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 01:49 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 01:49 PM
Dissolved Nickel	0.00333	0.00300	0.0100	J	mg/L	1	02/18/20 01:49 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 01:49 PM
Dissolved Vanadium	0.00248	0.000500	0.00100		mg/L	1	02/18/20 01:49 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0863	0.0100	0.0300		mg/L	1	02/14/20 12:42 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/14/20 12:42 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/14/20 12:42 PM
Calcium	554	10.0	30.0		mg/L	100	02/14/20 01:30 PM
Chromium	0.00500	0.00200	0.00500		mg/L	1	02/14/20 12:42 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/14/20 12:42 PM
Magnesium	898	10.0	30.0		mg/L	100	02/14/20 01:30 PM
Nickel	0.00437	0.00300	0.0100	J	mg/L	1	02/14/20 12:42 PM
Potassium	63.4	10.0	30.0		mg/L	100	02/14/20 01:30 PM
Sodium	8250	100	300		mg/L	1000	02/14/20 01:10 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/14/20 12:42 PM
Vanadium	0.00239	0.000500	0.00100		mg/L	1	02/14/20 12:42 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:21 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 02:06 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.103	0.00300	0.0100	N	mg/L	1	02/14/20 12:42 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.102	0.00300	0.0100	N	mg/L	1	02/18/20 01:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	15700	150	500		mg/L	500	02/11/20 01:11 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/11/20 05:27 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/11/20 05:27 PM
Sulfate	2310	500	1500		mg/L	500	02/11/20 01:11 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *16-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7A
Project:	Copano GW 1Q20	**Lab ID:**	2002082-04
Project No:	19125525	**Collection Date:**	02/10/20 02:32 PM
Lab Order:	2002082	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	315	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 10:56 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 10:56 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 10:56 AM
Alkalinity, Total (As CaCO3)	315	20.0	20.0		mg/L @ pH 4.53	1	02/18/20 10:56 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/21/20 01:20 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	28900	1000	1000		mg/L	1	02/12/20 05:15 PM

Qualifiers:

ND - Not Detected at the SDL
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *16-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW- 203
Project:	Copano GW 1Q20	**Lab ID:**	2002082-05
Project No:	19125525	**Collection Date:**	02/10/20 01:10 PM
Lab Order:	2002082	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/18/20 02:02 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 02:02 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 02:02 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 02:02 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 02:02 PM
Dissolved Nickel	0.00346	0.00300	0.0100	J	mg/L	1	02/18/20 02:02 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 02:02 PM
Dissolved Vanadium	0.00398	0.000500	0.00100		mg/L	1	02/18/20 02:02 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0390	0.0100	0.0300		mg/L	1	02/14/20 12:48 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/14/20 12:48 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/14/20 12:48 PM
Calcium	1240	10.0	30.0		mg/L	100	02/14/20 01:32 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/14/20 12:48 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/14/20 12:48 PM
Magnesium	1800	10.0	30.0		mg/L	100	02/14/20 01:32 PM
Nickel	0.00351	0.00300	0.0100	J	mg/L	1	02/14/20 12:48 PM
Potassium	102	10.0	30.0		mg/L	100	02/14/20 01:32 PM
Sodium	12100	100	300		mg/L	1000	02/14/20 01:12 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/14/20 12:48 PM
Vanadium	0.00397	0.000500	0.00100		mg/L	1	02/14/20 12:48 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:24 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 02:09 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0586	0.00300	0.0100	N	mg/L	1	02/14/20 12:48 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0581	0.00300	0.0100	N	mg/L	1	02/18/20 02:02 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	24500	150	500		mg/L	500	02/11/20 01:27 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/12/20 10:07 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/12/20 10:07 AM
Sulfate	3940	500	1500		mg/L	500	02/11/20 01:27 PM

Qualifiers:

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B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *16-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW- 203
Project:	Copano GW 1Q20	**Lab ID:**	2002082-05
Project No:	19125525	**Collection Date:**	02/10/20 01:10 PM
Lab Order:	2002082	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	253	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:09 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:09 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:09 AM
Alkalinity, Total (As CaCO3)	253	20.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:09 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/21/20 01:20 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	46300	1000	1000		mg/L	1	02/12/20 05:15 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191203A

Sample ID: **DCS-93925**	Batch ID: **93925**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **DCS**	Run ID: **CETAC2_HG_191203A**	Analysis Date: **12/3/2019 2:43:30 PM**	Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000184	0.000200	0.000200	0	92.0	82	119	0	0	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	Page 1 of 34
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218A

The QC data in batch 95016 applies to the following samples: 2002082-01A, 2002082-02A, 2002082-03A, 2002082-04A, 2002082-05A

Sample ID: **MB-95016**	Batch ID: **95016**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **MBLK**	Run ID: **CETAC2_HG_200218A**			Analysis Date: **2/18/2020 1:51:04 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	<0.0000800	0.000200									

Sample ID: **LCS-95016**	Batch ID: **95016**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **LCS**	Run ID: **CETAC2_HG_200218A**			Analysis Date: **2/18/2020 1:53:20 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	85	115				

Sample ID: **LCSD-95016**	Batch ID: **95016**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **LCSD**	Run ID: **CETAC2_HG_200218A**			Analysis Date: **2/18/2020 1:55:36 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	0.00196	0.000200	0.00200	0	98.0	85	115	1.54	15		

Sample ID: **2002097-04A SD**	Batch ID: **95016**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **SD**	Run ID: **CETAC2_HG_200218A**			Analysis Date: **2/18/2020 2:34:11 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	<0.000400	0.00100	0	0				0	10		

Sample ID: **2002097-04A PDS**	Batch ID: **95016**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **PDS**	Run ID: **CETAC2_HG_200218A**			Analysis Date: **2/18/2020 2:36:27 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	0.00174	0.000200	0.00250	0	69.6	85	115			S	

Sample ID: **2002097-04A MS**	Batch ID: **95016**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **MS**	Run ID: **CETAC2_HG_200218A**			Analysis Date: **2/18/2020 4:15:52 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	0.00192	0.00100	0.00200	0	96.0	80	120				

Sample ID: **2002097-04A MSD**	Batch ID: **95016**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **MSD**	Run ID: **CETAC2_HG_200218A**			Analysis Date: **2/18/2020 4:18:09 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	0.00208	0.00100	0.00200	0	104	80	120	7.76	15		

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218A

Sample ID: **ICV-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 10:49:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00401	0.000200	0.00400	0	100	90	110			

Sample ID: **CCV5-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 1:46:30 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	90	110			

Sample ID: **CCV6-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 2:20:33 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	90	110			

Sample ID: **CCV7-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 2:56:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00185	0.000200	0.00200	0	92.5	90	110			

Sample ID: **CCV9-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 4:05:06 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00187	0.000200	0.00200	0	93.5	90	110			

Sample ID: **CCV10-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 4:29:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00191	0.000200	0.00200	0	95.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218B

The QC data in batch 95018 applies to the following samples: 2002082-01B, 2002082-02B, 2002082-03B, 2002082-04B, 2002082-05B

Sample ID: **MB-95018**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:01:31 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-95018**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:03:46 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00195	0.000200	0.00200	0	97.5	85	115			

Sample ID: **LCSD-95018**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:06:02 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	85	115	1.03	15	

Sample ID: **2002097-04B SD**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:44:38 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2002097-04B PDS**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:46:54 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00174	0.000200	0.00250	0	69.6	85	115			S

Sample ID: **2002097-04B MS**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:24:33 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00192	0.00100	0.00200	0	95.8	80	120			

Sample ID: **2002097-04B MSD**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:26:50 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00197	0.00100	0.00200	0	98.5	80	120	2.83	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218B

Sample ID: **ICV-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 10:49:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00401	0.000200	0.00400	0	100	90	110			

Sample ID: **CCV7-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 2:56:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00185	0.000200	0.00200	0	92.5	90	110			

Sample ID: **CCV8-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:30:59 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV9-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:05:06 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00187	0.000200	0.00200	0	93.5	90	110			

Sample ID: **CCV10-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:29:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00191	0.000200	0.00200	0	95.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200103A

Sample ID: **DCS2-94341**	Batch ID: **94341**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS2**	Run ID: **ICP-MS4_200103A**	Analysis Date: **1/3/2020 12:53:00 PM**		Prep Date: **12/31/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.277	0.300	0.300	0	92.3	70	130	0	0	
Magnesium	0.324	0.300	0.300	0	108	70	130	0	0	
Potassium	0.317	0.300	0.300	0	106	70	130	0	0	
Sodium	0.316	0.300	0.300	0	105	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_200214A**

The QC data in batch 94959 applies to the following samples: 2002082-01A, 2002082-02A, 2002082-03A, 2002082-04A, 2002082-05A

Sample ID: **MB-94959**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_200214A**	Analysis Date: **2/14/2020 12:54:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	<0.100	0.300								

Sample ID: **LCS-94959**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_200214A**	Analysis Date: **2/14/2020 12:56:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.07	0.300	5.00	0	101	80	120			

Sample ID: **LCSD-94959**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_200214A**	Analysis Date: **2/14/2020 12:58:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.08	0.300	5.00	0	102	80	120	0.239	15	

Sample ID: **2002082-03A SD**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200214A**	Analysis Date: **2/14/2020 1:04:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	12000	1500	0	12200				2.15	20	

Sample ID: **2002082-03A PDS**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200214A**	Analysis Date: **2/14/2020 1:14:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	16800	300	5000	12200	91.5	75	125			

Sample ID: **2002082-03A MS**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200214A**	Analysis Date: **2/14/2020 1:16:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	12100	300	5.00	12200	-1580	75	125			S

Sample ID: **2002082-03A MSD**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_200214A**	Analysis Date: **2/14/2020 1:18:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	12400	300	5.00	12200	3170	75	125	1.94	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200214A

Sample ID: **2002082-03A SD**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200214A**	Analysis Date: **2/14/2020 1:24:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1240	150	0	1280				2.45	20	
Magnesium	1830	150	0	1810				1.45	20	
Potassium	101	150	0	101				0.398	20	

Sample ID: **2002082-03A PDS**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200214A**	Analysis Date: **2/14/2020 1:34:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1740	30.0	500	1280	93.9	75	125			
Magnesium	2230	30.0	500	1810	84.7	75	125			
Potassium	586	30.0	500	101	97.0	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200214A

Sample ID: **ICV-200214**	Batch ID: **R108971**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200214A**	Analysis Date: **2/14/2020 12:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.59	0.300	2.50	0	103	90	110			
Magnesium	2.54	0.300	2.50	0	102	90	110			
Potassium	2.50	0.300	2.50	0	100	90	110			
Sodium	2.60	0.300	2.50	0	104	90	110			

Sample ID: **LCVL-200214**	Batch ID: **R108971**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200214A**	Analysis Date: **2/14/2020 12:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0969	0.300	0.100	0	96.9	80	120			
Magnesium	0.104	0.300	0.100	0	104	80	120			
Potassium	0.105	0.300	0.100	0	105	80	120			
Sodium	0.108	0.300	0.100	0	108	80	120			

Sample ID: **CCV1-200214**	Batch ID: **R108971**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200214A**	Analysis Date: **2/14/2020 1:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.90	0.300	5.00	0	98.0	90	110			
Magnesium	5.17	0.300	5.00	0	103	90	110			
Potassium	5.04	0.300	5.00	0	101	90	110			
Sodium	5.20	0.300	5.00	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200107A

Sample ID: **DCS1-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:14:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0276	0.0300	0.0200	0	138	70	130	0	0	S
Antimony	0.00107	0.00250	0.00100	0	107	70	130	0	0	
Lead	0.000537	0.00100	0.000500	0	107	70	130	0	0	
Thallium	0.000503	0.00150	0.000500	0	101	70	130	0	0	
Vanadium	0.000494	0.00100	0.000500	0	98.8	70	130	0	0	

Sample ID: **DCS2-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:16:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	
Magnesium	0.309	0.300	0.300	0	103	70	130	0	0	
Potassium	0.309	0.300	0.300	0	103	70	130	0	0	

Sample ID: **DCS3-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:19:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00538	0.00500	0.00500	0	108	70	130	0	0	
Chromium	0.00528	0.00500	0.00500	0	106	70	130	0	0	
Nickel	0.00533	0.0100	0.00500	0	107	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200107C**

Sample ID: **DCS1-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**		
SampType: **DCS**	Run ID: **ICP-MS5_200107C**	Analysis Date: **1/7/2020 11:14:00 AM**	Prep Date: **12/31/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.000491	0.0100	0.000500	0	98.2	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200214A**

The QC data in batch 94959 applies to the following samples: 2002082-01A, 2002082-02A, 2002082-03A, 2002082-04A, 2002082-05A

Sample ID: **MB-94959** Batch ID: **94959** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200214A** Analysis Date: **2/14/2020 12:15:00 PM** Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-94959** Batch ID: **94959** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200214A** Analysis Date: **2/14/2020 12:17:00 PM** Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.08	0.0300	5.00	0	102	80	120			
Antimony	0.198	0.00250	0.200	0	99.0	80	120			
Arsenic	0.207	0.00500	0.200	0	103	80	120			
Calcium	5.04	0.300	5.00	0	101	80	120			
Chromium	0.200	0.00500	0.200	0	100	80	120			
Lead	0.199	0.00100	0.200	0	99.3	80	120			
Magnesium	5.04	0.300	5.00	0	101	80	120			
Nickel	0.202	0.0100	0.200	0	101	80	120			
Potassium	4.96	0.300	5.00	0	99.2	80	120			
Thallium	0.210	0.00150	0.200	0	105	80	120			
Vanadium	0.199	0.00100	0.200	0	99.7	80	120			

Sample ID: **LCSD-94959** Batch ID: **94959** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200214A** Analysis Date: **2/14/2020 12:20:00 PM** Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.05	0.0300	5.00	0	101	80	120	0.553	15	
Antimony	0.200	0.00250	0.200	0	100	80	120	1.14	15	
Arsenic	0.206	0.00500	0.200	0	103	80	120	0.527	15	
Calcium	5.05	0.300	5.00	0	101	80	120	0.233	15	
Chromium	0.200	0.00500	0.200	0	99.9	80	120	0.185	15	
Lead	0.198	0.00100	0.200	0	98.9	80	120	0.405	15	
Magnesium	5.06	0.300	5.00	0	101	80	120	0.266	15	
Nickel	0.201	0.0100	0.200	0	100	80	120	0.573	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200214A

Sample ID: **LCSD-94959** Batch ID: **94959** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200214A** Analysis Date: **2/14/2020 12:20:00 PM** Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	5.01	0.300	5.00	0	100	80	120	1.04	15	
Thallium	0.211	0.00150	0.200	0	106	80	120	0.779	15	
Vanadium	0.198	0.00100	0.200	0	99.1	80	120	0.591	15	

Sample ID: **2002082-03A SD** Batch ID: **94959** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200214A** Analysis Date: **2/14/2020 12:26:00 PM** Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0644	0.150	0	0.0730				12.4	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Nickel	<0.0150	0.0500	0	0.00371				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	0.00371	0.00500	0	0.00408				9.50	20	

Sample ID: **2002082-03A PDS** Batch ID: **94959** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200214A** Analysis Date: **2/14/2020 1:31:00 PM** Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.97	0.0300	5.00	0.0729	97.9	75	125			
Antimony	0.177	0.00250	0.200	0	88.7	75	125			
Arsenic	0.171	0.00500	0.200	0	85.4	75	125			
Chromium	0.160	0.00500	0.200	0	80.2	75	125			
Lead	0.198	0.00100	0.200	0	98.8	75	125			
Nickel	0.152	0.0100	0.200	0.00371	73.9	75	125			S
Thallium	0.197	0.00150	0.200	0	98.4	75	125			
Vanadium	0.174	0.00100	0.200	0.00408	85.2	75	125			

Sample ID: **2002082-03A MS** Batch ID: **94959** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_200214A** Analysis Date: **2/14/2020 1:38:00 PM** Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0.0729	101	75	125			
Antimony	0.174	0.00250	0.200	0	86.8	75	125			
Arsenic	0.175	0.00500	0.200	0	87.4	75	125			
Calcium	1360	0.300	5.00	1310	852	75	125			S
Chromium	0.156	0.00500	0.200	0	77.9	75	125			
Lead	0.196	0.00100	0.200	0	97.9	75	125			
Magnesium	1710	0.300	5.00	1690	258	75	125			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200214A

Sample ID: **2002082-03A MS**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200214A**	Analysis Date: **2/14/2020 1:38:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.147	0.0100	0.200	0.00371	71.8	75	125			S
Potassium	121	0.300	5.00	108	253	75	125			S
Thallium	0.195	0.00150	0.200	0	97.3	75	125			
Vanadium	0.173	0.00100	0.200	0.00408	84.6	75	125			

Sample ID: **2002082-03A MSD**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200214A**	Analysis Date: **2/14/2020 1:41:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.19	0.0300	5.00	0.0729	102	75	125	0.802	15	
Antimony	0.175	0.00250	0.200	0	87.4	75	125	0.666	15	
Arsenic	0.176	0.00500	0.200	0	88.0	75	125	0.653	15	
Calcium	1370	0.300	5.00	1310	1140	75	125	1.05	15	S
Chromium	0.154	0.00500	0.200	0	77.1	75	125	0.964	15	
Lead	0.199	0.00100	0.200	0	99.3	75	125	1.41	15	
Magnesium	1680	0.300	5.00	1690	-196	75	125	1.34	15	S
Nickel	0.145	0.0100	0.200	0.00371	70.9	75	125	1.25	15	S
Potassium	124	0.300	5.00	108	317	75	125	2.59	15	S
Thallium	0.197	0.00150	0.200	0	98.3	75	125	1.04	15	
Vanadium	0.172	0.00100	0.200	0.00408	84.1	75	125	0.567	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200214A

Sample ID: **ICV-200214** Batch ID: **R108968** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_200214A** Analysis Date: **2/14/2020 12:04:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.47	0.0300	2.50	0	99.0	90	110			
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Calcium	2.65	0.300	2.50	0	106	90	110			
Chromium	0.103	0.00500	0.100	0	103	90	110			
Lead	0.102	0.00100	0.100	0	102	90	110			
Magnesium	2.46	0.300	2.50	0	98.3	90	110			
Nickel	0.104	0.0100	0.100	0	104	90	110			
Potassium	2.45	0.300	2.50	0	98.0	90	110			
Thallium	0.0996	0.00150	0.100	0	99.6	90	110			
Vanadium	0.101	0.00100	0.100	0	101	90	110			

Sample ID: **LCVL-200214** Batch ID: **R108968** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_200214A** Analysis Date: **2/14/2020 12:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0966	0.0300	0.100	0	96.6	80	120			
Antimony	0.00206	0.00250	0.00200	0	103	80	120			
Arsenic	0.00515	0.00500	0.00500	0	103	80	120			
Calcium	0.115	0.300	0.100	0	115	80	120			
Chromium	0.00514	0.00500	0.00500	0	103	80	120			
Lead	0.00101	0.00100	0.00100	0	101	80	120			
Magnesium	0.100	0.300	0.100	0	100	80	120			
Nickel	0.00506	0.0100	0.00500	0	101	80	120			
Potassium	0.104	0.300	0.100	0	104	80	120			
Thallium	0.000988	0.00150	0.00100	0	98.8	80	120			
Vanadium	0.000902	0.00100	0.00100	0	90.2	80	120			

Sample ID: **CCV1-200214** Batch ID: **R108968** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200214A** Analysis Date: **2/14/2020 1:58:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.31	0.0300	5.00	0	106	90	110			
Antimony	0.188	0.00250	0.200	0	93.8	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Calcium	5.31	0.300	5.00	0	106	90	110			
Chromium	0.184	0.00500	0.200	0	92.0	90	110			
Lead	0.195	0.00100	0.200	0	97.3	90	110			
Magnesium	5.16	0.300	5.00	0	103	90	110			
Nickel	0.194	0.0100	0.200	0	97.0	90	110			
Potassium	5.50	0.300	5.00	0	110	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200214A**

Sample ID: **CCV1-200214**	Batch ID: **R108968**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **CCV**	Run ID: **ICP-MS5_200214A**	Analysis Date: **2/14/2020 1:58:00 PM**		Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.212	0.00150	0.200	0	106	90	110			
Vanadium	0.188	0.00100	0.200	0	93.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200214B**

The QC data in batch 94959 applies to the following samples: 2002082-01A, 2002082-02A, 2002082-03A, 2002082-04A, 2002082-05A

Sample ID: **MB-94959**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_200214B**	Analysis Date: **2/14/2020 12:15:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-94959**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_200214B**	Analysis Date: **2/14/2020 12:17:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	103	80	120			N

Sample ID: **LCSD-94959**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200214B**	Analysis Date: **2/14/2020 12:20:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	103	80	120	0.031	15	N

Sample ID: **2002082-03A SD**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200214B**	Analysis Date: **2/14/2020 12:26:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0581	0.0500	0	0.0614				5.55	20	N

Sample ID: **2002082-03A PDS**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200214B**	Analysis Date: **2/14/2020 1:31:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.290	0.0100	0.200	0.0614	115	75	125			N

Sample ID: **2002082-03A MS**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200214B**	Analysis Date: **2/14/2020 1:38:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.289	0.0100	0.200	0.0614	114	75	125			N

Sample ID: **2002082-03A MSD**	Batch ID: **94959**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200214B**	Analysis Date: **2/14/2020 1:41:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.289	0.0100	0.200	0.0614	114	75	125	0.215	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200214B

Sample ID: **ICV-200214**	Batch ID: **R109129**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200214B**	Analysis Date: **2/14/2020 12:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0989	0.0100	0.100	0	98.9	90	110			N

Sample ID: **LCVL-200214**	Batch ID: **R109129**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200214B**	Analysis Date: **2/14/2020 12:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00495	0.0100	0.00500	0	99.1	80	120			N

Sample ID: **CCV1-200214**	Batch ID: **R109129**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200214B**	Analysis Date: **2/14/2020 1:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.200	0.0100	0.200	0	100	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200218B**

The QC data in batch 95024 applies to the following samples: 2002082-01B, 2002082-02B, 2002082-03B, 2002082-04B, 2002082-05B

Sample ID: **MB-95024** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:29:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-95024** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:32:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0	103	80	120			
Antimony	0.199	0.00250	0.200	0	99.7	80	120			
Arsenic	0.207	0.00500	0.200	0	104	80	120			
Chromium	0.202	0.00500	0.200	0	101	80	120			
Lead	0.200	0.00100	0.200	0	100	80	120			
Nickel	0.201	0.0100	0.200	0	101	80	120			
Thallium	0.211	0.00150	0.200	0	106	80	120			
Vanadium	0.199	0.00100	0.200	0	99.7	80	120			

Sample ID: **LCSD-95024** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:34:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.13	0.0300	5.00	0	103	80	120	0.262	15	
Antimony	0.201	0.00250	0.200	0	100	80	120	0.625	15	
Arsenic	0.209	0.00500	0.200	0	104	80	120	0.722	15	
Chromium	0.204	0.00500	0.200	0	102	80	120	0.978	15	
Lead	0.202	0.00100	0.200	0	101	80	120	0.958	15	
Nickel	0.203	0.0100	0.200	0	101	80	120	0.694	15	
Thallium	0.213	0.00150	0.200	0	106	80	120	0.721	15	
Vanadium	0.201	0.00100	0.200	0	100	80	120	0.611	15	

Sample ID: **2002097-04B SD** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:52:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0175				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

Sample ID: **2002097-04B SD** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:52:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00276				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0.000374				0	20	
Nickel	<0.0150	0.0500	0	0.00873				0	20	
Thallium	<0.00250	0.00750	0	0.00147				0	20	
Vanadium	0.00636	0.00500	0	0.00649				2.05	20	

Sample ID: **2002097-04B PDS** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 3:05:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.82	0.0300	5.00	0.0175	96.1	75	125			
Antimony	0.178	0.00250	0.200	0	89.0	75	125			
Arsenic	0.152	0.00500	0.200	0.00276	74.8	75	125			
Chromium	0.157	0.00500	0.200	0	78.7	75	125			
Lead	0.197	0.00100	0.200	0.000374	98.1	75	125			
Nickel	0.134	0.0100	0.200	0.00873	62.9	75	125			S
Thallium	0.196	0.00150	0.200	0.00147	97.3	75	125			
Vanadium	0.173	0.00100	0.200	0.00649	83.5	75	125			

Sample ID: **2002097-04B MS** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 3:18:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.01	0.0300	5.00	0.0175	99.8	75	125			
Antimony	0.178	0.00250	0.200	0	89.2	75	125			
Arsenic	0.156	0.00500	0.200	0.00276	76.6	75	125			
Chromium	0.154	0.00500	0.200	0	77.0	75	125			
Lead	0.199	0.00100	0.200	0.000374	99.5	75	125			
Nickel	0.133	0.0100	0.200	0.00873	62.0	75	125			S
Thallium	0.199	0.00150	0.200	0.00147	98.6	75	125			
Vanadium	0.173	0.00100	0.200	0.00649	83.2	75	125			

Sample ID: **2002097-04B MSD** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 3:29:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.09	0.0300	5.00	0.0175	101	75	125	1.61	15	
Antimony	0.177	0.00250	0.200	0	88.7	75	125	0.546	15	
Arsenic	0.154	0.00500	0.200	0.00276	75.7	75	125	1.18	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

Sample ID: **2002097-04B MSD** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 3:29:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.153	0.00500	0.200	0	76.6	75	125	0.533	15	
Lead	0.199	0.00100	0.200	0.000374	99.4	75	125	0.180	15	
Nickel	0.130	0.0100	0.200	0.00873	60.8	75	125	1.83	15	S
Thallium	0.199	0.00150	0.200	0.00147	98.7	75	125	0.119	15	
Vanadium	0.172	0.00100	0.200	0.00649	82.6	75	125	0.680	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

Sample ID: **ICV-200218**	Batch ID: **R109033**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200218B**	Analysis Date: **2/18/2020 11:30:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.50	0.0300	2.50	0	100	90	110			
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.0993	0.00500	0.100	0	99.3	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Lead	0.100	0.00100	0.100	0	100	90	110			
Nickel	0.0999	0.0100	0.100	0	99.9	90	110			
Thallium	0.0971	0.00150	0.100	0	97.1	90	110			
Vanadium	0.101	0.00100	0.100	0	101	90	110			

Sample ID: **LCVL-200218**	Batch ID: **R109033**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200218B**	Analysis Date: **2/18/2020 11:35:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.104	0.0300	0.100	0	104	80	120			
Antimony	0.00198	0.00250	0.00200	0	98.9	80	120			
Arsenic	0.00494	0.00500	0.00500	0	98.8	80	120			
Chromium	0.00524	0.00500	0.00500	0	105	80	120			
Lead	0.00101	0.00100	0.00100	0	101	80	120			
Nickel	0.00480	0.0100	0.00500	0	95.9	80	120			
Thallium	0.000974	0.00150	0.00100	0	97.4	80	120			
Vanadium	0.000924	0.00100	0.00100	0	92.4	80	120			

Sample ID: **CCV1-200218**	Batch ID: **R109033**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218B**	Analysis Date: **2/18/2020 12:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.12	0.0300	5.00	0	102	90	110			
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.208	0.00500	0.200	0	104	90	110			
Chromium	0.201	0.00500	0.200	0	100	90	110			
Lead	0.201	0.00100	0.200	0	101	90	110			
Nickel	0.200	0.0100	0.200	0	99.9	90	110			
Thallium	0.212	0.00150	0.200	0	106	90	110			
Vanadium	0.199	0.00100	0.200	0	99.7	90	110			

Sample ID: **CCV2-200218**	Batch ID: **R109033**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218B**	Analysis Date: **2/18/2020 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.32	0.0300	5.00	0	106	90	110			
Antimony	0.185	0.00250	0.200	0	92.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

Sample ID: **CCV2-200218** Batch ID: **R109033** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 3:43:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Chromium	0.184	0.00500	0.200	0	91.8	90	110			
Lead	0.195	0.00100	0.200	0	97.7	90	110			
Nickel	0.187	0.0100	0.200	0	93.5	90	110			
Thallium	0.209	0.00150	0.200	0	105	90	110			
Vanadium	0.185	0.00100	0.200	0	92.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200218C**

The QC data in batch 95024 applies to the following samples: 2002082-01B, 2002082-02B, 2002082-03B, 2002082-04B, 2002082-05B

Sample ID: **MB-95024**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:29:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-95024**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:32:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	104	80	120			N

Sample ID: **LCSD-95024**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:34:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	104	80	120	0.063	15	N

Sample ID: **2002097-04B SD**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:52:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.113	0.0500	0	0.116				2.63	20	N

Sample ID: **2002097-04B PDS**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 3:05:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.336	0.0100	0.200	0.116	110	75	125			N

Sample ID: **2002097-04B MS**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 3:18:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.337	0.0100	0.200	0.116	111	75	125			N

Sample ID: **2002097-04B MSD**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 3:29:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.338	0.0100	0.200	0.116	111	75	125	0.394	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200218C**

Sample ID: **ICV-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 11:30:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0970	0.0100	0.100	0	97.0	90	110			N

Sample ID: **LCVL-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 11:35:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00490	0.0100	0.00500	0	98.0	80	120			N

Sample ID: **CCV1-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	103	90	110			N

Sample ID: **CCV2-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0	97.3	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200205A

Sample ID: **DCS2-94859** Batch ID: **94859** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC4_200205A** Analysis Date: **2/5/2020 10:45:34 AM** Prep Date: **2/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.443	1.00	0.5000	0	88.7	65	135	0	0	
Fluoride	0.232	0.400	0.2000	0	116	65	135	0	0	
Nitrate-N	0.238	0.500	0.2500	0	95.0	65	135	0	0	
Sulfate	1.43	3.00	1.500	0	95.5	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200211A

The QC data in batch 94927 applies to the following samples: 2002082-01D, 2002082-02D, 2002082-03D, 2002082-04D, 2002082-05D

Sample ID: **MB-94927** Batch ID: **94927** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_200211A** Analysis Date: **2/11/2020 10:22:43 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-94927** Batch ID: **94927** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_200211A** Analysis Date: **2/11/2020 10:38:43 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.84	0.400	4.000	0	96.1	90	110			
Nitrate-N	5.11	0.500	5.000	0	102	90	110			
Sulfate	29.8	3.00	30.00	0	99.3	90	110			

Sample ID: **LCSD-94927** Batch ID: **94927** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_200211A** Analysis Date: **2/11/2020 10:54:43 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110	0.977	20	
Fluoride	3.92	0.400	4.000	0	98.1	90	110	2.05	20	
Nitrate-N	5.14	0.500	5.000	0	103	90	110	0.538	20	
Sulfate	29.9	3.00	30.00	0	99.8	90	110	0.517	20	

Sample ID: **2002082-01DMS** Batch ID: **94927** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_200211A** Analysis Date: **2/11/2020 4:23:06 PM** Prep Date: **2/11/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24400	500	10000	16470	79.8	90	110			S
Fluoride	10000	200	10000	0	100	90	110			
Nitrate-N	2220	250	2258	0	98.5	90	110			
Sulfate	13700	1500	10000	4085	96.5	90	110			

Sample ID: **2002082-01DMSD** Batch ID: **94927** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_200211A** Analysis Date: **2/12/2020 9:35:17 AM** Prep Date: **2/11/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25500	500	10000	16470	90.3	90	110	4.20	20	
Fluoride	10500	200	10000	0	105	90	110	4.95	20	
Nitrate-N	2330	250	2258	0	103	90	110	4.54	20	
Sulfate	14800	1500	10000	4085	107	90	110	7.22	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200211A

Sample ID: **ICV-200211** Batch ID: **R108902** TestNo: **E300** Units: **mg/L**
SampType: **ICV** Run ID: **IC4_200211A** Analysis Date: **2/11/2020 9:50:43 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.4	1.00	25.00	0	105	90	110			
Fluoride	10.4	0.400	10.00	0	104	90	110			
Nitrate-N	13.1	0.500	12.50	0	104	90	110			
Sulfate	79.4	3.00	75.00	0	106	90	110			

Sample ID: **CCV1-200211** Batch ID: **R108902** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC4_200211A** Analysis Date: **2/11/2020 3:51:06 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	3.88	0.400	4.000	0	97.1	90	110			
Nitrate-N	5.17	0.500	5.000	0	103	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID: **CCV2-200211** Batch ID: **R108902** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC4_200211A** Analysis Date: **2/11/2020 7:03:06 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	3.90	0.400	4.000	0	97.6	90	110			
Nitrate-N	5.17	0.500	5.000	0	103	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

Sample ID: **CCV3-200211** Batch ID: **R108902** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC4_200211A** Analysis Date: **2/12/2020 11:27:17 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	3.84	0.400	4.000	0	95.9	90	110			
Nitrate-N	5.17	0.500	5.000	0	103	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200218A

The QC data in batch 95038 applies to the following samples: 2002082-01D, 2002082-02D, 2002082-03D, 2002082-04D, 2002082-05D

Sample ID: **MB-95038** Batch ID: **95038** TestNo: **M2320 B** Units: **mg/L @ pH 4.15**
SampType: **MBLK** Run ID: **TITRATOR_200218A** Analysis Date: **2/18/2020 9:29:00 AM** Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-95038** Batch ID: **95038** TestNo: **M2320 B** Units: **mg/L @ pH 4.04**
SampType: **LCS** Run ID: **TITRATOR_200218A** Analysis Date: **2/18/2020 9:34:00 AM** Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	54.8	20.0	50.00	0	110	74	129			

Sample ID: **LCSD-95038** Batch ID: **95038** TestNo: **M2320 B** Units: **mg/L @ pH 4.06**
SampType: **LCSD** Run ID: **TITRATOR_200218A** Analysis Date: **2/18/2020 9:38:00 AM** Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	55.8	20.0	50.00	0	112	74	129	1.74	20	

Sample ID: **2002082-01D-DUP** Batch ID: **95038** TestNo: **M2320 B** Units: **mg/L @ pH 4.52**
SampType: **DUP** Run ID: **TITRATOR_200218A** Analysis Date: **2/18/2020 10:20:00 AM** Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	173	20.0	0	175.8				1.43	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	173	20.0	0	175.8				1.43	20	

Sample ID: **2002097-04D-DUP** Batch ID: **95038** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_200218A** Analysis Date: **2/18/2020 12:21:00 PM** Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	208	20.0	0	209.6				0.766	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	208	20.0	0	209.6				0.766	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200218A

Sample ID: **ICV-200218**	Batch ID: **R109038**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.14**
SampType: **ICV**	Run ID: **TITRATOR_200218A**	Analysis Date: **2/18/2020 9:22:00 AM**	Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	6.32	20.0	0							
Alkalinity, Carbonate (As CaCO3)	96.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	102	20.0	100.0	0	102	98	102			

Sample ID: **CCV1-200218**	Batch ID: **R109038**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.27**
SampType: **CCV**	Run ID: **TITRATOR_200218A**	Analysis Date: **2/18/2020 11:39:00 AM**	Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	22.8	20.0	0							
Alkalinity, Carbonate (As CaCO3)	80.5	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	103	20.0	100.0	0	103	90	110			

Sample ID: **CCV2-200218**	Batch ID: **R109038**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.35**
SampType: **CCV**	Run ID: **TITRATOR_200218A**	Analysis Date: **2/18/2020 1:13:00 PM**	Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	24.4	20.0	0							
Alkalinity, Carbonate (As CaCO3)	75.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.4	20.0	100.0	0	99.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200131C

Sample ID: **DCS-94791**	Batch ID: **94791**	TestNo: **M4500-NH3-D**	Units: **mg/L**		
SampType: **DCS**	Run ID: **WC_200131C**	Analysis Date: **1/31/2020 3:45:00 PM**	Prep Date: **1/31/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.122	0.250	0.1000	0	122	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200212D

The QC data in batch 94970 applies to the following samples: 2002082-01D, 2002082-02D, 2002082-03D, 2002082-04D, 2002082-05D

Sample ID: **MB-94970**	Batch ID: **94970**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200212D**	Analysis Date: **2/12/2020 5:15:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-94970**	Batch ID: **94970**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200212D**	Analysis Date: **2/12/2020 5:15:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	747	10.0	745.6	0	100	90	113			

Sample ID: **2002082-01D-DUP**	Batch ID: **94970**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200212D**	Analysis Date: **2/12/2020 5:15:00 PM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	33500	1000	0	32500				3.03	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200221A

The QC data in batch 95116 applies to the following samples: 2002082-01C, 2002082-02C, 2002082-03C, 2002082-04C, 2002082-05C

Sample ID: **MB-95116**	Batch ID: **95116**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200221A**	Analysis Date: **2/21/2020 1:20:00 PM**	Prep Date: **2/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-95116**	Batch ID: **95116**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200221A**	Analysis Date: **2/21/2020 1:20:00 PM**	Prep Date: **2/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.86	0.250	5.000	0	97.2	80	120			

Sample ID: **2002082-01CMS**	Batch ID: **95116**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_200221A**	Analysis Date: **2/21/2020 1:20:00 PM**	Prep Date: **2/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.51	0.250	5.000	0.2480	85.2	80	120			

Sample ID: **2002082-01CMSD**	Batch ID: **95116**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_200221A**	Analysis Date: **2/21/2020 1:20:00 PM**	Prep Date: **2/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.76	0.250	5.000	0.2480	90.2	80	120	5.39	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200221A

Sample ID: **ICV-200221**	Batch ID: **R109125**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_200221A**	Analysis Date: **2/21/2020 1:20:00 PM**	Prep Date: **2/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.91	0.250	2.500	0	116	80	120			

Sample ID: **CCV-200221**	Batch ID: **R109125**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_200221A**	Analysis Date: **2/21/2020 1:20:00 PM**	Prep Date: **2/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.22	0.250	5.000	0	84.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002082
Project: Copano GW 1Q20

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.1**	**g/L @ pH 4.1**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

March 11, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1189047
Samples Received:	02/13/2020
Project Number:	2002082
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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MW4-4 L1189047-01 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				02/10/20 10:50	02/13/20 09:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1429172	1	02/17/20 15:37	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1429172	1	02/17/20 15:37	02/18/20 22:48	RGT	Mt. Juliet, TN

MW4-7 L1189047-02 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				02/10/20 12:05	02/13/20 09:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1429172	1	02/17/20 15:37	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1429172	1	02/17/20 15:37	02/18/20 22:48	RGT	Mt. Juliet, TN

MW4-7B L1189047-03 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				02/10/20 13:25	02/13/20 09:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1429172	1	02/17/20 15:37	03/05/20 13:30	DME	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1429172	1	02/17/20 15:37	02/20/20 15:03	DME	Mt. Juliet, TN

MW4-7A L1189047-04 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				02/10/20 14:32	02/13/20 09:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1429172	1	02/17/20 15:37	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1429172	1	02/17/20 15:37	02/18/20 22:48	RGT	Mt. Juliet, TN

MW-203 L1189047-05 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				02/10/20 13:10	02/13/20 09:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1431736	1	02/28/20 13:52	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1429172	1	02/19/20 15:00	03/05/20 13:30	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1429172	1	02/19/20 15:00	02/21/20 10:30	RGT	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Report Revision History

Level II Report - Version 1: 03/06/20 16:30

Project Narrative

Report was reprinted to correct -03 COMB result.

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.95		0.445	0.702	03/05/2020 13:30	WG1431736
(T) Barium	*106*			*62.0-143*	*03/05/2020 13:30*	WG1431736
(T) Yttrium	*100*			*79.0-136*	*03/05/2020 13:30*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	3.05		0.885	1.02	03/05/2020 13:30	WG1429172

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.10		0.440	0.317	02/18/2020 22:48	WG1429172
(T) Barium-133	*102*			*30.0-143*	*02/18/2020 22:48*	WG1429172

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.60		0.421	0.609	03/05/2020 13:30	WG1431736
(T) Barium	*98.5*			*62.0-143*	*03/05/2020 13:30*	WG1431736
(T) Yttrium	*110*			*79.0-136*	*03/05/2020 13:30*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	4.07		0.916	0.879	03/05/2020 13:30	WG1429172

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.47		0.495	0.27	02/18/2020 22:48	WG1429172
(T) Barium-133	*104*			*30.0-143*	*02/18/2020 22:48*	WG1429172

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	13.0		0.628	0.655	03/05/2020 13:30	WG1431736
(T) Barium	*109*			*62.0-143*	*03/05/2020 13:30*	WG1431736
(T) Yttrium	*110*			*79.0-136*	*03/05/2020 13:30*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	17.3		1.43	0.992	03/05/2020 13:30	WG1429172

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	4.38		0.803	0.337	02/20/2020 15:03	WG1429172
(T) Barium-133	*107*			*30.0-143*	*02/20/2020 15:03*	WG1429172

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	4.01		0.636	0.889	03/05/2020 13:30	WG1431736
(T) Barium	*105*			*62.0-143*	*03/05/2020 13:30*	WG1431736
(T) Yttrium	*106*			*79.0-136*	*03/05/2020 13:30*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	5.32		1.06	1.11	03/05/2020 13:30	WG1429172

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.31		0.420	0.221	02/18/2020 22:48	WG1429172
(T) Barium-133	*105*			*30.0-143*	*02/18/2020 22:48*	WG1429172

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	14.5		0.613	0.579	03/05/2020 13:30	WG1431736
(T) Barium	*118*			*62.0-143*	*03/05/2020 13:30*	WG1431736
(T) Yttrium	*112*			*79.0-136*	*03/05/2020 13:30*	WG1431736

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	15.3		1.00	0.946	03/05/2020 13:30	WG1429172

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.755		0.389	0.367	02/21/2020 10:30	WG1429172
(T) Barium-133	*91.9*			*30.0-143*	*02/21/2020 10:30*	WG1429172

Method Blank (MB)

(MB) R3506008-1 03/05/20 09:45

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.542		0.388
(T) Barium	*101*		
(T) Yttrium	*105*		

L1188203-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1188203-04 03/05/20 09:45 • (DUP) R3506008-5 03/05/20 09:45

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	1.04	1.98	1	62.2	1.24		20	3
(T) Barium	*94.2*	*118*						
(T) Yttrium	*96.5*	*103*						

Laboratory Control Sample (LCS)

(LCS) R3506008-2 03/05/20 09:45

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.13	103	80.0-120	
(T) Barium			*111*		
(T) Yttrium			*111*		

L1188203-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1188203-01 03/05/20 09:45 • (MS) R3506008-3 03/05/20 09:45 • (MSD) R3506008-4 03/05/20 09:45

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	12.5	3.78	17.2	16.2	107	99.0	1	70.0-130			6.12		20
(T) Barium		*112*			*119*	*111*							
(T) Yttrium		*108*			*106*	*97.5*							

Method Blank (MB)

(MB) R3501822-1 02/18/20 15:22

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	0.00340		0.0643
(T) Barium-133	*97.3*		

L1189047-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1189047-03 02/20/20 15:03 • (DUP) R3501822-6 02/20/20 15:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	4.38	7.01	1	46.3	2.16		20	3
(T) Barium-133	*107*	*100*						

Laboratory Control Sample (LCS)

(LCS) R3501822-2 02/18/20 15:22

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.34	106	80.0-120	
(T) Barium-133			*100*		

L1189520-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1189520-01 02/18/20 22:48 • (MS) R3501822-3 02/18/20 15:22 • (MSD) R3501822-4 02/18/20 15:22

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	5.44	25.6	26.1	100	103	1	75.0-125			2.09		20
(T) Barium-133		*103*			*103*	*96.6*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

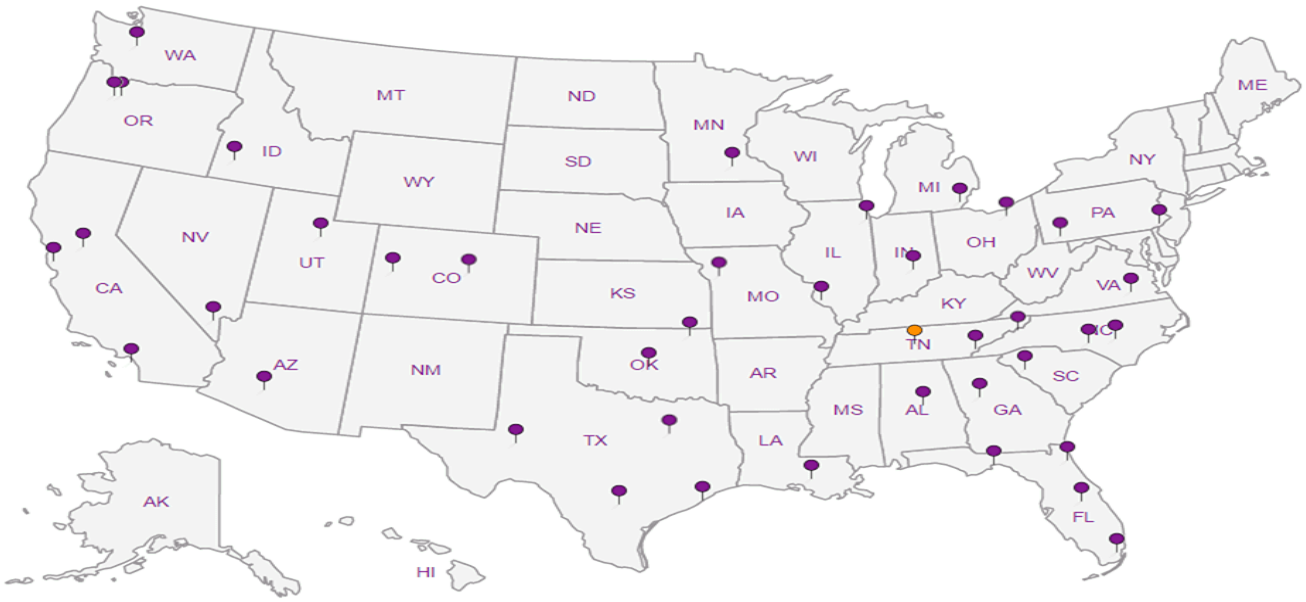
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



CHAIN-OF-CUSTODY RECORD

G245

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

Work Order: 2002082

1189047

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

11-Feb-20

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	RA 228 E904.0	RA226 M7500 Ra B M	Requested Tests			
MW4-4	Aqueous	-01E	02/10/20 10:50 AM	1LHDPEHNO3	1					-01
MW4-4	Aqueous	-01F	02/10/20 10:50 AM	1LHDPEHNO3		1				
MW4-7	Aqueous	-02E	02/10/20 12:05 PM	1LHDPEHNO3	1					02
MW4-7	Aqueous	-02F	02/10/20 12:05 PM	1LHDPEHNO3		1				
MW4-7B	Aqueous	-03E	02/10/20 01:25 PM	1LHDPEHNO3	1					03
MW4-7B	Aqueous	-03F	02/10/20 01:25 PM	1LHDPEHNO3		1				
MW4-7A	Aqueous	-04E	02/10/20 02:32 PM	1LHDPEHNO3	1					04
MW4-7A	Aqueous	-04F	02/10/20 02:32 PM	1LHDPEHNO3		1				
MW- 203	Aqueous	-05E	02/10/20 01:10 PM	1LHDPEHNO3	1					05
MW- 203	Aqueous	-05F	02/10/20 01:10 PM	1LHDPEHNO3		1				

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

RAD SCREEN: <0.5 mR/hr

		Date/Time			Date/Time
Relinquished by:		2-12-2020 1700	Received by:	Carol Kemp	2/13/20 10:35
Relinquished by:			Received by:		

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHCRTX	1189047	
Cooler Received/Opened On: 2 / 13 / 20 Temperature:	Amb	
Received By: Carol Kemp		
Signature: Carol Kemp		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002082

Sample ID: **MW4-4**
Lab ID Number: **2002082-01**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1110	mg/L	SW6020B
Magnesium	1170	mg/L	SW6020B
Sodium	8490	mg/L	SW6020B
Potassium	48.1	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.52	M2320 B
Bicarbonate	176	mg/L @ pH 4.52	M2320 B
Sulfate	4080	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	1.43	mg/L	E300
T-Alkalinity	176	mg/L @ pH 4.52	M2320 B
Hardness	7590	mg/L	SM 2340B
Chloride	16500	mg/L	E300
TDS	32500	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	3.52
Calcium	55.39
Chloride	465.44
Fluoride	0.00
Magnesium	96.22
Nitrate-N	0.10
Potassium	1.23
Sodium	369.29
Sulfate	84.95
TOTAL ANIONS	554
TOTAL CATIONS	522
CATION/ANION (% DIFF)	-2.96
Calculated TDS	31488
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.03
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/16/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002082

Sample ID: **MW4-7**
Lab ID Number: **2002082-02**

PARAMETER	RESULT	UNITS	METHOD
Calcium	742	mg/L	SW6020B
Magnesium	865	mg/L	SW6020B
Sodium	7440	mg/L	SW6020B
Potassium	46.8	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.52	M2320 B
Bicarbonate	259	mg/L @ pH 4.52	M2320 B
Sulfate	2470	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	259	mg/L @ pH 4.52	M2320 B
Hardness	5415	mg/L	SM 2340B
Chloride	14200	mg/L	E300
TDS	26500	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	5.17
Calcium	37.03
Chloride	400.56
Fluoride	0.00
Magnesium	71.13
Nitrate-N	0.00
Potassium	1.20
Sodium	323.62
Sulfate	51.43
TOTAL ANIONS	457
TOTAL CATIONS	433
CATION/ANION (% DIFF)	-2.72
Calculated TDS	25894
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.02
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/16/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002082

Sample ID: **MW4-7B**
Lab ID Number: **2002082-03**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1280	mg/L	SW6020B
Magnesium	1810	mg/L	SW6020B
Sodium	12200	mg/L	SW6020B
Potassium	101	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	254	mg/L @ pH 4.53	M2320 B
Sulfate	3850	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	254	mg/L @ pH 4.53	M2320 B
Hardness	10650	mg/L	SM 2340B
Chloride	24200	mg/L	E300
TDS	45900	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	5.07
Calcium	63.87
Chloride	682.65
Fluoride	0.00
Magnesium	148.85
Nitrate-N	0.00
Potassium	2.59
Sodium	530.67
Sulfate	80.16
TOTAL ANIONS	768
TOTAL CATIONS	746
CATION/ANION (% DIFF)	-1.45
Calculated TDS	43568
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.05
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/16/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002082

Sample ID: **MW4-7A**
Lab ID Number: **2002082-04**

PARAMETER	RESULT	UNITS	METHOD
Calcium	554	mg/L	SW6020B
Magnesium	898	mg/L	SW6020B
Sodium	8250	mg/L	SW6020B
Potassium	63.4	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	315	mg/L @ pH 4.53	M2320 B
Sulfate	2310	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	315	mg/L @ pH 4.53	M2320 B
Hardness	5081	mg/L	SM 2340B
Chloride	15700	mg/L	E300
TDS	28900	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	6.29
Calcium	27.64
Chloride	442.88
Fluoride	0.00
Magnesium	73.85
Nitrate-N	0.00
Potassium	1.63
Sodium	358.85
Sulfate	48.09
TOTAL ANIONS	497
TOTAL CATIONS	462
CATION/ANION (% DIFF)	-3.68
Calculated TDS	27932
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.03
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/16/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002082

Sample ID: **MW- 203**
Lab ID Number: **2002082-05**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1240	mg/L	SW6020B
Magnesium	1800	mg/L	SW6020B
Sodium	12100	mg/L	SW6020B
Potassium	102	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	253	mg/L @ pH 4.53	M2320 B
Sulfate	3940	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	253	mg/L @ pH 4.53	M2320 B
Hardness	10509	mg/L	SM 2340B
Chloride	24500	mg/L	E300
TDS	46300	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	5.05
Calcium	61.88
Chloride	691.11
Fluoride	0.00
Magnesium	148.03
Nitrate-N	0.00
Potassium	2.61
Sodium	526.32
Sulfate	82.03
TOTAL ANIONS	778
TOTAL CATIONS	739
CATION/ANION (% DIFF)	-2.60
Calculated TDS	43808
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.06
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/16/20

Cation/Anion % Difference calculated per SM1030E.

March 17, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 2002097

RE: Copano GW 1Q20

Dear Kevin Dworsky:

DHL Analytical, Inc. received 6 sample(s) on 2/12/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 80819

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 6620 E. Airline Rd.
PHONE: (361) 573-6442 FAX/E-MAIL:
DATA REPORTED TO: Kevin Dworsky, Greg Logan
ADDITIONAL REPORT COPIES TO: Victor Gonzalez

DATE: 2/11/20 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 2002097
PROJECT LOCATION OR NAME: Copano GW 1920
CLENT PROJECT #: 19125525 COLLECTOR: Victor Gonzalez

Authorize S% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☒ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ SVOC 625 ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 2008 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ___ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ___ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	FIELD NOTES
MW3-1	01	2/11/20	9:26	W	P	6		X	X	X	X	See attached list for all analysis MS/MSD
MW3-2	02		10:40			6						
MW3-3	03		12:00			6						
MW3-4B	04		14:00			18						
MW3-4	05		15:55			6						
MW-204	06		15:35			6						

RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
[signature] 2/11/20 18:00 Fed Ex
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
Fed Ex 2/12/20 0930 [signature]
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

3

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1/1.6/0.4°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Dissolved Metals[1]	SW6020A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Metals.
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Dissolved Mercury	SW7470A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Mercury.
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:

1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium, Uranium

2) From time of sample collection

APAR (Copano GW 1Q20)

CUSTODY SEAL

SIGNATURE

FedEx
MPS# 0263 7776 9918 3593

WED – 12 FEB 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US AUS

#5078066 02/11 5GBJ2/049E/FE4A

RT 512 FZ
1 10:30 D
3593 02.12

FedEx
TRK# 0201 7776 9918 7051

WED – 12 FEB 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX–US AUS

#507B0G6 02/11 5GBJ2/049E/FE4A

CUSTODY SEAL

DATE 2/11/20

SIGNATURE VA

CUSTODY SEAL

DATE 2/11/20

SIGNATURE

FedEx

MPS# 0263 7776 9918 6776

WED – 12 FEB 10:30A

PRIORITY OVERNIGHT

78664

TX-US AUS

44 BSMA

RT 512

FZ

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **2/12/2020**

Work Order Number **2002097** Received by: **EL**

Checklist completed by: _____ 2/12/2020 (Signature / Date) Reviewed by 02 2/12/2020 (Initials / Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.1 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? No		Checked by SH
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW 1Q20	**LRC Date:** 3/17/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2002097
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW 1Q20	**LRC Date:** 3/17/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2002097
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?		X			**S10-02**
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

03/17/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *17-Mar-20*

CLIENT: Golder
Project: Copano GW 1Q20
Lab Order: 2002097

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis (total & dissolved)
Method SW6020B - Uranium in Water Analysis (total & dissolved) (this parameter is not NELAP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 2/12/20. A total of 6 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Ammonia analysis performed on 2/20/20 the matrix spike and matrix spike duplicate recoveries were below control limits. This was due to matrix effect. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits. No further corrective actions were taken.

For Anions analysis performed on 2/12/20 the matrix spikes and matrix spike duplicate recoveries (2002097-01 MS/MSD & 2002097-04 MS/MSD) were out of control limits for Chloride and/or Fluoride. These are flagged accordingly. The samples selected for the matrix spikes and matrix spike duplicates were from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Total Metals analysis performed on 2/17/20 and 2/18/20 (batch 94996) the matrix spike and matrix spike duplicate recoveries were out of control limits for six analytes. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Dissolved Metals analysis performed on 2/18/20 (batch 95024) the matrix spike and matrix spike duplicate recoveries were below control limits for Nickel. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within

control limits for this analyte. No further corrective actions were taken.

Exception Report R10-01

For Metals and Uranium analyses, some dissolved results were slightly greater than the total results for several samples. These are within the acceptable variation limits. No further corrective actions were taken.

For Anions analysis all samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride).

Exception Report S9-01

For Dissolved Metals analysis performed on 2/18/20 (batch 95024) the PDS recovery was below control limits for Nickel. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

For Total Metals analysis performed on 2/17/20 (batch 94996) the PDS recovery was below control limits for Arsenic and Nickel. These are flagged accordingly. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

For Dissolved Mercury analysis performed on 2/18/20 (batch 95018) the PDS recovery was below control limits. This was due to matrix effect. These are flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

For Total Mercury analysis performed on 2/18/20 (batch 95016) the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

Exception Report S10-02

For Metals analysis, the recovery of Aluminum for the Detectability Check Standard (DCS1-94341) was slightly above the DHL Analytical internal control limits; the recovery meets TRRP specifications. This is flagged accordingly in the QC summary report. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT: Golder
Project: Copano GW 1Q20
Lab Order: 2002097

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2002097-01	MW3-1		02/11/20 09:26 AM	2/12/2020
2002097-02	MW3-2		02/11/20 10:40 AM	2/12/2020
2002097-03	MW3-3		02/11/20 12:00 PM	2/12/2020
2002097-04	MW3-4B		02/11/20 02:00 PM	2/12/2020
2002097-05	MW3-4		02/11/20 03:55 PM	2/12/2020
2002097-06	MW-204		02/11/20 03:35 PM	2/12/2020

Lab Order: 2002097
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002097-01A	MW3-1	02/11/20 09:26 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-1	02/11/20 09:26 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-1	02/11/20 09:26 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-1	02/11/20 09:26 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016
2002097-01B	MW3-1	02/11/20 09:26 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-1	02/11/20 09:26 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-1	02/11/20 09:26 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002097-01C	MW3-1	02/11/20 09:26 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/20/20 10:55 AM	95102
2002097-01D	MW3-1	02/11/20 09:26 AM	Aqueous	M2320 B	Alkalinity Preparation	02/18/20 08:29 AM	95038
	MW3-1	02/11/20 09:26 AM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW3-1	02/11/20 09:26 AM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW3-1	02/11/20 09:26 AM	Aqueous	E300	Anion Preparation	02/28/20 10:54 AM	95231
	MW3-1	02/11/20 09:26 AM	Aqueous	M2540C	TDS Preparation	02/14/20 02:23 PM	94990
2002097-02A	MW3-2	02/11/20 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-2	02/11/20 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-2	02/11/20 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-2	02/11/20 10:40 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016
2002097-02B	MW3-2	02/11/20 10:40 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-2	02/11/20 10:40 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-2	02/11/20 10:40 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002097-02C	MW3-2	02/11/20 10:40 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/20/20 10:55 AM	95102
2002097-02D	MW3-2	02/11/20 10:40 AM	Aqueous	M2320 B	Alkalinity Preparation	02/18/20 08:29 AM	95038
	MW3-2	02/11/20 10:40 AM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW3-2	02/11/20 10:40 AM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW3-2	02/11/20 10:40 AM	Aqueous	M2540C	TDS Preparation	02/14/20 02:23 PM	94990
2002097-03A	MW3-3	02/11/20 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-3	02/11/20 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-3	02/11/20 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996

Lab Order: 2002097
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002097-03A	MW3-3	02/11/20 12:00 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016
2002097-03B	MW3-3	02/11/20 12:00 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-3	02/11/20 12:00 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-3	02/11/20 12:00 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002097-03C	MW3-3	02/11/20 12:00 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/20/20 10:55 AM	95102
2002097-03D	MW3-3	02/11/20 12:00 PM	Aqueous	M2320 B	Alkalinity Preparation	02/18/20 08:29 AM	95038
	MW3-3	02/11/20 12:00 PM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW3-3	02/11/20 12:00 PM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW3-3	02/11/20 12:00 PM	Aqueous	M2540C	TDS Preparation	02/14/20 02:23 PM	94990
2002097-04A	MW3-4B	02/11/20 02:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-4B	02/11/20 02:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-4B	02/11/20 02:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-4B	02/11/20 02:00 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016
	MW3-4B	02/11/20 02:00 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016
2002097-04B	MW3-4B	02/11/20 02:00 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-4B	02/11/20 02:00 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-4B	02/11/20 02:00 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
	MW3-4B	02/11/20 02:00 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002097-04C	MW3-4B	02/11/20 02:00 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/20/20 10:55 AM	95102
2002097-04D	MW3-4B	02/11/20 02:00 PM	Aqueous	M2320 B	Alkalinity Preparation	02/18/20 08:29 AM	95038
	MW3-4B	02/11/20 02:00 PM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW3-4B	02/11/20 02:00 PM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW3-4B	02/11/20 02:00 PM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW3-4B	02/11/20 02:00 PM	Aqueous	M2540C	TDS Preparation	02/14/20 02:23 PM	94990
2002097-05A	MW3-4	02/11/20 03:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-4	02/11/20 03:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-4	02/11/20 03:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-4	02/11/20 03:55 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016

Lab Order: 2002097
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002097-05B	MW3-4	02/11/20 03:55 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-4	02/11/20 03:55 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-4	02/11/20 03:55 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002097-05C	MW3-4	02/11/20 03:55 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/20/20 10:55 AM	95102
2002097-05D	MW3-4	02/11/20 03:55 PM	Aqueous	M2320 B	Alkalinity Preparation	02/18/20 08:29 AM	95038
	MW3-4	02/11/20 03:55 PM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW3-4	02/11/20 03:55 PM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW3-4	02/11/20 03:55 PM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW3-4	02/11/20 03:55 PM	Aqueous	M2540C	TDS Preparation	02/14/20 02:23 PM	94990
2002097-06A	MW-204	02/11/20 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW-204	02/11/20 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW-204	02/11/20 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW-204	02/11/20 03:35 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:57 PM	95016
2002097-06B	MW-204	02/11/20 03:35 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW-204	02/11/20 03:35 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW-204	02/11/20 03:35 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002097-06C	MW-204	02/11/20 03:35 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/20/20 10:55 AM	95102
2002097-06D	MW-204	02/11/20 03:35 PM	Aqueous	M2320 B	Alkalinity Preparation	02/18/20 08:29 AM	95038
	MW-204	02/11/20 03:35 PM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW-204	02/11/20 03:35 PM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW-204	02/11/20 03:35 PM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW-204	02/11/20 03:35 PM	Aqueous	E300	Anion Preparation	02/12/20 11:10 AM	94941
	MW-204	02/11/20 03:35 PM	Aqueous	M2540C	TDS Preparation	02/14/20 02:23 PM	94990

Lab Order: 2002097
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002097-01A	MW3-1	Aqueous	SW7470A	Mercury Total: Aqueous	95016	1	02/18/20 02:15 PM	CETAC2_HG_200218A
	MW3-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1000	02/18/20 11:24 AM	ICP-MS4_200218B
	MW3-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	100	02/18/20 11:55 AM	ICP-MS4_200218B
	MW3-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1	02/17/20 11:18 AM	ICP-MS5_200217A
	MW3-1	Aqueous	SW6020B	Uranium in Water by ICPMS	94996	1	02/17/20 11:18 AM	ICP-MS5_200217B
2002097-01B	MW3-1	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 02:15 PM	ICP-MS5_200218C
	MW3-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:26 PM	CETAC2_HG_200218B
	MW3-1	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 02:15 PM	ICP-MS5_200218B
2002097-01C	MW3-1	Aqueous	M4500-NH3-D	Ammonia aqueous	95102	1	02/20/20 03:30 PM	WC_200220A
2002097-01D	MW3-1	Aqueous	M2320 B	Alkalinity	95038	1	02/18/20 11:34 AM	TITRATOR_200218A
	MW3-1	Aqueous	E300	Anions by IC method - Water	95231	10	02/28/20 12:41 PM	IC4_200228A
	MW3-1	Aqueous	E300	Anions by IC method - Water	94941	10	02/12/20 07:05 PM	IC4_200212A
	MW3-1	Aqueous	E300	Anions by IC method - Water	94941	500	02/13/20 12:57 AM	IC4_200212A
	MW3-1	Aqueous	M2540C	Total Dissolved Solids	94990	1	02/14/20 05:05 PM	WC_200214D
2002097-02A	MW3-2	Aqueous	SW7470A	Mercury Total: Aqueous	95016	1	02/18/20 02:18 PM	CETAC2_HG_200218A
	MW3-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1000	02/18/20 11:26 AM	ICP-MS4_200218B
	MW3-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	100	02/18/20 11:57 AM	ICP-MS4_200218B
	MW3-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1	02/17/20 11:29 AM	ICP-MS5_200217A
	MW3-2	Aqueous	SW6020B	Uranium in Water by ICPMS	94996	1	02/17/20 11:29 AM	ICP-MS5_200217B
2002097-02B	MW3-2	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 02:28 PM	ICP-MS5_200218C
	MW3-2	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:28 PM	CETAC2_HG_200218B
	MW3-2	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 02:28 PM	ICP-MS5_200218B
2002097-02C	MW3-2	Aqueous	M4500-NH3-D	Ammonia aqueous	95102	1	02/20/20 03:30 PM	WC_200220A
2002097-02D	MW3-2	Aqueous	M2320 B	Alkalinity	95038	1	02/18/20 11:49 AM	TITRATOR_200218A
	MW3-2	Aqueous	E300	Anions by IC method - Water	94941	10	02/12/20 07:21 PM	IC4_200212A
	MW3-2	Aqueous	E300	Anions by IC method - Water	94941	500	02/13/20 01:45 AM	IC4_200212A

Lab Order: 2002097
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002097-02D	MW3-2	Aqueous	M2540C	Total Dissolved Solids	94990	1	02/14/20 05:05 PM	WC_200214D
2002097-03A	MW3-3	Aqueous	SW7470A	Mercury Total: Aqueous	95016	1	02/18/20 02:25 PM	CETAC2_HG_200218A
	MW3-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1	02/17/20 11:40 AM	ICP-MS5_200217A
	MW3-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1000	02/18/20 11:28 AM	ICP-MS4_200218B
	MW3-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	100	02/18/20 11:59 AM	ICP-MS4_200218B
	MW3-3	Aqueous	SW6020B	Uranium in Water by ICPMS	94996	1	02/17/20 11:40 AM	ICP-MS5_200217B
2002097-03B	MW3-3	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 02:41 PM	ICP-MS5_200218C
	MW3-3	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:35 PM	CETAC2_HG_200218B
	MW3-3	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 02:41 PM	ICP-MS5_200218B
2002097-03C	MW3-3	Aqueous	M4500-NH3-D	Ammonia aqueous	95102	1	02/20/20 03:30 PM	WC_200220A
2002097-03D	MW3-3	Aqueous	M2320 B	Alkalinity	95038	1	02/18/20 11:58 AM	TITRATOR_200218A
	MW3-3	Aqueous	E300	Anions by IC method - Water	94941	10	02/12/20 09:13 PM	IC4_200212A
	MW3-3	Aqueous	E300	Anions by IC method - Water	94941	500	02/13/20 02:01 AM	IC4_200212A
	MW3-3	Aqueous	M2540C	Total Dissolved Solids	94990	1	02/14/20 05:05 PM	WC_200214D
2002097-04A	MW3-4B	Aqueous	SW7470A	Mercury Total: Aqueous	95016	5	02/18/20 04:13 PM	CETAC2_HG_200218A
	MW3-4B	Aqueous	SW7470A	Mercury Total: Aqueous	95016	1	02/18/20 02:27 PM	CETAC2_HG_200218A
	MW3-4B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	2000	02/18/20 11:20 AM	ICP-MS4_200218B
	MW3-4B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1	02/17/20 11:02 AM	ICP-MS5_200217A
	MW3-4B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	200	02/18/20 11:51 AM	ICP-MS4_200218B
	MW3-4B	Aqueous	SW6020B	Uranium in Water by ICPMS	94996	1	02/17/20 11:02 AM	ICP-MS5_200217B
2002097-04B	MW3-4B	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 12:38 PM	ICP-MS5_200218C
	MW3-4B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:37 PM	CETAC2_HG_200218B
	MW3-4B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	5	02/18/20 04:20 PM	CETAC2_HG_200218B
	MW3-4B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 12:38 PM	ICP-MS5_200218B
2002097-04C	MW3-4B	Aqueous	M4500-NH3-D	Ammonia aqueous	95102	1	02/20/20 03:30 PM	WC_200220A

Lab Order: 2002097
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002097-04D	MW3-4B	Aqueous	M2320 B	Alkalinity	95038	1	02/18/20 12:10 PM	TITRATOR_200218A
	MW3-4B	Aqueous	E300	Anions by IC method - Water	94941	1000	02/13/20 10:15 AM	IC4_200212A
	MW3-4B	Aqueous	E300	Anions by IC method - Water	94941	10	02/12/20 09:29 PM	IC4_200212A
	MW3-4B	Aqueous	E300	Anions by IC method - Water	94941	500	02/13/20 02:17 AM	IC4_200212A
	MW3-4B	Aqueous	M2540C	Total Dissolved Solids	94990	1	02/14/20 05:05 PM	WC_200214D
2002097-05A	MW3-4	Aqueous	SW7470A	Mercury Total: Aqueous	95016	1	02/18/20 02:38 PM	CETAC2_HG_200218A
	MW3-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1000	02/18/20 11:30 AM	ICP-MS4_200218B
	MW3-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	100	02/18/20 12:01 PM	ICP-MS4_200218B
	MW3-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1	02/17/20 11:57 AM	ICP-MS5_200217A
	MW3-4	Aqueous	SW6020B	Uranium in Water by ICPMS	94996	1	02/17/20 11:57 AM	ICP-MS5_200217B
2002097-05B	MW3-4	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 02:54 PM	ICP-MS5_200218C
	MW3-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:49 PM	CETAC2_HG_200218B
	MW3-4	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 02:54 PM	ICP-MS5_200218B
2002097-05C	MW3-4	Aqueous	M4500-NH3-D	Ammonia aqueous	95102	1	02/20/20 03:30 PM	WC_200220A
2002097-05D	MW3-4	Aqueous	M2320 B	Alkalinity	95038	1	02/18/20 12:32 PM	TITRATOR_200218A
	MW3-4	Aqueous	E300	Anions by IC method - Water	94941	10	02/12/20 09:45 PM	IC4_200212A
	MW3-4	Aqueous	E300	Anions by IC method - Water	94941	500	02/13/20 03:05 AM	IC4_200212A
	MW3-4	Aqueous	E300	Anions by IC method - Water	94941	1000	02/13/20 11:03 AM	IC4_200212A
	MW3-4	Aqueous	M2540C	Total Dissolved Solids	94990	1	02/14/20 05:05 PM	WC_200214D
2002097-06A	MW-204	Aqueous	SW7470A	Mercury Total: Aqueous	95016	1	02/18/20 02:41 PM	CETAC2_HG_200218A
	MW-204	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1	02/17/20 12:14 PM	ICP-MS5_200217A
	MW-204	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1000	02/18/20 11:32 AM	ICP-MS4_200218B
	MW-204	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	100	02/18/20 12:03 PM	ICP-MS4_200218B
	MW-204	Aqueous	SW6020B	Uranium in Water by ICPMS	94996	1	02/17/20 12:14 PM	ICP-MS5_200217B
2002097-06B	MW-204	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 03:47 PM	ICP-MS5_200218C
	MW-204	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:51 PM	CETAC2_HG_200218B

Lab Order: 2002097
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002097-06B	MW-204	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 03:47 PM	ICP-MS5_200218B
2002097-06C	MW-204	Aqueous	M4500-NH3-D	Ammonia aqueous	95102	1	02/20/20 03:30 PM	WC_200220A
2002097-06D	MW-204	Aqueous	M2320 B	Alkalinity	95038	1	02/18/20 12:42 PM	TITRATOR_200218A
	MW-204	Aqueous	E300	Anions by IC method - Water	94941	10	02/12/20 10:01 PM	IC4_200212A
	MW-204	Aqueous	E300	Anions by IC method - Water	94941	500	02/13/20 03:21 AM	IC4_200212A
	MW-204	Aqueous	E300	Anions by IC method - Water	94941	1000	02/13/20 11:19 AM	IC4_200212A
	MW-204	Aqueous	E300	Anions by IC method - Water	94941	10	02/13/20 11:35 AM	IC4_200212A
	MW-204	Aqueous	M2540C	Total Dissolved Solids	94990	1	02/14/20 05:05 PM	WC_200214D

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-1
Project:	Copano GW 1Q20	**Lab ID:**	2002097-01
Project No:	19125525	**Collection Date:**	02/11/20 09:26 AM
Lab Order:	2002097	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/18/20 02:15 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 02:15 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 02:15 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 02:15 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 02:15 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/18/20 02:15 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 02:15 PM
Dissolved Vanadium	0.00102	0.000500	0.00100		mg/L	1	02/18/20 02:15 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0142	0.0100	0.0300	J	mg/L	1	02/17/20 11:18 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/17/20 11:18 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 11:18 AM
Calcium	1130	10.0	30.0		mg/L	100	02/18/20 11:55 AM
Chromium	0.00617	0.00200	0.00500		mg/L	1	02/17/20 11:18 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/17/20 11:18 AM
Magnesium	1280	10.0	30.0		mg/L	100	02/18/20 11:55 AM
Nickel	0.00532	0.00300	0.0100	J	mg/L	1	02/17/20 11:18 AM
Potassium	39.2	10.0	30.0		mg/L	100	02/18/20 11:55 AM
Sodium	9930	100	300		mg/L	1000	02/18/20 11:24 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/17/20 11:18 AM
Vanadium	0.000984	0.000500	0.00100	J	mg/L	1	02/17/20 11:18 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:26 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 02:15 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.115	0.00300	0.0100	N	mg/L	1	02/17/20 11:18 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.117	0.00300	0.0100	N	mg/L	1	02/18/20 02:15 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	19000	150	500		mg/L	500	02/13/20 12:57 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/28/20 12:41 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/12/20 07:05 PM
Sulfate	4120	500	1500		mg/L	500	02/13/20 12:57 AM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-1
Project:	Copano GW 1Q20	**Lab ID:**	2002097-01
Project No:	19125525	**Collection Date:**	02/11/20 09:26 AM
Lab Order:	2002097	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	220	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:34 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:34 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:34 AM
Alkalinity, Total (As CaCO3)	220	20.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:34 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.167	0.100	0.250	J	mg/L	1	02/20/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	40300	1000	1000		mg/L	1	02/14/20 05:05 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-2
Project:	Copano GW 1Q20	**Lab ID:**	2002097-02
Project No:	19125525	**Collection Date:**	02/11/20 10:40 AM
Lab Order:	2002097	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0158	0.0100	0.0300	J	mg/L	1	02/18/20 02:28 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 02:28 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 02:28 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 02:28 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 02:28 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/18/20 02:28 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 02:28 PM
Dissolved Vanadium	0.00187	0.000500	0.00100		mg/L	1	02/18/20 02:28 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.108	0.0100	0.0300		mg/L	1	02/17/20 11:29 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/17/20 11:29 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 11:29 AM
Calcium	883	10.0	30.0		mg/L	100	02/18/20 11:57 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 11:29 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/17/20 11:29 AM
Magnesium	1260	10.0	30.0		mg/L	100	02/18/20 11:57 AM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/17/20 11:29 AM
Potassium	48.5	10.0	30.0		mg/L	100	02/18/20 11:57 AM
Sodium	9210	100	300		mg/L	1000	02/18/20 11:26 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/17/20 11:29 AM
Vanadium	0.00200	0.000500	0.00100		mg/L	1	02/17/20 11:29 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:28 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 02:18 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.122	0.00300	0.0100	N	mg/L	1	02/17/20 11:29 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.125	0.00300	0.0100	N	mg/L	1	02/18/20 02:28 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	18200	150	500		mg/L	500	02/13/20 01:45 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/12/20 07:21 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/12/20 07:21 PM
Sulfate	3890	500	1500		mg/L	500	02/13/20 01:45 AM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-2
Project:	Copano GW 1Q20	**Lab ID:**	2002097-02
Project No:	19125525	**Collection Date:**	02/11/20 10:40 AM
Lab Order:	2002097	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	229	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:49 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:49 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:49 AM
Alkalinity, Total (As CaCO3)	229	20.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:49 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.128	0.100	0.250	J	mg/L	1	02/20/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	38700	1000	1000		mg/L	1	02/14/20 05:05 PM

Qualifiers:

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-3
Project:	Copano GW 1Q20	**Lab ID:**	2002097-03
Project No:	19125525	**Collection Date:**	02/11/20 12:00 PM
Lab Order:	2002097	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0114	0.0100	0.0300	J	mg/L	1	02/18/20 02:41 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 02:41 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 02:41 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 02:41 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 02:41 PM
Dissolved Nickel	0.00315	0.00300	0.0100	J	mg/L	1	02/18/20 02:41 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 02:41 PM
Dissolved Vanadium	0.00169	0.000500	0.00100		mg/L	1	02/18/20 02:41 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0155	0.0100	0.0300	J	mg/L	1	02/17/20 11:40 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/17/20 11:40 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 11:40 AM
Calcium	1100	10.0	30.0		mg/L	100	02/18/20 11:59 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 11:40 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/17/20 11:40 AM
Magnesium	1350	10.0	30.0		mg/L	100	02/18/20 11:59 AM
Nickel	0.00352	0.00300	0.0100	J	mg/L	1	02/17/20 11:40 AM
Potassium	53.3	10.0	30.0		mg/L	100	02/18/20 11:59 AM
Sodium	9620	100	300		mg/L	1000	02/18/20 11:28 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/17/20 11:40 AM
Vanadium	0.00178	0.000500	0.00100		mg/L	1	02/17/20 11:40 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:35 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 02:25 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.119	0.00300	0.0100	N	mg/L	1	02/17/20 11:40 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.121	0.00300	0.0100	N	mg/L	1	02/18/20 02:41 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	18700	150	500		mg/L	500	02/13/20 02:01 AM
Fluoride	1.78	1.00	4.00	J	mg/L	10	02/12/20 09:13 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/12/20 09:13 PM
Sulfate	4510	500	1500		mg/L	500	02/13/20 02:01 AM

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DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-3
Project:	Copano GW 1Q20	**Lab ID:**	2002097-03
Project No:	19125525	**Collection Date:**	02/11/20 12:00 PM
Lab Order:	2002097	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	203	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:58 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:58 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:58 AM
Alkalinity, Total (As CaCO3)	203	20.0	20.0		mg/L @ pH 4.53	1	02/18/20 11:58 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.106	0.100	0.250	J	mg/L	1	02/20/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	40400	1000	1000		mg/L	1	02/14/20 05:05 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4B
Project:	Copano GW 1Q20	**Lab ID:**	2002097-04
Project No:	19125525	**Collection Date:**	02/11/20 02:00 PM
Lab Order:	2002097	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0175	0.0100	0.0300	J	mg/L	1	02/18/20 12:38 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 12:38 PM
Dissolved Arsenic	0.00276	0.00200	0.00500	J	mg/L	1	02/18/20 12:38 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 12:38 PM
Dissolved Lead	0.000374	0.000300	0.00100	J	mg/L	1	02/18/20 12:38 PM
Dissolved Nickel	0.00873	0.00300	0.0100	J	mg/L	1	02/18/20 12:38 PM
Dissolved Thallium	0.00147	0.000500	0.00150	J	mg/L	1	02/18/20 12:38 PM
Dissolved Vanadium	0.00649	0.000500	0.00100		mg/L	1	02/18/20 12:38 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0227	0.0100	0.0300	J	mg/L	1	02/17/20 11:02 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/17/20 11:02 AM
Arsenic	0.00269	0.00200	0.00500	J	mg/L	1	02/17/20 11:02 AM
Calcium	1360	20.0	60.0		mg/L	200	02/18/20 11:51 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 11:02 AM
Lead	0.000826	0.000300	0.00100	J	mg/L	1	02/17/20 11:02 AM
Magnesium	2890	20.0	60.0		mg/L	200	02/18/20 11:51 AM
Nickel	0.00585	0.00300	0.0100	J	mg/L	1	02/17/20 11:02 AM
Potassium	289	20.0	60.0		mg/L	200	02/18/20 11:51 AM
Sodium	22500	200	600		mg/L	2000	02/18/20 11:20 AM
Thallium	0.00149	0.000500	0.00150	J	mg/L	1	02/17/20 11:02 AM
Vanadium	0.00646	0.000500	0.00100		mg/L	1	02/17/20 11:02 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:37 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 02:27 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.109	0.00300	0.0100	N	mg/L	1	02/17/20 11:02 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.116	0.00300	0.0100	N	mg/L	1	02/18/20 12:38 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	43700	300	1000		mg/L	1000	02/13/20 10:15 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/12/20 09:29 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/12/20 09:29 PM
Sulfate	5930	500	1500		mg/L	500	02/13/20 02:17 AM

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DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4B
Project:	Copano GW 1Q20	**Lab ID:**	2002097-04
Project No:	19125525	**Collection Date:**	02/11/20 02:00 PM
Lab Order:	2002097	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	210	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 12:10 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 12:10 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 12:10 PM
Alkalinity, Total (As CaCO3)	210	20.0	20.0		mg/L @ pH 4.53	1	02/18/20 12:10 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/20/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	79000	5000	5000		mg/L	1	02/14/20 05:05 PM

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DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4
Project:	Copano GW 1Q20	**Lab ID:**	2002097-05
Project No:	19125525	**Collection Date:**	02/11/20 03:55 PM
Lab Order:	2002097	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0122	0.0100	0.0300	J	mg/L	1	02/18/20 02:54 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 02:54 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 02:54 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 02:54 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 02:54 PM
Dissolved Nickel	0.00557	0.00300	0.0100	J	mg/L	1	02/18/20 02:54 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 02:54 PM
Dissolved Vanadium	0.00186	0.000500	0.00100		mg/L	1	02/18/20 02:54 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0944	0.0100	0.0300		mg/L	1	02/17/20 11:57 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/17/20 11:57 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 11:57 AM
Calcium	1340	10.0	30.0		mg/L	100	02/18/20 12:01 PM
Chromium	0.00282	0.00200	0.00500	J	mg/L	1	02/17/20 11:57 AM
Lead	0.000563	0.000300	0.00100	J	mg/L	1	02/17/20 11:57 AM
Magnesium	1940	10.0	30.0		mg/L	100	02/18/20 12:01 PM
Nickel	0.00527	0.00300	0.0100	J	mg/L	1	02/17/20 11:57 AM
Potassium	125	10.0	30.0		mg/L	100	02/18/20 12:01 PM
Sodium	14900	100	300		mg/L	1000	02/18/20 11:30 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/17/20 11:57 AM
Vanadium	0.00231	0.000500	0.00100		mg/L	1	02/17/20 11:57 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:49 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 02:38 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.158	0.00300	0.0100	N	mg/L	1	02/17/20 11:57 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.161	0.00300	0.0100	N	mg/L	1	02/18/20 02:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	29700	300	1000		mg/L	1000	02/13/20 11:03 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/12/20 09:45 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/12/20 09:45 PM
Sulfate	4590	500	1500		mg/L	500	02/13/20 03:05 AM

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DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4
Project:	Copano GW 1Q20	**Lab ID:**	2002097-05
Project No:	19125525	**Collection Date:**	02/11/20 03:55 PM
Lab Order:	2002097	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	217	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 12:32 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 12:32 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/18/20 12:32 PM
Alkalinity, Total (As CaCO3)	217	20.0	20.0		mg/L @ pH 4.53	1	02/18/20 12:32 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.180	0.100	0.250	J	mg/L	1	02/20/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	59500	1000	1000		mg/L	1	02/14/20 05:05 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-204
Project:	Copano GW 1Q20	**Lab ID:**	2002097-06
Project No:	19125525	**Collection Date:**	02/11/20 03:35 PM
Lab Order:	2002097	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0142	0.0100	0.0300	J	mg/L	1	02/18/20 03:47 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 03:47 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 03:47 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 03:47 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 03:47 PM
Dissolved Nickel	0.00566	0.00300	0.0100	J	mg/L	1	02/18/20 03:47 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 03:47 PM
Dissolved Vanadium	0.00181	0.000500	0.00100		mg/L	1	02/18/20 03:47 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0695	0.0100	0.0300		mg/L	1	02/17/20 12:14 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/17/20 12:14 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 12:14 PM
Calcium	1330	10.0	30.0		mg/L	100	02/18/20 12:03 PM
Chromium	0.00226	0.00200	0.00500	J	mg/L	1	02/17/20 12:14 PM
Lead	0.000372	0.000300	0.00100	J	mg/L	1	02/17/20 12:14 PM
Magnesium	1940	10.0	30.0		mg/L	100	02/18/20 12:03 PM
Nickel	0.00524	0.00300	0.0100	J	mg/L	1	02/17/20 12:14 PM
Potassium	123	10.0	30.0		mg/L	100	02/18/20 12:03 PM
Sodium	14800	100	300		mg/L	1000	02/18/20 11:32 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/17/20 12:14 PM
Vanadium	0.00214	0.000500	0.00100		mg/L	1	02/17/20 12:14 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:51 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 02:41 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.157	0.00300	0.0100	N	mg/L	1	02/17/20 12:14 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.155	0.00300	0.0100	N	mg/L	1	02/18/20 03:47 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	29900	300	1000		mg/L	1000	02/13/20 11:19 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/13/20 11:35 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/13/20 11:35 AM
Sulfate	4610	500	1500		mg/L	500	02/13/20 03:21 AM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-204
Project:	Copano GW 1Q20	**Lab ID:**	2002097-06
Project No:	19125525	**Collection Date:**	02/11/20 03:35 PM
Lab Order:	2002097	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	211	10.0	20.0		mg/L @ pH 4.52	1	02/18/20 12:42 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/18/20 12:42 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/18/20 12:42 PM
Alkalinity, Total (As CaCO3)	211	20.0	20.0		mg/L @ pH 4.52	1	02/18/20 12:42 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.119	0.100	0.250	J	mg/L	1	02/20/20 03:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	58300	1000	1000		mg/L	1	02/14/20 05:05 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191203A

Sample ID: **DCS-93925** Batch ID: **93925** TestNo: **SW7470A** Units: **mg/L**
SampType: **DCS** Run ID: **CETAC2_HG_191203A** Analysis Date: **12/3/2019 2:43:30 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000184	0.000200	0.000200	0	92.0	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218A

The QC data in batch 95016 applies to the following samples: 2002097-01A, 2002097-02A, 2002097-03A, 2002097-04A, 2002097-05A, 2002097-06A

Sample ID: **MB-95016**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 1:51:04 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-95016**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 1:53:20 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	85	115			

Sample ID: **LCSD-95016**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 1:55:36 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00196	0.000200	0.00200	0	98.0	85	115	1.54	15	

Sample ID: **2002097-04A SD**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 2:34:11 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2002097-04A PDS**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 2:36:27 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00174	0.000200	0.00250	0	69.6	85	115			S

Sample ID: **2002097-04A MS**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 4:15:52 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00192	0.00100	0.00200	0	96.0	80	120			

Sample ID: **2002097-04A MSD**	Batch ID: **95016**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 4:18:09 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00208	0.00100	0.00200	0	104	80	120	7.76	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218A

Sample ID: **ICV-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 10:49:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00401	0.000200	0.00400	0	100	90	110			

Sample ID: **CCV5-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 1:46:30 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	90	110			

Sample ID: **CCV6-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 2:20:33 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00189	0.000200	0.00200	0	94.5	90	110			

Sample ID: **CCV7-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 2:56:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00185	0.000200	0.00200	0	92.5	90	110			

Sample ID: **CCV9-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 4:05:06 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00187	0.000200	0.00200	0	93.5	90	110			

Sample ID: **CCV10-200218**	Batch ID: **R109010**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218A**	Analysis Date: **2/18/2020 4:29:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00191	0.000200	0.00200	0	95.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218B

The QC data in batch 95018 applies to the following samples: 2002097-01B, 2002097-02B, 2002097-03B, 2002097-04B, 2002097-05B, 2002097-06B

Sample ID: **MB-95018**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:01:31 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-95018**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:03:46 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00195	0.000200	0.00200	0	97.5	85	115			

Sample ID: **LCSD-95018**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:06:02 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	85	115	1.03	15	

Sample ID: **2002097-04B SD**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:44:38 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2002097-04B PDS**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:46:54 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00174	0.000200	0.00250	0	69.6	85	115			S

Sample ID: **2002097-04B MS**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:24:33 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00192	0.00100	0.00200	0	95.8	80	120			

Sample ID: **2002097-04B MSD**	Batch ID: **95018**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:26:50 PM**	Prep Date: **2/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00197	0.00100	0.00200	0	98.5	80	120	2.83	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218B

Sample ID: **ICV-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 10:49:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00401	0.000200	0.00400	0	100	90	110			

Sample ID: **CCV7-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 2:56:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00185	0.000200	0.00200	0	92.5	90	110			

Sample ID: **CCV8-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:30:59 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV9-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:05:06 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00187	0.000200	0.00200	0	93.5	90	110			

Sample ID: **CCV10-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:29:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00191	0.000200	0.00200	0	95.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200103A

Sample ID: **DCS2-94341**	Batch ID: **94341**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS2**	Run ID: **ICP-MS4_200103A**	Analysis Date: **1/3/2020 12:53:00 PM**		Prep Date: **12/31/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.277	0.300	0.300	0	92.3	70	130	0	0	
Magnesium	0.324	0.300	0.300	0	108	70	130	0	0	
Potassium	0.317	0.300	0.300	0	106	70	130	0	0	
Sodium	0.316	0.300	0.300	0	105	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218B

The QC data in batch 94996 applies to the following samples: 2002097-01A, 2002097-02A, 2002097-03A, 2002097-04A, 2002097-05A, 2002097-06A

Sample ID: **MB-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:12:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	<0.100	0.300								

Sample ID: **LCS-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:14:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.05	0.300	5.00	0	101	80	120			

Sample ID: **LCSD-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:16:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.12	0.300	5.00	0	102	80	120	1.45	15	

Sample ID: **2002097-04A SD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:22:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	22700	3000	0	22500				0.762	20	

Sample ID: **2002097-04A PDS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:40:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	33300	600	10000	22500	108	75	125			

Sample ID: **2002097-04A MS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:42:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	21700	600	5.00	22500	-16500	75	125			S

Sample ID: **2002097-04A MSD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:44:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	22400	600	5.00	22500	-2740	75	125	3.12	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218B

Sample ID: **2002097-04A SD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:53:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1380	300	0	1360				0.913	20	
Magnesium	2980	300	0	2890				3.11	20	
Potassium	290	300	0	289				0.307	20	

Sample ID: **2002097-04A PDS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 12:11:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2410	60.0	1000	1360	104	75	125			
Magnesium	3860	60.0	1000	2890	97.3	75	125			
Potassium	1240	60.0	1000	289	95.3	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218B

Sample ID: **ICV-200218**	Batch ID: **R109015**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 10:59:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.53	0.300	2.50	0	101	90	110			
Magnesium	2.43	0.300	2.50	0	97.2	90	110			
Potassium	2.40	0.300	2.50	0	95.8	90	110			
Sodium	2.54	0.300	2.50	0	102	90	110			

Sample ID: **LCVL-200218**	Batch ID: **R109015**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:05:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.117	0.300	0.100	0	117	80	120			
Magnesium	0.104	0.300	0.100	0	104	80	120			
Potassium	0.103	0.300	0.100	0	103	80	120			
Sodium	0.110	0.300	0.100	0	110	80	120			

Sample ID: **CCV1-200218**	Batch ID: **R109015**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:47:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.99	0.300	5.00	0	99.9	90	110			
Magnesium	5.02	0.300	5.00	0	100	90	110			
Potassium	4.94	0.300	5.00	0	98.7	90	110			
Sodium	5.01	0.300	5.00	0	100	90	110			

Sample ID: **CCV2-200218**	Batch ID: **R109015**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 12:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.95	0.300	5.00	0	99.1	90	110			
Magnesium	5.02	0.300	5.00	0	100	90	110			
Potassium	4.91	0.300	5.00	0	98.3	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200107A

Sample ID: **DCS1-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:14:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0276	0.0300	0.0200	0	138	70	130	0	0	S
Antimony	0.00107	0.00250	0.00100	0	107	70	130	0	0	
Lead	0.000537	0.00100	0.000500	0	107	70	130	0	0	
Thallium	0.000503	0.00150	0.000500	0	101	70	130	0	0	
Vanadium	0.000494	0.00100	0.000500	0	98.8	70	130	0	0	

Sample ID: **DCS2-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:16:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	
Magnesium	0.309	0.300	0.300	0	103	70	130	0	0	
Potassium	0.309	0.300	0.300	0	103	70	130	0	0	

Sample ID: **DCS3-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:19:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00538	0.00500	0.00500	0	108	70	130	0	0	
Chromium	0.00528	0.00500	0.00500	0	106	70	130	0	0	
Nickel	0.00533	0.0100	0.00500	0	107	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200107C**

Sample ID: **DCS1-94341**	Batch ID: **94341**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS**	Run ID: **ICP-MS5_200107C**	Analysis Date: **1/7/2020 11:14:00 AM**		Prep Date: **12/31/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.000491	0.0100	0.000500	0	98.2	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200217A

The QC data in batch 94996 applies to the following samples: 2002097-01A, 2002097-02A, 2002097-03A, 2002097-04A, 2002097-05A, 2002097-06A

Sample ID: **MB-94996** Batch ID: **94996** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200217A** Analysis Date: **2/17/2020 10:54:00 AM** Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-94996** Batch ID: **94996** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200217A** Analysis Date: **2/17/2020 10:56:00 AM** Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.92	0.0300	5.00	0	98.4	80	120			
Antimony	0.194	0.00250	0.200	0	97.1	80	120			
Arsenic	0.202	0.00500	0.200	0	101	80	120			
Calcium	4.91	0.300	5.00	0	98.3	80	120			
Chromium	0.200	0.00500	0.200	0	100	80	120			
Lead	0.196	0.00100	0.200	0	98.0	80	120			
Magnesium	4.93	0.300	5.00	0	98.7	80	120			
Nickel	0.199	0.0100	0.200	0	99.3	80	120			
Potassium	4.89	0.300	5.00	0	97.8	80	120			
Thallium	0.205	0.00150	0.200	0	103	80	120			
Vanadium	0.196	0.00100	0.200	0	98.0	80	120			

Sample ID: **LCSD-94996** Batch ID: **94996** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200217A** Analysis Date: **2/17/2020 10:58:00 AM** Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.95	0.0300	5.00	0	98.9	80	120	0.512	15	
Antimony	0.194	0.00250	0.200	0	96.9	80	120	0.251	15	
Arsenic	0.202	0.00500	0.200	0	101	80	120	0.148	15	
Calcium	4.84	0.300	5.00	0	96.9	80	120	1.42	15	
Chromium	0.199	0.00500	0.200	0	99.6	80	120	0.493	15	
Lead	0.197	0.00100	0.200	0	98.3	80	120	0.380	15	
Magnesium	4.94	0.300	5.00	0	98.8	80	120	0.158	15	
Nickel	0.198	0.0100	0.200	0	99.2	80	120	0.062	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200217A

Sample ID: **LCSD-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 10:58:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	4.90	0.300	5.00	0	98.0	80	120	0.175	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	0.658	15	
Vanadium	0.196	0.00100	0.200	0	97.8	80	120	0.152	15	

Sample ID: **2002097-04A SD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 11:09:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0227				0	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00269				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0.000826				0	20	
Nickel	<0.0150	0.0500	0	0.00585				0	20	
Thallium	<0.00250	0.00750	0	0.00149				0	20	
Vanadium	0.00654	0.00500	0	0.00646				1.23	20	

Sample ID: **2002097-04A PDS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 1:23:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.72	0.0300	5.00	0.0227	93.9	75	125			
Antimony	0.171	0.00250	0.200	0	85.3	75	125			
Arsenic	0.150	0.00500	0.200	0.00269	73.4	75	125			S
Chromium	0.156	0.00500	0.200	0	78.2	75	125			
Lead	0.193	0.00100	0.200	0.000826	95.9	75	125			
Nickel	0.130	0.0100	0.200	0.00585	61.9	75	125			S
Thallium	0.192	0.00150	0.200	0.00149	95.4	75	125			
Vanadium	0.172	0.00100	0.200	0.00646	82.8	75	125			

Sample ID: **2002097-04A MS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 1:43:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.84	0.0300	5.00	0.0227	96.4	75	125			
Antimony	0.170	0.00250	0.200	0	85.0	75	125			
Arsenic	0.151	0.00500	0.200	0.00269	74.1	75	125			S
Calcium	1330	0.300	5.00	1290	719	75	125			S
Chromium	0.152	0.00500	0.200	0	76.2	75	125			
Lead	0.192	0.00100	0.200	0.000826	95.5	75	125			
Magnesium	2530	0.300	5.00	2570	-816	75	125			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200217A

Sample ID: **2002097-04A MS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 1:43:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.127	0.0100	0.200	0.00585	60.3	75	125			S
Potassium	332	0.300	5.00	312	398	75	125			S
Thallium	0.191	0.00150	0.200	0.00149	95.0	75	125			
Vanadium	0.171	0.00100	0.200	0.00646	82.2	75	125			

Sample ID: **2002097-04A MSD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 1:58:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.91	0.0300	5.00	0.0227	97.6	75	125	1.31	15	
Antimony	0.169	0.00250	0.200	0	84.6	75	125	0.528	15	
Arsenic	0.150	0.00500	0.200	0.00269	73.6	75	125	0.686	15	S
Calcium	1350	0.300	5.00	1290	1060	75	125	1.26	15	S
Chromium	0.150	0.00500	0.200	0	75.2	75	125	1.25	15	
Lead	0.194	0.00100	0.200	0.000826	96.7	75	125	1.20	15	
Magnesium	2560	0.300	5.00	2570	-320	75	125	0.974	15	S
Nickel	0.123	0.0100	0.200	0.00585	58.7	75	125	2.69	15	S
Potassium	338	0.300	5.00	312	516	75	125	1.77	15	S
Thallium	0.193	0.00150	0.200	0.00149	96.0	75	125	1.07	15	
Vanadium	0.168	0.00100	0.200	0.00646	81.0	75	125	1.50	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200217A

Sample ID: **ICV-200217**	Batch ID: **R108996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 10:41:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.41	0.0300	2.50	0	96.4	90	110			
Antimony	0.0990	0.00250	0.100	0	99.0	90	110			
Arsenic	0.100	0.00500	0.100	0	100	90	110			
Calcium	2.55	0.300	2.50	0	102	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Lead	0.0996	0.00100	0.100	0	99.6	90	110			
Magnesium	2.38	0.300	2.50	0	95.2	90	110			
Nickel	0.101	0.0100	0.100	0	101	90	110			
Potassium	2.44	0.300	2.50	0	97.7	90	110			
Thallium	0.0970	0.00150	0.100	0	97.0	90	110			
Vanadium	0.0993	0.00100	0.100	0	99.3	90	110			

Sample ID: **LCVL-200217**	Batch ID: **R108996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 10:46:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.104	0.0300	0.100	0	104	80	120			
Antimony	0.00192	0.00250	0.00200	0	95.8	80	120			
Arsenic	0.00515	0.00500	0.00500	0	103	80	120			
Calcium	0.104	0.300	0.100	0	104	80	120			
Chromium	0.00512	0.00500	0.00500	0	102	80	120			
Lead	0.00101	0.00100	0.00100	0	101	80	120			
Magnesium	0.0973	0.300	0.100	0	97.3	80	120			
Nickel	0.00496	0.0100	0.00500	0	99.2	80	120			
Potassium	0.0956	0.300	0.100	0	95.6	80	120			
Thallium	0.00100	0.00150	0.00100	0	100	80	120			
Vanadium	0.000854	0.00100	0.00100	0	85.4	80	120			

Sample ID: **CCV1-200217**	Batch ID: **R108996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.01	0.0300	5.00	0	100	90	110			
Antimony	0.181	0.00250	0.200	0	90.7	90	110			
Arsenic	0.199	0.00500	0.200	0	99.7	90	110			
Calcium	4.86	0.300	5.00	0	97.3	90	110			
Chromium	0.187	0.00500	0.200	0	93.5	90	110			
Lead	0.188	0.00100	0.200	0	94.0	90	110			
Magnesium	4.82	0.300	5.00	0	96.5	90	110			
Nickel	0.193	0.0100	0.200	0	96.4	90	110			
Potassium	4.99	0.300	5.00	0	99.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200217A**

Sample ID: **CCV1-200217**	Batch ID: **R108996**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **CCV**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 2:23:00 PM**		Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.202	0.00150	0.200	0	101	90	110			
Vanadium	0.186	0.00100	0.200	0	93.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200217B

The QC data in batch 94996 applies to the following samples: 2002097-01A, 2002097-02A, 2002097-03A, 2002097-04A, 2002097-05A, 2002097-06A

Sample ID: **MB-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 10:54:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 10:56:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0	100	80	120			N

Sample ID: **LCSD-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 10:58:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0	100	80	120	0.150	15	N

Sample ID: **2002097-04A SD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 11:09:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.104	0.0500	0	0.109				4.94	20	N

Sample ID: **2002097-04A PDS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 1:23:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.322	0.0100	0.200	0.109	106	75	125			N

Sample ID: **2002097-04A MS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 1:43:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.325	0.0100	0.200	0.109	108	75	125			N

Sample ID: **2002097-04A MSD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 1:58:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.326	0.0100	0.200	0.109	108	75	125	0.370	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200217B

Sample ID: **ICV-200217**	Batch ID: **R109007**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 10:41:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0957	0.0100	0.100	0	95.7	90	110			N

Sample ID: **LCVL-200217**	Batch ID: **R109007**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 10:46:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00488	0.0100	0.00500	0	97.6	80	120			N

Sample ID: **CCV1-200217**	Batch ID: **R109007**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0	96.6	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

The QC data in batch 95024 applies to the following samples: 2002097-01B, 2002097-02B, 2002097-03B, 2002097-04B, 2002097-05B, 2002097-06B

Sample ID: **MB-95024** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:29:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-95024** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:32:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0	103	80	120			
Antimony	0.199	0.00250	0.200	0	99.7	80	120			
Arsenic	0.207	0.00500	0.200	0	104	80	120			
Chromium	0.202	0.00500	0.200	0	101	80	120			
Lead	0.200	0.00100	0.200	0	100	80	120			
Nickel	0.201	0.0100	0.200	0	101	80	120			
Thallium	0.211	0.00150	0.200	0	106	80	120			
Vanadium	0.199	0.00100	0.200	0	99.7	80	120			

Sample ID: **LCSD-95024** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:34:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.13	0.0300	5.00	0	103	80	120	0.262	15	
Antimony	0.201	0.00250	0.200	0	100	80	120	0.625	15	
Arsenic	0.209	0.00500	0.200	0	104	80	120	0.722	15	
Chromium	0.204	0.00500	0.200	0	102	80	120	0.978	15	
Lead	0.202	0.00100	0.200	0	101	80	120	0.958	15	
Nickel	0.203	0.0100	0.200	0	101	80	120	0.694	15	
Thallium	0.213	0.00150	0.200	0	106	80	120	0.721	15	
Vanadium	0.201	0.00100	0.200	0	100	80	120	0.611	15	

Sample ID: **2002097-04B SD** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:52:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0175				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

Sample ID: **2002097-04B SD**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200218B**	Analysis Date: **2/18/2020 12:52:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00276				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0.000374				0	20	
Nickel	<0.0150	0.0500	0	0.00873				0	20	
Thallium	<0.00250	0.00750	0	0.00147				0	20	
Vanadium	0.00636	0.00500	0	0.00649				2.05	20	

Sample ID: **2002097-04B PDS**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200218B**	Analysis Date: **2/18/2020 3:05:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.82	0.0300	5.00	0.0175	96.1	75	125			
Antimony	0.178	0.00250	0.200	0	89.0	75	125			
Arsenic	0.152	0.00500	0.200	0.00276	74.8	75	125			
Chromium	0.157	0.00500	0.200	0	78.7	75	125			
Lead	0.197	0.00100	0.200	0.000374	98.1	75	125			
Nickel	0.134	0.0100	0.200	0.00873	62.9	75	125			S
Thallium	0.196	0.00150	0.200	0.00147	97.3	75	125			
Vanadium	0.173	0.00100	0.200	0.00649	83.5	75	125			

Sample ID: **2002097-04B MS**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200218B**	Analysis Date: **2/18/2020 3:18:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	5.01	0.0300	5.00	0.0175	99.8	75	125			
Dissolved Antimony	0.178	0.00250	0.200	0	89.2	75	125			
Dissolved Arsenic	0.156	0.00500	0.200	0.00276	76.6	75	125			
Dissolved Chromium	0.154	0.00500	0.200	0	77.0	75	125			
Dissolved Lead	0.199	0.00100	0.200	0.000374	99.5	75	125			
Dissolved Nickel	0.133	0.0100	0.200	0.00873	62.0	75	125			S
Dissolved Thallium	0.199	0.00150	0.200	0.00147	98.6	75	125			
Dissolved Vanadium	0.173	0.00100	0.200	0.00649	83.2	75	125			

Sample ID: **2002097-04B MSD**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200218B**	Analysis Date: **2/18/2020 3:29:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	5.09	0.0300	5.00	0.0175	101	75	125	1.61	15	
Dissolved Antimony	0.177	0.00250	0.200	0	88.7	75	125	0.546	15	
Dissolved Arsenic	0.154	0.00500	0.200	0.00276	75.7	75	125	1.18	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

Sample ID: **2002097-04B MSD** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 3:29:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Chromium	0.153	0.00500	0.200	0	76.6	75	125	0.533	15	
Dissolved Lead	0.199	0.00100	0.200	0.000374	99.4	75	125	0.180	15	
Dissolved Nickel	0.130	0.0100	0.200	0.00873	60.8	75	125	1.83	15	S
Dissolved Thallium	0.199	0.00150	0.200	0.00147	98.7	75	125	0.119	15	
Dissolved Vanadium	0.172	0.00100	0.200	0.00649	82.6	75	125	0.680	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

Sample ID: **ICV-200218** Batch ID: **R109033** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 11:30:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.50	0.0300	2.50	0	100	90	110			
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.0993	0.00500	0.100	0	99.3	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Lead	0.100	0.00100	0.100	0	100	90	110			
Nickel	0.0999	0.0100	0.100	0	99.9	90	110			
Thallium	0.0971	0.00150	0.100	0	97.1	90	110			
Vanadium	0.101	0.00100	0.100	0	101	90	110			

Sample ID: **LCVL-200218** Batch ID: **R109033** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 11:35:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.104	0.0300	0.100	0	104	80	120			
Antimony	0.00198	0.00250	0.00200	0	98.9	80	120			
Arsenic	0.00494	0.00500	0.00500	0	98.8	80	120			
Chromium	0.00524	0.00500	0.00500	0	105	80	120			
Lead	0.00101	0.00100	0.00100	0	101	80	120			
Nickel	0.00480	0.0100	0.00500	0	95.9	80	120			
Thallium	0.000974	0.00150	0.00100	0	97.4	80	120			
Vanadium	0.000924	0.00100	0.00100	0	92.4	80	120			

Sample ID: **CCV1-200218** Batch ID: **R109033** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:24:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.12	0.0300	5.00	0	102	90	110			
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.208	0.00500	0.200	0	104	90	110			
Chromium	0.201	0.00500	0.200	0	100	90	110			
Lead	0.201	0.00100	0.200	0	101	90	110			
Nickel	0.200	0.0100	0.200	0	99.9	90	110			
Thallium	0.212	0.00150	0.200	0	106	90	110			
Vanadium	0.199	0.00100	0.200	0	99.7	90	110			

Sample ID: **CCV2-200218** Batch ID: **R109033** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 3:43:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.32	0.0300	5.00	0	106	90	110			
Antimony	0.185	0.00250	0.200	0	92.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

Sample ID: **CCV2-200218**	Batch ID: **R109033**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218B**	Analysis Date: **2/18/2020 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Chromium	0.184	0.00500	0.200	0	91.8	90	110			
Lead	0.195	0.00100	0.200	0	97.7	90	110			
Nickel	0.187	0.0100	0.200	0	93.5	90	110			
Thallium	0.209	0.00150	0.200	0	105	90	110			
Vanadium	0.185	0.00100	0.200	0	92.6	90	110			

Sample ID: **CCV3-200218**	Batch ID: **R109033**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218B**	Analysis Date: **2/18/2020 4:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.31	0.0300	5.00	0	106	90	110			
Antimony	0.185	0.00250	0.200	0	92.5	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Chromium	0.183	0.00500	0.200	0	91.6	90	110			
Lead	0.193	0.00100	0.200	0	96.5	90	110			
Nickel	0.187	0.0100	0.200	0	93.4	90	110			
Thallium	0.208	0.00150	0.200	0	104	90	110			
Vanadium	0.184	0.00100	0.200	0	92.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200218C**

The QC data in batch 95024 applies to the following samples: 2002097-01B, 2002097-02B, 2002097-03B, 2002097-04B, 2002097-05B, 2002097-06B

Sample ID: **MB-95024**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:29:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-95024**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:32:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	104	80	120			N

Sample ID: **LCSD-95024**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:34:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	104	80	120	0.063	15	N

Sample ID: **2002097-04B SD**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:52:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.113	0.0500	0	0.116				2.63	20	N

Sample ID: **2002097-04B PDS**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 3:05:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.336	0.0100	0.200	0.116	110	75	125			N

Sample ID: **2002097-04B MS**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 3:18:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.337	0.0100	0.200	0.116	111	75	125			N

Sample ID: **2002097-04B MSD**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 3:29:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.338	0.0100	0.200	0.116	111	75	125	0.394	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218C

Sample ID: **ICV-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 11:30:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0970	0.0100	0.100	0	97.0	90	110			N

Sample ID: **LCVL-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 11:35:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00490	0.0100	0.00500	0	98.0	80	120			N

Sample ID: **CCV1-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	103	90	110			N

Sample ID: **CCV2-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0	97.3	90	110			N

Sample ID: **CCV3-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 4:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0	97.3	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200205A

Sample ID: **DCS2-94859** Batch ID: **94859** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC4_200205A** Analysis Date: **2/5/2020 10:45:34 AM** Prep Date: **2/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.443	1.00	0.5000	0	88.7	65	135	0	0	
Fluoride	0.232	0.400	0.2000	0	116	65	135	0	0	
Nitrate-N	0.238	0.500	0.2500	0	95.0	65	135	0	0	
Sulfate	1.43	3.00	1.500	0	95.5	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200212A

The QC data in batch 94941 applies to the following samples: 2002097-01D, 2002097-02D, 2002097-03D, 2002097-04D, 2002097-05D, 2002097-06D

Sample ID: **MB-94941** Batch ID: **94941** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_200212A** Analysis Date: **2/12/2020 12:50:41 PM** Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-94941** Batch ID: **94941** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_200212A** Analysis Date: **2/12/2020 2:18:18 PM** Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	3.83	0.400	4.000	0	95.7	90	110			
Nitrate-N	5.14	0.500	5.000	0	103	90	110			
Sulfate	30.0	3.00	30.00	0	100	90	110			

Sample ID: **LCSD-94941** Batch ID: **94941** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_200212A** Analysis Date: **2/12/2020 3:10:43 PM** Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110	1.81	20	
Fluoride	3.77	0.400	4.000	0	94.1	90	110	1.66	20	
Nitrate-N	5.07	0.500	5.000	0	101	90	110	1.40	20	
Sulfate	29.6	3.00	30.00	0	98.5	90	110	1.51	20	

Sample ID: **2002097-01DMS** Batch ID: **94941** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_200212A** Analysis Date: **2/13/2020 1:13:36 AM** Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	27100	500	10000	18960	81.5	90	110			S
Fluoride	10500	200	10000	0	105	90	110			
Nitrate-N	2160	250	2258	0	95.6	90	110			
Sulfate	14400	1500	10000	4125	102	90	110			

Sample ID: **2002097-01DMSD** Batch ID: **94941** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_200212A** Analysis Date: **2/13/2020 1:29:36 AM** Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26700	500	10000	18960	76.9	90	110	1.72	20	S
Fluoride	11200	200	10000	0	112	90	110	6.46	20	S
Nitrate-N	2090	250	2258	0	92.4	90	110	3.40	20	
Sulfate	14100	1500	10000	4125	99.7	90	110	1.86	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200212A

Sample ID: **2002097-04DMS**	Batch ID: **94941**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_200212A**	Analysis Date: **2/13/2020 2:33:36 AM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	10500	200	10000	0	105	90	110			
Nitrate-N	2130	250	2258	0	94.4	90	110			
Sulfate	16200	1500	10000	5933	102	90	110			

Sample ID: **2002097-04DMSD**	Batch ID: **94941**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_200212A**	Analysis Date: **2/13/2020 2:49:36 AM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	10400	200	10000	0	104	90	110	1.18	20	
Nitrate-N	2310	250	2258	0	102	90	110	7.95	20	
Sulfate	16000	1500	10000	5933	101	90	110	1.08	20	

Sample ID: **2002097-04DMS**	Batch ID: **94941**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_200212A**	Analysis Date: **2/13/2020 10:31:58 AM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	57900	1000	20000	43710	71.2	90	110			S

Sample ID: **2002097-04DMSD**	Batch ID: **94941**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_200212A**	Analysis Date: **2/13/2020 10:47:58 AM**	Prep Date: **2/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	58000	1000	20000	43710	71.6	90	110	0.149	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200212A

Sample ID: **ICV-200212**	Batch ID: **R108925**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_200212A**	Analysis Date: **2/12/2020 12:18:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.9	1.00	25.00	0	104	90	110			
Fluoride	10.0	0.400	10.00	0	100	90	110			
Nitrate-N	12.8	0.500	12.50	0	102	90	110			
Sulfate	77.8	3.00	75.00	0	104	90	110			

Sample ID: **CCV1-200212**	Batch ID: **R108925**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200212A**	Analysis Date: **2/12/2020 8:41:36 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.84	0.400	4.000	0	95.9	90	110			
Nitrate-N	5.14	0.500	5.000	0	103	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID: **CCV2-200212**	Batch ID: **R108925**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200212A**	Analysis Date: **2/13/2020 12:25:36 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	3.86	0.400	4.000	0	96.4	90	110			
Nitrate-N	5.12	0.500	5.000	0	102	90	110			
Sulfate	30.0	3.00	30.00	0	100	90	110			

Sample ID: **CCV3-200212**	Batch ID: **R108925**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200212A**	Analysis Date: **2/13/2020 5:45:36 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	3.95	0.400	4.000	0	98.8	90	110			
Nitrate-N	5.24	0.500	5.000	0	105	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Sample ID: **CCV4-200212**	Batch ID: **R108925**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200212A**	Analysis Date: **2/13/2020 8:09:36 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.84	0.400	4.000	0	96.0	90	110			
Nitrate-N	5.10	0.500	5.000	0	102	90	110			
Sulfate	29.9	3.00	30.00	0	99.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200212A

Sample ID: **ICV-200213** Batch ID: **R108925** TestNo: **E300** Units: **mg/L**
SampType: **ICV** Run ID: **IC4_200212A** Analysis Date: **2/13/2020 3:14:47 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.0	1.00	25.00	0	104	90	110			
Fluoride	10.2	0.400	10.00	0	102	90	110			
Nitrate-N	12.8	0.500	12.50	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200226B

Sample ID: **DCS2-95179** Batch ID: **95179** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC4_200226B** Analysis Date: **2/26/2020 1:26:40 PM** Prep Date: **2/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.478	1.00	0.5000	0	95.6	70	130	0	0	
Fluoride	0.232	0.400	0.2000	0	116	70	130	0	0	
Nitrate-N	0.214	0.0500	0.2500	0	85.7	70	130	0	0	
Sulfate	1.40	3.00	1.500	0	93.5	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200228A

The QC data in batch 95231 applies to the following samples: 2002097-01D

Sample ID: **MB-95231**	Batch ID: **95231**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC4_200228A**	Analysis Date: **2/28/2020 11:46:51 AM**	Prep Date: **2/28/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	<0.100	0.400								

Sample ID: **LCS-95231**	Batch ID: **95231**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC4_200228A**	Analysis Date: **2/28/2020 12:02:51 PM**	Prep Date: **2/28/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.78	0.400	4.000	0	94.6	90	110			

Sample ID: **LCSD-95231**	Batch ID: **95231**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC4_200228A**	Analysis Date: **2/28/2020 12:18:51 PM**	Prep Date: **2/28/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.80	0.400	4.000	0	94.9	90	110	0.388	20	

Sample ID: **2002246-01CMS**	Batch ID: **95231**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_200228A**	Analysis Date: **2/28/2020 3:23:31 PM**	Prep Date: **2/28/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	198	4.00	200.0	0	98.8	90	110			

Sample ID: **2002246-01CMSD**	Batch ID: **95231**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_200228A**	Analysis Date: **2/28/2020 3:39:30 PM**	Prep Date: **2/28/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	199	4.00	200.0	0	99.3	90	110	0.501	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200228A

Sample ID: **ICV-200228**	Batch ID: **R109261**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_200228A**	Analysis Date: **2/28/2020 11:14:52 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	9.99	0.400	10.00	0	99.9	90	110			

Sample ID: **CCV1-200228**	Batch ID: **R109261**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200228A**	Analysis Date: **2/28/2020 4:43:31 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.86	0.400	4.000	0	96.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200218A

The QC data in batch 95038 applies to the following samples: 2002097-01D, 2002097-02D, 2002097-03D, 2002097-04D, 2002097-05D, 2002097-06D

Sample ID: **MB-95038** Batch ID: **95038** TestNo: **M2320 B** Units: **mg/L @ pH 4.15**
SampType: **MBLK** Run ID: **TITRATOR_200218A** Analysis Date: **2/18/2020 9:29:00 AM** Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-95038** Batch ID: **95038** TestNo: **M2320 B** Units: **mg/L @ pH 4.04**
SampType: **LCS** Run ID: **TITRATOR_200218A** Analysis Date: **2/18/2020 9:34:00 AM** Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	54.8	20.0	50.00	0	110	74	129			

Sample ID: **LCSD-95038** Batch ID: **95038** TestNo: **M2320 B** Units: **mg/L @ pH 4.06**
SampType: **LCSD** Run ID: **TITRATOR_200218A** Analysis Date: **2/18/2020 9:38:00 AM** Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	55.8	20.0	50.00	0	112	74	129	1.74	20	

Sample ID: **2002082-01D-DUP** Batch ID: **95038** TestNo: **M2320 B** Units: **mg/L @ pH 4.52**
SampType: **DUP** Run ID: **TITRATOR_200218A** Analysis Date: **2/18/2020 10:20:00 AM** Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	173	20.0	0	175.8				1.43	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	173	20.0	0	175.8				1.43	20	

Sample ID: **2002097-04D-DUP** Batch ID: **95038** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_200218A** Analysis Date: **2/18/2020 12:21:00 PM** Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	208	20.0	0	209.6				0.766	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	208	20.0	0	209.6				0.766	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200218A

Sample ID: **ICV-200218**	Batch ID: **R109038**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.14**
SampType: **ICV**	Run ID: **TITRATOR_200218A**	Analysis Date: **2/18/2020 9:22:00 AM**	Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	6.32	20.0	0							
Alkalinity, Carbonate (As CaCO3)	96.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	102	20.0	100.0	0	102	98	102			

Sample ID: **CCV1-200218**	Batch ID: **R109038**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.27**
SampType: **CCV**	Run ID: **TITRATOR_200218A**	Analysis Date: **2/18/2020 11:39:00 AM**	Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	22.8	20.0	0							
Alkalinity, Carbonate (As CaCO3)	80.5	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	103	20.0	100.0	0	103	90	110			

Sample ID: **CCV2-200218**	Batch ID: **R109038**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.35**
SampType: **CCV**	Run ID: **TITRATOR_200218A**	Analysis Date: **2/18/2020 1:13:00 PM**	Prep Date: **2/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	24.4	20.0	0							
Alkalinity, Carbonate (As CaCO3)	75.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.4	20.0	100.0	0	99.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200131C

Sample ID: **DCS-94791**	Batch ID: **94791**	TestNo: **M4500-NH3-D**	Units: **mg/L**		
SampType: **DCS**	Run ID: **WC_200131C**	Analysis Date: **1/31/2020 3:45:00 PM**	Prep Date: **1/31/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.122	0.250	0.1000	0	122	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200214D

The QC data in batch 94990 applies to the following samples: 2002097-01D, 2002097-02D, 2002097-03D, 2002097-04D, 2002097-05D, 2002097-06D

Sample ID: **MB-94990**	Batch ID: **94990**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200214D**	Analysis Date: **2/14/2020 5:05:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-94990**	Batch ID: **94990**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200214D**	Analysis Date: **2/14/2020 5:05:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	763	10.0	745.6	0	102	90	113			

Sample ID: **2002097-01D-DUP**	Batch ID: **94990**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200214D**	Analysis Date: **2/14/2020 5:05:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	39900	1000	0	40300				0.998	5	

Sample ID: **2002097-02D-DUP**	Batch ID: **94990**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200214D**	Analysis Date: **2/14/2020 5:05:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	37600	1000	0	38700				2.88	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200220A

The QC data in batch 95102 applies to the following samples: 2002097-01C, 2002097-02C, 2002097-03C, 2002097-04C, 2002097-05C, 2002097-06C

Sample ID: **MB-95102**	Batch ID: **95102**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200220A**	Analysis Date: **2/20/2020 3:30:00 PM**	Prep Date: **2/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-95102**	Batch ID: **95102**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200220A**	Analysis Date: **2/20/2020 3:30:00 PM**	Prep Date: **2/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.88	0.250	5.000	0	97.6	80	120			

Sample ID: **2002097-04CMS**	Batch ID: **95102**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_200220A**	Analysis Date: **2/20/2020 3:30:00 PM**	Prep Date: **2/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	3.50	0.250	5.000	0	70.0	80	120			S

Sample ID: **2002097-04CMSD**	Batch ID: **95102**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_200220A**	Analysis Date: **2/20/2020 3:30:00 PM**	Prep Date: **2/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	3.34	0.250	5.000	0	66.8	80	120	4.68	25	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200220A

Sample ID: **ICV-200220**	Batch ID: **R109092**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_200220A**	Analysis Date: **2/20/2020 3:30:00 PM**	Prep Date: **2/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.95	0.250	2.500	0	118	80	120			

Sample ID: **CCV-200220**	Batch ID: **R109092**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_200220A**	Analysis Date: **2/20/2020 3:30:00 PM**	Prep Date: **2/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.38	0.250	5.000	0	87.6	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002097
Project: Copano GW 1Q20

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.1**	**g/L @ pH 4.1**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

March 12, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1190096
Samples Received:	02/17/2020
Project Number:	2002114
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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MW3-1 L1190096-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
	02/11/20 09:26	02/17/20 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1437110	1	03/03/20 15:53	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 16:58	RGT	Mt. Juliet, TN

MW3-2 L1190096-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
	02/11/20 10:40	02/17/20 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1437110	1	03/03/20 15:53	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 16:58	RGT	Mt. Juliet, TN

MW3-3 L1190096-03 Non-Potable Water

Collected by	Collected date/time	Received date/time
	02/11/20 12:00	02/17/20 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1437110	1	03/03/20 15:53	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 16:58	RGT	Mt. Juliet, TN

MW3-4B L1190096-04 Non-Potable Water

Collected by	Collected date/time	Received date/time
	02/11/20 14:00	02/17/20 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1437110	1	03/03/20 15:53	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 16:58	RGT	Mt. Juliet, TN

MW3-4 L1190096-05 Non-Potable Water

Collected by	Collected date/time	Received date/time
	02/11/20 13:55	02/17/20 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1437110	1	03/03/20 15:53	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 16:58	RGT	Mt. Juliet, TN

MW-204 L1190096-06 Non-Potable Water

Collected by	Collected date/time	Received date/time
	02/11/20 15:35	02/17/20 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1437110	1	03/03/20 15:53	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1431739	1	02/21/20 13:49	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1431739	1	02/21/20 13:49	02/26/20 18:12	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.0141		0.411	0.668	03/06/2020 09:50	WG1437110
(T) Barium	*115*			*62.0-143*	*03/06/2020 09:50*	WG1437110
(T) Yttrium	*106*			*79.0-136*	*03/06/2020 09:50*	WG1437110

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.131		0.632	1.01	03/06/2020 09:50	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.131		0.221	0.339	02/26/2020 16:58	WG1431739
(T) Barium-133	*106*			*30.0-143*	*02/26/2020 16:58*	WG1431739

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.08		0.445	0.736	03/06/2020 09:50	WG1437110
(T) Barium	*124*			*62.0-143*	*03/06/2020 09:50*	WG1437110
(T) Yttrium	*103*			*79.0-136*	*03/06/2020 09:50*	WG1437110

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.42		0.696	1	03/06/2020 09:50	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.337		0.251	0.266	02/26/2020 16:58	WG1431739
(T) Barium-133	*107*			*30.0-143*	*02/26/2020 16:58*	WG1431739

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.73		0.416	0.623	03/06/2020 09:50	WG1437110
(T) Barium	*118*			*62.0-143*	*03/06/2020 09:50*	WG1437110
(T) Yttrium	*98.0*			*79.0-136*	*03/06/2020 09:50*	WG1437110

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.02		0.670	0.933	03/06/2020 09:50	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.296		0.254	0.31	02/26/2020 16:58	WG1431739
(T) Barium-133	*106*			*30.0-143*	*02/26/2020 16:58*	WG1431739

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	22.2		0.715	0.615	03/06/2020 09:50	WG1437110
(T) Barium	*105*			*62.0-143*	*03/06/2020 09:50*	WG1437110
(T) Yttrium	*110*			*79.0-136*	*03/06/2020 09:50*	WG1437110

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	25.0		1.40	0.94	03/06/2020 09:50	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	2.83		0.688	0.325	02/26/2020 16:58	WG1431739
(T) Barium-133	*97.5*			*30.0-143*	*02/26/2020 16:58*	WG1431739

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.64		0.527	0.766	03/06/2020 09:50	WG1437110
(T) Barium	*112*			*62.0-143*	*03/06/2020 09:50*	WG1437110
(T) Yttrium	*87.2*			*79.0-136*	*03/06/2020 09:50*	WG1437110

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	3.21		0.850	1.04	03/06/2020 09:50	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.576		0.323	0.272	02/26/2020 16:58	WG1431739
(T) Barium-133	*99.4*			*30.0-143*	*02/26/2020 16:58*	WG1431739

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.62		0.394	0.589	03/06/2020 09:50	WG1437110
(T) Barium	*115*			*62.0-143*	*03/06/2020 09:50*	WG1437110
(T) Yttrium	*105*			*79.0-136*	*03/06/2020 09:50*	WG1437110

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.21		0.690	0.843	03/06/2020 09:50	WG1431739

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.589		0.296	0.254	02/26/2020 18:12	WG1431739
(T) Barium-133	*100*			*30.0-143*	*02/26/2020 18:12*	WG1431739

Method Blank (MB)

(MB) R3507879-1 03/10/20 09:50

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.132		0.419
(T) Barium	*101*		
(T) Yttrium	*113*		

L1189900-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1189900-02 03/10/20 09:50 • (DUP) R3507879-5 03/10/20 09:50

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.307	-0.783	1	200	1.62		20	3
(T) Barium	*112*	*125*						
(T) Yttrium	*128*	*124*						

Laboratory Control Sample (LCS)

(LCS) R3507879-2 03/10/20 09:50

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.66	113	80.0-120	
(T) Barium			*112*		
(T) Yttrium			*115*		

L1190096-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1190096-04 03/06/20 09:50 • (MS) R3507879-3 03/10/20 09:50 • (MSD) R3507879-4 03/10/20 09:50

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	22.2	34.1	30.4	119	82.0	1	70.0-130			11.3		20
(T) Barium		*105*			*112*	*121*							
(T) Yttrium		*110*			*105*	*116*							

Method Blank (MB)

(MB) R3504615-1 02/26/20 16:58

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	0.00338		0.0639
(T) Barium-133	*97.9*		

L1190096-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1190096-02 02/26/20 16:58 • (DUP) R3504615-5 02/26/20 16:58

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.337	0.408	1	19.0	0.207		20	3
(T) Barium-133	*107*	*96.8*						

Laboratory Control Sample (LCS)

(LCS) R3504615-2 02/26/20 16:58

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.48	109	80.0-120	
(T) Barium-133			*94.9*		

L1190096-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1190096-04 02/26/20 16:58 • (MS) R3504615-3 02/26/20 16:58 • (MSD) R3504615-4 02/26/20 16:58

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	2.83	19.9	22.3	84.9	96.8	1	75.0-125			11.4		20
(T) Barium-133		*97.5*			*87.6*	*91.9*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

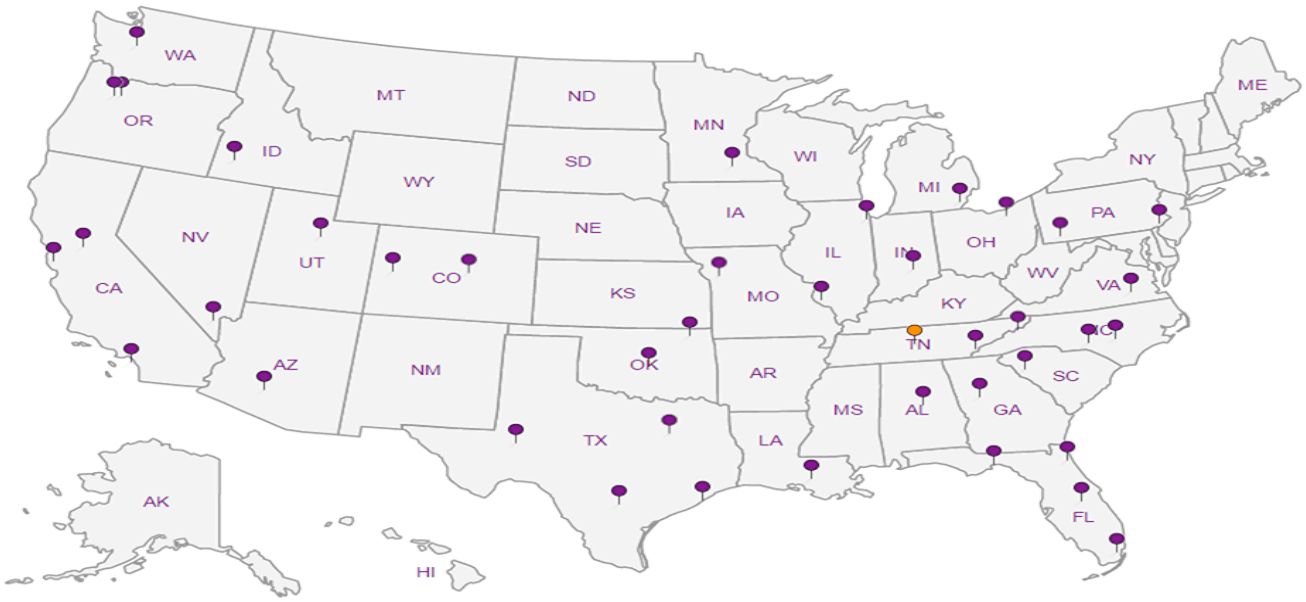
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

G108

Work Order: 2002097

1197096

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

12-Feb-20

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests RA228 E904.0	RA226 M7500 Ra B M				
MW3-1	Aqueous	-01E	02/11/20 09:26 AM	1LHDPEHNO3	1					01
MW3-1	Aqueous	-01F	02/11/20 09:26 AM	1LHDPEHNO3		1				
MW3-2	Aqueous	-02E	02/11/20 10:40 AM	1LHDPEHNO3	1					02
MW3-2	Aqueous	-02F	02/11/20 10:40 AM	1LHDPEHNO3		1				
MW3-3	Aqueous	-03E	02/11/20 12:00 PM	1LHDPEHNO3	1					03
MW3-3	Aqueous	-03F	02/11/20 12:00 PM	1LHDPEHNO3		1				
MW3-4B	Aqueous	-04E	02/11/20 02:00 PM	1LHDPEHNO3	3					04
MW3-4B	Aqueous	-04F	02/11/20 02:00 PM	1LHDPEHNO3		3				
MW3-4	Aqueous	-05E	02/11/20 03:55 PM	1LHDPEHNO3	1					05
MW3-4	Aqueous	-05F	02/11/20 03:55 PM	1LHDPEHNO3		1				
MW-204	Aqueous	-06E	02/11/20 03:35 PM	1LHDPEHNO3	1					06
MW-204	Aqueous	-06F	02/11/20 03:35 PM	1LHDPEHNO3		1				

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		2/13/2020 1700	Received by:	Carol Kemp	2/17/20 9:20
Relinquished by:			Received by:		

Amb

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHHBT	1190096	
Cooler Received/Opened On: 2/17/20 Temperature:	Amb	
Received By: Carol Kemp		
Signature: Carol Kemp		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002097

Sample ID: **MW3-1**
Lab ID Number: **2002097-01**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1130	mg/L	SW6020B
Magnesium	1280	mg/L	SW6020B
Sodium	9930	mg/L	SW6020B
Potassium	39.2	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	220	mg/L @ pH 4.53	M2320 B
Sulfate	4120	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	220	mg/L @ pH 4.53	M2320 B
Hardness	8093	mg/L	SM 2340B
Chloride	19000	mg/L	E300
TDS	40300	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.40
Calcium	56.39
Chloride	535.97
Fluoride	0.00
Magnesium	105.26
Nitrate-N	0.00
Potassium	1.00
Sodium	431.93
Sulfate	85.78
TOTAL ANIONS	626
TOTAL CATIONS	595
CATION/ANION (% DIFF)	-2.59
Calculated TDS	35609
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.13
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/17/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002097

Sample ID: **MW3-2**
Lab ID Number: **2002097-02**

PARAMETER	RESULT	UNITS	METHOD
Calcium	883	mg/L	SW6020B
Magnesium	1260	mg/L	SW6020B
Sodium	9210	mg/L	SW6020B
Potassium	48.5	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	229	mg/L @ pH 4.53	M2320 B
Sulfate	3890	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	229	mg/L @ pH 4.53	M2320 B
Hardness	7394	mg/L	SM 2340B
Chloride	18200	mg/L	E300
TDS	38700	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.58
Calcium	44.06
Chloride	513.40
Fluoride	0.00
Magnesium	103.62
Nitrate-N	0.00
Potassium	1.24
Sodium	400.61
Sulfate	80.99
TOTAL ANIONS	599
TOTAL CATIONS	550
CATION/ANION (% DIFF)	-4.30
Calculated TDS	33606
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.15
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/17/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002097

Sample ID: **MW3-3**
Lab ID Number: **2002097-03**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1100	mg/L	SW6020B
Magnesium	1350	mg/L	SW6020B
Sodium	9620	mg/L	SW6020B
Potassium	53.3	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	203	mg/L @ pH 4.53	M2320 B
Sulfate	4510	mg/L	E300
Fluoride	1.78	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	203	mg/L @ pH 4.53	M2320 B
Hardness	8306	mg/L	SM 2340B
Chloride	18700	mg/L	E300
TDS	40400	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.06
Calcium	54.89
Chloride	527.50
Fluoride	0.09
Magnesium	111.02
Nitrate-N	0.00
Potassium	1.37
Sodium	418.44
Sulfate	93.90
TOTAL ANIONS	626
TOTAL CATIONS	586
CATION/ANION (% DIFF)	-3.29
Calculated TDS	35436
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.14
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/17/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002097

Sample ID: **MW3-4B**
Lab ID Number: **2002097-04**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1360	mg/L	SW6020B
Magnesium	2890	mg/L	SW6020B
Sodium	22500	mg/L	SW6020B
Potassium	289	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	210	mg/L @ pH 4.53	M2320 B
Sulfate	5930	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	210	mg/L @ pH 4.53	M2320 B
Hardness	15297	mg/L	SM 2340B
Chloride	43700	mg/L	E300
TDS	79000	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.20
Calcium	67.86
Chloride	1232.72
Fluoride	0.00
Magnesium	237.66
Nitrate-N	0.00
Potassium	7.41
Sodium	978.69
Sulfate	123.46
TOTAL ANIONS	1360
TOTAL CATIONS	1290
CATION/ANION (% DIFF)	-2.59
Calculated TDS	76774
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.03
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/17/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002097

Sample ID: **MW3-4**
Lab ID Number: **2002097-05**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1340	mg/L	SW6020B
Magnesium	1940	mg/L	SW6020B
Sodium	14900	mg/L	SW6020B
Potassium	125	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	217	mg/L @ pH 4.53	M2320 B
Sulfate	4590	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	217	mg/L @ pH 4.53	M2320 B
Hardness	11335	mg/L	SM 2340B
Chloride	29700	mg/L	E300
TDS	59500	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.34
Calcium	66.87
Chloride	837.80
Fluoride	0.00
Magnesium	159.54
Nitrate-N	0.00
Potassium	3.20
Sodium	648.11
Sulfate	95.57
TOTAL ANIONS	938
TOTAL CATIONS	878
CATION/ANION (% DIFF)	-3.30
Calculated TDS	52704
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.13
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/17/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002097

Sample ID: **MW-204**
Lab ID Number: **2002097-06**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1330	mg/L	SW6020B
Magnesium	1940	mg/L	SW6020B
Sodium	14800	mg/L	SW6020B
Potassium	123	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.52	M2320 B
Bicarbonate	211	mg/L @ pH 4.52	M2320 B
Sulfate	4610	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	211	mg/L @ pH 4.52	M2320 B
Hardness	11310	mg/L	SM 2340B
Chloride	29900	mg/L	E300
TDS	58300	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.22
Calcium	66.37
Chloride	843.44
Fluoride	0.00
Magnesium	159.54
Nitrate-N	0.00
Potassium	3.15
Sodium	643.76
Sulfate	95.98
TOTAL ANIONS	944
TOTAL CATIONS	873
CATION/ANION (% DIFF)	-3.90
Calculated TDS	52808
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.10
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/17/20

Cation/Anion % Difference calculated per SM1030E.

March 17, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 2002114

RE: Copano GW 1Q20

Dear Kevin Dworsky:

DHL Analytical, Inc. received 5 sample(s) on 2/13/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 80821 CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 6020 E. Airline Rd.
PHONE: (361) 573-6442 FAX/E-MAIL:
DATA REPORTED TO: Kevin Dwarsky, Greg Logan
ADDITIONAL REPORT COPIES TO: Victor Gonzalez

DATE: 2/12/20 PAGE 1 OF 1
PO #: DHL WORK ORDER #:
PROJECT LOCATION OR NAME: Copano GW 1Q20
CLENT PROJECT #: 19125525 COLLECTOR: Victor Gonzalez

Authorize 5% surcharge for TRRP Report? ☒ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☒ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ ___ ☐ | RCRA ☐ TX11 ☐ ___ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ___ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☒ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
MW3-5	01	2/12/20	9:30	W	P	6		X	X	X	X	See attached
MW3-6	02	↓	10:40	↓	↓	↓		↓	↓	↓	↓	list for all
MW3-7	03		11:50									analysis
MW3-7B	04		13:15									
MW-205	05	↓	13:05	↓	↓	↓		↓	↓	↓	↓	

RELINQUISHED BY: (Signature) DATE/TIME 2/12/20 18:00 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx DATE/TIME 2/13/20 0937 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 2.6/2.4 THERM #: 38
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Dissolved Metals[1]	SW6020A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Metals.
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Dissolved Mercury	SW7470A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Mercury.
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:

1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium, Uranium

2) From time of sample collection

APAR (Copano GW 1Q20)

ORIGIN ID:VCTA (361) 541-0723
VICTOR GONZALEZ
GOLDER ASSOCIATES
620 E. AIRLINE

VICTORIA, TX 77901
UNITED STATES US

SHIP DATE: 05FEB20
ACTWGT: 65.00 LB
CAD: 2806631/INET4220
DIMS: 24x12x15 IN

BILL RECIPIENT

TO SAMPLE RECEIVING
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222
REF: COPANO SLUDGE PERMIT 1H20 - VG
INV:
PO: 18111309 - 2002
DEPT:

56BJ2049E/FE4A

FedEx Express

FedEx
MPS# 0283 7776 9918 3950

THU – 13 FEB 10:30A
PRIORITY OVERNIGHT

MP 02 M

44 BSMA

78664
TX – US AUS

#5078066 02/12 56BJ2/049E/FE4A

FedEx Ship Manager - Print Your Label(s)

2/5/2020

CUSTODY SEAL

DATE 2/12/20

SIGNATURE

DHL ANALYTICAL

ORIGIN ID:VCTA (361) 541-0723
VICTOR GONZALEZ
GOLDER ASSOCIATES
620 E. AIRLINE

VICTORIA, TX 77901
UNITED STATES US

SHIP DATE: 05FEB20
ACTWGT: 65.00 LB
CAD: 2806631/INET4220
DIMS: 24x12x15 IN

BILL RECIPIENT

TO **SAMPLE RECEIVING**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF: COPANO APAR 1Q20 - VG
INV:
PO: 19125525 DEPT:

568J2/049E/FE4A

FedEx Express

J32102601139 1/ur

FedEx
MPS# 0263 7776 9918 6960

THU – 13 FEB 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX – US AUS

#5078066 02/12 568J2/049E/FE4A

FedEx Ship Manager - Print Your Label(s)

2/5/2020

CUSTODY SEAL

DATE 2/12/20

SIGNATURE

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 2/13/2020

Work Order Number 2002114 | Received by: EL

Checklist completed by: _____ (Signature) 2/13/2020 (Date) | Reviewed by PL (Initials) 2/13/2020 (Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.6 °C | 2.4
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? N		Checked by
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW 1Q20	**LRC Date:** 3/17/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2002114
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW 1Q20	**LRC Date:** 3/17/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2002114
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?		X			**S10-02**
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

03/17/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

CLIENT: Golder
Project: Copano GW 1Q20
Lab Order: 2002114

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis (total & dissolved)
Method SW6020B - Uranium in Water Analysis (this parameter is not NELAP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 2/13/20. A total of 5 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions analysis performed on 2/13/20 the matrix spikes and matrix spike duplicate recoveries (2002114-01 MS/MSD & 2002114-02 MS/MSD) were below control limits for Chloride. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates were from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Total Metals analysis performed on 2/17/20 and 2/18/20 (batches 94996 & 94997) the matrix spikes and matrix spike duplicate recoveries were out of control limits for a total of eight analytes. These are flagged accordingly. The samples selected for the matrix spikes and matrix spike duplicates were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Dissolved Metals analysis performed on 2/18/20 (batch 95024) the matrix spike and matrix spike duplicate recoveries were below control limits for Nickel. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Exception Report R10-01

For Total and Dissolved Metals some dissolved metals results were slightly greater than the total metals

results for samples MW3-7, MW3-7B and MW-205. These are within the acceptable variation limits. No further corrective actions were taken.

For Anions analysis all samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride).

Exception Report S9-01

For Dissolved Metals analysis performed on 2/18/20 (batch 95024) the PDS recovery was below control limits for Nickel. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

For Total Metals analysis performed on 2/17/20 and 2/18/20 (batch 94996 & 94997) the PDS recoveries were below control limits for a total of three analytes. These are flagged accordingly. The serial dilutions were within control limits for these analytes. No further corrective actions were taken.

For Dissolved Mercury analysis performed on 2/18/20 (batch 95018) the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

Exception Report S10-02

For Metals analysis, the recovery of Aluminum for the Detectability Check Standard (DCS1-94341) was slightly above the DHL Analytical internal control limits; the recovery meets TRRP specifications. This is flagged accordingly in the QC summary report. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT: Golder
Project: Copano GW 1Q20
Lab Order: 2002114

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2002114-01	MW3-5		02/12/20 09:03 AM	2/13/2020
2002114-02	MW3-6		02/12/20 10:40 AM	2/13/2020
2002114-03	MW3-7		02/12/20 11:50 AM	2/13/2020
2002114-04	MW3-7B		02/12/20 01:15 PM	2/13/2020
2002114-05	MW-205		02/12/20 01:05 PM	2/13/2020

Lab Order: 2002114
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002114-01A	MW3-5	02/12/20 09:03 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-5	02/12/20 09:03 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-5	02/12/20 09:03 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-5	02/12/20 09:03 AM	Aqueous	SW7470A	Mercury Aq Prep	02/25/20 09:23 AM	95165
2002114-01B	MW3-5	02/12/20 09:03 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-5	02/12/20 09:03 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-5	02/12/20 09:03 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002114-01C	MW3-5	02/12/20 09:03 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/24/20 11:10 AM	95142
2002114-01D	MW3-5	02/12/20 09:03 AM	Aqueous	M2320 B	Alkalinity Preparation	02/25/20 07:37 AM	95155
	MW3-5	02/12/20 09:03 AM	Aqueous	E300	Anion Preparation	02/13/20 10:42 AM	94984
	MW3-5	02/12/20 09:03 AM	Aqueous	E300	Anion Preparation	02/13/20 10:42 AM	94984
	MW3-5	02/12/20 09:03 AM	Aqueous	M2540C	TDS Preparation	02/17/20 11:17 AM	95036
2002114-02A	MW3-6	02/12/20 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-6	02/12/20 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-6	02/12/20 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-6	02/12/20 10:40 AM	Aqueous	SW7470A	Mercury Aq Prep	02/25/20 09:23 AM	95165
2002114-02B	MW3-6	02/12/20 10:40 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-6	02/12/20 10:40 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-6	02/12/20 10:40 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002114-02C	MW3-6	02/12/20 10:40 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/24/20 11:10 AM	95142
2002114-02D	MW3-6	02/12/20 10:40 AM	Aqueous	M2320 B	Alkalinity Preparation	02/25/20 07:37 AM	95155
	MW3-6	02/12/20 10:40 AM	Aqueous	E300	Anion Preparation	02/13/20 10:42 AM	94984
	MW3-6	02/12/20 10:40 AM	Aqueous	E300	Anion Preparation	02/13/20 10:42 AM	94984
	MW3-6	02/12/20 10:40 AM	Aqueous	M2540C	TDS Preparation	02/17/20 11:17 AM	95036
2002114-03A	MW3-7	02/12/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-7	02/12/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-7	02/12/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94996
	MW3-7	02/12/20 11:50 AM	Aqueous	SW7470A	Mercury Aq Prep	02/25/20 09:23 AM	95165

Lab Order: 2002114
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002114-03B	MW3-7	02/12/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-7	02/12/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-7	02/12/20 11:50 AM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002114-03C	MW3-7	02/12/20 11:50 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/24/20 11:10 AM	95142
2002114-03D	MW3-7	02/12/20 11:50 AM	Aqueous	M2320 B	Alkalinity Preparation	02/25/20 07:37 AM	95155
	MW3-7	02/12/20 11:50 AM	Aqueous	E300	Anion Preparation	02/13/20 10:42 AM	94984
	MW3-7	02/12/20 11:50 AM	Aqueous	E300	Anion Preparation	02/13/20 10:42 AM	94984
	MW3-7	02/12/20 11:50 AM	Aqueous	M2540C	TDS Preparation	02/17/20 11:17 AM	95036
2002114-04A	MW3-7B	02/12/20 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94997
	MW3-7B	02/12/20 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94997
	MW3-7B	02/12/20 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:15 AM	94997
	MW3-7B	02/12/20 01:15 PM	Aqueous	SW7470A	Mercury Aq Prep	02/25/20 09:23 AM	95165
2002114-04B	MW3-7B	02/12/20 01:15 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-7B	02/12/20 01:15 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW3-7B	02/12/20 01:15 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002114-04C	MW3-7B	02/12/20 01:15 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/24/20 11:10 AM	95142
2002114-04D	MW3-7B	02/12/20 01:15 PM	Aqueous	M2320 B	Alkalinity Preparation	02/25/20 07:37 AM	95155
	MW3-7B	02/12/20 01:15 PM	Aqueous	E300	Anion Preparation	02/13/20 10:42 AM	94984
	MW3-7B	02/12/20 01:15 PM	Aqueous	E300	Anion Preparation	02/13/20 10:42 AM	94984
	MW3-7B	02/12/20 01:15 PM	Aqueous	M2540C	TDS Preparation	02/17/20 11:17 AM	95036
2002114-05A	MW-205	02/12/20 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:18 AM	94997
	MW-205	02/12/20 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:18 AM	94997
	MW-205	02/12/20 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/14/20 08:18 AM	94997
	MW-205	02/12/20 01:05 PM	Aqueous	SW7470A	Mercury Aq Prep	02/25/20 09:23 AM	95165
2002114-05B	MW-205	02/12/20 01:05 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW-205	02/12/20 01:05 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	02/17/20 09:02 AM	95024
	MW-205	02/12/20 01:05 PM	Aqueous	SW7470A	Mercury Aq Prep	02/16/20 12:58 PM	95018
2002114-05C	MW-205	02/12/20 01:05 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	02/24/20 11:10 AM	95142

Lab Order: 2002114
Client: Golder
Project: Copano GW 1Q20

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2002114-05D	MW-205	02/12/20 01:05 PM	Aqueous	M2320 B	Alkalinity Preparation	02/25/20 07:37 AM	95155
	MW-205	02/12/20 01:05 PM	Aqueous	E300	Anion Preparation	02/13/20 10:42 AM	94984
	MW-205	02/12/20 01:05 PM	Aqueous	E300	Anion Preparation	02/13/20 10:42 AM	94984
	MW-205	02/12/20 01:05 PM	Aqueous	M2540C	TDS Preparation	02/17/20 11:17 AM	95036

Lab Order: 2002114
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002114-01A	MW3-5	Aqueous	SW7470A	Mercury Total: Aqueous	95165	1	02/25/20 01:22 PM	CETAC2_HG_200225A
	MW3-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1000	02/18/20 11:34 AM	ICP-MS4_200218B
	MW3-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	100	02/18/20 12:05 PM	ICP-MS4_200218B
	MW3-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1	02/17/20 03:37 PM	ICP-MS5_200217A
	MW3-5	Aqueous	SW6020B	Uranium in Water by ICPMS	94996	1	02/17/20 03:37 PM	ICP-MS5_200217B
2002114-01B	MW3-5	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 03:54 PM	ICP-MS5_200218C
	MW3-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:53 PM	CETAC2_HG_200218B
	MW3-5	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 03:54 PM	ICP-MS5_200218B
2002114-01C	MW3-5	Aqueous	M4500-NH3-D	Ammonia aqueous	95142	1	02/24/20 03:40 PM	WC_200224A
2002114-01D	MW3-5	Aqueous	M2320 B	Alkalinity	95155	1	02/25/20 10:29 AM	TITRATOR_200225A
	MW3-5	Aqueous	E300	Anions by IC method - Water	94984	500	02/13/20 03:15 PM	IC2_200213A
	MW3-5	Aqueous	E300	Anions by IC method - Water	94984	10	02/13/20 09:23 PM	IC2_200213A
	MW3-5	Aqueous	M2540C	Total Dissolved Solids	95036	1	02/17/20 04:30 PM	WC_200217B
2002114-02A	MW3-6	Aqueous	SW7470A	Mercury Total: Aqueous	95165	1	02/25/20 01:25 PM	CETAC2_HG_200225A
	MW3-6	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1	02/17/20 03:53 PM	ICP-MS5_200217A
	MW3-6	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	100	02/18/20 12:07 PM	ICP-MS4_200218B
	MW3-6	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1000	02/18/20 11:36 AM	ICP-MS4_200218B
	MW3-6	Aqueous	SW6020B	Uranium in Water by ICPMS	94996	1	02/17/20 03:53 PM	ICP-MS5_200217B
2002114-02B	MW3-6	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 04:01 PM	ICP-MS5_200218C
	MW3-6	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:55 PM	CETAC2_HG_200218B
	MW3-6	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 04:01 PM	ICP-MS5_200218B
2002114-02C	MW3-6	Aqueous	M4500-NH3-D	Ammonia aqueous	95142	1	02/24/20 03:40 PM	WC_200224A
2002114-02D	MW3-6	Aqueous	M2320 B	Alkalinity	95155	1	02/25/20 10:50 AM	TITRATOR_200225A
	MW3-6	Aqueous	E300	Anions by IC method - Water	94984	500	02/13/20 04:03 PM	IC2_200213A
	MW3-6	Aqueous	E300	Anions by IC method - Water	94984	10	02/13/20 09:39 PM	IC2_200213A
	MW3-6	Aqueous	M2540C	Total Dissolved Solids	95036	1	02/17/20 04:30 PM	WC_200217B

Lab Order: 2002114
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002114-03A	MW3-7	Aqueous	SW7470A	Mercury Total: Aqueous	95165	1	02/25/20 01:27 PM	CETAC2_HG_200225A
	MW3-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1000	02/18/20 11:38 AM	ICP-MS4_200218B
	MW3-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	100	02/18/20 12:09 PM	ICP-MS4_200218B
	MW3-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94996	1	02/17/20 04:08 PM	ICP-MS5_200217A
	MW3-7	Aqueous	SW6020B	Uranium in Water by ICPMS	94996	1	02/17/20 04:08 PM	ICP-MS5_200217B
2002114-03B	MW3-7	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 04:07 PM	ICP-MS5_200218C
	MW3-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 03:58 PM	CETAC2_HG_200218B
	MW3-7	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 04:07 PM	ICP-MS5_200218B
2002114-03C	MW3-7	Aqueous	M4500-NH3-D	Ammonia aqueous	95142	1	02/24/20 03:40 PM	WC_200224A
2002114-03D	MW3-7	Aqueous	M2320 B	Alkalinity	95155	1	02/25/20 11:05 AM	TITRATOR_200225A
	MW3-7	Aqueous	E300	Anions by IC method - Water	94984	500	02/13/20 04:51 PM	IC2_200213A
	MW3-7	Aqueous	E300	Anions by IC method - Water	94984	10	02/13/20 09:55 PM	IC2_200213A
	MW3-7	Aqueous	M2540C	Total Dissolved Solids	95036	1	02/17/20 04:30 PM	WC_200217B
2002114-04A	MW3-7B	Aqueous	SW7470A	Mercury Total: Aqueous	95165	1	02/25/20 01:29 PM	CETAC2_HG_200225A
	MW3-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94997	1	02/18/20 02:58 PM	ICP-MS4_200218B
	MW3-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94997	1000	02/18/20 02:41 PM	ICP-MS4_200218B
	MW3-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94997	100	02/18/20 02:52 PM	ICP-MS4_200218B
	MW3-7B	Aqueous	SW6020B	Uranium in Water by ICPMS	94997	1	02/18/20 02:58 PM	ICP-MS4_200218C
2002114-04B	MW3-7B	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 04:14 PM	ICP-MS5_200218C
	MW3-7B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 04:00 PM	CETAC2_HG_200218B
	MW3-7B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 04:14 PM	ICP-MS5_200218B
2002114-04C	MW3-7B	Aqueous	M4500-NH3-D	Ammonia aqueous	95142	1	02/24/20 03:40 PM	WC_200224A
2002114-04D	MW3-7B	Aqueous	M2320 B	Alkalinity	95155	1	02/25/20 11:14 AM	TITRATOR_200225A
	MW3-7B	Aqueous	E300	Anions by IC method - Water	94984	500	02/13/20 05:07 PM	IC2_200213A
	MW3-7B	Aqueous	E300	Anions by IC method - Water	94984	10	02/13/20 10:11 PM	IC2_200213A
	MW3-7B	Aqueous	M2540C	Total Dissolved Solids	95036	1	02/17/20 04:30 PM	WC_200217B

Lab Order: 2002114
Client: Golder
Project: Copano GW 1Q20

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2002114-05A	MW-205	Aqueous	SW7470A	Mercury Total: Aqueous	95165	1	02/25/20 01:31 PM	CETAC2_HG_200225A
	MW-205	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94997	1	02/18/20 03:00 PM	ICP-MS4_200218B
	MW-205	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94997	1000	02/18/20 02:43 PM	ICP-MS4_200218B
	MW-205	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94997	100	02/18/20 02:54 PM	ICP-MS4_200218B
	MW-205	Aqueous	SW6020B	Uranium in Water by ICPMS	94997	1	02/18/20 03:00 PM	ICP-MS4_200218C
2002114-05B	MW-205	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	95024	1	02/18/20 04:27 PM	ICP-MS5_200218C
	MW-205	Aqueous	SW7470A	Mercury (0.45µ Filtered)	95018	1	02/18/20 04:02 PM	CETAC2_HG_200218B
	MW-205	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	95024	1	02/18/20 04:27 PM	ICP-MS5_200218B
2002114-05C	MW-205	Aqueous	M4500-NH3-D	Ammonia aqueous	95142	1	02/24/20 03:40 PM	WC_200224A
2002114-05D	MW-205	Aqueous	M2320 B	Alkalinity	95155	1	02/25/20 11:21 AM	TITRATOR_200225A
	MW-205	Aqueous	E300	Anions by IC method - Water	94984	500	02/13/20 05:23 PM	IC2_200213A
	MW-205	Aqueous	E300	Anions by IC method - Water	94984	10	02/14/20 12:03 AM	IC2_200213A
	MW-205	Aqueous	M2540C	Total Dissolved Solids	95036	1	02/17/20 04:30 PM	WC_200217B

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-5
Project:	Copano GW 1Q20	**Lab ID:**	2002114-01
Project No:	19125525	**Collection Date:**	02/12/20 09:03 AM
Lab Order:	2002114	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0235	0.0100	0.0300	J	mg/L	1	02/18/20 03:54 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 03:54 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 03:54 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 03:54 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 03:54 PM
Dissolved Nickel	0.00389	0.00300	0.0100	J	mg/L	1	02/18/20 03:54 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 03:54 PM
Dissolved Vanadium	0.00213	0.000500	0.00100		mg/L	1	02/18/20 03:54 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.105	0.0100	0.0300		mg/L	1	02/17/20 03:37 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/17/20 03:37 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 03:37 PM
Calcium	1170	10.0	30.0		mg/L	100	02/18/20 12:05 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 03:37 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/17/20 03:37 PM
Magnesium	1430	10.0	30.0		mg/L	100	02/18/20 12:05 PM
Nickel	0.00480	0.00300	0.0100	J	mg/L	1	02/17/20 03:37 PM
Potassium	76.5	10.0	30.0		mg/L	100	02/18/20 12:05 PM
Sodium	11400	100	300		mg/L	1000	02/18/20 11:34 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/17/20 03:37 PM
Vanadium	0.00257	0.000500	0.00100		mg/L	1	02/17/20 03:37 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:53 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/25/20 01:22 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.126	0.00300	0.0100	N	mg/L	1	02/17/20 03:37 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.126	0.00300	0.0100	N	mg/L	1	02/18/20 03:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	20600	150	500		mg/L	500	02/13/20 03:15 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/13/20 09:23 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/13/20 09:23 PM
Sulfate	4640	500	1500		mg/L	500	02/13/20 03:15 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-5
Project:	Copano GW 1Q20	**Lab ID:**	2002114-01
Project No:	19125525	**Collection Date:**	02/12/20 09:03 AM
Lab Order:	2002114	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	211	10.0	20.0		mg/L @ pH 4.53	1	02/25/20 10:29 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/25/20 10:29 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/25/20 10:29 AM
Alkalinity, Total (As CaCO3)	211	20.0	20.0		mg/L @ pH 4.53	1	02/25/20 10:29 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/24/20 03:40 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	44100	1000	1000		mg/L	1	02/17/20 04:30 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-6
Project:	Copano GW 1Q20	**Lab ID:**	2002114-02
Project No:	19125525	**Collection Date:**	02/12/20 10:40 AM
Lab Order:	2002114	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/18/20 04:01 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 04:01 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 04:01 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 04:01 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 04:01 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/18/20 04:01 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 04:01 PM
Dissolved Vanadium	0.000758	0.000500	0.00100	J	mg/L	1	02/18/20 04:01 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0245	0.0100	0.0300	J	mg/L	1	02/17/20 03:53 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/17/20 03:53 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 03:53 PM
Calcium	1210	10.0	30.0		mg/L	100	02/18/20 12:07 PM
Chromium	0.00362	0.00200	0.00500	J	mg/L	1	02/17/20 03:53 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/17/20 03:53 PM
Magnesium	1560	10.0	30.0		mg/L	100	02/18/20 12:07 PM
Nickel	0.00343	0.00300	0.0100	J	mg/L	1	02/17/20 03:53 PM
Potassium	58.9	10.0	30.0		mg/L	100	02/18/20 12:07 PM
Sodium	11200	100	300		mg/L	1000	02/18/20 11:36 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/17/20 03:53 PM
Vanadium	0.00103	0.000500	0.00100		mg/L	1	02/17/20 03:53 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:55 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/25/20 01:25 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0953	0.00300	0.0100	N	mg/L	1	02/17/20 03:53 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0914	0.00300	0.0100	N	mg/L	1	02/18/20 04:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	20200	150	500		mg/L	500	02/13/20 04:03 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/13/20 09:39 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/13/20 09:39 PM
Sulfate	4600	500	1500		mg/L	500	02/13/20 04:03 PM

Qualifiers:

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N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-6
Project:	Copano GW 1Q20	**Lab ID:**	2002114-02
Project No:	19125525	**Collection Date:**	02/12/20 10:40 AM
Lab Order:	2002114	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	258	10.0	20.0		mg/L @ pH 4.53	1	02/25/20 10:50 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/25/20 10:50 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/25/20 10:50 AM
Alkalinity, Total (As CaCO3)	258	20.0	20.0		mg/L @ pH 4.53	1	02/25/20 10:50 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.160	0.100	0.250	J	mg/L	1	02/24/20 03:40 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	43500	1000	1000		mg/L	1	02/17/20 04:30 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7
Project:	Copano GW 1Q20	**Lab ID:**	2002114-03
Project No:	19125525	**Collection Date:**	02/12/20 11:50 AM
Lab Order:	2002114	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/18/20 04:07 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 04:07 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 04:07 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 04:07 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 04:07 PM
Dissolved Nickel	0.00330	0.00300	0.0100	J	mg/L	1	02/18/20 04:07 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 04:07 PM
Dissolved Vanadium	0.00513	0.000500	0.00100		mg/L	1	02/18/20 04:07 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0178	0.0100	0.0300	J	mg/L	1	02/17/20 04:08 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/17/20 04:08 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 04:08 PM
Calcium	1100	10.0	30.0		mg/L	100	02/18/20 12:09 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/17/20 04:08 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/17/20 04:08 PM
Magnesium	1450	10.0	30.0		mg/L	100	02/18/20 12:09 PM
Nickel	0.00308	0.00300	0.0100	J	mg/L	1	02/17/20 04:08 PM
Potassium	47.7	10.0	30.0		mg/L	100	02/18/20 12:09 PM
Sodium	11600	100	300		mg/L	1000	02/18/20 11:38 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/17/20 04:08 PM
Vanadium	0.00549	0.000500	0.00100		mg/L	1	02/17/20 04:08 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 03:58 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/25/20 01:27 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.124	0.00300	0.0100	N	mg/L	1	02/17/20 04:08 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.124	0.00300	0.0100	N	mg/L	1	02/18/20 04:07 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21200	150	500		mg/L	500	02/13/20 04:51 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/13/20 09:55 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/13/20 09:55 PM
Sulfate	5160	500	1500		mg/L	500	02/13/20 04:51 PM

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7
Project:	Copano GW 1Q20	**Lab ID:**	2002114-03
Project No:	19125525	**Collection Date:**	02/12/20 11:50 AM
Lab Order:	2002114	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	327	10.0	20.0		mg/L @ pH 4.53	1	02/25/20 11:05 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/25/20 11:05 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	02/25/20 11:05 AM
Alkalinity, Total (As CaCO3)	327	20.0	20.0		mg/L @ pH 4.53	1	02/25/20 11:05 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.122	0.100	0.250	J	mg/L	1	02/24/20 03:40 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	45400	1000	1000		mg/L	1	02/17/20 04:30 PM

Qualifiers:

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7B
Project:	Copano GW 1Q20	**Lab ID:**	2002114-04
Project No:	19125525	**Collection Date:**	02/12/20 01:15 PM
Lab Order:	2002114	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	02/18/20 04:14 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 04:14 PM
Dissolved Arsenic	0.00526	0.00200	0.00500		mg/L	1	02/18/20 04:14 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 04:14 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 04:14 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/18/20 04:14 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 04:14 PM
Dissolved Vanadium	0.000617	0.000500	0.00100	J	mg/L	1	02/18/20 04:14 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0121	0.0100	0.0300	J	mg/L	1	02/18/20 02:58 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 02:58 PM
Arsenic	0.00547	0.00200	0.00500		mg/L	1	02/18/20 02:58 PM
Calcium	1100	10.0	30.0		mg/L	100	02/18/20 02:52 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 02:58 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 02:58 PM
Magnesium	1480	10.0	30.0		mg/L	100	02/18/20 02:52 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/18/20 02:58 PM
Potassium	61.8	10.0	30.0		mg/L	100	02/18/20 02:52 PM
Sodium	10700	100	300		mg/L	1000	02/18/20 02:41 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 02:58 PM
Vanadium	0.000531	0.000500	0.00100	J	mg/L	1	02/18/20 02:58 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 04:00 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/25/20 01:29 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0773	0.00300	0.0100	N	mg/L	1	02/18/20 02:58 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0725	0.00300	0.0100	N	mg/L	1	02/18/20 04:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	20300	150	500		mg/L	500	02/13/20 05:07 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/13/20 10:11 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/13/20 10:11 PM
Sulfate	3740	500	1500		mg/L	500	02/13/20 05:07 PM

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DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-7B
Project:	Copano GW 1Q20	**Lab ID:**	2002114-04
Project No:	19125525	**Collection Date:**	02/12/20 01:15 PM
Lab Order:	2002114	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	202	10.0	20.0		mg/L @ pH 4.52	1	02/25/20 11:14 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/25/20 11:14 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/25/20 11:14 AM
Alkalinity, Total (As CaCO3)	202	20.0	20.0		mg/L @ pH 4.52	1	02/25/20 11:14 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/24/20 03:40 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	43700	1000	1000		mg/L	1	02/17/20 04:30 PM

Qualifiers:

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J - Analyte detected between SDL and RL
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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-205
Project:	Copano GW 1Q20	**Lab ID:**	2002114-05
Project No:	19125525	**Collection Date:**	02/12/20 01:05 PM
Lab Order:	2002114	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0105	0.0100	0.0300	J	mg/L	1	02/18/20 04:27 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 04:27 PM
Dissolved Arsenic	0.00518	0.00200	0.00500		mg/L	1	02/18/20 04:27 PM
Dissolved Chromium	0.00268	0.00200	0.00500	J	mg/L	1	02/18/20 04:27 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 04:27 PM
Dissolved Nickel	0.00482	0.00300	0.0100	J	mg/L	1	02/18/20 04:27 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 04:27 PM
Dissolved Vanadium	0.00131	0.000500	0.00100		mg/L	1	02/18/20 04:27 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0167	0.0100	0.0300	J	mg/L	1	02/18/20 03:00 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/18/20 03:00 PM
Arsenic	0.00561	0.00200	0.00500		mg/L	1	02/18/20 03:00 PM
Calcium	1120	10.0	30.0		mg/L	100	02/18/20 02:54 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/18/20 03:00 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/18/20 03:00 PM
Magnesium	1490	10.0	30.0		mg/L	100	02/18/20 02:54 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	02/18/20 03:00 PM
Potassium	63.7	10.0	30.0		mg/L	100	02/18/20 02:54 PM
Sodium	11200	100	300		mg/L	1000	02/18/20 02:43 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/18/20 03:00 PM
Vanadium	<0.000500	0.000500	0.00100		mg/L	1	02/18/20 03:00 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/18/20 04:02 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/25/20 01:31 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0754	0.00300	0.0100	N	mg/L	1	02/18/20 03:00 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0724	0.00300	0.0100	N	mg/L	1	02/18/20 04:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21000	150	500		mg/L	500	02/13/20 05:23 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	02/14/20 12:03 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	02/14/20 12:03 AM
Sulfate	3890	500	1500		mg/L	500	02/13/20 05:23 PM

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DHL Analytical, Inc.

Date: *17-Mar-20*

CLIENT:	Golder	**Client Sample ID:**	MW-205
Project:	Copano GW 1Q20	**Lab ID:**	2002114-05
Project No:	19125525	**Collection Date:**	02/12/20 01:05 PM
Lab Order:	2002114	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	183	10.0	20.0		mg/L @ pH 4.52	1	02/25/20 11:21 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/25/20 11:21 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	02/25/20 11:21 AM
Alkalinity, Total (As CaCO3)	183	20.0	20.0		mg/L @ pH 4.52	1	02/25/20 11:21 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	02/24/20 03:40 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	43400	1000	1000		mg/L	1	02/17/20 04:30 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191203A

Sample ID: **DCS-93925** Batch ID: **93925** TestNo: **SW7470A** Units: **mg/L**
SampType: **DCS** Run ID: **CETAC2_HG_191203A** Analysis Date: **12/3/2019 2:43:30 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000184	0.000200	0.000200	0	92.0	82	119	0	0	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	Page 1 of 44
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218B

The QC data in batch 95018 applies to the following samples: 2002114-01B, 2002114-02B, 2002114-03B, 2002114-04B, 2002114-05B

Sample ID: **MB-95018**	Batch ID: **95018**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **MBLK**	Run ID: **CETAC2_HG_200218B**			Analysis Date: **2/18/2020 3:01:31 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	<0.0000800	0.000200									

Sample ID: **LCS-95018**	Batch ID: **95018**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **LCS**	Run ID: **CETAC2_HG_200218B**			Analysis Date: **2/18/2020 3:03:46 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	0.00195	0.000200	0.00200	0	97.5	85	115				

Sample ID: **LCSD-95018**	Batch ID: **95018**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **LCSD**	Run ID: **CETAC2_HG_200218B**			Analysis Date: **2/18/2020 3:06:02 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	0.00193	0.000200	0.00200	0	96.5	85	115	1.03	15		

Sample ID: **2002097-04B SD**	Batch ID: **95018**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **SD**	Run ID: **CETAC2_HG_200218B**			Analysis Date: **2/18/2020 3:44:38 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	<0.000400	0.00100	0	0				0	10		

Sample ID: **2002097-04B PDS**	Batch ID: **95018**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **PDS**	Run ID: **CETAC2_HG_200218B**			Analysis Date: **2/18/2020 3:46:54 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	0.00174	0.000200	0.00250	0	69.6	85	115			S	

Sample ID: **2002097-04B MS**	Batch ID: **95018**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **MS**	Run ID: **CETAC2_HG_200218B**			Analysis Date: **2/18/2020 4:24:33 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	0.00192	0.00100	0.00200	0	95.8	80	120				

Sample ID: **2002097-04B MSD**	Batch ID: **95018**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **MSD**	Run ID: **CETAC2_HG_200218B**			Analysis Date: **2/18/2020 4:26:50 PM**				Prep Date: **2/16/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Dissolved Mercury	0.00197	0.00100	0.00200	0	98.5	80	120	2.83	15		

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200218B

Sample ID: **ICV-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 10:49:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00401	0.000200	0.00400	0	100	90	110			

Sample ID: **CCV7-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 2:56:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00185	0.000200	0.00200	0	92.5	90	110			

Sample ID: **CCV8-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 3:30:59 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV9-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:05:06 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00187	0.000200	0.00200	0	93.5	90	110			

Sample ID: **CCV10-200218**	Batch ID: **R109012**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200218B**	Analysis Date: **2/18/2020 4:29:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00191	0.000200	0.00200	0	95.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200225A

The QC data in batch 95165 applies to the following samples: 2002114-01A, 2002114-02A, 2002114-03A, 2002114-04A, 2002114-05A

Sample ID: **MB-95165**	Batch ID: **95165**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_200225A**	Analysis Date: **2/25/2020 1:02:26 PM**	Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-95165**	Batch ID: **95165**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_200225A**	Analysis Date: **2/25/2020 1:06:58 PM**	Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00203	0.000200	0.00200	0	102	85	115			

Sample ID: **LCSD-95165**	Batch ID: **95165**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_200225A**	Analysis Date: **2/25/2020 1:09:14 PM**	Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	85	115	0.494	15	

Sample ID: **2002191-02A MS**	Batch ID: **95165**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_200225A**	Analysis Date: **2/25/2020 1:56:54 PM**	Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0103	0.00100	0.0100	0	103	80	120			

Sample ID: **2002191-02A MSD**	Batch ID: **95165**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_200225A**	Analysis Date: **2/25/2020 1:59:11 PM**	Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0101	0.00100	0.0100	0	101	80	120	1.96	15	

Sample ID: **2002191-02A SD**	Batch ID: **95165**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_200225A**	Analysis Date: **2/25/2020 2:01:27 PM**	Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **2002191-02A PDS**	Batch ID: **95165**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_200225A**	Analysis Date: **2/25/2020 2:03:44 PM**	Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0118	0.00100	0.0125	0	94.4	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200225A

Sample ID: **ICV-200225**	Batch ID: **R109181**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200225A**	Analysis Date: **2/25/2020 12:57:52 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00413	0.000200	0.00400	0	103	90	110			

Sample ID: **CCV1-200225**	Batch ID: **R109181**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200225A**	Analysis Date: **2/25/2020 1:34:11 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Sample ID: **CCV2-200225**	Batch ID: **R109181**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200225A**	Analysis Date: **2/25/2020 2:08:19 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00197	0.000200	0.00200	0	98.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200103A

Sample ID: **DCS1-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_200103A**	Analysis Date: **1/3/2020 12:51:00 PM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0250	0.0300	0.0200	0	125	70	130	0	0	
Antimony	0.00112	0.00250	0.00100	0	112	70	130	0	0	
Lead	0.000512	0.00100	0.000500	0	102	70	130	0	0	
Thallium	0.000470	0.00150	0.000500	0	94.0	70	130	0	0	
Vanadium	0.000496	0.00100	0.000500	0	99.2	70	130	0	0	

Sample ID: **DCS2-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_200103A**	Analysis Date: **1/3/2020 12:53:00 PM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.277	0.300	0.300	0	92.3	70	130	0	0	
Magnesium	0.324	0.300	0.300	0	108	70	130	0	0	
Potassium	0.317	0.300	0.300	0	106	70	130	0	0	
Sodium	0.316	0.300	0.300	0	105	70	130	0	0	

Sample ID: **DCS3-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_200103A**	Analysis Date: **1/3/2020 12:55:00 PM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00526	0.00500	0.00500	0	105	70	130	0	0	
Chromium	0.00550	0.00500	0.00500	0	110	70	130	0	0	
Nickel	0.00573	0.0100	0.00500	0	115	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200103B

Sample ID: **DCS1-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**		
SampType: **DCS**	Run ID: **ICP-MS4_200103B**	Analysis Date: **1/3/2020 12:51:00 PM**	Prep Date: **12/31/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.000438	0.0100	0.000500	0	87.6	60	140	0	0	N

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	Page 7 of 44
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218B

The QC data in batch 94996 applies to the following samples: 2002114-01A, 2002114-02A, 2002114-03A

Sample ID: **MB-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:12:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	<0.100	0.300								

Sample ID: **LCS-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:14:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.05	0.300	5.00	0	101	80	120			

Sample ID: **LCSD-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:16:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.12	0.300	5.00	0	102	80	120	1.45	15	

Sample ID: **2002097-04A SD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:22:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	22700	3000	0	22500				0.762	20	

Sample ID: **2002097-04A PDS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:40:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	33300	600	10000	22500	108	75	125			

Sample ID: **2002097-04A MS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:42:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	21700	600	5.00	22500	-16500	75	125			S

Sample ID: **2002097-04A MSD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:44:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	22400	600	5.00	22500	-2740	75	125	3.12	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218B

Sample ID: **2002097-04A SD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:53:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1380	300	0	1360				0.913	20	
Magnesium	2980	300	0	2890				3.11	20	
Potassium	290	300	0	289				0.307	20	

Sample ID: **2002097-04A PDS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 12:11:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2410	60.0	1000	1360	104	75	125			
Magnesium	3860	60.0	1000	2890	97.3	75	125			
Potassium	1240	60.0	1000	289	95.3	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_200218B**

The QC data in batch 94997 applies to the following samples: 2002114-04A, 2002114-05A

Sample ID: **MB-94997** Batch ID: **94997** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_200218B** Analysis Date: **2/18/2020 1:39:00 PM** Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-94997** Batch ID: **94997** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_200218B** Analysis Date: **2/18/2020 1:41:00 PM** Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.87	0.0300	5.00	0	97.4	80	120			
Antimony	0.195	0.00250	0.200	0	97.6	80	120			
Arsenic	0.196	0.00500	0.200	0	97.9	80	120			
Calcium	5.09	0.300	5.00	0	102	80	120			
Chromium	0.199	0.00500	0.200	0	99.6	80	120			
Lead	0.195	0.00100	0.200	0	97.6	80	120			
Magnesium	5.14	0.300	5.00	0	103	80	120			
Nickel	0.203	0.0100	0.200	0	101	80	120			
Potassium	4.99	0.300	5.00	0	99.7	80	120			
Sodium	5.06	0.300	5.00	0	101	80	120			
Thallium	0.193	0.00150	0.200	0	96.3	80	120			
Vanadium	0.197	0.00100	0.200	0	98.5	80	120			

Sample ID: **LCSD-94997** Batch ID: **94997** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_200218B** Analysis Date: **2/18/2020 1:43:00 PM** Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.89	0.0300	5.00	0	97.9	80	120	0.485	15	
Antimony	0.195	0.00250	0.200	0	97.6	80	120	0.092	15	
Arsenic	0.197	0.00500	0.200	0	98.5	80	120	0.602	15	
Calcium	4.94	0.300	5.00	0	98.8	80	120	3.03	15	
Chromium	0.202	0.00500	0.200	0	101	80	120	1.36	15	
Lead	0.200	0.00100	0.200	0	100	80	120	2.55	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218B

Sample ID: **LCSD-94997**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 1:43:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	5.08	0.300	5.00	0	102	80	120	1.24	15	
Nickel	0.206	0.0100	0.200	0	103	80	120	1.54	15	
Potassium	4.94	0.300	5.00	0	98.9	80	120	0.864	15	
Sodium	5.02	0.300	5.00	0	100	80	120	0.718	15	
Thallium	0.199	0.00150	0.200	0	99.3	80	120	3.02	15	
Vanadium	0.197	0.00100	0.200	0	98.5	80	120	0.008	15	

Sample ID: **2002128-02A SD**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 1:49:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.382	0.150	0	0.392				2.68	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Nickel	<0.0150	0.0500	0	0				0	20	
Potassium	13.6	1.50	0	13.5				0.882	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	<0.00250	0.00500	0	0				0	20	

Sample ID: **2002128-02A PDS**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 2:07:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.00	0.0300	5.00	0.392	92.2	75	125			
Antimony	0.197	0.00250	0.200	0	98.3	75	125			
Arsenic	0.196	0.00500	0.200	0	97.8	75	125			
Chromium	0.197	0.00500	0.200	0	98.4	75	125			
Lead	0.196	0.00100	0.200	0	97.8	75	125			
Nickel	0.200	0.0100	0.200	0	99.8	75	125			
Potassium	17.1	0.300	5.00	13.5	71.9	75	125			S
Thallium	0.196	0.00150	0.200	0	97.8	75	125			
Vanadium	0.197	0.00100	0.200	0	98.4	75	125			

Sample ID: **2002128-02A MS**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 2:09:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.24	0.0300	5.00	0.392	97.0	75	125			
Antimony	0.197	0.00250	0.200	0	98.6	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218B

Sample ID: **2002128-02A MS**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 2:09:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.201	0.00500	0.200	0	100	75	125			
Calcium	140	0.300	5.00	138	33.5	75	125			S
Chromium	0.196	0.00500	0.200	0	97.9	75	125			
Lead	0.205	0.00100	0.200	0	102	75	125			
Magnesium	33.4	0.300	5.00	29.6	76.5	75	125			
Nickel	0.199	0.0100	0.200	0	99.7	75	125			
Potassium	18.2	0.300	5.00	13.5	93.5	75	125			
Sodium	197	0.300	5.00	197	5.77	75	125			S
Thallium	0.201	0.00150	0.200	0	101	75	125			
Vanadium	0.198	0.00100	0.200	0	99.0	75	125			

Sample ID: **2002128-02A MSD**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 2:11:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.19	0.0300	5.00	0.392	96.0	75	125	0.919	15	
Antimony	0.195	0.00250	0.200	0	97.7	75	125	0.908	15	
Arsenic	0.201	0.00500	0.200	0	100	75	125	0.001	15	
Calcium	142	0.300	5.00	138	75.3	75	125	1.48	15	
Chromium	0.195	0.00500	0.200	0	97.4	75	125	0.532	15	
Lead	0.200	0.00100	0.200	0	100	75	125	2.25	15	
Magnesium	34.3	0.300	5.00	29.6	94.6	75	125	2.67	15	
Nickel	0.201	0.0100	0.200	0	100	75	125	0.583	15	
Potassium	18.4	0.300	5.00	13.5	98.4	75	125	1.33	15	
Sodium	203	0.300	5.00	197	135	75	125	3.22	15	S
Thallium	0.198	0.00150	0.200	0	99.0	75	125	1.62	15	
Vanadium	0.198	0.00100	0.200	0	99.2	75	125	0.176	15	

Sample ID: **2002128-02A SD**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 2:27:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	141	15.0	0	138				2.27	20	
Magnesium	31.1	15.0	0	30.2				3.15	20	
Sodium	206	15.0	0	206				0.001	20	

Sample ID: **2002128-02A PDS**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 2:45:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	189	3.00	50.0	138	103	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218B

Sample ID: **2002128-02A PDS**	Batch ID: **94997**	TestNo: **SW6020B**		Units:	**mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 2:45:00 PM**		Prep Date:	**2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	79.1	3.00	50.0	30.2	97.8	75	125			
Sodium	260	3.00	50.0	206	108	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218B

Sample ID: **ICV-200218**	Batch ID: **R109015**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 10:59:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.35	0.0300	2.50	0	94.0	90	110			
Antimony	0.0979	0.00250	0.100	0	97.9	90	110			
Arsenic	0.0971	0.00500	0.100	0	97.1	90	110			
Calcium	2.53	0.300	2.50	0	101	90	110			
Chromium	0.103	0.00500	0.100	0	103	90	110			
Lead	0.0971	0.00100	0.100	0	97.1	90	110			
Magnesium	2.43	0.300	2.50	0	97.2	90	110			
Nickel	0.104	0.0100	0.100	0	104	90	110			
Potassium	2.40	0.300	2.50	0	95.8	90	110			
Sodium	2.54	0.300	2.50	0	102	90	110			
Thallium	0.0963	0.00150	0.100	0	96.3	90	110			
Vanadium	0.0994	0.00100	0.100	0	99.4	90	110			

Sample ID: **LCVL-200218**	Batch ID: **R109015**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:05:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0993	0.0300	0.100	0	99.3	80	120			
Antimony	0.00190	0.00250	0.00200	0	95.2	80	120			
Arsenic	0.00503	0.00500	0.00500	0	101	80	120			
Calcium	0.117	0.300	0.100	0	117	80	120			
Chromium	0.00521	0.00500	0.00500	0	104	80	120			
Lead	0.00101	0.00100	0.00100	0	101	80	120			
Magnesium	0.104	0.300	0.100	0	104	80	120			
Nickel	0.00535	0.0100	0.00500	0	107	80	120			
Potassium	0.103	0.300	0.100	0	103	80	120			
Sodium	0.110	0.300	0.100	0	110	80	120			
Thallium	0.000959	0.00150	0.00100	0	95.9	80	120			
Vanadium	0.00103	0.00100	0.00100	0	103	80	120			

Sample ID: **CCV1-200218**	Batch ID: **R109015**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 11:47:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.99	0.300	5.00	0	99.9	90	110			
Magnesium	5.02	0.300	5.00	0	100	90	110			
Potassium	4.94	0.300	5.00	0	98.7	90	110			
Sodium	5.01	0.300	5.00	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218B

Sample ID: **CCV2-200218**	Batch ID: **R109015**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 12:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.95	0.300	5.00	0	99.1	90	110			
Magnesium	5.02	0.300	5.00	0	100	90	110			
Potassium	4.91	0.300	5.00	0	98.3	90	110			

Sample ID: **CCV4-200218**	Batch ID: **R109015**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 1:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.95	0.0300	5.00	0	98.9	90	110			
Antimony	0.194	0.00250	0.200	0	97.0	90	110			
Arsenic	0.198	0.00500	0.200	0	98.9	90	110			
Calcium	5.00	0.300	5.00	0	99.9	90	110			
Chromium	0.201	0.00500	0.200	0	101	90	110			
Lead	0.196	0.00100	0.200	0	98.1	90	110			
Magnesium	4.99	0.300	5.00	0	99.8	90	110			
Nickel	0.205	0.0100	0.200	0	103	90	110			
Potassium	4.93	0.300	5.00	0	98.6	90	110			
Sodium	5.00	0.300	5.00	0	100	90	110			
Thallium	0.196	0.00150	0.200	0	97.9	90	110			
Vanadium	0.198	0.00100	0.200	0	98.8	90	110			

Sample ID: **CCV5-200218**	Batch ID: **R109015**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 2:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.92	0.0300	5.00	0	98.4	90	110			
Antimony	0.195	0.00250	0.200	0	97.5	90	110			
Arsenic	0.199	0.00500	0.200	0	99.7	90	110			
Calcium	4.97	0.300	5.00	0	99.4	90	110			
Chromium	0.201	0.00500	0.200	0	100	90	110			
Lead	0.198	0.00100	0.200	0	98.9	90	110			
Magnesium	5.09	0.300	5.00	0	102	90	110			
Nickel	0.208	0.0100	0.200	0	104	90	110			
Potassium	4.88	0.300	5.00	0	97.7	90	110			
Sodium	5.19	0.300	5.00	0	104	90	110			
Thallium	0.197	0.00150	0.200	0	98.3	90	110			
Vanadium	0.198	0.00100	0.200	0	98.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218B

Sample ID: **CCV6-200218**	Batch ID: **R109015**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 2:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.90	0.0300	5.00	0	98.0	90	110			
Antimony	0.197	0.00250	0.200	0	98.7	90	110			
Arsenic	0.197	0.00500	0.200	0	98.5	90	110			
Calcium	4.90	0.300	5.00	0	98.0	90	110			
Chromium	0.201	0.00500	0.200	0	101	90	110			
Lead	0.197	0.00100	0.200	0	98.7	90	110			
Magnesium	5.07	0.300	5.00	0	101	90	110			
Nickel	0.204	0.0100	0.200	0	102	90	110			
Potassium	4.87	0.300	5.00	0	97.3	90	110			
Sodium	5.11	0.300	5.00	0	102	90	110			
Thallium	0.197	0.00150	0.200	0	98.6	90	110			
Vanadium	0.198	0.00100	0.200	0	99.1	90	110			

Sample ID: **CCV7-200218**	Batch ID: **R109015**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200218B**	Analysis Date: **2/18/2020 3:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.93	0.0300	5.00	0	98.6	90	110			
Antimony	0.197	0.00250	0.200	0	98.6	90	110			
Arsenic	0.197	0.00500	0.200	0	98.6	90	110			
Calcium	4.95	0.300	5.00	0	99.0	90	110			
Chromium	0.201	0.00500	0.200	0	100	90	110			
Lead	0.190	0.00100	0.200	0	95.1	90	110			
Magnesium	4.99	0.300	5.00	0	99.7	90	110			
Nickel	0.204	0.0100	0.200	0	102	90	110			
Potassium	4.83	0.300	5.00	0	96.5	90	110			
Thallium	0.190	0.00150	0.200	0	94.8	90	110			
Vanadium	0.197	0.00100	0.200	0	98.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218C

The QC data in batch 94997 applies to the following samples: 2002114-04A, 2002114-05A

Sample ID: **MB-94997**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 1:39:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-94997**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 1:41:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0	96.4	80	120			N

Sample ID: **LCSD-94997**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 1:43:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.194	0.0100	0.200	0	97.1	80	120	0.723	15	N

Sample ID: **2002128-02A SD**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 1:49:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.0150	0.0500	0	0				0	20	N

Sample ID: **2002128-02A PDS**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 2:07:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0	101	75	125			N

Sample ID: **2002128-02A MS**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 2:09:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.203	0.0100	0.200	0	102	75	125			N

Sample ID: **2002128-02A MSD**	Batch ID: **94997**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 2:11:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0	101	75	125	0.886	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200218C

Sample ID: **ICV-200218**	Batch ID: **R109023**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 10:59:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0933	0.0100	0.100	0	93.3	90	110			N

Sample ID: **LCVL-200218**	Batch ID: **R109023**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 11:05:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00466	0.0100	0.00500	0	93.2	80	120			N

Sample ID: **CCV4-200218**	Batch ID: **R109023**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 1:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0	96.5	90	110			N

Sample ID: **CCV5-200218**	Batch ID: **R109023**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 2:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0	97.6	90	110			N

Sample ID: **CCV6-200218**	Batch ID: **R109023**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 2:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	97.8	90	110			N

Sample ID: **CCV7-200218**	Batch ID: **R109023**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200218C**	Analysis Date: **2/18/2020 3:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0	97.4	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200107A

Sample ID: **DCS1-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:14:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0276	0.0300	0.0200	0	138	70	130	0	0	S
Antimony	0.00107	0.00250	0.00100	0	107	70	130	0	0	
Lead	0.000537	0.00100	0.000500	0	107	70	130	0	0	
Thallium	0.000503	0.00150	0.000500	0	101	70	130	0	0	
Vanadium	0.000494	0.00100	0.000500	0	98.8	70	130	0	0	

Sample ID: **DCS2-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:16:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	
Magnesium	0.309	0.300	0.300	0	103	70	130	0	0	
Potassium	0.309	0.300	0.300	0	103	70	130	0	0	

Sample ID: **DCS3-94341**	Batch ID: **94341**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_200107A**	Analysis Date: **1/7/2020 11:19:00 AM**	Prep Date: **12/31/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00538	0.00500	0.00500	0	108	70	130	0	0	
Chromium	0.00528	0.00500	0.00500	0	106	70	130	0	0	
Nickel	0.00533	0.0100	0.00500	0	107	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200107C**

Sample ID: **DCS1-94341**	Batch ID: **94341**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS**	Run ID: **ICP-MS5_200107C**	Analysis Date: **1/7/2020 11:14:00 AM**		Prep Date: **12/31/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.000491	0.0100	0.000500	0	98.2	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200217A

The QC data in batch 94996 applies to the following samples: 2002114-01A, 2002114-02A, 2002114-03A

Sample ID: **MB-94996** Batch ID: **94996** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200217A** Analysis Date: **2/17/2020 10:54:00 AM** Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-94996** Batch ID: **94996** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200217A** Analysis Date: **2/17/2020 10:56:00 AM** Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.92	0.0300	5.00	0	98.4	80	120			
Antimony	0.194	0.00250	0.200	0	97.1	80	120			
Arsenic	0.202	0.00500	0.200	0	101	80	120			
Calcium	4.91	0.300	5.00	0	98.3	80	120			
Chromium	0.200	0.00500	0.200	0	100	80	120			
Lead	0.196	0.00100	0.200	0	98.0	80	120			
Magnesium	4.93	0.300	5.00	0	98.7	80	120			
Nickel	0.199	0.0100	0.200	0	99.3	80	120			
Potassium	4.89	0.300	5.00	0	97.8	80	120			
Thallium	0.205	0.00150	0.200	0	103	80	120			
Vanadium	0.196	0.00100	0.200	0	98.0	80	120			

Sample ID: **LCSD-94996** Batch ID: **94996** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200217A** Analysis Date: **2/17/2020 10:58:00 AM** Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.95	0.0300	5.00	0	98.9	80	120	0.512	15	
Antimony	0.194	0.00250	0.200	0	96.9	80	120	0.251	15	
Arsenic	0.202	0.00500	0.200	0	101	80	120	0.148	15	
Calcium	4.84	0.300	5.00	0	96.9	80	120	1.42	15	
Chromium	0.199	0.00500	0.200	0	99.6	80	120	0.493	15	
Lead	0.197	0.00100	0.200	0	98.3	80	120	0.380	15	
Magnesium	4.94	0.300	5.00	0	98.8	80	120	0.158	15	
Nickel	0.198	0.0100	0.200	0	99.2	80	120	0.062	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200217A

Sample ID: **LCSD-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 10:58:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	4.90	0.300	5.00	0	98.0	80	120	0.175	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	0.658	15	
Vanadium	0.196	0.00100	0.200	0	97.8	80	120	0.152	15	

Sample ID: **2002097-04A SD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 11:09:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0227				0	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00269				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0.000826				0	20	
Nickel	<0.0150	0.0500	0	0.00585				0	20	
Thallium	<0.00250	0.00750	0	0.00149				0	20	
Vanadium	0.00654	0.00500	0	0.00646				1.23	20	

Sample ID: **2002097-04A PDS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 1:23:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.72	0.0300	5.00	0.0227	93.9	75	125			
Antimony	0.171	0.00250	0.200	0	85.3	75	125			
Arsenic	0.150	0.00500	0.200	0.00269	73.4	75	125			S
Chromium	0.156	0.00500	0.200	0	78.2	75	125			
Lead	0.193	0.00100	0.200	0.000826	95.9	75	125			
Nickel	0.130	0.0100	0.200	0.00585	61.9	75	125			S
Thallium	0.192	0.00150	0.200	0.00149	95.4	75	125			
Vanadium	0.172	0.00100	0.200	0.00646	82.8	75	125			

Sample ID: **2002097-04A MS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 1:43:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.84	0.0300	5.00	0.0227	96.4	75	125			
Antimony	0.170	0.00250	0.200	0	85.0	75	125			
Arsenic	0.151	0.00500	0.200	0.00269	74.1	75	125			S
Calcium	1330	0.300	5.00	1290	719	75	125			S
Chromium	0.152	0.00500	0.200	0	76.2	75	125			
Lead	0.192	0.00100	0.200	0.000826	95.5	75	125			
Magnesium	2530	0.300	5.00	2570	-816	75	125			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200217A

Sample ID: **2002097-04A MS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 1:43:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.127	0.0100	0.200	0.00585	60.3	75	125			S
Potassium	332	0.300	5.00	312	398	75	125			S
Thallium	0.191	0.00150	0.200	0.00149	95.0	75	125			
Vanadium	0.171	0.00100	0.200	0.00646	82.2	75	125			

Sample ID: **2002097-04A MSD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 1:58:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.91	0.0300	5.00	0.0227	97.6	75	125	1.31	15	
Antimony	0.169	0.00250	0.200	0	84.6	75	125	0.528	15	
Arsenic	0.150	0.00500	0.200	0.00269	73.6	75	125	0.686	15	S
Calcium	1350	0.300	5.00	1290	1060	75	125	1.26	15	S
Chromium	0.150	0.00500	0.200	0	75.2	75	125	1.25	15	
Lead	0.194	0.00100	0.200	0.000826	96.7	75	125	1.20	15	
Magnesium	2560	0.300	5.00	2570	-320	75	125	0.974	15	S
Nickel	0.123	0.0100	0.200	0.00585	58.7	75	125	2.69	15	S
Potassium	338	0.300	5.00	312	516	75	125	1.77	15	S
Thallium	0.193	0.00150	0.200	0.00149	96.0	75	125	1.07	15	
Vanadium	0.168	0.00100	0.200	0.00646	81.0	75	125	1.50	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200217A

Sample ID: **ICV-200217**	Batch ID: **R108996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 10:41:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.41	0.0300	2.50	0	96.4	90	110			
Antimony	0.0990	0.00250	0.100	0	99.0	90	110			
Arsenic	0.100	0.00500	0.100	0	100	90	110			
Calcium	2.55	0.300	2.50	0	102	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Lead	0.0996	0.00100	0.100	0	99.6	90	110			
Magnesium	2.38	0.300	2.50	0	95.2	90	110			
Nickel	0.101	0.0100	0.100	0	101	90	110			
Potassium	2.44	0.300	2.50	0	97.7	90	110			
Thallium	0.0970	0.00150	0.100	0	97.0	90	110			
Vanadium	0.0993	0.00100	0.100	0	99.3	90	110			

Sample ID: **LCVL-200217**	Batch ID: **R108996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 10:46:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.104	0.0300	0.100	0	104	80	120			
Antimony	0.00192	0.00250	0.00200	0	95.8	80	120			
Arsenic	0.00515	0.00500	0.00500	0	103	80	120			
Calcium	0.104	0.300	0.100	0	104	80	120			
Chromium	0.00512	0.00500	0.00500	0	102	80	120			
Lead	0.00101	0.00100	0.00100	0	101	80	120			
Magnesium	0.0973	0.300	0.100	0	97.3	80	120			
Nickel	0.00496	0.0100	0.00500	0	99.2	80	120			
Potassium	0.0956	0.300	0.100	0	95.6	80	120			
Thallium	0.00100	0.00150	0.00100	0	100	80	120			
Vanadium	0.000854	0.00100	0.00100	0	85.4	80	120			

Sample ID: **CCV1-200217**	Batch ID: **R108996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.01	0.0300	5.00	0	100	90	110			
Antimony	0.181	0.00250	0.200	0	90.7	90	110			
Arsenic	0.199	0.00500	0.200	0	99.7	90	110			
Calcium	4.86	0.300	5.00	0	97.3	90	110			
Chromium	0.187	0.00500	0.200	0	93.5	90	110			
Lead	0.188	0.00100	0.200	0	94.0	90	110			
Magnesium	4.82	0.300	5.00	0	96.5	90	110			
Nickel	0.193	0.0100	0.200	0	96.4	90	110			
Potassium	4.99	0.300	5.00	0	99.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200217A

Sample ID: **CCV1-200217**	Batch ID: **R108996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.202	0.00150	0.200	0	101	90	110			
Vanadium	0.186	0.00100	0.200	0	93.1	90	110			

Sample ID: **CCV2-200217**	Batch ID: **R108996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200217A**	Analysis Date: **2/17/2020 4:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.13	0.0300	5.00	0	103	90	110			
Antimony	0.194	0.00250	0.200	0	97.0	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Chromium	0.198	0.00500	0.200	0	99.0	90	110			
Lead	0.195	0.00100	0.200	0	97.3	90	110			
Nickel	0.197	0.0100	0.200	0	98.4	90	110			
Potassium	5.17	0.300	5.00	0	103	90	110			
Thallium	0.212	0.00150	0.200	0	106	90	110			
Vanadium	0.198	0.00100	0.200	0	98.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200217B**

The QC data in batch 94996 applies to the following samples: 2002114-01A, 2002114-02A, 2002114-03A

Sample ID: **MB-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 10:54:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 10:56:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0	100	80	120			N

Sample ID: **LCSD-94996**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 10:58:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0	100	80	120	0.150	15	N

Sample ID: **2002097-04A SD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 11:09:00 AM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.104	0.0500	0	0.109				4.94	20	N

Sample ID: **2002097-04A PDS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 1:23:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.322	0.0100	0.200	0.109	106	75	125			N

Sample ID: **2002097-04A MS**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 1:43:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.325	0.0100	0.200	0.109	108	75	125			N

Sample ID: **2002097-04A MSD**	Batch ID: **94996**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 1:58:00 PM**	Prep Date: **2/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.326	0.0100	0.200	0.109	108	75	125	0.370	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200217B

Sample ID: **ICV-200217**	Batch ID: **R109007**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 10:41:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0957	0.0100	0.100	0	95.7	90	110			N

Sample ID: **LCVL-200217**	Batch ID: **R109007**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 10:46:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00488	0.0100	0.00500	0	97.6	80	120			N

Sample ID: **CCV1-200217**	Batch ID: **R109007**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0	96.6	90	110			N

Sample ID: **CCV2-200217**	Batch ID: **R109007**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200217B**	Analysis Date: **2/17/2020 4:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.202	0.0100	0.200	0	101	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

The QC data in batch 95024 applies to the following samples: 2002114-01B, 2002114-02B, 2002114-03B, 2002114-04B, 2002114-05B

Sample ID: **MB-95024** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:29:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-95024** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:32:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0	103	80	120			
Antimony	0.199	0.00250	0.200	0	99.7	80	120			
Arsenic	0.207	0.00500	0.200	0	104	80	120			
Chromium	0.202	0.00500	0.200	0	101	80	120			
Lead	0.200	0.00100	0.200	0	100	80	120			
Nickel	0.201	0.0100	0.200	0	101	80	120			
Thallium	0.211	0.00150	0.200	0	106	80	120			
Vanadium	0.199	0.00100	0.200	0	99.7	80	120			

Sample ID: **LCSD-95024** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:34:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.13	0.0300	5.00	0	103	80	120	0.262	15	
Antimony	0.201	0.00250	0.200	0	100	80	120	0.625	15	
Arsenic	0.209	0.00500	0.200	0	104	80	120	0.722	15	
Chromium	0.204	0.00500	0.200	0	102	80	120	0.978	15	
Lead	0.202	0.00100	0.200	0	101	80	120	0.958	15	
Nickel	0.203	0.0100	0.200	0	101	80	120	0.694	15	
Thallium	0.213	0.00150	0.200	0	106	80	120	0.721	15	
Vanadium	0.201	0.00100	0.200	0	100	80	120	0.611	15	

Sample ID: **2002097-04B SD** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:52:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0175				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

Sample ID: **2002097-04B SD** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:52:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00276				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0.000374				0	20	
Nickel	<0.0150	0.0500	0	0.00873				0	20	
Thallium	<0.00250	0.00750	0	0.00147				0	20	
Vanadium	0.00636	0.00500	0	0.00649				2.05	20	

Sample ID: **2002097-04B PDS** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 3:05:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.82	0.0300	5.00	0.0175	96.1	75	125			
Antimony	0.178	0.00250	0.200	0	89.0	75	125			
Arsenic	0.152	0.00500	0.200	0.00276	74.8	75	125			
Chromium	0.157	0.00500	0.200	0	78.7	75	125			
Lead	0.197	0.00100	0.200	0.000374	98.1	75	125			
Nickel	0.134	0.0100	0.200	0.00873	62.9	75	125			S
Thallium	0.196	0.00150	0.200	0.00147	97.3	75	125			
Vanadium	0.173	0.00100	0.200	0.00649	83.5	75	125			

Sample ID: **2002097-04B MS** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 3:18:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.01	0.0300	5.00	0.0175	99.8	75	125			
Antimony	0.178	0.00250	0.200	0	89.2	75	125			
Arsenic	0.156	0.00500	0.200	0.00276	76.6	75	125			
Chromium	0.154	0.00500	0.200	0	77.0	75	125			
Lead	0.199	0.00100	0.200	0.000374	99.5	75	125			
Nickel	0.133	0.0100	0.200	0.00873	62.0	75	125			S
Thallium	0.199	0.00150	0.200	0.00147	98.6	75	125			
Vanadium	0.173	0.00100	0.200	0.00649	83.2	75	125			

Sample ID: **2002097-04B MSD** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 3:29:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.09	0.0300	5.00	0.0175	101	75	125	1.61	15	
Antimony	0.177	0.00250	0.200	0	88.7	75	125	0.546	15	
Arsenic	0.154	0.00500	0.200	0.00276	75.7	75	125	1.18	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

Sample ID: **2002097-04B MSD** Batch ID: **95024** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 3:29:00 PM** Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.153	0.00500	0.200	0	76.6	75	125	0.533	15	
Lead	0.199	0.00100	0.200	0.000374	99.4	75	125	0.180	15	
Nickel	0.130	0.0100	0.200	0.00873	60.8	75	125	1.83	15	S
Thallium	0.199	0.00150	0.200	0.00147	98.7	75	125	0.119	15	
Vanadium	0.172	0.00100	0.200	0.00649	82.6	75	125	0.680	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

Sample ID: **ICV-200218** Batch ID: **R109033** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 11:30:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.50	0.0300	2.50	0	100	90	110			
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.0993	0.00500	0.100	0	99.3	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Lead	0.100	0.00100	0.100	0	100	90	110			
Nickel	0.0999	0.0100	0.100	0	99.9	90	110			
Thallium	0.0971	0.00150	0.100	0	97.1	90	110			
Vanadium	0.101	0.00100	0.100	0	101	90	110			

Sample ID: **LCVL-200218** Batch ID: **R109033** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 11:35:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.104	0.0300	0.100	0	104	80	120			
Antimony	0.00198	0.00250	0.00200	0	98.9	80	120			
Arsenic	0.00494	0.00500	0.00500	0	98.8	80	120			
Chromium	0.00524	0.00500	0.00500	0	105	80	120			
Lead	0.00101	0.00100	0.00100	0	101	80	120			
Nickel	0.00480	0.0100	0.00500	0	95.9	80	120			
Thallium	0.000974	0.00150	0.00100	0	97.4	80	120			
Vanadium	0.000924	0.00100	0.00100	0	92.4	80	120			

Sample ID: **CCV1-200218** Batch ID: **R109033** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 12:24:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.12	0.0300	5.00	0	102	90	110			
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.208	0.00500	0.200	0	104	90	110			
Chromium	0.201	0.00500	0.200	0	100	90	110			
Lead	0.201	0.00100	0.200	0	101	90	110			
Nickel	0.200	0.0100	0.200	0	99.9	90	110			
Thallium	0.212	0.00150	0.200	0	106	90	110			
Vanadium	0.199	0.00100	0.200	0	99.7	90	110			

Sample ID: **CCV2-200218** Batch ID: **R109033** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200218B** Analysis Date: **2/18/2020 3:43:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.32	0.0300	5.00	0	106	90	110			
Antimony	0.185	0.00250	0.200	0	92.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218B

Sample ID: **CCV2-200218**	Batch ID: **R109033**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218B**	Analysis Date: **2/18/2020 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Chromium	0.184	0.00500	0.200	0	91.8	90	110			
Lead	0.195	0.00100	0.200	0	97.7	90	110			
Nickel	0.187	0.0100	0.200	0	93.5	90	110			
Thallium	0.209	0.00150	0.200	0	105	90	110			
Vanadium	0.185	0.00100	0.200	0	92.6	90	110			

Sample ID: **CCV3-200218**	Batch ID: **R109033**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218B**	Analysis Date: **2/18/2020 4:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.31	0.0300	5.00	0	106	90	110			
Antimony	0.185	0.00250	0.200	0	92.5	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Chromium	0.183	0.00500	0.200	0	91.6	90	110			
Lead	0.193	0.00100	0.200	0	96.5	90	110			
Nickel	0.187	0.0100	0.200	0	93.4	90	110			
Thallium	0.208	0.00150	0.200	0	104	90	110			
Vanadium	0.184	0.00100	0.200	0	92.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218C

The QC data in batch 95024 applies to the following samples: 2002114-01B, 2002114-02B, 2002114-03B, 2002114-04B, 2002114-05B

Sample ID: **MB-95024**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:29:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-95024**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:32:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	104	80	120			N

Sample ID: **LCSD-95024**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:34:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	104	80	120	0.063	15	N

Sample ID: **2002097-04B SD**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:52:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.113	0.0500	0	0.116				2.63	20	N

Sample ID: **2002097-04B PDS**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 3:05:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.336	0.0100	0.200	0.116	110	75	125			N

Sample ID: **2002097-04B MS**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 3:18:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.337	0.0100	0.200	0.116	111	75	125			N

Sample ID: **2002097-04B MSD**	Batch ID: **95024**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 3:29:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.338	0.0100	0.200	0.116	111	75	125	0.394	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200218C

Sample ID: **ICV-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 11:30:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0970	0.0100	0.100	0	97.0	90	110			N

Sample ID: **LCVL-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 11:35:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00490	0.0100	0.00500	0	98.0	80	120			N

Sample ID: **CCV1-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 12:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.207	0.0100	0.200	0	103	90	110			N

Sample ID: **CCV2-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0	97.3	90	110			N

Sample ID: **CCV3-200218**	Batch ID: **R109081**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200218C**	Analysis Date: **2/18/2020 4:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0	97.3	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200213A

The QC data in batch 94984 applies to the following samples: 2002114-01D, 2002114-02D, 2002114-03D, 2002114-04D, 2002114-05D

Sample ID: **MB-94984** Batch ID: **94984** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_200213A** Analysis Date: **2/13/2020 11:39:56 AM** Prep Date: **2/13/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-94984** Batch ID: **94984** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_200213A** Analysis Date: **2/13/2020 12:43:57 PM** Prep Date: **2/13/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.44	1.00	10.00	0	94.4	90	110			
Fluoride	3.82	0.400	4.000	0	95.5	90	110			
Nitrate-N	4.82	0.500	5.000	0	96.3	90	110			
Sulfate	29.8	3.00	30.00	0	99.3	90	110			

Sample ID: **LCSD-94984** Batch ID: **94984** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_200213A** Analysis Date: **2/13/2020 12:59:57 PM** Prep Date: **2/13/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.35	1.00	10.00	0	93.5	90	110	0.916	20	
Fluoride	3.79	0.400	4.000	0	94.9	90	110	0.714	20	
Nitrate-N	4.78	0.500	5.000	0	95.6	90	110	0.794	20	
Sulfate	29.6	3.00	30.00	0	98.5	90	110	0.817	20	

Sample ID: **2002114-01DMS** Batch ID: **94984** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_200213A** Analysis Date: **2/13/2020 3:31:26 PM** Prep Date: **2/13/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	27200	500	10000	20560	66.6	90	110			S
Fluoride	9970	200	10000	0	99.7	90	110			
Nitrate-N	2060	250	2258	0	91.2	90	110			
Sulfate	14100	1500	10000	4641	94.2	90	110			

Sample ID: **2002114-01DMSD** Batch ID: **94984** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_200213A** Analysis Date: **2/13/2020 3:47:26 PM** Prep Date: **2/13/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	27300	500	10000	20560	67.2	90	110	0.203	20	S
Fluoride	10000	200	10000	0	100	90	110	0.621	20	
Nitrate-N	2060	250	2258	0	91.2	90	110	0.020	20	
Sulfate	14100	1500	10000	4641	94.1	90	110	0.038	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200213A

Sample ID: **2002114-02DMS**	Batch ID: **94984**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_200213A**	Analysis Date: **2/13/2020 4:19:26 PM**	Prep Date: **2/13/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	27300	500	10000	20210	70.5	90	110			S
Fluoride	10200	200	10000	0	102	90	110			
Nitrate-N	2090	250	2258	0	92.6	90	110			
Sulfate	14200	1500	10000	4600	95.7	90	110			

Sample ID: **2002114-02DMSD**	Batch ID: **94984**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_200213A**	Analysis Date: **2/13/2020 4:35:26 PM**	Prep Date: **2/13/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	27300	500	10000	20210	70.9	90	110	0.141	20	S
Fluoride	10200	200	10000	0	102	90	110	0.373	20	
Nitrate-N	2090	250	2258	0	92.5	90	110	0.045	20	
Sulfate	14200	1500	10000	4600	95.7	90	110	0.007	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200213A

Sample ID: **ICV-200213**	Batch ID: **R108950**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_200213A**	Analysis Date: **2/13/2020 11:07:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.8	1.00	25.00	0	99.1	90	110			
Fluoride	10.3	0.400	10.00	0	103	90	110			
Nitrate-N	12.9	0.500	12.50	0	103	90	110			
Sulfate	78.7	3.00	75.00	0	105	90	110			

Sample ID: **CCV1-200213**	Batch ID: **R108950**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200213A**	Analysis Date: **2/13/2020 7:15:26 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.62	1.00	10.00	0	96.2	90	110			
Fluoride	3.92	0.400	4.000	0	98.0	90	110			
Nitrate-N	4.87	0.500	5.000	0	97.3	90	110			
Sulfate	30.0	3.00	30.00	0	100	90	110			

Sample ID: **CCV2-200213**	Batch ID: **R108950**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200213A**	Analysis Date: **2/13/2020 11:31:25 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.90	0.400	4.000	0	97.4	90	110			
Nitrate-N	4.87	0.500	5.000	0	97.4	90	110			

Sample ID: **CCV3-200213**	Batch ID: **R108950**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200213A**	Analysis Date: **2/14/2020 1:23:25 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.87	0.400	4.000	0	96.8	90	110			
Nitrate-N	4.78	0.500	5.000	0	95.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200213B

The QC data in batch 94984 applies to the following samples: 2002114-01D, 2002114-02D, 2002114-03D, 2002114-04D, 2002114-05D

Sample ID: **DCS2-94984** Batch ID: **94984** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_200213B** Analysis Date: **2/13/2020 12:11:57 PM** Prep Date: **2/13/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.396	1.00	0.5000	0	79.1	70	130			
Fluoride	0.185	0.400	0.2000	0	92.6	70	130			
Nitrate-N	0.231	0.0500	0.2500	0	92.2	70	130			
Sulfate	1.50	3.00	1.500	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200225A

The QC data in batch 95155 applies to the following samples: 2002114-01D, 2002114-02D, 2002114-03D, 2002114-04D, 2002114-05D

Sample ID: **MB-95155** Batch ID: **95155** TestNo: **M2320 B** Units: **mg/L @ pH 4.26**
SampType: **MBLK** Run ID: **TITRATOR_200225A** Analysis Date: **2/25/2020 9:49:00 AM** Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-95155** Batch ID: **95155** TestNo: **M2320 B** Units: **mg/L @ pH 4.01**
SampType: **LCS** Run ID: **TITRATOR_200225A** Analysis Date: **2/25/2020 9:53:00 AM** Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	54.3	20.0	50.00	0	109	74	129			

Sample ID: **LCSD-95155** Batch ID: **95155** TestNo: **M2320 B** Units: **mg/L @ pH 4.09**
SampType: **LCSD** Run ID: **TITRATOR_200225A** Analysis Date: **2/25/2020 9:57:00 AM** Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	55.1	20.0	50.00	0	110	74	129	1.46	20	

Sample ID: **2002114-01D-DUP** Batch ID: **95155** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_200225A** Analysis Date: **2/25/2020 10:39:00 AM** Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	206	20.0	0	211.0				2.25	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	206	20.0	0	211.0				2.25	20	

Sample ID: **2002172-01D-DUP** Batch ID: **95155** TestNo: **M2320 B** Units: **mg/L @ pH 4.5**
SampType: **DUP** Run ID: **TITRATOR_200225A** Analysis Date: **2/25/2020 11:33:00 AM** Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	136	20.0	0	141.5				3.60	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	136	20.0	0	141.5				3.60	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200225A

Sample ID: **ICV-200225**	Batch ID: **R109183**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.26**
SampType: **ICV**	Run ID: **TITRATOR_200225A**	Analysis Date: **2/25/2020 9:43:00 AM**	Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	14.1	20.0	0							
Alkalinity, Carbonate (As CaCO3)	86.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	98	102			

Sample ID: **CCV1-200225**	Batch ID: **R109183**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.31**
SampType: **CCV**	Run ID: **TITRATOR_200225A**	Analysis Date: **2/25/2020 11:50:00 AM**	Prep Date: **2/25/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	22.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	77.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200217B

The QC data in batch 95036 applies to the following samples: 2002114-01D, 2002114-02D, 2002114-03D, 2002114-04D, 2002114-05D

Sample ID: **MB-95036**	Batch ID: **95036**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200217B**	Analysis Date: **2/17/2020 4:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-95036**	Batch ID: **95036**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200217B**	Analysis Date: **2/17/2020 4:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	745	10.0	745.6	0	99.9	90	113			

Sample ID: **2002113-01C-DUP**	Batch ID: **95036**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200217B**	Analysis Date: **2/17/2020 4:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	43700	1000	0	44800				2.49	5	

Sample ID: **2002113-02C-DUP**	Batch ID: **95036**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200217B**	Analysis Date: **2/17/2020 4:30:00 PM**	Prep Date: **2/17/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	44900	1000	0	43900				2.25	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200224A

The QC data in batch 95142 applies to the following samples: 2002114-01C, 2002114-02C, 2002114-03C, 2002114-04C, 2002114-05C

Sample ID: **MB-95142**	Batch ID: **95142**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200224A**	Analysis Date: **2/24/2020 3:40:00 PM**	Prep Date: **2/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-95142**	Batch ID: **95142**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200224A**	Analysis Date: **2/24/2020 3:40:00 PM**	Prep Date: **2/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.16	0.250	5.000	0	103	80	120			

Sample ID: **LCSD-95142**	Batch ID: **95142**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **LCSD**	Run ID: **WC_200224A**	Analysis Date: **2/24/2020 3:40:00 PM**	Prep Date: **2/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.33	0.250	5.000	0	107	80	120	3.24	25	

Sample ID: **DCS-95142**	Batch ID: **95142**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **DCS**	Run ID: **WC_200224A**	Analysis Date: **2/24/2020 3:40:00 PM**	Prep Date: **2/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.121	0.250	0.1000	0	121	65	135			

Sample ID: **2002094-01CMS**	Batch ID: **95142**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_200224A**	Analysis Date: **2/24/2020 3:40:00 PM**	Prep Date: **2/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.32	0.250	5.000	0.1700	103	80	120			

Sample ID: **2002094-01CMSD**	Batch ID: **95142**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_200224A**	Analysis Date: **2/24/2020 3:40:00 PM**	Prep Date: **2/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.58	0.250	5.000	0.1700	108	80	120	4.77	25	

Sample ID: **2002114-01CMS**	Batch ID: **95142**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_200224A**	Analysis Date: **2/24/2020 3:40:00 PM**	Prep Date: **2/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.04	0.250	5.000	0	80.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200224A

Sample ID: **2002114-01CMSD**	Batch ID: **95142**	TestNo: **M4500-NH3-D**		Units: **mg/L**	
SampType: **MSD**	Run ID: **WC_200224A**	Analysis Date: **2/24/2020 3:40:00 PM**		Prep Date: **2/24/2020**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.40	0.250	5.000	0	88.0	80	120	8.53	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200224A

Sample ID: **ICV-200224**	Batch ID: **R109162**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_200224A**	Analysis Date: **2/24/2020 3:40:00 PM**	Prep Date: **2/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.94	0.250	2.500	0	118	80	120			

Sample ID: **CCV1-200224**	Batch ID: **R109162**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_200224A**	Analysis Date: **2/24/2020 3:40:00 PM**	Prep Date: **2/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.75	0.250	5.000	0	95.0	80	120			

Sample ID: **CCV2-200224**	Batch ID: **R109162**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_200224A**	Analysis Date: **2/24/2020 3:40:00 PM**	Prep Date: **2/24/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.45	0.250	5.000	0	89.0	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2002114
Project: Copano GW 1Q20

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.2**	**g/L @ pH 4.2**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

March 12, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1190095
Samples Received:	02/17/2020
Project Number:	2002114
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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MW3-5 L1190095-01 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				02/12/20 09:03	02/17/20 09:20	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1437110	1	03/03/20 15:53	03/10/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1430480	1	02/19/20 15:20	03/10/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1430480	1	02/19/20 15:20	02/20/20 15:03	RGT	Mt. Juliet, TN

MW3-6 L1190095-02 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				02/12/20 10:40	02/17/20 09:20	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1437110	1	03/03/20 15:53	03/10/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1430480	1	02/19/20 15:20	03/10/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1430480	1	02/19/20 15:20	02/20/20 15:03	RGT	Mt. Juliet, TN

MW3-7 L1190095-03 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				02/12/20 11:50	02/17/20 09:20	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1437110	1	03/03/20 15:53	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1430480	1	02/19/20 15:20	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1430480	1	02/19/20 15:20	02/20/20 15:03	RGT	Mt. Juliet, TN

MW3-7B L1190095-04 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				02/12/20 13:15	02/17/20 09:20	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1437110	1	03/03/20 15:53	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1430480	1	02/19/20 15:20	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1430480	1	02/19/20 15:20	02/20/20 15:03	RGT	Mt. Juliet, TN

MW-205 L1190095-05 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				02/12/20 13:05	02/17/20 09:20	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1437110	1	03/03/20 15:53	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1430480	1	02/19/20 15:20	03/06/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1430480	1	02/19/20 15:20	02/20/20 15:03	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.768		0.420	0.612	03/10/2020 09:50	WG1437110
(T) Barium	*113*			*62.0-143*	*03/10/2020 09:50*	WG1437110
(T) Yttrium	*116*			*79.0-136*	*03/10/2020 09:50*	WG1437110

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.24		0.701	0.878	03/10/2020 09:50	WG1430480

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.471		0.281	0.266	02/20/2020 15:03	WG1430480
(T) Barium-133	*94.2*			*30.0-143*	*02/20/2020 15:03*	WG1430480

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.31		0.419	0.618	03/10/2020 09:50	WG1437110
(T) Barium	*110*			*62.0-143*	*03/10/2020 09:50*	WG1437110
(T) Yttrium	*108*			*79.0-136*	*03/10/2020 09:50*	WG1437110

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.45		0.580	0.839	03/10/2020 09:50	WG1430480

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.134		0.161	0.221	02/20/2020 15:03	WG1430480
(T) Barium-133	*104*			*30.0-143*	*02/20/2020 15:03*	WG1430480

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.21		0.381	0.561	03/06/2020 09:50	WG1437110
(T) Barium	*112*			*62.0-143*	*03/06/2020 09:50*	WG1437110
(T) Yttrium	*97.8*			*79.0-136*	*03/06/2020 09:50*	WG1437110

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.38		0.617	0.904	03/06/2020 09:50	WG1430480

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.171		0.236	0.343	02/20/2020 15:03	WG1430480
(T) Barium-133	*94.9*			*30.0-143*	*02/20/2020 15:03*	WG1430480

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	14.2		0.603	0.526	03/06/2020 09:50	WG1437110
(T) Barium	*113*			*62.0-143*	*03/06/2020 09:50*	WG1437110
(T) Yttrium	*101*			*79.0-136*	*03/06/2020 09:50*	WG1437110

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	26.6		1.85	0.677	03/06/2020 09:50	WG1430480

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	12.4		1.25	0.151	02/20/2020 15:03	WG1430480
(T) Barium-133	*101*			*30.0-143*	*02/20/2020 15:03*	WG1430480

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	13.9		0.634	0.621	03/06/2020 09:50	WG1437110
(T) Barium	*112*			*62.0-143*	*03/06/2020 09:50*	WG1437110
(T) Yttrium	*100*			*79.0-136*	*03/06/2020 09:50*	WG1437110

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	24.4		1.81	0.89	03/06/2020 09:50	WG1430480

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	10.5		1.18	0.269	02/20/2020 15:03	WG1430480
(T) Barium-133	*94.3*			*30.0-143*	*02/20/2020 15:03*	WG1430480

Method Blank (MB)

(MB) R3507879-1 03/10/20 09:50

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.132		0.419
(T) Barium	*101*		
(T) Yttrium	*113*		

L1189900-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1189900-02 03/10/20 09:50 • (DUP) R3507879-5 03/10/20 09:50

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.307	-0.783	1	200	1.62		20	3
(T) Barium	*112*	*125*						
(T) Yttrium	*128*	*124*						

Laboratory Control Sample (LCS)

(LCS) R3507879-2 03/10/20 09:50

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.66	113	80.0-120	
(T) Barium			*112*		
(T) Yttrium			*115*		

L1190096-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1190096-04 03/06/20 09:50 • (MS) R3507879-3 03/10/20 09:50 • (MSD) R3507879-4 03/10/20 09:50

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	22.2	34.1	30.4	119	82.0	1	70.0-130			11.3		20
(T) Barium		*105*			*112*	*121*							
(T) Yttrium		*110*			*105*	*116*							

Method Blank (MB)

(MB) R3502795-5 02/20/20 19:05

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	0.0433		0.0579
(T) Barium-133	*94.4*		

L1190095-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1190095-02 02/20/20 15:03 • (DUP) R3502795-4 02/20/20 15:03

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.134	0.246	1	58.9	0.351		20	3
(T) Barium-133	*104*	*85.5*						

Laboratory Control Sample (LCS)

(LCS) R3502795-1 02/20/20 15:03

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	5.83	116	80.0-120	
(T) Barium-133			*89.5*		

L1190095-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1190095-04 02/20/20 15:03 • (MS) R3502795-2 02/20/20 15:03 • (MSD) R3502795-3 02/20/20 15:03

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	12.4	29.6	30.3	85.4	89.1	1	75.0-125			2.47		20
(T) Barium-133		*101*			*78.3*	*93.2*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

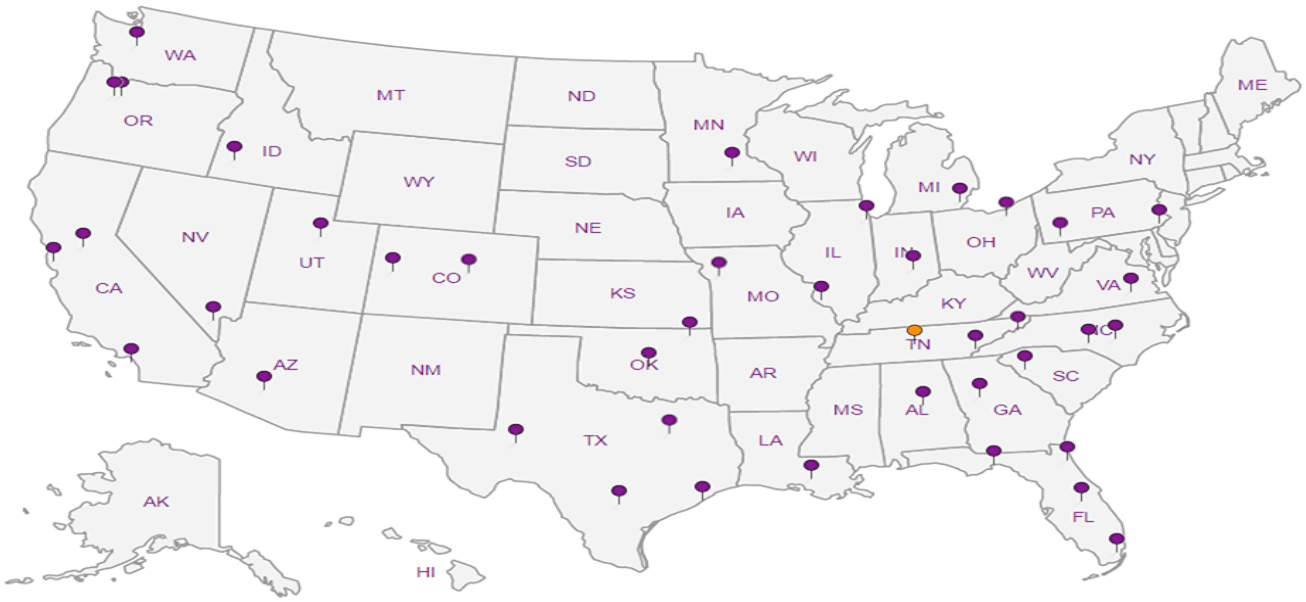
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

G109

Work Order: 2002114

1190095

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

CL CL

13-Feb-20

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	RA228 E904.0	RA226 M7500 Ra B M	Requested Tests			
MW3-5	Aqueous	-01E	02/12/20 09:03 AM	1LHDPEHNO3	1					01
MW3-5	Aqueous	-01F	02/12/20 09:03 AM	1LHDPEHNO3		1				
MW3-6	Aqueous	-02E	02/12/20 10:40 AM	1LHDPEHNO3	1					02
MW3-6	Aqueous	-02F	02/12/20 10:40 AM	1LHDPEHNO3		1				
MW3-7	Aqueous	-03E	02/12/20 11:50 AM	1LHDPEHNO3	1					03
MW3-7	Aqueous	-03F	02/12/20 11:50 AM	1LHDPEHNO3		1				
MW3-7B	Aqueous	-04E	02/12/20 01:15 PM	1LHDPEHNO3	1					04
MW3-7B	Aqueous	-04F	02/12/20 01:15 PM	1LHDPEHNO3		1				
MW-205	Aqueous	-05E	02/12/20 01:05 PM	1LHDPEHNO3	1					05
MW-205	Aqueous	-05F	02/12/20 01:05 PM	1LHDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		2.13.2020 1700	**Received by:**	Carol Kemp	2/17/20 9:20
Relinquished by:			**Received by:**		

Amb

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRGTX	190095	
Cooler Received/Opened On: 2/17/20 Temperature:	Amb	
Received By: Carol Kemp		
Signature: Carol Kemp		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002114

Sample ID: **MW3-5**
Lab ID Number: **2002114-01**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1170	mg/L	SW6020B
Magnesium	1430	mg/L	SW6020B
Sodium	11400	mg/L	SW6020B
Potassium	76.5	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	211	mg/L @ pH 4.53	M2320 B
Sulfate	4640	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	211	mg/L @ pH 4.53	M2320 B
Hardness	8810	mg/L	SM 2340B
Chloride	20600	mg/L	E300
TDS	44100	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.22
Calcium	58.38
Chloride	581.10
Fluoride	0.00
Magnesium	117.60
Nitrate-N	0.00
Potassium	1.96
Sodium	495.87
Sulfate	96.61
TOTAL ANIONS	682
TOTAL CATIONS	674
CATION/ANION (% DIFF)	-0.60
Calculated TDS	39422
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.12
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/17/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002114

Sample ID: **MW3-6**
Lab ID Number: **2002114-02**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1210	mg/L	SW6020B
Magnesium	1560	mg/L	SW6020B
Sodium	11200	mg/L	SW6020B
Potassium	58.9	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	258	mg/L @ pH 4.53	M2320 B
Sulfate	4600	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	258	mg/L @ pH 4.53	M2320 B
Hardness	9445	mg/L	SM 2340B
Chloride	20200	mg/L	E300
TDS	43500	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	5.15
Calcium	60.38
Chloride	569.82
Fluoride	0.00
Magnesium	128.29
Nitrate-N	0.00
Potassium	1.51
Sodium	487.17
Sulfate	95.77
TOTAL ANIONS	671
TOTAL CATIONS	677
CATION/ANION (% DIFF)	0.49
Calculated TDS	38958
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.12
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/17/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002114

Sample ID: **MW3-7**
Lab ID Number: **2002114-03**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1100	mg/L	SW6020B
Magnesium	1450	mg/L	SW6020B
Sodium	11600	mg/L	SW6020B
Potassium	47.7	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.53	M2320 B
Bicarbonate	327	mg/L @ pH 4.53	M2320 B
Sulfate	5160	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	327	mg/L @ pH 4.53	M2320 B
Hardness	8718	mg/L	SM 2340B
Chloride	21200	mg/L	E300
TDS	45400	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	6.53
Calcium	54.89
Chloride	598.03
Fluoride	0.00
Magnesium	119.24
Nitrate-N	0.00
Potassium	1.22
Sodium	504.57
Sulfate	107.43
TOTAL ANIONS	712
TOTAL CATIONS	680
CATION/ANION (% DIFF)	-2.30
Calculated TDS	40722
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.11
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/17/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002114

Sample ID: **MW3-7B**
Lab ID Number: **2002114-04**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1100	mg/L	SW6020B
Magnesium	1480	mg/L	SW6020B
Sodium	10700	mg/L	SW6020B
Potassium	61.8	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.52	M2320 B
Bicarbonate	202	mg/L @ pH 4.52	M2320 B
Sulfate	3740	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	202	mg/L @ pH 4.52	M2320 B
Hardness	8841	mg/L	SM 2340B
Chloride	20300	mg/L	E300
TDS	43700	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	4.04
Calcium	54.89
Chloride	572.64
Fluoride	0.00
Magnesium	121.71
Nitrate-N	0.00
Potassium	1.58
Sodium	465.42
Sulfate	77.87
TOTAL ANIONS	655
TOTAL CATIONS	644
CATION/ANION (% DIFF)	-0.84
Calculated TDS	37483
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.17
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/17/20

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL
MINERAL BALANCE REPORT

Golder

Client Project Number: 19125525
Location: Copano GW 1Q20
DHL Project Number: 2002114

Sample ID: **MW-205**
Lab ID Number: **2002114-05**

PARAMETER	RESULT	UNITS	METHOD
Calcium	1120	mg/L	SW6020B
Magnesium	1490	mg/L	SW6020B
Sodium	11200	mg/L	SW6020B
Potassium	63.7	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.52	M2320 B
Bicarbonate	183	mg/L @ pH 4.52	M2320 B
Sulfate	3890	mg/L	E300
Fluoride	0	mg/L	E300
Nitrate-N	0	mg/L	E300
T-Alkalinity	183	mg/L @ pH 4.52	M2320 B
Hardness	8932	mg/L	SM 2340B
Chloride	21000	mg/L	E300
TDS	43400	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	3.66
Calcium	55.89
Chloride	592.38
Fluoride	0.00
Magnesium	122.53
Nitrate-N	0.00
Potassium	1.63
Sodium	487.17
Sulfate	80.99
TOTAL ANIONS	677
TOTAL CATIONS	667
CATION/ANION (% DIFF)	-0.73
Calculated TDS	38856
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.12
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 03/17/20

Cation/Anion % Difference calculated per SM1030E.

June 22, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 2005136

RE: Copano Surface Water & Sediment

Dear Kevin Dworsky:

DHL Analytical, Inc. received 16 sample(s) on 5/16/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 68959

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Rd Victoria, Tx 77901
PHONE: (361) 573-6442 FAX/E-MAIL: Greg_Logan@golder.com
DATA REPORTED TO: Scott Fenner Scott_fenner@golder.com
ADDITIONAL REPORT COPIES TO: Matt Wickham

DATE: 5/15/20 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 2005136
PROJECT LOCATION OR NAME: Copano Surface water & sediment
CLENT PROJECT #: 1 COLLECTOR: Scott Fenner

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021]	TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑	GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑	VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑	SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑	8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑	8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑	8321 HERB ❑ TPHOS, AMMONIA ❑	METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑	RCRA ❑ TX11 ❑	PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑	CHLORIDE ❑ ANIONS	TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑	TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑	RCI ❑ FLASHPOINT ❑ DGAS ❑	TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑	Ag 226/228	FIELD NOTES
SWSD-1	01/02	5/15/20	1235	S.W	G+P	4		X		X	X								X								X		
SWSD-2	~~02~~ 03/04		1259																										
SWISD-3	~~03~~ 05/06		1309																										
SWISD-4	~~04~~ 07/08		1325																										
SWISD-5	~~05~~ 09/10		1340																										
SWISD-6	~~06~~ 11/12		1357																										
SWISD-Dup-1	~~07~~ 13/14		1314																										
SWSD-Dup-2	~~08~~ 15/16		1402			6																							
	EL 5/18/20																												

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	5/15/20 1700	FedEx
FEDEX	5-16-20 1750	

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☑
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 2.1 / 0.6 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010


ORIGIN ID:VCTA (361) 573-6442
GOLDER
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 15MAY20
ACTWGT: 56.00 LB
CAD: 6995140/SSFE2110
DIMS: 21x12x12 IN
BILL THIRD PARTY
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
1 of 2
TRK# 0201 3929 0274 8560
MASTER
XO BSMA
SATURDAY 12:00P
PRIORITY OVERNIGI
7868
TX-US
Part # 156297-435 RRDB2 EXP 02/21


ORIGIN ID:VCTA (361) 573-6442
GOLDER
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 15MAY20
ACTWGT: 54.65 LB
CAD: 6995140/SSFE2110
DIMS: 21x12x12 IN
BILL THIRD PARTY
Part # 156297-435 RRDB2 EXP 02/21
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
2 of 2
MPS# 0263 3929 0274 8570
Mstr# 3929 0274 8560
0201
SATURDAY 12:00P
PRIORITY OVERNIGHT
XO BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: **5/18/2020**

Work Order Number 2005136 | Received by: **CC**

Checklist completed by: _____ (Signature) 5/18/2020 (Date) | Reviewed by _____ (Initials) 5/18/2020 (Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.1 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments:

Corrective Action:

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano Surface Water & Sediment	**LRC Date:** 6/22/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2005136
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?	**X**				
		7) Were % moisture (or solids) reported for all soil and sediment samples?	**X**				
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano Surface Water & Sediment	**LRC Date:** 6/22/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2005136
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?		X			**S4-01**
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

06/22/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *22-Jun-20*

CLIENT: Golder
Project: Copano Surface Water & Sediment
Lab Order: 2005136

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis (soil & water) (total & dissolved)
Method SW6020B - Uranium in Water Analysis (soil & water) (total & dissolved) (this parameter is not NELAP certified)
Method SW7471B/7470A - Mercury Analysis (soil & water) (total & dissolved)
Method D2216 - Percent Moisture Analysis

Exception Report R1-01

The samples were received and log-in performed on 5/16/20. A total of 16 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Total Metals analysis performed on 5/20/20 (batch 96410) the matrix spike and matrix spike duplicate recoveries were out of control limits for Aluminum and/or Lead. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Dissolved Metals analysis performed on 5/21/20 (batch 96424) the matrix spike duplicate recovery was slightly below control limits for Antimony. This is flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Exception Report R10-01

For Total and Dissolved Metals the dissolved Nickel results were slightly greater than the total Nickel results for samples SW-2 and SW-Dup-1. These are within the acceptable variation limits. No further corrective actions were taken.

Exception Report S4-01

For Total Metals analysis of sample SW-Dup-1, the response for the internal standard Scandium was above DHL's internal control limits and within the method control limits for EPA 6020B. No further corrective actions were taken.

Exception Report S9-01

CLIENT:	Golder
Project:	Copano Surface Water & Sediment
Lab Order:	2005136

CASE NARRATIVE

For Total Metals analysis performed on 5/20/20 (batch 96410) the PDS recovery was slightly above control limits for Lead. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT: Golder
Project: Copano Surface Water & Sediment
Lab Order: 2005136

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2005136-01	SW-1		05/15/20 12:35 PM	5/16/2020
2005136-02	SD-1		05/15/20 12:35 PM	5/16/2020
2005136-03	SW-2		05/15/20 12:59 PM	5/16/2020
2005136-04	SD-2		05/15/20 12:59 PM	5/16/2020
2005136-05	SW-3		05/15/20 01:09 PM	5/16/2020
2005136-06	SD-3		05/15/20 01:09 PM	5/16/2020
2005136-07	SW-4		05/15/20 01:25 PM	5/16/2020
2005136-08	SD-4		05/15/20 01:25 PM	5/16/2020
2005136-09	SW-5		05/15/20 01:40 PM	5/16/2020
2005136-10	SD-5		05/15/20 01:40 PM	5/16/2020
2005136-11	SW-6		05/15/20 01:57 PM	5/16/2020
2005136-12	SD-6		05/15/20 01:57 PM	5/16/2020
2005136-13	SW-Dup-1		05/15/20 01:14 PM	5/16/2020
2005136-14	SD-Dup-1		05/15/20 01:14 PM	5/16/2020
2005136-15	SW-Dup-2		05/15/20 02:02 PM	5/16/2020
2005136-16	SD-Dup-2		05/15/20 02:02 PM	5/16/2020

Lab Order: 2005136
Client: Golder
Project: Copano Surface Water & Sediment

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005136-01A	SW-1	05/15/20 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-1	05/15/20 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-1	05/15/20 12:35 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:17 AM	96441
2005136-01B	SW-1	05/15/20 12:35 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-1	05/15/20 12:35 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-1	05/15/20 12:35 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:44 AM	96445
2005136-02A	SD-1	05/15/20 12:35 PM	Sediment	SW7471B	Mercury Soil Prep, Total	05/19/20 10:17 AM	96411
	SD-1	05/15/20 12:35 PM	Sediment	D2216	Moisture Preparation	05/19/20 02:44 PM	96417
	SD-1	05/15/20 12:35 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-1	05/15/20 12:35 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-1	05/15/20 12:35 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
2005136-03A	SW-2	05/15/20 12:59 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-2	05/15/20 12:59 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-2	05/15/20 12:59 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:17 AM	96441
2005136-03B	SW-2	05/15/20 12:59 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-2	05/15/20 12:59 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-2	05/15/20 12:59 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:44 AM	96445
2005136-04A	SD-2	05/15/20 12:59 PM	Sediment	SW7471B	Mercury Soil Prep, Total	05/19/20 10:17 AM	96411
	SD-2	05/15/20 12:59 PM	Sediment	D2216	Moisture Preparation	05/19/20 02:44 PM	96417
	SD-2	05/15/20 12:59 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-2	05/15/20 12:59 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-2	05/15/20 12:59 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
2005136-05A	SW-3	05/15/20 01:09 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-3	05/15/20 01:09 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-3	05/15/20 01:09 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:17 AM	96441
2005136-05B	SW-3	05/15/20 01:09 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-3	05/15/20 01:09 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-3	05/15/20 01:09 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:44 AM	96445

Lab Order: 2005136
Client: Golder
Project: Copano Surface Water & Sediment

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005136-06A	SD-3	05/15/20 01:09 PM	Sediment	SW7471B	Mercury Soil Prep, Total	05/19/20 10:17 AM	96411
	SD-3	05/15/20 01:09 PM	Sediment	D2216	Moisture Preparation	05/19/20 02:44 PM	96417
	SD-3	05/15/20 01:09 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-3	05/15/20 01:09 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-3	05/15/20 01:09 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
2005136-07A	SW-4	05/15/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-4	05/15/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-4	05/15/20 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:17 AM	96441
2005136-07B	SW-4	05/15/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-4	05/15/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-4	05/15/20 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:44 AM	96445
2005136-08A	SD-4	05/15/20 01:25 PM	Sediment	SW7471B	Mercury Soil Prep, Total	05/19/20 10:17 AM	96411
	SD-4	05/15/20 01:25 PM	Sediment	D2216	Moisture Preparation	05/19/20 02:44 PM	96417
	SD-4	05/15/20 01:25 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-4	05/15/20 01:25 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-4	05/15/20 01:25 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
2005136-09A	SW-5	05/15/20 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-5	05/15/20 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-5	05/15/20 01:40 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:17 AM	96441
2005136-09B	SW-5	05/15/20 01:40 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-5	05/15/20 01:40 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-5	05/15/20 01:40 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:44 AM	96445
2005136-10A	SD-5	05/15/20 01:40 PM	Sediment	SW7471B	Mercury Soil Prep, Total	05/19/20 10:17 AM	96411
	SD-5	05/15/20 01:40 PM	Sediment	D2216	Moisture Preparation	05/19/20 02:44 PM	96417
	SD-5	05/15/20 01:40 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-5	05/15/20 01:40 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-5	05/15/20 01:40 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
2005136-11A	SW-6	05/15/20 01:57 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424

Lab Order: 2005136
Client: Golder
Project: Copano Surface Water & Sediment

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005136-11A	SW-6	05/15/20 01:57 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-6	05/15/20 01:57 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:17 AM	96441
2005136-11B	SW-6	05/15/20 01:57 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-6	05/15/20 01:57 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-6	05/15/20 01:57 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:44 AM	96445
2005136-12A	SD-6	05/15/20 01:57 PM	Sediment	SW7471B	Mercury Soil Prep, Total	05/19/20 10:17 AM	96411
	SD-6	05/15/20 01:57 PM	Sediment	D2216	Moisture Preparation	05/19/20 02:44 PM	96417
	SD-6	05/15/20 01:57 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-6	05/15/20 01:57 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-6	05/15/20 01:57 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
2005136-13A	SW-Dup-1	05/15/20 01:14 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-Dup-1	05/15/20 01:14 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-Dup-1	05/15/20 01:14 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:17 AM	96441
2005136-13B	SW-Dup-1	05/15/20 01:14 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-Dup-1	05/15/20 01:14 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-Dup-1	05/15/20 01:14 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:44 AM	96445
2005136-14A	SD-Dup-1	05/15/20 01:14 PM	Sediment	SW7471B	Mercury Soil Prep, Total	05/19/20 10:17 AM	96411
	SD-Dup-1	05/15/20 01:14 PM	Sediment	D2216	Moisture Preparation	05/19/20 02:44 PM	96417
	SD-Dup-1	05/15/20 01:14 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-Dup-1	05/15/20 01:14 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-Dup-1	05/15/20 01:14 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
2005136-15A	SW-Dup-2	05/15/20 02:02 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-Dup-2	05/15/20 02:02 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/20 09:31 AM	96424
	SW-Dup-2	05/15/20 02:02 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:17 AM	96441
2005136-15B	SW-Dup-2	05/15/20 02:02 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-Dup-2	05/15/20 02:02 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/21/20 10:54 AM	96447
	SW-Dup-2	05/15/20 02:02 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/20 10:44 AM	96445
2005136-16A	SD-Dup-2	05/15/20 02:02 PM	Sediment	SW7471B	Mercury Soil Prep, Total	05/19/20 10:17 AM	96411

Lab Order: 2005136
Client: Golder
Project: Copano Surface Water & Sediment

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005136-16A	SD-Dup-2	05/15/20 02:02 PM	Sediment	D2216	Moisture Preparation	05/19/20 02:44 PM	96417
	SD-Dup-2	05/15/20 02:02 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-Dup-2	05/15/20 02:02 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410
	SD-Dup-2	05/15/20 02:02 PM	Sediment	SW3050B	Soil Prep Total Metals: ICP-MS	05/19/20 10:14 AM	96410

Lab Order: 2005136
Client: Golder
Project: Copano Surface Water & Sediment

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005136-01A	SW-1	Aqueous	SW7470A	Mercury Total: Aqueous	96441	1	05/22/20 12:24 PM	CETAC2_HG_200522B
	SW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96424	1	05/21/20 12:50 PM	ICP-MS4_200521B
	SW-1	Aqueous	SW6020B	Uranium in Water by ICPMS	96424	1	05/21/20 12:50 PM	ICP-MS4_200521C
2005136-01B	SW-1	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	96447	1	05/22/20 12:18 PM	ICP-MS4_200522C
	SW-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	96445	1	05/22/20 02:41 PM	CETAC2_HG_200522D
	SW-1	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	96447	1	05/22/20 12:18 PM	ICP-MS4_200522B
2005136-02A	SD-1	Sediment	D2216	Percent Moisture	96417	1	05/20/20 09:12 AM	PMOIST_200519A
	SD-1	Sediment	SW7471B	Total Mercury: Soil/Solid	96411	1	05/20/20 10:18 AM	CETAC2_HG_200520A
	SD-1	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	5	05/20/20 11:57 AM	ICP-MS4_200520A
	SD-1	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	50	05/20/20 12:53 PM	ICP-MS4_200520A
	SD-1	Sediment	SW6020B	Uranium in Soil	96410	5	05/20/20 11:57 AM	ICP-MS4_200520B
2005136-03A	SW-2	Aqueous	SW7470A	Mercury Total: Aqueous	96441	1	05/22/20 12:27 PM	CETAC2_HG_200522B
	SW-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96424	1	05/21/20 12:51 PM	ICP-MS4_200521B
	SW-2	Aqueous	SW6020B	Uranium in Water by ICPMS	96424	1	05/21/20 12:51 PM	ICP-MS4_200521C
2005136-03B	SW-2	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	96447	1	05/22/20 12:22 PM	ICP-MS4_200522C
	SW-2	Aqueous	SW7470A	Mercury (0.45µ Filtered)	96445	1	05/22/20 02:43 PM	CETAC2_HG_200522D
	SW-2	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	96447	1	05/22/20 12:22 PM	ICP-MS4_200522B
2005136-04A	SD-2	Sediment	D2216	Percent Moisture	96417	1	05/20/20 09:12 AM	PMOIST_200519A
	SD-2	Sediment	SW7471B	Total Mercury: Soil/Solid	96411	1	05/20/20 10:20 AM	CETAC2_HG_200520A
	SD-2	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	5	05/20/20 11:59 AM	ICP-MS4_200520A
	SD-2	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	50	05/20/20 12:55 PM	ICP-MS4_200520A
	SD-2	Sediment	SW6020B	Uranium in Soil	96410	5	05/20/20 11:59 AM	ICP-MS4_200520B
2005136-05A	SW-3	Aqueous	SW7470A	Mercury Total: Aqueous	96441	1	05/22/20 12:33 PM	CETAC2_HG_200522B
	SW-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96424	1	05/21/20 12:53 PM	ICP-MS4_200521B
	SW-3	Aqueous	SW6020B	Uranium in Water by ICPMS	96424	1	05/21/20 12:53 PM	ICP-MS4_200521C

Lab Order: 2005136
Client: Golder
Project: Copano Surface Water & Sediment

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005136-05B	SW-3	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	96447	1	05/22/20 12:26 PM	ICP-MS4_200522C
	SW-3	Aqueous	SW7470A	Mercury (0.45µ Filtered)	96445	1	05/22/20 02:46 PM	CETAC2_HG_200522D
	SW-3	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	96447	1	05/22/20 12:26 PM	ICP-MS4_200522B
2005136-06A	SD-3	Sediment	D2216	Percent Moisture	96417	1	05/20/20 09:12 AM	PMOIST_200519A
	SD-3	Sediment	SW7471B	Total Mercury: Soil/Solid	96411	1	05/20/20 10:22 AM	CETAC2_HG_200520A
	SD-3	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	5	05/20/20 12:01 PM	ICP-MS4_200520A
	SD-3	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	50	05/20/20 12:57 PM	ICP-MS4_200520A
	SD-3	Sediment	SW6020B	Uranium in Soil	96410	5	05/20/20 12:01 PM	ICP-MS4_200520B
2005136-07A	SW-4	Aqueous	SW7470A	Mercury Total: Aqueous	96441	1	05/22/20 12:36 PM	CETAC2_HG_200522B
	SW-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96424	1	05/21/20 12:55 PM	ICP-MS4_200521B
	SW-4	Aqueous	SW6020B	Uranium in Water by ICPMS	96424	1	05/21/20 12:55 PM	ICP-MS4_200521C
2005136-07B	SW-4	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	96447	1	05/22/20 12:30 PM	ICP-MS4_200522C
	SW-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	96445	1	05/22/20 02:48 PM	CETAC2_HG_200522D
	SW-4	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	96447	1	05/22/20 12:30 PM	ICP-MS4_200522B
2005136-08A	SD-4	Sediment	D2216	Percent Moisture	96417	1	05/20/20 09:12 AM	PMOIST_200519A
	SD-4	Sediment	SW7471B	Total Mercury: Soil/Solid	96411	1	05/20/20 10:25 AM	CETAC2_HG_200520A
	SD-4	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	5	05/20/20 12:03 PM	ICP-MS4_200520A
	SD-4	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	50	05/20/20 12:59 PM	ICP-MS4_200520A
	SD-4	Sediment	SW6020B	Uranium in Soil	96410	5	05/20/20 12:03 PM	ICP-MS4_200520B
2005136-09A	SW-5	Aqueous	SW7470A	Mercury Total: Aqueous	96441	1	05/22/20 12:38 PM	CETAC2_HG_200522B
	SW-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96424	1	05/21/20 12:57 PM	ICP-MS4_200521B
	SW-5	Aqueous	SW6020B	Uranium in Water by ICPMS	96424	1	05/21/20 12:57 PM	ICP-MS4_200521C
2005136-09B	SW-5	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	96447	1	05/22/20 12:34 PM	ICP-MS4_200522C
	SW-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	96445	1	05/22/20 02:50 PM	CETAC2_HG_200522D
	SW-5	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	96447	1	05/22/20 12:34 PM	ICP-MS4_200522B

Lab Order: 2005136
Client: Golder
Project: Copano Surface Water & Sediment

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005136-10A	SD-5	Sediment	D2216	Percent Moisture	96417	1	05/20/20 09:12 AM	PMOIST_200519A
	SD-5	Sediment	SW7471B	Total Mercury: Soil/Solid	96411	1	05/20/20 10:27 AM	CETAC2_HG_200520A
	SD-5	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	5	05/20/20 12:05 PM	ICP-MS4_200520A
	SD-5	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	50	05/20/20 01:01 PM	ICP-MS4_200520A
	SD-5	Sediment	SW6020B	Uranium in Soil	96410	5	05/20/20 12:05 PM	ICP-MS4_200520B
2005136-11A	SW-6	Aqueous	SW7470A	Mercury Total: Aqueous	96441	1	05/22/20 12:40 PM	CETAC2_HG_200522B
	SW-6	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96424	1	05/21/20 12:59 PM	ICP-MS4_200521B
	SW-6	Aqueous	SW6020B	Uranium in Water by ICPMS	96424	1	05/21/20 12:59 PM	ICP-MS4_200521C
2005136-11B	SW-6	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	96447	1	05/22/20 12:38 PM	ICP-MS4_200522C
	SW-6	Aqueous	SW7470A	Mercury (0.45µ Filtered)	96445	1	05/22/20 02:52 PM	CETAC2_HG_200522D
	SW-6	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	96447	1	05/22/20 12:38 PM	ICP-MS4_200522B
2005136-12A	SD-6	Sediment	D2216	Percent Moisture	96417	1	05/20/20 09:12 AM	PMOIST_200519A
	SD-6	Sediment	SW7471B	Total Mercury: Soil/Solid	96411	1	05/20/20 10:29 AM	CETAC2_HG_200520A
	SD-6	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	5	05/20/20 12:07 PM	ICP-MS4_200520A
	SD-6	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	50	05/20/20 01:03 PM	ICP-MS4_200520A
	SD-6	Sediment	SW6020B	Uranium in Soil	96410	5	05/20/20 12:07 PM	ICP-MS4_200520B
2005136-13A	SW-Dup-1	Aqueous	SW7470A	Mercury Total: Aqueous	96441	1	05/22/20 12:43 PM	CETAC2_HG_200522B
	SW-Dup-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96424	1	05/21/20 01:01 PM	ICP-MS4_200521B
	SW-Dup-1	Aqueous	SW6020B	Uranium in Water by ICPMS	96424	1	05/21/20 01:01 PM	ICP-MS4_200521C
2005136-13B	SW-Dup-1	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	96447	1	05/22/20 12:42 PM	ICP-MS4_200522C
	SW-Dup-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	96445	1	05/22/20 02:55 PM	CETAC2_HG_200522D
	SW-Dup-1	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	96447	1	05/22/20 12:42 PM	ICP-MS4_200522B
2005136-14A	SD-Dup-1	Sediment	D2216	Percent Moisture	96417	1	05/20/20 09:12 AM	PMOIST_200519A
	SD-Dup-1	Sediment	SW7471B	Total Mercury: Soil/Solid	96411	1	05/20/20 10:36 AM	CETAC2_HG_200520A
	SD-Dup-1	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	5	05/20/20 12:09 PM	ICP-MS4_200520A

Lab Order: 2005136
Client: Golder
Project: Copano Surface Water & Sediment

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005136-14A	SD-Dup-1	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	50	05/20/20 01:05 PM	ICP-MS4_200520A
	SD-Dup-1	Sediment	SW6020B	Uranium in Soil	96410	5	05/20/20 12:09 PM	ICP-MS4_200520B
2005136-15A	SW-Dup-2	Aqueous	SW7470A	Mercury Total: Aqueous	96441	1	05/22/20 12:45 PM	CETAC2_HG_200522B
	SW-Dup-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96424	1	05/21/20 01:03 PM	ICP-MS4_200521B
	SW-Dup-2	Aqueous	SW6020B	Uranium in Water by ICPMS	96424	1	05/21/20 01:03 PM	ICP-MS4_200521C
2005136-15B	SW-Dup-2	Aqueous	SW6020B	Dissolved Uranium in Water by ICPMS	96447	1	05/22/20 12:46 PM	ICP-MS4_200522C
	SW-Dup-2	Aqueous	SW7470A	Mercury (0.45µ Filtered)	96445	1	05/22/20 02:57 PM	CETAC2_HG_200522D
	SW-Dup-2	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	96447	1	05/22/20 12:46 PM	ICP-MS4_200522B
2005136-16A	SD-Dup-2	Sediment	D2216	Percent Moisture	96417	1	05/20/20 09:12 AM	PMOIST_200519A
	SD-Dup-2	Sediment	SW7471B	Total Mercury: Soil/Solid	96411	1	05/20/20 10:38 AM	CETAC2_HG_200520A
	SD-Dup-2	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	5	05/20/20 12:37 PM	ICP-MS4_200520A
	SD-Dup-2	Sediment	SW6020B	Trace Metals: ICP-MS - Solid	96410	100	05/20/20 01:07 PM	ICP-MS4_200520A
	SD-Dup-2	Sediment	SW6020B	Uranium in Soil	96410	5	05/20/20 12:37 PM	ICP-MS4_200520B

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SW-1
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-01
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 12:35 PM
Lab Order:	2005136	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	05/22/20 12:18 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/20 12:18 PM
Dissolved Arsenic	0.00867	0.00200	0.00500		mg/L	1	05/22/20 12:18 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/20 12:18 PM
Dissolved Lead	0.000526	0.000300	0.00100	J	mg/L	1	05/22/20 12:18 PM
Dissolved Nickel	0.00368	0.00300	0.0100	J	mg/L	1	05/22/20 12:18 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/20 12:18 PM
Dissolved Vanadium	0.00326	0.000500	0.00100		mg/L	1	05/22/20 12:18 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	7.81	0.0100	0.0300		mg/L	1	05/21/20 12:50 PM
Antimony	0.00232	0.000800	0.00250	J	mg/L	1	05/21/20 12:50 PM
Arsenic	0.0113	0.00200	0.00500		mg/L	1	05/21/20 12:50 PM
Chromium	0.00417	0.00200	0.00500	J	mg/L	1	05/21/20 12:50 PM
Lead	0.00344	0.000300	0.00100		mg/L	1	05/21/20 12:50 PM
Nickel	0.00565	0.00300	0.0100	J	mg/L	1	05/21/20 12:50 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/21/20 12:50 PM
Vanadium	0.0104	0.000500	0.00100		mg/L	1	05/21/20 12:50 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 02:41 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 12:24 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.00466	0.00300	0.0100	JN	mg/L	1	05/21/20 12:50 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Dissolved Uranium	0.00401	0.00300	0.0100	JN	mg/L	1	05/22/20 12:18 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SD-1
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-02
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 12:35 PM
Lab Order:	2005136	**Matrix:**	SEDIMENT

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **RO**
Aluminum	6730	175	524		mg/Kg-dry	50	05/20/20 12:53 PM
Antimony	<0.210	0.210	1.40		mg/Kg-dry	5	05/20/20 11:57 AM
Arsenic	1.12	0.699	1.40	J	mg/Kg-dry	5	05/20/20 11:57 AM
Chromium	5.17	0.699	2.80		mg/Kg-dry	5	05/20/20 11:57 AM
Lead	3.75	0.140	0.419		mg/Kg-dry	5	05/20/20 11:57 AM
Nickel	2.62	0.699	2.80	J	mg/Kg-dry	5	05/20/20 11:57 AM
Thallium	<0.699	0.699	1.40		mg/Kg-dry	5	05/20/20 11:57 AM
Vanadium	8.89	1.40	3.49		mg/Kg-dry	5	05/20/20 11:57 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0228	0.0228	0.0571		mg/Kg-dry	1	05/20/20 10:18 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **RO**
Uranium	<1.40	1.40	3.49	N	mg/Kg-dry	5	05/20/20 11:57 AM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	35.0	0	0		WT%	1	05/20/20 09:12 AM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SW-2
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-03
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 12:59 PM
Lab Order:	2005136	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0166	0.0100	0.0300	J	mg/L	1	05/22/20 12:22 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/20 12:22 PM
Dissolved Arsenic	0.0106	0.00200	0.00500		mg/L	1	05/22/20 12:22 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/20 12:22 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/20 12:22 PM
Dissolved Nickel	0.00335	0.00300	0.0100	J	mg/L	1	05/22/20 12:22 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/20 12:22 PM
Dissolved Vanadium	0.00233	0.000500	0.00100		mg/L	1	05/22/20 12:22 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.660	0.0100	0.0300		mg/L	1	05/21/20 12:51 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/21/20 12:51 PM
Arsenic	0.0116	0.00200	0.00500		mg/L	1	05/21/20 12:51 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/21/20 12:51 PM
Lead	0.000489	0.000300	0.00100	J	mg/L	1	05/21/20 12:51 PM
Nickel	0.00331	0.00300	0.0100	J	mg/L	1	05/21/20 12:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/21/20 12:51 PM
Vanadium	0.00341	0.000500	0.00100		mg/L	1	05/21/20 12:51 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 02:43 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 12:27 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.00403	0.00300	0.0100	JN	mg/L	1	05/21/20 12:51 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Dissolved Uranium	0.00388	0.00300	0.0100	JN	mg/L	1	05/22/20 12:22 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SD-2
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-04
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 12:59 PM
Lab Order:	2005136	**Matrix:**	SEDIMENT

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **RO**
Aluminum	12000	193	580		mg/Kg-dry	50	05/20/20 12:55 PM
Antimony	<0.232	0.232	1.55		mg/Kg-dry	5	05/20/20 11:59 AM
Arsenic	1.89	0.774	1.55		mg/Kg-dry	5	05/20/20 11:59 AM
Chromium	8.93	0.774	3.10		mg/Kg-dry	5	05/20/20 11:59 AM
Lead	5.43	0.155	0.464		mg/Kg-dry	5	05/20/20 11:59 AM
Nickel	4.70	0.774	3.10		mg/Kg-dry	5	05/20/20 11:59 AM
Thallium	<0.774	0.774	1.55		mg/Kg-dry	5	05/20/20 11:59 AM
Vanadium	15.9	1.55	3.87		mg/Kg-dry	5	05/20/20 11:59 AM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0245	0.0245	0.0614		mg/Kg-dry	1	05/20/20 10:20 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **RO**
Uranium	<1.55	1.55	3.87	N	mg/Kg-dry	5	05/20/20 11:59 AM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	39.6	0	0		WT%	1	05/20/20 09:12 AM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SW-3
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-05
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 01:09 PM
Lab Order:	2005136	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	05/22/20 12:26 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/20 12:26 PM
Dissolved Arsenic	0.0115	0.00200	0.00500		mg/L	1	05/22/20 12:26 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/20 12:26 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/20 12:26 PM
Dissolved Nickel	0.00332	0.00300	0.0100	J	mg/L	1	05/22/20 12:26 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/20 12:26 PM
Dissolved Vanadium	0.00231	0.000500	0.00100		mg/L	1	05/22/20 12:26 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	2.51	0.0100	0.0300		mg/L	1	05/21/20 12:53 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/21/20 12:53 PM
Arsenic	0.0127	0.00200	0.00500		mg/L	1	05/21/20 12:53 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/21/20 12:53 PM
Lead	0.00117	0.000300	0.00100		mg/L	1	05/21/20 12:53 PM
Nickel	0.00427	0.00300	0.0100	J	mg/L	1	05/21/20 12:53 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/21/20 12:53 PM
Vanadium	0.00463	0.000500	0.00100		mg/L	1	05/21/20 12:53 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 02:46 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 12:33 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.00360	0.00300	0.0100	JN	mg/L	1	05/21/20 12:53 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Dissolved Uranium	0.00345	0.00300	0.0100	JN	mg/L	1	05/22/20 12:26 PM

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- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SD-3
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-06
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 01:09 PM
Lab Order:	2005136	**Matrix:**	SEDIMENT

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **RO**
Aluminum	10300	184	551		mg/Kg-dry	50	05/20/20 12:57 PM
Antimony	<0.220	0.220	1.47		mg/Kg-dry	5	05/20/20 12:01 PM
Arsenic	1.18	0.735	1.47	J	mg/Kg-dry	5	05/20/20 12:01 PM
Chromium	7.57	0.735	2.94		mg/Kg-dry	5	05/20/20 12:01 PM
Lead	4.74	0.147	0.441		mg/Kg-dry	5	05/20/20 12:01 PM
Nickel	3.80	0.735	2.94		mg/Kg-dry	5	05/20/20 12:01 PM
Thallium	<0.735	0.735	1.47		mg/Kg-dry	5	05/20/20 12:01 PM
Vanadium	11.1	1.47	3.67		mg/Kg-dry	5	05/20/20 12:01 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0260	0.0260	0.0650		mg/Kg-dry	1	05/20/20 10:22 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **RO**
Uranium	<1.47	1.47	3.67	N	mg/Kg-dry	5	05/20/20 12:01 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	39.2	0	0		WT%	1	05/20/20 09:12 AM

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- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SW-4
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-07
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 01:25 PM
Lab Order:	2005136	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	05/22/20 12:30 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/20 12:30 PM
Dissolved Arsenic	0.00732	0.00200	0.00500		mg/L	1	05/22/20 12:30 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/20 12:30 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/20 12:30 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	05/22/20 12:30 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/20 12:30 PM
Dissolved Vanadium	0.00311	0.000500	0.00100		mg/L	1	05/22/20 12:30 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	1.33	0.0100	0.0300		mg/L	1	05/21/20 12:55 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/21/20 12:55 PM
Arsenic	0.00786	0.00200	0.00500		mg/L	1	05/21/20 12:55 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/21/20 12:55 PM
Lead	0.000590	0.000300	0.00100	J	mg/L	1	05/21/20 12:55 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	05/21/20 12:55 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/21/20 12:55 PM
Vanadium	0.00443	0.000500	0.00100		mg/L	1	05/21/20 12:55 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 02:48 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 12:36 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.00425	0.00300	0.0100	JN	mg/L	1	05/21/20 12:55 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Dissolved Uranium	0.00410	0.00300	0.0100	JN	mg/L	1	05/22/20 12:30 PM

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- RL - Reporting Limit (MQL adjusted for moisture and sample size)
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- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SD-4
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-08
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 01:25 PM
Lab Order:	2005136	**Matrix:**	SEDIMENT

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **RO**
Aluminum	13800	190	569		mg/Kg-dry	50	05/20/20 12:59 PM
Antimony	<0.228	0.228	1.52		mg/Kg-dry	5	05/20/20 12:03 PM
Arsenic	2.40	0.759	1.52		mg/Kg-dry	5	05/20/20 12:03 PM
Chromium	10.0	0.759	3.03		mg/Kg-dry	5	05/20/20 12:03 PM
Lead	7.75	0.152	0.455		mg/Kg-dry	5	05/20/20 12:03 PM
Nickel	5.47	0.759	3.03		mg/Kg-dry	5	05/20/20 12:03 PM
Thallium	<0.759	0.759	1.52		mg/Kg-dry	5	05/20/20 12:03 PM
Vanadium	18.9	1.52	3.79		mg/Kg-dry	5	05/20/20 12:03 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0256	0.0256	0.0640		mg/Kg-dry	1	05/20/20 10:25 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **RO**
Uranium	<1.52	1.52	3.79	N	mg/Kg-dry	5	05/20/20 12:03 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	40.1	0	0		WT%	1	05/20/20 09:12 AM

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DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SW-5
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-09
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 01:40 PM
Lab Order:	2005136	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	05/22/20 12:34 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/20 12:34 PM
Dissolved Arsenic	0.00625	0.00200	0.00500		mg/L	1	05/22/20 12:34 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/20 12:34 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/20 12:34 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	05/22/20 12:34 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/20 12:34 PM
Dissolved Vanadium	0.00287	0.000500	0.00100		mg/L	1	05/22/20 12:34 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	3.76	0.0100	0.0300		mg/L	1	05/21/20 12:57 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/21/20 12:57 PM
Arsenic	0.00749	0.00200	0.00500		mg/L	1	05/21/20 12:57 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/21/20 12:57 PM
Lead	0.00160	0.000300	0.00100		mg/L	1	05/21/20 12:57 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	05/21/20 12:57 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/21/20 12:57 PM
Vanadium	0.00708	0.000500	0.00100		mg/L	1	05/21/20 12:57 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 02:50 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 12:38 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.00403	0.00300	0.0100	JN	mg/L	1	05/21/20 12:57 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Dissolved Uranium	0.00385	0.00300	0.0100	JN	mg/L	1	05/22/20 12:34 PM

Qualifiers:

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SD-5
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-10
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 01:40 PM
Lab Order:	2005136	**Matrix:**	SEDIMENT

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **RO**
Aluminum	18300	195	584		mg/Kg-dry	50	05/20/20 01:01 PM
Antimony	<0.234	0.234	1.56		mg/Kg-dry	5	05/20/20 12:05 PM
Arsenic	2.72	0.779	1.56		mg/Kg-dry	5	05/20/20 12:05 PM
Chromium	13.3	0.779	3.12		mg/Kg-dry	5	05/20/20 12:05 PM
Lead	7.12	0.156	0.467		mg/Kg-dry	5	05/20/20 12:05 PM
Nickel	7.75	0.779	3.12		mg/Kg-dry	5	05/20/20 12:05 PM
Thallium	<0.779	0.779	1.56		mg/Kg-dry	5	05/20/20 12:05 PM
Vanadium	30.1	1.56	3.89		mg/Kg-dry	5	05/20/20 12:05 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0267	0.0267	0.0668		mg/Kg-dry	1	05/20/20 10:27 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **RO**
Uranium	<1.56	1.56	3.89	N	mg/Kg-dry	5	05/20/20 12:05 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	44.2	0	0		WT%	1	05/20/20 09:12 AM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SW-6
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-11
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 01:57 PM
Lab Order:	2005136	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	05/22/20 12:38 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/20 12:38 PM
Dissolved Arsenic	0.0123	0.00200	0.00500		mg/L	1	05/22/20 12:38 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/20 12:38 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/20 12:38 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	05/22/20 12:38 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/20 12:38 PM
Dissolved Vanadium	0.00564	0.000500	0.00100		mg/L	1	05/22/20 12:38 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	6.55	0.0100	0.0300		mg/L	1	05/21/20 12:59 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/21/20 12:59 PM
Arsenic	0.0135	0.00200	0.00500		mg/L	1	05/21/20 12:59 PM
Chromium	0.00279	0.00200	0.00500	J	mg/L	1	05/21/20 12:59 PM
Lead	0.00292	0.000300	0.00100		mg/L	1	05/21/20 12:59 PM
Nickel	0.00425	0.00300	0.0100	J	mg/L	1	05/21/20 12:59 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/21/20 12:59 PM
Vanadium	0.0111	0.000500	0.00100		mg/L	1	05/21/20 12:59 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 02:52 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 12:40 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.00879	0.00300	0.0100	JN	mg/L	1	05/21/20 12:59 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Dissolved Uranium	0.00853	0.00300	0.0100	JN	mg/L	1	05/22/20 12:38 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SD-6
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-12
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 01:57 PM
Lab Order:	2005136	**Matrix:**	SEDIMENT

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **RO**
Aluminum	36700	237	712		mg/Kg-dry	50	05/20/20 01:03 PM
Antimony	<0.285	0.285	1.90		mg/Kg-dry	5	05/20/20 12:07 PM
Arsenic	4.39	0.949	1.90		mg/Kg-dry	5	05/20/20 12:07 PM
Chromium	24.8	0.949	3.79		mg/Kg-dry	5	05/20/20 12:07 PM
Lead	13.8	0.190	0.569		mg/Kg-dry	5	05/20/20 12:07 PM
Nickel	14.8	0.949	3.79		mg/Kg-dry	5	05/20/20 12:07 PM
Thallium	<0.949	0.949	1.90		mg/Kg-dry	5	05/20/20 12:07 PM
Vanadium	43.6	1.90	4.74		mg/Kg-dry	5	05/20/20 12:07 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0301	0.0301	0.0752		mg/Kg-dry	1	05/20/20 10:29 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **RO**
Uranium	2.05	1.90	4.74	JN	mg/Kg-dry	5	05/20/20 12:07 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	54.2	0	0		WT%	1	05/20/20 09:12 AM

Qualifiers:

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- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SW-Dup-1
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-13
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 01:14 PM
Lab Order:	2005136	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	05/22/20 12:42 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/20 12:42 PM
Dissolved Arsenic	0.0112	0.00200	0.00500		mg/L	1	05/22/20 12:42 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/20 12:42 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/20 12:42 PM
Dissolved Nickel	0.00420	0.00300	0.0100	J	mg/L	1	05/22/20 12:42 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/20 12:42 PM
Dissolved Vanadium	0.00223	0.000500	0.00100		mg/L	1	05/22/20 12:42 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	1.81	0.0100	0.0300		mg/L	1	05/21/20 01:01 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/21/20 01:01 PM
Arsenic	0.0123	0.00200	0.00500		mg/L	1	05/21/20 01:01 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/21/20 01:01 PM
Lead	0.000895	0.000300	0.00100	J	mg/L	1	05/21/20 01:01 PM
Nickel	0.00388	0.00300	0.0100	J	mg/L	1	05/21/20 01:01 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/21/20 01:01 PM
Vanadium	0.00388	0.000500	0.00100		mg/L	1	05/21/20 01:01 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 02:55 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 12:43 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.00356	0.00300	0.0100	JN	mg/L	1	05/21/20 01:01 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Dissolved Uranium	0.00334	0.00300	0.0100	JN	mg/L	1	05/22/20 12:42 PM

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S - Spike Recovery outside control limits
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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SD-Dup-1
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-14
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 01:14 PM
Lab Order:	2005136	**Matrix:**	SEDIMENT

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **RO**
Aluminum	10000	191	574		mg/Kg-dry	50	05/20/20 01:05 PM
Antimony	<0.230	0.230	1.53		mg/Kg-dry	5	05/20/20 12:09 PM
Arsenic	1.17	0.765	1.53	J	mg/Kg-dry	5	05/20/20 12:09 PM
Chromium	7.28	0.765	3.06		mg/Kg-dry	5	05/20/20 12:09 PM
Lead	4.56	0.153	0.459		mg/Kg-dry	5	05/20/20 12:09 PM
Nickel	3.69	0.765	3.06		mg/Kg-dry	5	05/20/20 12:09 PM
Thallium	<0.765	0.765	1.53		mg/Kg-dry	5	05/20/20 12:09 PM
Vanadium	11.4	1.53	3.83		mg/Kg-dry	5	05/20/20 12:09 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0232	0.0232	0.0580		mg/Kg-dry	1	05/20/20 10:36 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **RO**
Uranium	<1.53	1.53	3.83	N	mg/Kg-dry	5	05/20/20 12:09 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	38.4	0	0		WT%	1	05/20/20 09:12 AM

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SW-Dup-2
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-15
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 02:02 PM
Lab Order:	2005136	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	05/22/20 12:46 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/20 12:46 PM
Dissolved Arsenic	0.0123	0.00200	0.00500		mg/L	1	05/22/20 12:46 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/20 12:46 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/20 12:46 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	05/22/20 12:46 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/20 12:46 PM
Dissolved Vanadium	0.00553	0.000500	0.00100		mg/L	1	05/22/20 12:46 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	7.51	0.0100	0.0300		mg/L	1	05/21/20 01:03 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/21/20 01:03 PM
Arsenic	0.0134	0.00200	0.00500		mg/L	1	05/21/20 01:03 PM
Chromium	0.00311	0.00200	0.00500	J	mg/L	1	05/21/20 01:03 PM
Lead	0.00338	0.000300	0.00100		mg/L	1	05/21/20 01:03 PM
Nickel	0.00422	0.00300	0.0100	J	mg/L	1	05/21/20 01:03 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/21/20 01:03 PM
Vanadium	0.0116	0.000500	0.00100		mg/L	1	05/21/20 01:03 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 02:57 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/20 12:45 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.00872	0.00300	0.0100	JN	mg/L	1	05/21/20 01:03 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Dissolved Uranium	0.00850	0.00300	0.0100	JN	mg/L	1	05/22/20 12:46 PM

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	SD-Dup-2
Project:	Copano Surface Water & Sediment	**Lab ID:**	2005136-16
Project No:	19134560 Phase 1000	**Collection Date:**	05/15/20 02:02 PM
Lab Order:	2005136	**Matrix:**	SEDIMENT

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID		**SW6020B**					Analyst: **RO**
Aluminum	52800	474	1420		mg/Kg-dry	100	05/20/20 01:07 PM
Antimony	0.288	0.284	1.89	J	mg/Kg-dry	5	05/20/20 12:37 PM
Arsenic	3.71	0.947	1.89		mg/Kg-dry	5	05/20/20 12:37 PM
Chromium	34.6	0.947	3.79		mg/Kg-dry	5	05/20/20 12:37 PM
Lead	15.5	0.189	0.568		mg/Kg-dry	5	05/20/20 12:37 PM
Nickel	18.0	0.947	3.79		mg/Kg-dry	5	05/20/20 12:37 PM
Thallium	<0.947	0.947	1.89		mg/Kg-dry	5	05/20/20 12:37 PM
Vanadium	58.2	1.89	4.74		mg/Kg-dry	5	05/20/20 12:37 PM
TOTAL MERCURY: SOIL/SOLID		**SW7471B**					Analyst: **BM**
Mercury	<0.0305	0.0305	0.0763		mg/Kg-dry	1	05/20/20 10:38 AM
URANIUM IN SOIL		**SW6020B**					Analyst: **RO**
Uranium	2.60	1.89	4.74	JN	mg/Kg-dry	5	05/20/20 12:37 PM
PERCENT MOISTURE		**D2216**					Analyst: **RBW**
Percent Moisture	52.9	0	0		WT%	1	05/20/20 09:12 AM

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- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200304C

Sample ID: **DCS-95289**	Batch ID: **95289**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **DCS**	Run ID: **CETAC2_HG_200304C**	Analysis Date: **3/4/2020 12:11:09 PM**	Prep Date: **3/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000175	0.000200	0.000200	0	87.5	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200422A

Sample ID: **DCS-96054** Batch ID: **96054** TestNo: **SW7471B** Units: **mg/Kg**
SampType: **DCS** Run ID: **CETAC2_HG_200422A** Analysis Date: **4/22/2020 12:07:27 PM** Prep Date: **4/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0388	0.0400	0.04000	0	97.0	80	124	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200520A

The QC data in batch 96411 applies to the following samples: 2005136-02A, 2005136-04A, 2005136-06A, 2005136-08A, 2005136-10A, 2005136-12A, 2005136-14A, 2005136-16A

Sample ID: **MB-96411**	Batch ID: **96411**	TestNo: **SW7471B**	Units: **mg/Kg**
SampType: **MBLK**	Run ID: **CETAC2_HG_200520A**	Analysis Date: **5/20/2020 9:53:27 AM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0160	0.0400								

Sample ID: **LCS-96411**	Batch ID: **96411**	TestNo: **SW7471B**	Units: **mg/Kg**
SampType: **LCS**	Run ID: **CETAC2_HG_200520A**	Analysis Date: **5/20/2020 9:55:43 AM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.190	0.0400	0.2000	0	95.0	85	115			

Sample ID: **LCSD-96411**	Batch ID: **96411**	TestNo: **SW7471B**	Units: **mg/Kg**
SampType: **LCSD**	Run ID: **CETAC2_HG_200520A**	Analysis Date: **5/20/2020 9:57:59 AM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.196	0.0400	0.2000	0	98.0	85	115	3.11	25	

Sample ID: **2005121-03A MS**	Batch ID: **96411**	TestNo: **SW7471B**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **CETAC2_HG_200520A**	Analysis Date: **5/20/2020 10:07:03 AM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.225	0.0447	0.2237	0	101	80	120			

Sample ID: **2005121-03A MSD**	Batch ID: **96411**	TestNo: **SW7471B**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **CETAC2_HG_200520A**	Analysis Date: **5/20/2020 10:09:19 AM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.210	0.0448	0.2239	0	94.0	80	120	6.61	25	

Sample ID: **2005121-03A SD**	Batch ID: **96411**	TestNo: **SW7471B**	Units: **mg/Kg-dry**
SampType: **SD**	Run ID: **CETAC2_HG_200520A**	Analysis Date: **5/20/2020 10:11:35 AM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0868	0.217	0	0				0	10	

Sample ID: **2005121-03A PDS**	Batch ID: **96411**	TestNo: **SW7471B**	Units: **mg/Kg-dry**
SampType: **PDS**	Run ID: **CETAC2_HG_200520A**	Analysis Date: **5/20/2020 10:13:52 AM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.264	0.0434	0.2711	0	97.2	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200520A

Sample ID: **ICV-200520**	Batch ID: **R110564**	TestNo: **SW7471B**	Units: **mg/Kg**
SampType: **ICV**	Run ID: **CETAC2_HG_200520A**	Analysis Date: **5/20/2020 9:48:53 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00380	0.0400	0.004000	0	95.0	90	110			

Sample ID: **CCV1-200520**	Batch ID: **R110564**	TestNo: **SW7471B**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **CETAC2_HG_200520A**	Analysis Date: **5/20/2020 10:32:01 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.0400	0.002000	0	102	90	110			

Sample ID: **CCV2-200520**	Batch ID: **R110564**	TestNo: **SW7471B**	Units: **mg/Kg**
SampType: **CCV**	Run ID: **CETAC2_HG_200520A**	Analysis Date: **5/20/2020 10:41:10 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00209	0.0400	0.002000	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200522B

The QC data in batch 96441 applies to the following samples: 2005136-01A, 2005136-03A, 2005136-05A, 2005136-07A, 2005136-09A, 2005136-11A, 2005136-13A, 2005136-15A

Sample ID: **MB-96441** Batch ID: **96441** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_200522B** Analysis Date: **5/22/2020 11:57:32 AM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-96441** Batch ID: **96441** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_200522B** Analysis Date: **5/22/2020 12:02:04 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00210	0.000200	0.00200	0	105	85	115			

Sample ID: **LCSD-96441** Batch ID: **96441** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_200522B** Analysis Date: **5/22/2020 12:04:20 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00198	0.000200	0.00200	0	99.0	85	115	5.88	15	

Sample ID: **2005126-01C MS** Batch ID: **96441** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_200522B** Analysis Date: **5/22/2020 12:11:08 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0106	0.00100	0.0100	0	106	80	120			

Sample ID: **2005126-01C MSD** Batch ID: **96441** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_200522B** Analysis Date: **5/22/2020 12:13:24 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0100	0.00100	0.0100	0	100	80	120	5.35	15	

Sample ID: **2005126-01C SD** Batch ID: **96441** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_200522B** Analysis Date: **5/22/2020 12:15:41 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **2005126-01C PDS** Batch ID: **96441** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_200522B** Analysis Date: **5/22/2020 12:17:57 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.0124	0.00100	0.0125	0	98.8	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200522B

Sample ID: **ICV-200519**	Batch ID: **R110620**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200522B**	Analysis Date: **5/22/2020 11:28:04 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00385	0.000200	0.00400	0	96.2	90	110			

Sample ID: **CCV1-200522**	Batch ID: **R110620**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200522B**	Analysis Date: **5/22/2020 12:29:20 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00218	0.000200	0.00200	0	109	90	110			

Sample ID: **CCV2-200522**	Batch ID: **R110620**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200522B**	Analysis Date: **5/22/2020 12:56:44 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200522D

The QC data in batch 96445 applies to the following samples: 2005136-01B, 2005136-03B, 2005136-05B, 2005136-07B, 2005136-09B, 2005136-11B, 2005136-13B, 2005136-15B

Sample ID: **MB-96445** Batch ID: **96445** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_200522D** Analysis Date: **5/22/2020 2:25:45 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **MB-96412-FILTER** Batch ID: **96445** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_200522D** Analysis Date: **5/22/2020 2:28:01 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-96445** Batch ID: **96445** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_200522D** Analysis Date: **5/22/2020 2:32:34 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00200	0.000200	0.00200	0	100	85	115			

Sample ID: **LCSD-96445** Batch ID: **96445** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_200522D** Analysis Date: **5/22/2020 2:34:50 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	85	115	0.995	15	

Sample ID: **2005153-08B MS** Batch ID: **96445** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_200522D** Analysis Date: **5/22/2020 4:36:32 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00212	0.000200	0.00200	0	106	80	120			

Sample ID: **2005153-08B MSD** Batch ID: **96445** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_200522D** Analysis Date: **5/22/2020 4:38:48 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00197	0.000200	0.00200	0	98.5	80	120	7.33	15	

Sample ID: **2005153-08B SD** Batch ID: **96445** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_200522D** Analysis Date: **5/22/2020 4:41:05 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200522D

Sample ID: **2005153-08B PDS**	Batch ID: **96445**	TestNo: **SW7470A**	Units: **mg/L**		
SampType: **PDS**	Run ID: **CETAC2_HG_200522D**	Analysis Date: **5/22/2020 4:43:22 PM**	Prep Date: **5/21/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00230	0.000200	0.00250	0	92.0	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200522D

Sample ID: **ICV-200519**	Batch ID: **R110622**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200522D**	Analysis Date: **5/22/2020 11:28:04 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00385	0.000200	0.00400	0	96.2	90	110			

Sample ID: **CCV5-200522**	Batch ID: **R110622**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200522D**	Analysis Date: **5/22/2020 2:21:12 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00183	0.000200	0.00200	0	91.5	90	110			

Sample ID: **CCV6-200522**	Batch ID: **R110622**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200522D**	Analysis Date: **5/22/2020 4:13:48 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00210	0.000200	0.00200	0	105	90	110			

Sample ID: **CCV7-200522**	Batch ID: **R110622**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200522D**	Analysis Date: **5/22/2020 4:50:13 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00185	0.000200	0.00200	0	92.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200415A

Sample ID: **DCS1-95799**	Batch ID: **95799**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **DCS**	Run ID: **ICP-MS4_200415A**	Analysis Date: **4/15/2020 2:48:00 PM**	Prep Date: **4/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	40.3	37.5	37.50	0	108	70	130	0	0	
Antimony	0.226	1.00	0.2500	0	90.5	70	130	0	0	
Lead	0.249	0.300	0.2500	0	99.7	70	130	0	0	

Sample ID: **DCS2-95799**	Batch ID: **95799**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **DCS2**	Run ID: **ICP-MS4_200415A**	Analysis Date: **4/15/2020 2:51:00 PM**	Prep Date: **4/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	1.30	1.00	1.250	0	104	70	130	0	0	
Chromium	1.42	2.00	1.250	0	114	70	130	0	0	
Nickel	1.38	2.00	1.250	0	110	70	130	0	0	
Thallium	1.19	1.00	1.250	0	95.2	70	130	0	0	

Sample ID: **DCS3-95799**	Batch ID: **95799**	TestNo: **SW6020B**	Units: **mg/Kg**
SampType: **DCS3**	Run ID: **ICP-MS4_200415A**	Analysis Date: **4/15/2020 2:54:00 PM**	Prep Date: **4/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vanadium	2.56	2.50	2.500	0	102	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200415A

Sample ID: **DCS1-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_200415A**	Analysis Date: **4/15/2020 2:59:00 PM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0253	0.0300	0.0200	0	127	70	130	0	0	
Antimony	0.000868	0.00250	0.00100	0	86.8	70	130	0	0	
Lead	0.000467	0.00100	0.000500	0	93.4	70	130	0	0	
Thallium	0.000455	0.00150	0.000500	0	91.0	70	130	0	0	
Vanadium	0.000568	0.00100	0.000500	0	114	70	130	0	0	

Sample ID: **DCS3-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_200415A**	Analysis Date: **4/15/2020 3:05:00 PM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00520	0.00500	0.00500	0	104	70	130	0	0	
Chromium	0.00563	0.00500	0.00500	0	113	70	130	0	0	
Nickel	0.00559	0.0100	0.00500	0	112	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200415B

Sample ID: **DCS1-95799** Batch ID: **95799** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **DCS** Run ID: **ICP-MS4_200415B** Analysis Date: **4/15/2020 2:48:00 PM** Prep Date: **4/6/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.226	2.50	0.2500	0	90.5	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200415B

Sample ID: **DCS1-95814** Batch ID: **95814** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS** Run ID: **ICP-MS4_200415B** Analysis Date: **4/15/2020 2:59:00 PM** Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.000427	0.0100	0.000500	0	85.4	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_200520A**

The QC data in batch 96410 applies to the following samples: 2005136-02A, 2005136-04A, 2005136-06A, 2005136-08A, 2005136-10A, 2005136-12A, 2005136-14A, 2005136-16A

Sample ID: **MB-96410** Batch ID: **96410** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **MBLK** Run ID: **ICP-MS4_200520A** Analysis Date: **5/20/2020 11:41:00 AM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<12.5	37.5								
Antimony	<0.150	1.00								
Arsenic	<0.500	1.00								
Chromium	<0.500	2.00								
Lead	<0.100	0.300								
Nickel	<0.500	2.00								
Thallium	<0.500	1.00								
Vanadium	<1.00	2.50								

Sample ID: **LCS-96410** Batch ID: **96410** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCS** Run ID: **ICP-MS4_200520A** Analysis Date: **5/20/2020 11:43:00 AM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	252	37.5	250.0	0	101	80	120			
Antimony	50.8	1.00	50.00	0	102	80	120			
Arsenic	50.5	1.00	50.00	0	101	80	120			
Chromium	52.0	2.00	50.00	0	104	80	120			
Lead	50.3	0.300	50.00	0	101	80	120			
Nickel	53.2	2.00	50.00	0	106	80	120			
Thallium	49.8	1.00	50.00	0	99.6	80	120			
Vanadium	52.0	2.50	50.00	0	104	80	120			

Sample ID: **LCSD-96410** Batch ID: **96410** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCSD** Run ID: **ICP-MS4_200520A** Analysis Date: **5/20/2020 11:45:00 AM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	252	37.5	250.0	0	101	80	120	0.370	25	
Antimony	50.9	1.00	50.00	0	102	80	120	0.223	25	
Arsenic	50.2	1.00	50.00	0	100	80	120	0.611	25	
Chromium	51.8	2.00	50.00	0	104	80	120	0.447	25	
Lead	51.6	0.300	50.00	0	103	80	120	2.59	25	
Nickel	52.1	2.00	50.00	0	104	80	120	1.98	25	
Thallium	49.8	1.00	50.00	0	99.6	80	120	0.046	25	
Vanadium	51.9	2.50	50.00	0	104	80	120	0.137	25	

Sample ID: **2005108-01A SD** Batch ID: **96410** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **ICP-MS4_200520A** Analysis Date: **5/20/2020 11:51:00 AM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200520A

Sample ID: **2005108-01A SD**	Batch ID: **96410**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **SD**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 11:51:00 AM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<2.77	5.53	0	1.095				0	20	
Arsenic	13.1	5.53	0	13.05				0.630	20	
Chromium	38.3	11.1	0	35.48				7.55	20	
Lead	368	1.66	0	380.5				3.20	20	
Nickel	39.3	11.1	0	36.72				6.72	20	
Thallium	<2.77	5.53	0	0				0	20	
Vanadium	113	13.8	0	108.7				4.20	20	

Sample ID: **2005108-01A PDS**	Batch ID: **96410**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **PDS**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 12:11:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	60.3	1.11	55.32	1.095	107	75	125			
Arsenic	70.4	1.11	55.32	13.05	104	75	125			
Chromium	92.3	2.21	55.32	35.48	103	75	125			
Lead	453	0.332	55.32	380.5	130	75	125			S
Nickel	88.9	2.21	55.32	36.72	94.3	75	125			
Thallium	58.3	1.11	55.32	0	105	75	125			
Vanadium	168	2.77	55.32	108.7	108	75	125			

Sample ID: **2005108-01A MS**	Batch ID: **96410**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 12:13:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	37000	43.0	286.9	40090	-1080	75	125			S
Antimony	59.4	1.15	57.39	1.095	102	75	125			
Arsenic	69.9	1.15	57.39	13.05	99.1	75	125			
Chromium	89.8	2.30	57.39	35.48	94.6	75	125			
Lead	446	0.344	57.39	380.5	114	75	125			
Nickel	84.8	2.30	57.39	36.72	83.8	75	125			
Thallium	58.3	1.15	57.39	0	102	75	125			
Vanadium	155	2.87	57.39	108.7	80.3	75	125			

Sample ID: **2005108-01A MSD**	Batch ID: **96410**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 12:15:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	40200	42.6	284.3	40090	25.2	75	125	8.25	25	S
Antimony	58.8	1.14	56.86	1.095	101	75	125	0.966	25	
Arsenic	70.1	1.14	56.86	13.05	100	75	125	0.235	25	
Chromium	88.6	2.27	56.86	35.48	93.5	75	125	1.28	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200520A

Sample ID: **2005108-01A MSD**	Batch ID: **96410**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 12:15:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	463	0.341	56.86	380.5	146	75	125	3.75	25	S
Nickel	87.5	2.27	56.86	36.72	89.4	75	125	3.17	25	
Thallium	59.1	1.14	56.86	0	104	75	125	1.30	25	
Vanadium	157	2.84	56.86	108.7	84.7	75	125	1.34	25	

Sample ID: **2005108-01A SD**	Batch ID: **96410**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **SD**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 12:51:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	40600	4150	0	41040				1.01	20	

Sample ID: **2005108-01A PDS**	Batch ID: **96410**	TestNo: **SW6020B**	Units: **mg/Kg-dry**
SampType: **PDS**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 1:09:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	67800	830	27660	41040	96.6	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200520A

Sample ID: **ICV-200520**	Batch ID: **R110568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 11:10:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.46	0.0300	2.50	0	98.6	90	110			
Antimony	0.104	0.00250	0.100	0	104	90	110			
Arsenic	0.0976	0.00500	0.100	0	97.6	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Lead	0.102	0.00100	0.100	0	102	90	110			
Nickel	0.104	0.0100	0.100	0	104	90	110			
Thallium	0.0990	0.00150	0.100	0	99.0	90	110			
Vanadium	0.105	0.00100	0.100	0	105	90	110			

Sample ID: **LCVL-200520**	Batch ID: **R110568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 11:20:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0999	0.0300	0.100	0	99.9	80	120			
Antimony	0.00205	0.00250	0.00200	0	103	80	120			
Arsenic	0.00504	0.00500	0.00500	0	101	80	120			
Chromium	0.00521	0.00500	0.00500	0	104	80	120			
Lead	0.000987	0.00100	0.00100	0	98.7	80	120			
Nickel	0.00530	0.0100	0.00500	0	106	80	120			
Thallium	0.000943	0.00150	0.00100	0	94.3	80	120			
Vanadium	0.00108	0.00100	0.00100	0	108	80	120			

Sample ID: **CCV1-200520**	Batch ID: **R110568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 12:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.94	0.0300	5.00	0	98.8	90	110			
Antimony	0.204	0.00250	0.200	0	102	90	110			
Arsenic	0.198	0.00500	0.200	0	99.1	90	110			
Chromium	0.209	0.00500	0.200	0	105	90	110			
Lead	0.201	0.00100	0.200	0	100	90	110			
Nickel	0.202	0.0100	0.200	0	101	90	110			
Thallium	0.193	0.00150	0.200	0	96.6	90	110			
Vanadium	0.210	0.00100	0.200	0	105	90	110			

Sample ID: **CCV2-200520**	Batch ID: **R110568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 12:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.93	0.0300	5.00	0	98.6	90	110			
Antimony	0.205	0.00250	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200520A

Sample ID: **CCV2-200520**	Batch ID: **R110568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 12:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.196	0.00500	0.200	0	97.8	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Lead	0.196	0.00100	0.200	0	97.9	90	110			
Nickel	0.202	0.0100	0.200	0	101	90	110			
Thallium	0.199	0.00150	0.200	0	99.6	90	110			
Vanadium	0.208	0.00100	0.200	0	104	90	110			

Sample ID: **CCV3-200520**	Batch ID: **R110568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200520A**	Analysis Date: **5/20/2020 1:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.87	0.0300	5.00	0	97.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200520B

The QC data in batch 96410 applies to the following samples: 2005136-02A, 2005136-04A, 2005136-06A, 2005136-08A, 2005136-10A, 2005136-12A, 2005136-14A, 2005136-16A

Sample ID: **MB-96410** Batch ID: **96410** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **MBLK** Run ID: **ICP-MS4_200520B** Analysis Date: **5/20/2020 11:41:00 AM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<1.00	2.50								N

Sample ID: **LCS-96410** Batch ID: **96410** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCS** Run ID: **ICP-MS4_200520B** Analysis Date: **5/20/2020 11:43:00 AM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	50.7	2.50	50.00	0	101	80	120			N

Sample ID: **LCSD-96410** Batch ID: **96410** TestNo: **SW6020B** Units: **mg/Kg**
SampType: **LCSD** Run ID: **ICP-MS4_200520B** Analysis Date: **5/20/2020 11:45:00 AM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	49.6	2.50	50.00	0	99.3	80	120	2.08	25	N

Sample ID: **2005108-01A SD** Batch ID: **96410** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **ICP-MS4_200520B** Analysis Date: **5/20/2020 11:51:00 AM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<5.53	13.8	0	0				0	20	N

Sample ID: **2005108-01A PDS** Batch ID: **96410** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **ICP-MS4_200520B** Analysis Date: **5/20/2020 12:11:00 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	60.2	2.77	55.32	0	109	75	125			N

Sample ID: **2005108-01A MS** Batch ID: **96410** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **ICP-MS4_200520B** Analysis Date: **5/20/2020 12:13:00 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	60.2	2.87	57.39	0	105	75	125			N

Sample ID: **2005108-01A MSD** Batch ID: **96410** TestNo: **SW6020B** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **ICP-MS4_200520B** Analysis Date: **5/20/2020 12:15:00 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	59.4	2.84	56.86	0	104	75	125	1.40	25	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200520B

Sample ID: **ICV-200520**	Batch ID: **R110569**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200520B**	Analysis Date: **5/20/2020 11:10:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0972	0.0100	0.100	0	97.2	90	110			N

Sample ID: **LCVL-200520**	Batch ID: **R110569**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200520B**	Analysis Date: **5/20/2020 11:20:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00471	0.0100	0.00500	0	94.3	80	120			N

Sample ID: **CCV1-200520**	Batch ID: **R110569**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200520B**	Analysis Date: **5/20/2020 12:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.194	0.0100	0.200	0	97.1	90	110			N

Sample ID: **CCV2-200520**	Batch ID: **R110569**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200520B**	Analysis Date: **5/20/2020 12:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.200	0.0100	0.200	0	99.8	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200521B

The QC data in batch 96424 applies to the following samples: 2005136-01A, 2005136-03A, 2005136-05A, 2005136-07A, 2005136-09A, 2005136-11A, 2005136-13A, 2005136-15A

Sample ID: **MB-96424** Batch ID: **96424** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_200521B** Analysis Date: **5/21/2020 12:32:00 PM** Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-96424** Batch ID: **96424** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_200521B** Analysis Date: **5/21/2020 12:34:00 PM** Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.82	0.0300	5.00	0	96.4	80	120			
Antimony	0.201	0.00250	0.200	0	101	80	120			
Arsenic	0.203	0.00500	0.200	0	101	80	120			
Chromium	0.209	0.00500	0.200	0	104	80	120			
Lead	0.201	0.00100	0.200	0	100	80	120			
Nickel	0.215	0.0100	0.200	0	107	80	120			
Thallium	0.203	0.00150	0.200	0	102	80	120			
Vanadium	0.203	0.00100	0.200	0	102	80	120			

Sample ID: **LCSD-96424** Batch ID: **96424** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_200521B** Analysis Date: **5/21/2020 12:36:00 PM** Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.87	0.0300	5.00	0	97.4	80	120	1.03	15	
Antimony	0.205	0.00250	0.200	0	102	80	120	1.70	15	
Arsenic	0.204	0.00500	0.200	0	102	80	120	0.515	15	
Chromium	0.209	0.00500	0.200	0	105	80	120	0.366	15	
Lead	0.205	0.00100	0.200	0	103	80	120	2.31	15	
Nickel	0.214	0.0100	0.200	0	107	80	120	0.108	15	
Thallium	0.198	0.00150	0.200	0	99.2	80	120	2.26	15	
Vanadium	0.205	0.00100	0.200	0	102	80	120	0.758	15	

Sample ID: **2005146-01A SD** Batch ID: **96424** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_200521B** Analysis Date: **5/21/2020 12:46:00 PM** Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200521B

Sample ID: **2005146-01A SD**	Batch ID: **96424**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200521B**	Analysis Date: **5/21/2020 12:46:00 PM**	Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.169	0.150	0	0.154				8.99	20	
Arsenic	0.0600	0.0250	0	0.0612				1.97	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Nickel	<0.0150	0.0500	0	0.00509				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	0.00919	0.00500	0	0.00929				1.08	20	

Sample ID: **2005146-01A PDS**	Batch ID: **96424**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200521B**	Analysis Date: **5/21/2020 1:09:00 PM**	Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.29	0.0300	5.00	0.154	103	75	125			
Arsenic	0.252	0.00500	0.200	0.0612	95.5	75	125			
Chromium	0.194	0.00500	0.200	0	97.2	75	125			
Lead	0.209	0.00100	0.200	0	104	75	125			
Nickel	0.198	0.0100	0.200	0.00509	96.2	75	125			
Thallium	0.198	0.00150	0.200	0	99.0	75	125			
Vanadium	0.203	0.00100	0.200	0.00929	96.7	75	125			

Sample ID: **2005146-01A MS**	Batch ID: **96424**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200521B**	Analysis Date: **5/21/2020 1:11:00 PM**	Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.30	0.0300	5.00	0.154	103	75	125			
Antimony	1.95	0.00250	0.200	1.71	122	75	125			
Arsenic	0.261	0.00500	0.200	0.0612	99.8	75	125			
Chromium	0.190	0.00500	0.200	0	95.0	75	125			
Lead	0.211	0.00100	0.200	0	105	75	125			
Nickel	0.198	0.0100	0.200	0.00509	96.3	75	125			
Thallium	0.205	0.00150	0.200	0	103	75	125			
Vanadium	0.202	0.00100	0.200	0.00929	96.4	75	125			

Sample ID: **2005146-01A MSD**	Batch ID: **96424**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_200521B**	Analysis Date: **5/21/2020 1:13:00 PM**	Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.16	0.0300	5.00	0.154	100	75	125	2.71	15	
Antimony	1.85	0.00250	0.200	1.71	73.7	75	125	5.09	15	S
Arsenic	0.259	0.00500	0.200	0.0612	98.8	75	125	0.722	15	
Chromium	0.191	0.00500	0.200	0	95.3	75	125	0.350	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200521B

Sample ID: **2005146-01A MSD** Batch ID: **96424** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_200521B** Analysis Date: **5/21/2020 1:13:00 PM** Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.207	0.00100	0.200	0	104	75	125	1.64	15	
Nickel	0.197	0.0100	0.200	0.00509	95.9	75	125	0.494	15	
Thallium	0.203	0.00150	0.200	0	102	75	125	1.03	15	
Vanadium	0.201	0.00100	0.200	0.00929	96.0	75	125	0.368	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200521B

Sample ID: **ICV-200521** Batch ID: **R110590** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_200521B** Analysis Date: **5/21/2020 10:57:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.43	0.0300	2.50	0	97.1	90	110			
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.0999	0.00500	0.100	0	99.9	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			
Lead	0.100	0.00100	0.100	0	100	90	110			
Nickel	0.108	0.0100	0.100	0	108	90	110			
Thallium	0.0986	0.00150	0.100	0	98.6	90	110			
Vanadium	0.103	0.00100	0.100	0	103	90	110			

Sample ID: **LCVL-200521** Batch ID: **R110590** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_200521B** Analysis Date: **5/21/2020 11:01:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.107	0.0300	0.100	0	107	80	120			
Antimony	0.00202	0.00250	0.00200	0	101	80	120			
Arsenic	0.00505	0.00500	0.00500	0	101	80	120			
Chromium	0.00532	0.00500	0.00500	0	106	80	120			
Lead	0.00102	0.00100	0.00100	0	102	80	120			
Nickel	0.00554	0.0100	0.00500	0	111	80	120			
Thallium	0.00101	0.00150	0.00100	0	101	80	120			
Vanadium	0.00104	0.00100	0.00100	0	104	80	120			

Sample ID: **CCV2-200521** Batch ID: **R110590** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_200521B** Analysis Date: **5/21/2020 12:20:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.82	0.0300	5.00	0	96.3	90	110			
Antimony	0.199	0.00250	0.200	0	99.3	90	110			
Arsenic	0.201	0.00500	0.200	0	101	90	110			
Chromium	0.209	0.00500	0.200	0	104	90	110			
Lead	0.200	0.00100	0.200	0	100	90	110			
Nickel	0.211	0.0100	0.200	0	106	90	110			
Thallium	0.201	0.00150	0.200	0	100	90	110			
Vanadium	0.204	0.00100	0.200	0	102	90	110			

Sample ID: **CCV3-200521** Batch ID: **R110590** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_200521B** Analysis Date: **5/21/2020 1:27:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.06	0.0300	5.00	0	101	90	110			
Antimony	0.202	0.00250	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200521B

Sample ID: **CCV3-200521** Batch ID: **R110590** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_200521B** Analysis Date: **5/21/2020 1:27:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.193	0.00500	0.200	0	96.4	90	110			
Chromium	0.200	0.00500	0.200	0	100	90	110			
Lead	0.197	0.00100	0.200	0	98.4	90	110			
Nickel	0.198	0.0100	0.200	0	98.8	90	110			
Thallium	0.196	0.00150	0.200	0	98.0	90	110			
Vanadium	0.199	0.00100	0.200	0	99.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_200521C**

The QC data in batch 96424 applies to the following samples: 2005136-01A, 2005136-03A, 2005136-05A, 2005136-07A, 2005136-09A, 2005136-11A, 2005136-13A, 2005136-15A

Sample ID: **MB-96424**	Batch ID: **96424**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_200521C**	Analysis Date: **5/21/2020 12:32:00 PM**	Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-96424**	Batch ID: **96424**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_200521C**	Analysis Date: **5/21/2020 12:34:00 PM**	Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.202	0.0100	0.200	0	101	80	120			N

Sample ID: **LCSD-96424**	Batch ID: **96424**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_200521C**	Analysis Date: **5/21/2020 12:36:00 PM**	Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.199	0.0100	0.200	0	99.4	80	120	1.60	15	N

Sample ID: **2005146-01A SD**	Batch ID: **96424**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200521C**	Analysis Date: **5/21/2020 12:46:00 PM**	Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.0150	0.0500	0	0.00309				0	20	N

Sample ID: **2005146-01A PDS**	Batch ID: **96424**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200521C**	Analysis Date: **5/21/2020 1:09:00 PM**	Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.202	0.0100	0.200	0.00309	99.2	75	125			N

Sample ID: **2005146-01A MS**	Batch ID: **96424**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200521C**	Analysis Date: **5/21/2020 1:11:00 PM**	Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.202	0.0100	0.200	0.00309	99.6	75	125			N

Sample ID: **2005146-01A MSD**	Batch ID: **96424**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_200521C**	Analysis Date: **5/21/2020 1:13:00 PM**	Prep Date: **5/20/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0.00309	98.9	75	125	0.723	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_200521C**

Sample ID: **ICV-200521**	Batch ID: **R110591**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200521C**	Analysis Date: **5/21/2020 10:57:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0983	0.0100	0.100	0	98.3	90	110			N

Sample ID: **LCVL-200521**	Batch ID: **R110591**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200521C**	Analysis Date: **5/21/2020 11:01:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00482	0.0100	0.00500	0	96.5	80	120			N

Sample ID: **CCV2-200521**	Batch ID: **R110591**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200521C**	Analysis Date: **5/21/2020 12:20:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.204	0.0100	0.200	0	102	90	110			N

Sample ID: **CCV3-200521**	Batch ID: **R110591**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200521C**	Analysis Date: **5/21/2020 1:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.200	0.0100	0.200	0	100	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200522B

The QC data in batch 96447 applies to the following samples: 2005136-01B, 2005136-03B, 2005136-05B, 2005136-07B, 2005136-09B, 2005136-11B, 2005136-13B, 2005136-15B

Sample ID: **MB-96447** Batch ID: **96447** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_200522B** Analysis Date: **5/22/2020 11:32:00 AM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **MB-96412-FILTER** Batch ID: **96447** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_200522B** Analysis Date: **5/22/2020 11:34:00 AM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-96447** Batch ID: **96447** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_200522B** Analysis Date: **5/22/2020 11:36:00 AM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.94	0.0300	5.00	0	98.7	80	120			
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.202	0.00500	0.200	0	101	80	120			
Chromium	0.205	0.00500	0.200	0	103	80	120			
Lead	0.202	0.00100	0.200	0	101	80	120			
Nickel	0.211	0.0100	0.200	0	105	80	120			
Thallium	0.200	0.00150	0.200	0	99.9	80	120			
Vanadium	0.200	0.00100	0.200	0	100	80	120			

Sample ID: **LCSD-96447** Batch ID: **96447** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_200522B** Analysis Date: **5/22/2020 11:38:00 AM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200522B

Sample ID: **LCSD-96447**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_200522B**	Analysis Date: **5/22/2020 11:38:00 AM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.97	0.0300	5.00	0	99.5	80	120	0.747	15	
Antimony	0.203	0.00250	0.200	0	102	80	120	0.926	15	
Arsenic	0.202	0.00500	0.200	0	101	80	120	0.196	15	
Chromium	0.209	0.00500	0.200	0	105	80	120	1.94	15	
Lead	0.206	0.00100	0.200	0	103	80	120	1.86	15	
Nickel	0.210	0.0100	0.200	0	105	80	120	0.352	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	1.28	15	
Vanadium	0.202	0.00100	0.200	0	101	80	120	0.911	15	

Sample ID: **2005153-08B SD**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200522B**	Analysis Date: **5/22/2020 11:44:00 AM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0101				0	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00638				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Nickel	<0.0150	0.0500	0	0				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	0.00256	0.00500	0	0.00252				1.26	20	

Sample ID: **2005153-08B PDS**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200522B**	Analysis Date: **5/22/2020 12:04:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.02	0.0300	5.00	0.0101	100	75	125			
Antimony	0.204	0.00250	0.200	0	102	75	125			
Arsenic	0.210	0.00500	0.200	0.00638	102	75	125			
Chromium	0.211	0.00500	0.200	0	105	75	125			
Lead	0.204	0.00100	0.200	0	102	75	125			
Nickel	0.215	0.0100	0.200	0	108	75	125			
Thallium	0.204	0.00150	0.200	0	102	75	125			
Vanadium	0.206	0.00100	0.200	0.00252	102	75	125			

Sample ID: **2005153-08B MS**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200522B**	Analysis Date: **5/22/2020 12:06:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.94	0.0300	5.00	0.0101	98.6	75	125			
Antimony	0.202	0.00250	0.200	0	101	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200522B

Sample ID: **2005153-08B MS**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200522B**	Analysis Date: **5/22/2020 12:06:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.207	0.00500	0.200	0.00638	100	75	125			
Chromium	0.205	0.00500	0.200	0	102	75	125			
Lead	0.201	0.00100	0.200	0	100	75	125			
Nickel	0.202	0.0100	0.200	0	101	75	125			
Thallium	0.205	0.00150	0.200	0	102	75	125			
Vanadium	0.203	0.00100	0.200	0.00252	100	75	125			

Sample ID: **2005153-08B MSD**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_200522B**	Analysis Date: **5/22/2020 12:08:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0.0101	99.3	75	125	0.714	15	
Antimony	0.203	0.00250	0.200	0	101	75	125	0.256	15	
Arsenic	0.207	0.00500	0.200	0.00638	100	75	125	0.017	15	
Chromium	0.205	0.00500	0.200	0	102	75	125	0.139	15	
Lead	0.204	0.00100	0.200	0	102	75	125	1.71	15	
Nickel	0.204	0.0100	0.200	0	102	75	125	0.851	15	
Thallium	0.207	0.00150	0.200	0	104	75	125	1.14	15	
Vanadium	0.203	0.00100	0.200	0.00252	100	75	125	0.019	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200522B

Sample ID: **ICV-200522** Batch ID: **R110607** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_200522B** Analysis Date: **5/22/2020 11:11:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.44	0.0300	2.50	0	97.8	90	110			
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.0998	0.00500	0.100	0	99.8	90	110			
Chromium	0.108	0.00500	0.100	0	108	90	110			
Lead	0.103	0.00100	0.100	0	103	90	110			
Nickel	0.107	0.0100	0.100	0	107	90	110			
Thallium	0.103	0.00150	0.100	0	103	90	110			
Vanadium	0.102	0.00100	0.100	0	102	90	110			

Sample ID: **LCVL-200522** Batch ID: **R110607** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_200522B** Analysis Date: **5/22/2020 11:25:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	80	120			
Antimony	0.00195	0.00250	0.00200	0	97.4	80	120			
Arsenic	0.00517	0.00500	0.00500	0	103	80	120			
Chromium	0.00535	0.00500	0.00500	0	107	80	120			
Lead	0.000963	0.00100	0.00100	0	96.3	80	120			
Nickel	0.00546	0.0100	0.00500	0	109	80	120			
Thallium	0.000989	0.00150	0.00100	0	98.9	80	120			
Vanadium	0.000866	0.00100	0.00100	0	86.6	80	120			

Sample ID: **CCV1-200522** Batch ID: **R110607** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_200522B** Analysis Date: **5/22/2020 12:14:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.89	0.0300	5.00	0	97.9	90	110			
Antimony	0.199	0.00250	0.200	0	99.4	90	110			
Arsenic	0.204	0.00500	0.200	0	102	90	110			
Chromium	0.207	0.00500	0.200	0	103	90	110			
Lead	0.203	0.00100	0.200	0	101	90	110			
Nickel	0.214	0.0100	0.200	0	107	90	110			
Thallium	0.205	0.00150	0.200	0	103	90	110			
Vanadium	0.200	0.00100	0.200	0	99.8	90	110			

Sample ID: **CCV2-200522** Batch ID: **R110607** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_200522B** Analysis Date: **5/22/2020 1:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.99	0.0300	5.00	0	99.7	90	110			
Antimony	0.198	0.00250	0.200	0	99.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200522B

Sample ID: **CCV2-200522** Batch ID: **R110607** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_200522B** Analysis Date: **5/22/2020 1:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Lead	0.200	0.00100	0.200	0	100	90	110			
Nickel	0.207	0.0100	0.200	0	103	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			
Vanadium	0.197	0.00100	0.200	0	98.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200522C

The QC data in batch 96447 applies to the following samples: 2005136-01B, 2005136-03B, 2005136-05B, 2005136-07B, 2005136-09B, 2005136-11B, 2005136-13B, 2005136-15B

Sample ID: **MB-96447**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_200522C**	Analysis Date: **5/22/2020 11:32:00 AM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **MB-96412-FILTER**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_200522C**	Analysis Date: **5/22/2020 11:34:00 AM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-96447**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_200522C**	Analysis Date: **5/22/2020 11:36:00 AM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.199	0.0100	0.200	0	99.6	80	120			N

Sample ID: **LCSD-96447**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_200522C**	Analysis Date: **5/22/2020 11:38:00 AM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.198	0.0100	0.200	0	99.0	80	120	0.596	15	N

Sample ID: **2005153-08B SD**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200522C**	Analysis Date: **5/22/2020 11:44:00 AM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0597	0.0500	0	0.0623				4.36	20	N

Sample ID: **2005153-08B PDS**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200522C**	Analysis Date: **5/22/2020 12:04:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.267	0.0100	0.200	0.0623	103	75	125			N

Sample ID: **2005153-08B MS**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200522C**	Analysis Date: **5/22/2020 12:06:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.267	0.0100	0.200	0.0623	102	75	125			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_200522C**

Sample ID: **2005153-08B MSD**	Batch ID: **96447**	TestNo: **SW6020B**	Units: **mg/L**		
SampType: **MSD**	Run ID: **ICP-MS4_200522C**	Analysis Date: **5/22/2020 12:08:00 PM**	Prep Date: **5/21/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.267	0.0100	0.200	0.0623	103	75	125	0.051	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_200522C**

Sample ID: **ICV-200522**	Batch ID: **R110608**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200522C**	Analysis Date: **5/22/2020 11:11:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.100	0.0100	0.100	0	100	90	110			N

Sample ID: **LCVL-200522**	Batch ID: **R110608**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200522C**	Analysis Date: **5/22/2020 11:25:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00471	0.0100	0.00500	0	94.1	80	120			N

Sample ID: **CCV1-200522**	Batch ID: **R110608**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200522C**	Analysis Date: **5/22/2020 12:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.201	0.0100	0.200	0	100	90	110			N

Sample ID: **CCV2-200522**	Batch ID: **R110608**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200522C**	Analysis Date: **5/22/2020 1:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.203	0.0100	0.200	0	102	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_200519A

The QC data in batch 96417 applies to the following samples: 2005136-02A, 2005136-04A, 2005136-06A, 2005136-08A, 2005136-10A, 2005136-12A, 2005136-14A, 2005136-16A

Sample ID: **2005098-01A-DUP** Batch ID: **96417** TestNo: **D2216** Units: **WT%**
SampType: **DUP** Run ID: **PMOIST_200519A** Analysis Date: **5/20/2020 9:12:00 AM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	21.0	0	0	23.84				12.8	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT: Golder
Work Order: 2005136
Project: Copano Surface Water & Sediment

MQL SUMMARY REPORT

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/Kg**	**mg/Kg**
Aluminum	12.5	37.5
Antimony	0.150	1.00
Arsenic	0.500	1.00
Chromium	0.500	2.00
Lead	0.100	0.300
Nickel	0.500	2.00
Thallium	0.500	1.00
Vanadium	1.00	2.50

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7471B	MDL	MQL
Analyte	**mg/Kg**	**mg/Kg**
Mercury	0.0160	0.0400

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW6020B	MDL	MQL
Analyte	**mg/Kg**	**mg/Kg**
Uranium, Total	1.00	2.50

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

June 19, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1221469
Samples Received:	05/22/2020
Project Number:	2005136
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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SW-1 L1221469-01 Non-Potable Water

Collected by | Collected date/time 05/15/20 12:35 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1483720	1	05/29/20 12:43	06/08/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN

SD-1 L1221469-02 Solids and Chemical Materials

Collected by | Collected date/time 05/15/20 12:35 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1491714	1	05/28/20 08:27	06/18/20 08:59	DME	Mt. Juliet, TN

SW-2 L1221469-03 Non-Potable Water

Collected by | Collected date/time 05/15/20 12:59 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1483720	1	05/29/20 12:43	06/08/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN

SD-2 L1221469-04 Solids and Chemical Materials

Collected by | Collected date/time 05/15/20 12:59 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1491714	1	05/28/20 08:27	06/18/20 09:18	DME	Mt. Juliet, TN

SW-3 L1221469-05 Non-Potable Water

Collected by | Collected date/time 05/15/20 13:09 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1483720	1	05/29/20 12:43	06/08/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN

SD-3 L1221469-06 Solids and Chemical Materials

Collected by | Collected date/time 05/15/20 13:09 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1491714	1	05/28/20 08:27	06/18/20 10:16	DME	Mt. Juliet, TN

SW-4 L1221469-07 Non-Potable Water

Collected by | Collected date/time 05/15/20 13:25 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1483720	1	05/29/20 12:43	06/08/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN

SD-4 L1221469-08 Solids and Chemical Materials

Collected by | Collected date/time 05/15/20 13:25 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1491714	1	05/28/20 08:27	06/18/20 10:17	DME	Mt. Juliet, TN

SW-5 L1221469-09 Non-Potable Water

Collected by | Collected date/time 05/15/20 13:40 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1483720	1	05/29/20 12:43	06/08/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN

SD-5 L1221469-10 Solids and Chemical Materials

Collected by | Collected date/time 05/15/20 13:40 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1491714	1	05/28/20 08:27	06/18/20 11:15	DME	Mt. Juliet, TN

SW-6 L1221469-11 Non-Potable Water

Collected by | Collected date/time 05/15/20 13:57 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1483720	1	05/29/20 12:43	06/08/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN

SD-6 L1221469-12 Solids and Chemical Materials

Collected by | Collected date/time 05/15/20 13:57 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1491714	1	05/28/20 08:27	06/18/20 11:16	DME	Mt. Juliet, TN

SW-DUP-1 L1221469-13 Non-Potable Water

Collected by | Collected date/time 05/15/20 13:14 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1483720	1	05/29/20 12:43	06/08/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN

SD-DUP-1 L1221469-14 Solids and Chemical Materials

Collected by | Collected date/time 05/15/20 13:14 | Received date/time 05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1491714	1	05/28/20 08:27	06/18/20 11:17	DME	Mt. Juliet, TN

SW-DUP-2 L1221469-15 Non-Potable Water

Collected by	Collected date/time	Received date/time
	05/15/20 14:02	05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1483720	1	05/29/20 12:43	06/08/20 09:45	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1489235	1	06/11/20 14:06	06/12/20 15:15	RGT	Mt. Juliet, TN

SD-DUP-2 L1221469-16 Solids and Chemical Materials

Collected by	Collected date/time	Received date/time
	05/15/20 14:02	05/22/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG1491714	1	05/28/20 08:27	06/18/20 11:25	DME	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.64		0.675	1.13	06/08/2020 09:45	WG1483720
(T) Barium	*102*			*62.0-143*	*06/08/2020 09:45*	WG1483720
(T) Yttrium	*99.4*			*79.0-136*	*06/08/2020 09:45*	WG1483720

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.93		0.886	1.35	06/12/2020 15:15	WG1489235

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.293		0.211	0.215	06/12/2020 15:15	WG1489235
(T) Barium-133	*107*			*30.0-143*	*06/12/2020 15:15*	WG1489235

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.256		0.217	0.436	06/18/2020 08:59	WG1491714
Bismuth-214 (Ra-226)	0.861		0.224	0.254	06/18/2020 08:59	WG1491714

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.290		0.619	1.39	06/08/2020 09:45	WG1483720
(T) Barium	*116*			*62.0-143*	*06/08/2020 09:45*	WG1483720
(T) Yttrium	*102*			*79.0-136*	*06/08/2020 09:45*	WG1483720

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.743		0.902	1.67	06/12/2020 15:15	WG1489235

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.453		0.283	0.276	06/12/2020 15:15	WG1489235
(T) Barium-133	*99.4*			*30.0-143*	*06/12/2020 15:15*	WG1489235

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.415		0.228	0.429	06/18/2020 09:18	WG1491714
Bismuth-214 (Ra-226)	0.836		0.190	0.229	06/18/2020 09:18	WG1491714

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.77		0.625	0.966	06/08/2020 09:45	WG1483720
(T) Barium	*112*			*62.0-143*	*06/08/2020 09:45*	WG1483720
(T) Yttrium	*109*			*79.0-136*	*06/08/2020 09:45*	WG1483720

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.98		0.807	1.17	06/12/2020 15:15	WG1489235

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.217		0.182	0.204	06/12/2020 15:15	WG1489235
(T) Barium-133	*94.8*			*30.0-143*	*06/12/2020 15:15*	WG1489235

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.406		0.215	0.36	06/18/2020 10:16	WG1491714
Bismuth-214 (Ra-226)	0.714		0.206	0.252	06/18/2020 10:16	WG1491714

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.796		0.681	1.1	06/08/2020 09:45	WG1483720
(T) Barium	*104*			*62.0-143*	*06/08/2020 09:45*	WG1483720
(T) Yttrium	*111*			*79.0-136*	*06/08/2020 09:45*	WG1483720

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.50		1.01	1.41	06/12/2020 15:15	WG1489235

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.706		0.326	0.314	06/12/2020 15:15	WG1489235
(T) Barium-133	*102*			*30.0-143*	*06/12/2020 15:15*	WG1489235

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.821		0.408	0.69	06/18/2020 10:17	WG1491714
Bismuth-214 (Ra-226)	1.05		0.304	0.373	06/18/2020 10:17	WG1491714

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.19		0.556	0.899	06/08/2020 09:45	WG1483720
(T) Barium	*116*			*62.0-143*	*06/08/2020 09:45*	WG1483720
(T) Yttrium	*114*			*79.0-136*	*06/08/2020 09:45*	WG1483720

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.30		0.716	1.14	06/12/2020 15:15	WG1489235

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.110		0.160	0.242	06/12/2020 15:15	WG1489235
(T) Barium-133	*97.1*			*30.0-143*	*06/12/2020 15:15*	WG1489235

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.628		0.238	0.365	06/18/2020 11:15	WG1491714
Bismuth-214 (Ra-226)	0.487		0.148	0.198	06/18/2020 11:15	WG1491714

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	3.79		0.582	0.771	06/08/2020 09:45	WG1483720
(T) Barium	*110*			*62.0-143*	*06/08/2020 09:45*	WG1483720
(T) Yttrium	*103*			*79.0-136*	*06/08/2020 09:45*	WG1483720

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	4.42		0.912	1.13	06/12/2020 15:15	WG1489235

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.629		0.330	0.356	06/12/2020 15:15	WG1489235
(T) Barium-133	*108*			*30.0-143*	*06/12/2020 15:15*	WG1489235

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	1.23		0.342	0.511	06/18/2020 11:16	WG1491714
Bismuth-214 (Ra-226)	0.822		0.221	0.27	06/18/2020 11:16	WG1491714

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.42		0.615	0.859	06/08/2020 09:45	WG1483720
(T) Barium	*120*			*62.0-143*	*06/08/2020 09:45*	WG1483720
(T) Yttrium	*115*			*79.0-136*	*06/08/2020 09:45*	WG1483720

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.79		0.863	1.11	06/12/2020 15:15	WG1489235

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.377		0.248	0.25	06/12/2020 15:15	WG1489235
(T) Barium-133	*103*			*30.0-143*	*06/12/2020 15:15*	WG1489235

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	0.395		0.249	0.47	06/18/2020 11:17	WG1491714
Bismuth-214 (Ra-226)	0.403		0.168	0.257	06/18/2020 11:17	WG1491714

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	3.11		0.593	0.804	06/08/2020 09:45	WG1483720
(T) Barium	*118*			*62.0-143*	*06/08/2020 09:45*	WG1483720
(T) Yttrium	*110*			*79.0-136*	*06/08/2020 09:45*	WG1483720

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	3.75		0.885	0.978	06/12/2020 15:15	WG1489235

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.647		0.292	0.174	06/12/2020 15:15	WG1489235
(T) Barium-133	*102*			*30.0-143*	*06/12/2020 15:15*	WG1489235

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	1.04		0.499	0.786	06/18/2020 11:25	WG1491714
Bismuth-214 (Ra-226)	0.718		0.333	0.529	06/18/2020 11:25	WG1491714

Method Blank (MB)

(MB) R3536266-1 06/07/20 12:40

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.711		0.542
(T) Barium	*82.1*		
(T) Yttrium	*103*		

Laboratory Control Sample (LCS)

(LCS) R3536266-2 06/07/20 12:40

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.47	109	80.0-120	
(T) Barium			*92.5*		
(T) Yttrium			*97.7*		

Method Blank (MB)

(MB) R3540630-4 06/19/20 13:14

Analyte	MB Result pCi/g	MB Qualifier	MB MDA pCi/g
Actinium-228 (Ra-228)	0.0369		0.390
Americium-241	0.0640		0.132
Bismuth-214 (Ra-226)	0.250		0.181
Cesium-137	-0.00878		0.109
Cobalt-60	0.0139		0.146

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3540630-2 06/19/20 10:22 • (LCSD) R3540630-3 06/19/20 10:56

Analyte	Spike Amount pCi/g	LCS Result pCi/g	LCSD Result pCi/g	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Americium-241	47.3	44.6	40.0	94.3	84.5	80.0-120			10.9	20
Cesium-137	72.4	78.1	76.6	108	106	80.0-120			1.91	20
Cobalt-60	86.9	92.5	83.9	106	96.5	80.0-120			9.79	20

Method Blank (MB)

(MB) R3539344-1 06/12/20 15:10

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	-0.00387		0.0511
(T) Barium-133	*85.9*		

Laboratory Control Sample (LCS)

(LCS) R3539344-2 06/12/20 15:10

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.10	102	80.0-120	
(T) Barium-133			*94.7*		

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

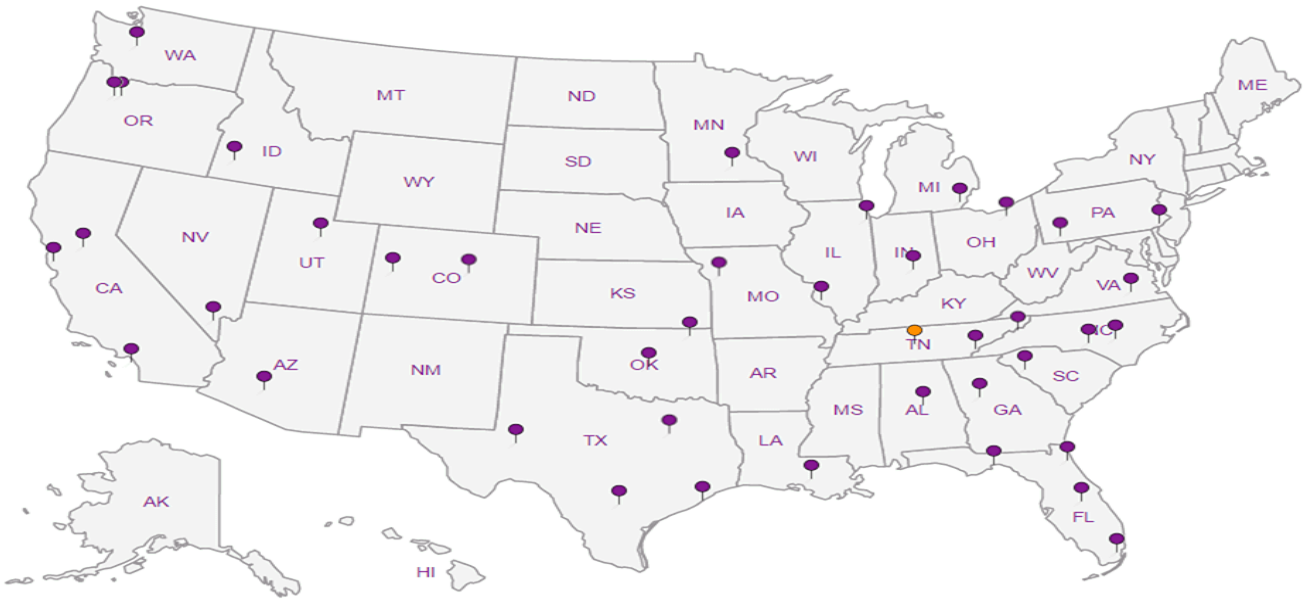
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 2005136

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

122469

18-May-20

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					RADIUM_S E901.1	Ra-228 E904.0	Ra-226 M7500 Ra B M			
SW-1	Aqueous	01C	05/15/20 12:35 PM	1LHDPEHNO3			1			-01
SW-1	Aqueous	01D	05/15/20 12:35 PM	1LHDPEHNO3		1				"
SD-1	Sediment	02A	05/15/20 12:35 PM	4-OZGJAR	1					02
SW-2	Aqueous	03C	05/15/20 12:59 PM	1LHDPEHNO3			1			03
SW-2	Aqueous	03D	05/15/20 12:59 PM	1LHDPEHNO3		1				"
SD-2	Sediment	04A	05/15/20 12:59 PM	4-OZGJAR	1					04
SW-3	Aqueous	05C	05/15/20 01:09 PM	1LHDPEHNO3			1			05
SW-3	Aqueous	05D	05/15/20 01:09 PM	1LHDPEHNO3		1				"
SD-3	Sediment	06A	05/15/20 01:09 PM	4-OZGJAR	1					06
SW-4	Aqueous	07C	05/15/20 01:25 PM	1LHDPEHNO3			1			07
SW-4	Aqueous	07D	05/15/20 01:25 PM	1LHDPEHNO3		1				"
SD-4	Sediment	08A	05/15/20 01:25 PM	4-OZGJAR	1					08
SW-5	Aqueous	09C	05/15/20 01:40 PM	1LHDPEHNO3			1			09
SW-5	Aqueous	09D	05/15/20 01:40 PM	1LHDPEHNO3		1				"
SD-5	Sediment	10A	05/15/20 01:40 PM	4-OZGJAR	1					10
SW-6	Aqueous	11C	05/15/20 01:57 PM	1LHDPEHNO3			1			11
SW-6	Aqueous	11D	05/15/20 01:57 PM	1LHDPEHNO3		1				"

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

J194

	Date/Time		Date/Time
Relinquished by:	5/20/20 1700	**Received by:**	
Relinquished by:		**Received by:**	MPappas 5-22-20 1030

All Cont < 500 cpm

24 Total

No TB

NCF

DHL Analytical, Inc.
2300 Double Creek Drive
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TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 2005136

1221469

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

18-May-20

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					RADIUM_S	Ra-228	Ra-226			
					E901.1	E904.0	M7500 Ra B M			
SD-6	Sediment	12A	05/15/20 01:57 PM	4-OZGJAR	1					12
SW-Dup-1	Aqueous	13C	05/15/20 01:14 PM	1LHDPEHNO3			1			13
SW-Dup-1	Aqueous	13D	05/15/20 01:14 PM	1LHDPEHNO3		1				"
SD-Dup-1	Sediment	14A	05/15/20 01:14 PM	4-OZGJAR	1					14
SW-Dup-2	Aqueous	15C	05/15/20 02:02 PM	1LHDPEHNO3			1			15
SW-Dup-2	Aqueous	15D	05/15/20 02:02 PM	1LHDPEHNO3		1				"
SD-Dup-2	Sediment	16A	05/15/20 02:02 PM	4-OZGJAR	1					16

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

	Date/Time		Date/Time
Relinquished by:	5/20/20 1700	**Received by:**	
Relinquished by:		**Received by:**	

TCEQ. 2013. *Determining Representative Concentrations of Chemicals of Concern for Ecological Receptors*. RG-366/TRRP-15eco. November.

Freshwater and Saltwater Aquatic Benchmarks

COC	Freshwater Chronic Benchmark (mg/L)	Saltwater Chronic Benchmark (mg/L)	Benchmark based on Total or Dissolved
Radium-226	4 pCi/L	4 pCi/L	Total
Radium-228	3 pCi/L	3 pCi/L	Total

Source: TCEQ August 2019 Benchmark Tables Accompanying the Ecological Risk Assessment Guidance
Mercury and thallium considered bioaccumulative in water
NA: Benchmark Not Available

Freshwater and Saltwater Sediment Benthic Benchmarks

COC	Freshwater Chronic Benchmark (mg/kg)	Saltwater Chronic Benchmark (mg/kg)	Bioaccumulative in Sediment?
Radium-226	100 pCi/g	100 pCi/g	No
Radium-228	91 pCi/g	91 pCi/g	No

Source: TCEQ August 2019 Benchmark Tables Accompanying the Ecological Risk Assessment Guidance
NA: Benchmark Not Available

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRRTX	1221469	
Cooler Received/Opened On: 5 / 22 / 20 Temperature:	AMB	
Received By: Michael Pappas		
Signature: M Pappas		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

Kelsey Stephenson

Pace Analytical®
National Center for Testing & Innovation

Login #: L1221469	Client:DHLRRTX	Date:05/22	Evaluated by:Kelsey S

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Temperature not in range		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	pH not in range.		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courier
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments: Received SD-5 and SD-DUP-2 received broken. Sample salvaged in a 16oz but may be contaminated.

Client informed by:		Call		Email		Voice Mail		Date:	Time:
TSR Initials:	Client Contact:								

Login Instructions:

Send to RAD Lab for separation and analysis

February 28, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 1909161

RE: Copano GW Sampling 3Q19

Dear Kevin Dworsky:

DHL Analytical, Inc. received 13 sample(s) on 9/19/2019 for the analyses presented in the following report.

REVISION#1: This revision consists of adding Dissolved Uranium to the list of test parameters for all samples as per the client. Please replace the original report with this revised report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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MQLSummaryReport 1909161 124

Subcontract Report 1909161 125

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

Nº 85938 CHAIN-OF-CUSTODY

CLIENT: Goldev Associates Inc.
ADDRESS: 620 E Airline Victoria, TX 77901
PHONE: 361-573-6442 FAX/E-MAIL: Kevin.Dworsky@goldev.com
DATA REPORTED TO: Kevin Dworsky, Matt W, Greg Logan
ADDITIONAL REPORT COPIES TO: Caitlin Carter

DATE: 9/18/19 PAGE 1 OF 2
PO #: DHL WORK ORDER #: 1909161
PROJECT LOCATION OR NAME: Copano GW Sampling 3Q19
CLENT PROJECT #: 19125525 COLLECTOR: Caitlin C, Greg L

Authorize 5% surcharge for TRRP Report? ☑ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION HCl	HNO_3	H_2SO_4	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
MW1-3	01	9/18/19	11:20	W	P	6		X	X		X	See attached	
MW1-3B	02		12:19										
MW3-6	03		13:25										
MW3-5	04		14:08										
~~MW1-4~~ MW3-4	05		15:10										
MW-202	06		15:15										
MW3-4B	07		16:09										

RELINQUISHED BY: (Signature) Caitlin Carter DATE/TIME 9/18/19 6:15 pm RECEIVED BY: (Signature) FEDEX
RELINQUISHED BY: (Signature) FEDEX DATE/TIME 9/19/19 10:10 RECEIVED BY: (Signature) Jaden Jones
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 0.8-C/0.7°C/1.0°C/2.4°C THERM #: 18
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 85937

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: Victoria TX
PHONE: _____ FAX/E-MAIL: _____
DATA REPORTED TO: _____
ADDITIONAL REPORT COPIES TO: _____

DATE: 9-18-19 PAGE 2 OF 2
PO #: _____ DHL WORK ORDER #: 1909161
PROJECT LOCATION OR NAME: Coyote 2019
CLENT PROJECT #: 19125525 COLLECTOR: _____

Authorize 5% surcharge for TRRP Report? ☑ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] ☐ | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8082 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ _____ ☐ | RCRA ☐ TX11 ☐ _____ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS _____ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	FIELD NOTES
MW4-1	08	9-17-19	17:45	W	P	6		X	X	X	X	
MW4-7	09	9-18-19	12:00			6						
MW4-4	10	9-18-19	12:40			6						
MW3-2	11	9-18-19	13:40			16						MS/MSD
MW3-3	12	9-18-19	4:50			6						
MW-6R	13	9-18-19	16:30			6						

See attached document

RELINQUISHED BY: (Signature) Cassie Cook — DATE/TIME 9/18/19 6:15 pm — RECEIVED BY: (Signature) FEDEX
RELINQUISHED BY: (Signature) FedEx — DATE/TIME 9/19/19 10:10 — RECEIVED BY: (Signature) Jadelines
RELINQUISHED BY: (Signature) — DATE/TIME — RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

4

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 0.8/0.7/1.0/2.6°C 78 THERM #: _____
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

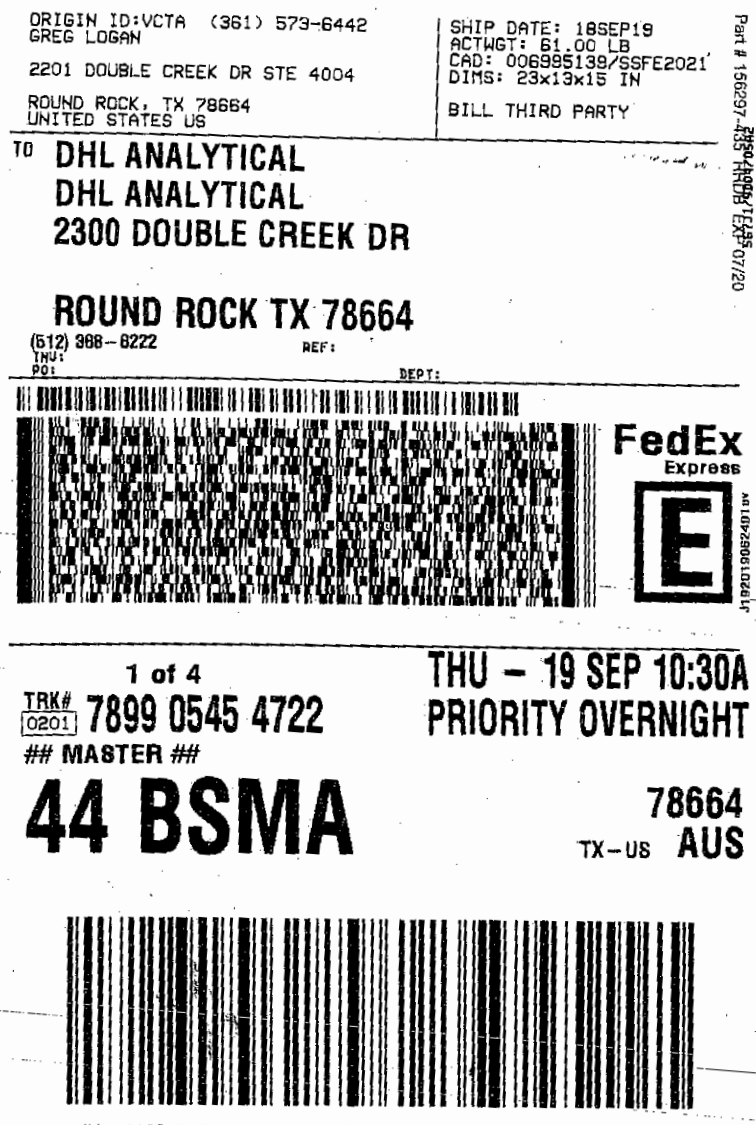
DHL COC Rev 1 | FEB 2010

TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate	E300	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate	E300	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:
1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium
2) From time of sample collection

Total & Dissolved Metals



ORIGIN ID:VCTA (361) 573-6442
GREG LOGAN

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 18SEP19
ACTWGT: 61.00 LB
CAD: 006995139/SSFE2021
DIMS: 23x13x15 IN

BILL THIRD PARTY

Part # 156297-435 REV B EXP 07/20

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222

INV:
PO: REF:
DEPT:

FedEx
Express

1 of 4

THU - 19 SEP 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7899 0545 4722

MASTER

44 BSMA

78664
TX-US AUS

ORIGIN ID:VCTA (361) 573-6442
GREG LOGAN

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

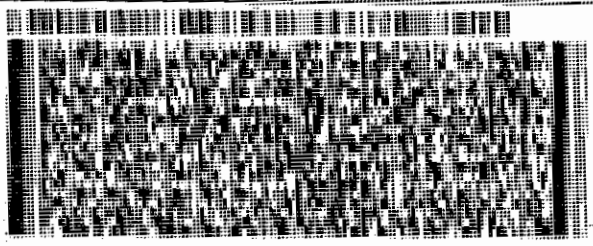
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CAD: 0068995139/SSFE2021
DIMS: 23x13x15 IN

BILL THIRD PARTY

Part # 156297-435 HRD13 EXP 07/20

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DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
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INV:
PO: DEPT:



FedEx Express

2 of 4
MPS# 0263 **7899 0545 4733**
Mstr# 7899 0545 4722 0201

THU - 19 SEP 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**

ORIGIN ID:VCTA (361) 573-6442
GREG LOGAN

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 18SEP19
ACTWGT: 61.00 LB
CAD: 006995139/SSFE2021
DIMS: 23x13x15 IN

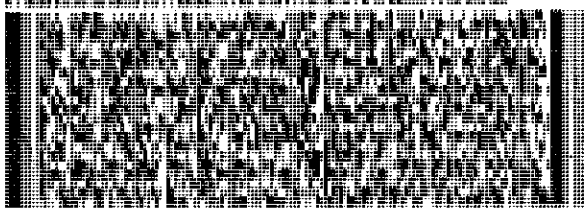
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Part # 156297-435 XXXXXXXXXXXX EXP 07/20

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DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:



FedEx
Express



3 of 4

MPS# 0263 **7899 0545 4744**

Mstr# **7899 0545 4722** 0201

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PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**



ORIGIN ID:VCTA (361) 573-6442
GREG LOGAN

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 18SEP19
ACTWGT: 61.00 LB
CAD: 0069951139/SSFE2021
DIMS: 23x13x15 IN

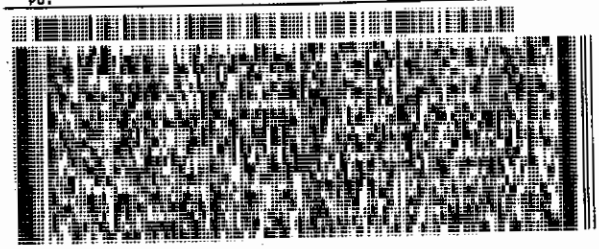
BILL THIRD PARTY

Part # 156297-435 HRDB EXP 07/20

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DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV: DEPT:
PO:



FedEx Express

4 of 4

MPS# 0263 7899 0545 4755

Mstr# 7899 0545 4722 0201

THU - 19 SEP 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **9/19/2019**

Work Order Number **1909161** Received by **JW**

Checklist completed by: _____ 9/19/2019 Reviewed by _____ 9/19/2019
Signature | Date | Initials | Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**0.8** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW Sampling 3Q19	**LRC Date:** 10/23/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1909161
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?		X			**R8-03**
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW Sampling 3Q19	**LRC Date:** 10/23/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1909161
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?		X			**S2-02**
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?		X			**S2-04**
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?		X			**S4-01**
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

02/28/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis (total & dissolved)
Method SW6020A - Uranium in Water Analysis (this parameter is not NELACP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 9/19/19. A total of 13 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Total Metals analysis performed on 9/25/19 and 9/27/19 (batch 92858) the matrix spike and matrix spike duplicate recoveries were out of control limits for five analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Dissolved Metals analysis performed on 9/23/19 (batch 92871) the matrix spike and matrix spike duplicate recoveries were slightly below control limits for Nickel. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Uranium analysis performed on 9/27/19 (batch 92858) the matrix spike and matrix spike duplicate recoveries were below control limits. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits. No further corrective actions were taken.

For Anions analysis performed on 9/19/19/19 (batch 92851) the matrix spikes and/or matrix spike duplicate recoveries (1909148-06 MS/MSD & 1909161-11 MSD) were below control limits for a total of three analytes. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate (batch 92851 1909161-11 MSD) was from this work order. The sample selected for the

matrix spike and matrix spike duplicate (batch 92851 1909148-06 MS/MSD) was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Ammonia analysis performed on 9/30/19 (batch 92999) the matrix spike and matrix spike duplicate recoveries (1909176-13 MS/MSD) were below control limits. This was due to matrix effect. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits. No further corrective actions were taken.

Exception Report R8-03

For TDS analysis performed on 9/20/19 (batch 92869) the sample and sample duplicate (1909142-04 & 1909142-04-DUP) had the RPD slightly above control limits. This is flagged accordingly in the QC summary report. The other sample and sample duplicate (1909142-05 & 1909142-05-DUP) was within control limits. No further corrective actions were taken.

Exception Report R10-01

For Total and Dissolved Metals analysis some dissolved results were slightly higher than the total results for ten samples. In addition, the Dissolved Uranium results were slightly higher than the Total Uranium results for all samples except for samples MW4-3 and MW3-3 . These are within the acceptable variation limits. No further corrective actions were taken.

For Anions analysis all samples (except for sample MW4-4) were diluted prior to analysis due to the nature of the samples (concentration of Chloride).

Exception Report S2-02

For Total and Dissolved Metals analyses performed on 9/23/19, 9/25/19 and 9/27/19 four LCVLs were out of control limits for Sodium or Vanadium. These are flagged accordingly in the QC summary report. The associated CCVs were within control limits for these analytes. No further corrective actions were taken.

For Total Metals analysis performed on 9/25/19 CCV3-190925 and LCVL3-190925 were above control limits for Potassium. These are flagged accordingly. The associated samples may be biased high for this analyte. No further corrective actions were taken.

Exception Report S2-04

For Total Metals analysis performed on 9/23/19 Vanadium was detected below the reporting limit in CCB2-190923. All associated samples may be biased high for this analyte. No further corrective actions were taken.

For Total Metals analysis performed on 9/24/19 Sodium was detected below the reporting limits in CCB2-190924 and CCB3-190924. This was due to matrix interference. All associated samples were QC samples. No further corrective actions were taken.

For Total Metals analysis performed on 9/25/19 Potassium was detected below the reporting limit in CCB3-190925. All associated samples are QC samples. No further corrective actions were taken.

For Total Metals analysis performed on 9/27/19 Potassium was detected below the reporting limit in CCB4-190927. All associated samples were detected grreater than 10 times the amount in the CCB for this analyte. No further corrective actions were taken.

Exception Report S4-01

For Dissolved Metals analysis twelve samples had low responses for the internal standard Bismuth. This was due to matrix interference. The associated analytes (Lead & Thallium) may be biased high. No further corrective actions were taken.

For Dissolved Metals analysis the matrix spike, matrix spike duplicate and PDS (batch 92871) had low responses for the internal standard Bismuth. This was due to matrix interference. The associated analytes (Lead & Thallium) were within control limits. No further corrective actions were taken.

For Total Metals analysis sample MW3-4B had the low response for the internal standard Bismuth. This was due to matrix interference. The associated analytes (Lead & Thallium) may be biased high. No further corrective actions were taken.

Exception Report S9-01

For Dissolved Metals analysis performed on 9/23/19 (batch 92871) the PDS recovery was below control limits for Nickel. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

For Total Metals analysis performed on 9/25/19 (batch 92858) the PDS recovery was slightly below control limits for Nickel. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

For Dissolved Metals analysis performed on 9/23/19 (batch 92871) the RPD for the serial dilution was above control limits for Vanadium. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Total Metals analysis performed on 9/25/19 (batch 92858) the RPD for the serial dilution was slightly above control limits for Aluminum. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

CASE NARRATIVE

For Total and Dissolved Mercury analyses performed on 9/25/19, 9/30/19 and 10/1/19 (batches 92890, 92988 & 93029) the PDS recoveries were below control limits. This was due to matrix effect. These are flagged accordingly. The serial dilutions were within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *23-Oct-19*

CLIENT: Golder
Project: Copano GW Sampling 3Q19
Lab Order: 1909161

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1909161-01	MW4-3		09/18/19 11:40 AM	9/19/2019
1909161-02	MW4-3B		09/18/19 12:19 PM	9/19/2019
1909161-03	MW3-6		09/18/19 01:25 PM	9/19/2019
1909161-04	MW3-5		09/18/19 02:08 PM	9/19/2019
1909161-05	MW3-4		09/18/19 03:10 PM	9/19/2019
1909161-06	MW-202		09/18/19 03:15 PM	9/19/2019
1909161-07	MW3-4B		09/18/19 04:09 PM	9/19/2019
1909161-08	MW4-1		09/17/19 05:45 PM	9/19/2019
1909161-09	MW4-7		09/18/19 12:00 PM	9/19/2019
1909161-10	MW4-4		09/18/19 12:40 PM	9/19/2019
1909161-11	MW3-2		09/18/19 01:40 PM	9/19/2019
1909161-12	MW3-3		09/18/19 02:50 PM	9/19/2019
1909161-13	MW-6R		09/18/19 04:30 PM	9/19/2019

Lab Order: 1909161
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909161-01A	MW4-3	09/18/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876
	MW4-3	09/18/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876
	MW4-3	09/18/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876
	MW4-3	09/18/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876
	MW4-3	09/18/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876
	MW4-3	09/18/19 11:40 AM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909161-01B	MW4-3	09/18/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW4-3	09/18/19 11:40 AM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909161-01C	MW4-3	09/18/19 11:40 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909161-01D	MW4-3	09/18/19 11:40 AM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW4-3	09/18/19 11:40 AM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-3	09/18/19 11:40 AM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-3	09/18/19 11:40 AM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-3	09/18/19 11:40 AM	Aqueous	M2540C	TDS Preparation	09/23/19 08:45 AM	92879
1909161-02A	MW4-3B	09/18/19 12:19 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876
	MW4-3B	09/18/19 12:19 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876
	MW4-3B	09/18/19 12:19 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876
	MW4-3B	09/18/19 12:19 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876
	MW4-3B	09/18/19 12:19 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909161-02B	MW4-3B	09/18/19 12:19 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW4-3B	09/18/19 12:19 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909161-02C	MW4-3B	09/18/19 12:19 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909161-02D	MW4-3B	09/18/19 12:19 PM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW4-3B	09/18/19 12:19 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-3B	09/18/19 12:19 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-3B	09/18/19 12:19 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-3B	09/18/19 12:19 PM	Aqueous	M2540C	TDS Preparation	09/23/19 08:45 AM	92879
1909161-03A	MW3-6	09/18/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876

Lab Order: 1909161
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909161-03A	MW3-6	09/18/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876
	MW3-6	09/18/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876
	MW3-6	09/18/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/23/19 08:18 AM	92876
	MW3-6	09/18/19 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909161-03B	MW3-6	09/18/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW3-6	09/18/19 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909161-03C	MW3-6	09/18/19 01:25 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909161-03D	MW3-6	09/18/19 01:25 PM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW3-6	09/18/19 01:25 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-6	09/18/19 01:25 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-6	09/18/19 01:25 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-6	09/18/19 01:25 PM	Aqueous	M2540C	TDS Preparation	09/23/19 08:45 AM	92879
1909161-04A	MW3-5	09/18/19 02:08 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-5	09/18/19 02:08 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-5	09/18/19 02:08 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-5	09/18/19 02:08 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-5	09/18/19 02:08 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909161-04B	MW3-5	09/18/19 02:08 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW3-5	09/18/19 02:08 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909161-04C	MW3-5	09/18/19 02:08 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909161-04D	MW3-5	09/18/19 02:08 PM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW3-5	09/18/19 02:08 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-5	09/18/19 02:08 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-5	09/18/19 02:08 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-5	09/18/19 02:08 PM	Aqueous	M2540C	TDS Preparation	09/23/19 08:45 AM	92879
1909161-05A	MW3-4	09/18/19 03:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-4	09/18/19 03:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-4	09/18/19 03:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858

Lab Order: 1909161
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909161-05A	MW3-4	09/18/19 03:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-4	09/18/19 03:10 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909161-05B	MW3-4	09/18/19 03:10 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW3-4	09/18/19 03:10 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909161-05C	MW3-4	09/18/19 03:10 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909161-05D	MW3-4	09/18/19 03:10 PM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW3-4	09/18/19 03:10 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-4	09/18/19 03:10 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-4	09/18/19 03:10 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-4	09/18/19 03:10 PM	Aqueous	M2540C	TDS Preparation	09/23/19 08:45 AM	92879
1909161-06A	MW-202	09/18/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW-202	09/18/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW-202	09/18/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW-202	09/18/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW-202	09/18/19 03:15 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909161-06B	MW-202	09/18/19 03:15 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW-202	09/18/19 03:15 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909161-06C	MW-202	09/18/19 03:15 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909161-06D	MW-202	09/18/19 03:15 PM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW-202	09/18/19 03:15 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW-202	09/18/19 03:15 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW-202	09/18/19 03:15 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW-202	09/18/19 03:15 PM	Aqueous	M2540C	TDS Preparation	09/23/19 08:45 AM	92879
1909161-07A	MW3-4B	09/18/19 04:09 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-4B	09/18/19 04:09 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-4B	09/18/19 04:09 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-4B	09/18/19 04:09 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-4B	09/18/19 04:09 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858

Lab Order: 1909161
Client: Golder
Project: Copano GW Sampling 3Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909161-07A	MW3-4B	09/18/19 04:09 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-4B	09/18/19 04:09 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909161-07B	MW3-4B	09/18/19 04:09 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW3-4B	09/18/19 04:09 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909161-07C	MW3-4B	09/18/19 04:09 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909161-07D	MW3-4B	09/18/19 04:09 PM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW3-4B	09/18/19 04:09 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-4B	09/18/19 04:09 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-4B	09/18/19 04:09 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-4B	09/18/19 04:09 PM	Aqueous	M2540C	TDS Preparation	09/23/19 08:45 AM	92879
1909161-08A	MW4-1	09/17/19 05:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW4-1	09/17/19 05:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW4-1	09/17/19 05:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW4-1	09/17/19 05:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW4-1	09/17/19 05:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW4-1	09/17/19 05:45 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909161-08B	MW4-1	09/17/19 05:45 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW4-1	09/17/19 05:45 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909161-08C	MW4-1	09/17/19 05:45 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909161-08D	MW4-1	09/17/19 05:45 PM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW4-1	09/17/19 05:45 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-1	09/17/19 05:45 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-1	09/17/19 05:45 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-1	09/17/19 05:45 PM	Aqueous	M2540C	TDS Preparation	09/20/19 01:19 PM	92869
1909161-09A	MW4-7	09/18/19 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW4-7	09/18/19 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW4-7	09/18/19 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW4-7	09/18/19 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858

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Client: Golder
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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909161-09A	MW4-7	09/18/19 12:00 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909161-09B	MW4-7	09/18/19 12:00 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW4-7	09/18/19 12:00 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909161-09C	MW4-7	09/18/19 12:00 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909161-09D	MW4-7	09/18/19 12:00 PM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW4-7	09/18/19 12:00 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-7	09/18/19 12:00 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-7	09/18/19 12:00 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-7	09/18/19 12:00 PM	Aqueous	M2540C	TDS Preparation	09/23/19 08:45 AM	92879
1909161-10A	MW4-4	09/18/19 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW4-4	09/18/19 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW4-4	09/18/19 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW4-4	09/18/19 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW4-4	09/18/19 12:40 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909161-10B	MW4-4	09/18/19 12:40 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW4-4	09/18/19 12:40 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909161-10C	MW4-4	09/18/19 12:40 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909161-10D	MW4-4	09/18/19 12:40 PM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW4-4	09/18/19 12:40 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-4	09/18/19 12:40 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-4	09/18/19 12:40 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW4-4	09/18/19 12:40 PM	Aqueous	M2540C	TDS Preparation	09/23/19 08:45 AM	92879
1909161-11A	MW3-2	09/18/19 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-2	09/18/19 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-2	09/18/19 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-2	09/18/19 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-2	09/18/19 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-2	09/18/19 01:40 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890

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Client: Golder
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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909161-11A	MW3-2	09/18/19 01:40 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909161-11B	MW3-2	09/18/19 01:40 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW3-2	09/18/19 01:40 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
	MW3-2	09/18/19 01:40 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909161-11C	MW3-2	09/18/19 01:40 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909161-11D	MW3-2	09/18/19 01:40 PM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW3-2	09/18/19 01:40 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-2	09/18/19 01:40 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-2	09/18/19 01:40 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-2	09/18/19 01:40 PM	Aqueous	M2540C	TDS Preparation	09/23/19 08:45 AM	92879
1909161-12A	MW3-3	09/18/19 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-3	09/18/19 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-3	09/18/19 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-3	09/18/19 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW3-3	09/18/19 02:50 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890
1909161-12B	MW3-3	09/18/19 02:50 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/20/19 02:07 PM	92871
	MW3-3	09/18/19 02:50 PM	Aqueous	SW7470A	Mercury Aq Prep	09/29/19 12:26 PM	92988
1909161-12C	MW3-3	09/18/19 02:50 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/27/19 10:30 AM	92953
1909161-12D	MW3-3	09/18/19 02:50 PM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW3-3	09/18/19 02:50 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-3	09/18/19 02:50 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-3	09/18/19 02:50 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW3-3	09/18/19 02:50 PM	Aqueous	M2540C	TDS Preparation	09/23/19 08:45 AM	92879
1909161-13A	MW-6R	09/18/19 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW-6R	09/18/19 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW-6R	09/18/19 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW-6R	09/18/19 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/20/19 08:34 AM	92858
	MW-6R	09/18/19 04:30 PM	Aqueous	SW7470A	Mercury Aq Prep	09/23/19 10:39 AM	92890

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909161-13B	MW-6R	09/18/19 04:30 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:54 AM	92891
	MW-6R	09/18/19 04:30 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	09/23/19 10:54 AM	92891
	MW-6R	09/18/19 04:30 PM	Aqueous	SW7470A	Mercury Aq Prep	10/01/19 10:45 AM	93029
1909161-13C	MW-6R	09/18/19 04:30 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	09/30/19 09:48 AM	92999
1909161-13D	MW-6R	09/18/19 04:30 PM	Aqueous	M2320 B	Alkalinity Preparation	09/23/19 08:03 AM	92875
	MW-6R	09/18/19 04:30 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW-6R	09/18/19 04:30 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW-6R	09/18/19 04:30 PM	Aqueous	E300	Anion Preparation	09/19/19 11:15 AM	92851
	MW-6R	09/18/19 04:30 PM	Aqueous	E300	Anion Preparation	10/03/19 09:19 AM	93077
	MW-6R	09/18/19 04:30 PM	Aqueous	M2540C	TDS Preparation	09/23/19 08:45 AM	92879

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909161-01A	MW4-3	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:32 PM	CETAC2_HG_190925C
	MW4-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92876	1000	09/25/19 01:09 PM	ICP-MS4_190925B
	MW4-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92876	10	09/25/19 01:36 PM	ICP-MS4_190925B
	MW4-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92876	1000	10/02/19 03:12 PM	ICP-MS4_191002C
	MW4-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92876	1	09/24/19 02:34 PM	ICP-MS5_190924A
	MW4-3	Aqueous	SW6020A	Uranium in Water by ICPMS	92876	1	09/24/19 02:34 PM	ICP-MS5_190924B
1909161-01B	MW4-3	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:14 AM	CETAC2_HG_190930A
	MW4-3	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 12:38 PM	ICP-MS4_190923A
1909161-01C	MW4-3	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909161-01D	MW4-3	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 10:07 AM	TITRATOR_190923A
	MW4-3	Aqueous	E300	Anions by IC method - Water	92851	10	09/19/19 05:11 PM	IC4_190919A
	MW4-3	Aqueous	E300	Anions by IC method - Water	92851	1000	09/19/19 09:11 PM	IC4_190919A
	MW4-3	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 02:31 AM	IC4_190919A
	MW4-3	Aqueous	M2540C	Total Dissolved Solids	92879	1	09/24/19 04:00 PM	WC_190924B
1909161-02A	MW4-3B	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:34 PM	CETAC2_HG_190925C
	MW4-3B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92876	1000	09/25/19 01:11 PM	ICP-MS4_190925B
	MW4-3B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92876	10	09/25/19 01:38 PM	ICP-MS4_190925B
	MW4-3B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92876	1	09/24/19 02:37 PM	ICP-MS5_190924A
	MW4-3B	Aqueous	SW6020A	Uranium in Water by ICPMS	92876	1	09/24/19 02:37 PM	ICP-MS5_190924B
1909161-02B	MW4-3B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:17 AM	CETAC2_HG_190930A
	MW4-3B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 01:47 PM	ICP-MS4_190923A
1909161-02C	MW4-3B	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909161-02D	MW4-3B	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 10:27 AM	TITRATOR_190923A
	MW4-3B	Aqueous	E300	Anions by IC method - Water	92851	10	09/19/19 05:27 PM	IC4_190919A
	MW4-3B	Aqueous	E300	Anions by IC method - Water	92851	1000	09/19/19 09:27 PM	IC4_190919A
	MW4-3B	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 02:47 AM	IC4_190919A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909161-02D	MW4-3B	Aqueous	M2540C	Total Dissolved Solids	92879	1	09/24/19 04:00 PM	WC_190924B
1909161-03A	MW3-6	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:36 PM	CETAC2_HG_190925C
	MW3-6	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92876	1000	09/25/19 01:13 PM	ICP-MS4_190925B
	MW3-6	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92876	10	09/25/19 01:40 PM	ICP-MS4_190925B
	MW3-6	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92876	1	09/24/19 02:39 PM	ICP-MS5_190924A
	MW3-6	Aqueous	SW6020A	Uranium in Water by ICPMS	92876	1	09/24/19 02:39 PM	ICP-MS5_190924B
1909161-03B	MW3-6	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:24 AM	CETAC2_HG_190930A
	MW3-6	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 01:49 PM	ICP-MS4_190923A
1909161-03C	MW3-6	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909161-03D	MW3-6	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 10:47 AM	TITRATOR_190923A
	MW3-6	Aqueous	E300	Anions by IC method - Water	92851	10	09/19/19 05:43 PM	IC4_190919A
	MW3-6	Aqueous	E300	Anions by IC method - Water	92851	1000	09/19/19 09:43 PM	IC4_190919A
	MW3-6	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 03:03 AM	IC4_190919A
	MW3-6	Aqueous	M2540C	Total Dissolved Solids	92879	1	09/24/19 04:00 PM	WC_190924B
1909161-04A	MW3-5	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:38 PM	CETAC2_HG_190925C
	MW3-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	10	09/27/19 05:13 PM	ICP-MS5_190927A
	MW3-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1	09/25/19 03:34 PM	ICP-MS5_190925A
	MW3-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	500	09/27/19 04:24 PM	ICP-MS5_190927A
	MW3-5	Aqueous	SW6020A	Uranium in Water by ICPMS	92858	10	09/27/19 05:13 PM	ICP-MS5_190927B
1909161-04B	MW3-5	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:26 AM	CETAC2_HG_190930A
	MW3-5	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 01:51 PM	ICP-MS4_190923A
1909161-04C	MW3-5	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909161-04D	MW3-5	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 11:00 AM	TITRATOR_190923A
	MW3-5	Aqueous	E300	Anions by IC method - Water	92851	10	09/19/19 05:59 PM	IC4_190919A
	MW3-5	Aqueous	E300	Anions by IC method - Water	92851	1000	09/19/19 09:59 PM	IC4_190919A
	MW3-5	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 03:19 AM	IC4_190919A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909161-04D	MW3-5	Aqueous	M2540C	Total Dissolved Solids	92879	1	09/24/19 04:00 PM	WC_190924B
1909161-05A	MW3-4	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:41 PM	CETAC2_HG_190925C
	MW3-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1	09/25/19 03:36 PM	ICP-MS5_190925A
	MW3-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1000	09/27/19 04:26 PM	ICP-MS5_190927A
	MW3-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	10	09/27/19 05:17 PM	ICP-MS5_190927A
	MW3-4	Aqueous	SW6020A	Uranium in Water by ICPMS	92858	10	09/27/19 05:17 PM	ICP-MS5_190927B
1909161-05B	MW3-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:28 AM	CETAC2_HG_190930A
	MW3-4	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 01:53 PM	ICP-MS4_190923A
1909161-05C	MW3-4	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909161-05D	MW3-4	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 11:19 AM	TITRATOR_190923A
	MW3-4	Aqueous	E300	Anions by IC method - Water	92851	10	09/19/19 06:15 PM	IC4_190919A
	MW3-4	Aqueous	E300	Anions by IC method - Water	92851	1000	09/19/19 10:15 PM	IC4_190919A
	MW3-4	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 03:35 AM	IC4_190919A
	MW3-4	Aqueous	M2540C	Total Dissolved Solids	92879	1	09/24/19 04:00 PM	WC_190924B
1909161-06A	MW-202	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:48 PM	CETAC2_HG_190925C
	MW-202	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1	09/25/19 03:39 PM	ICP-MS5_190925A
	MW-202	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1000	09/27/19 04:29 PM	ICP-MS5_190927A
	MW-202	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	10	09/27/19 05:22 PM	ICP-MS5_190927A
	MW-202	Aqueous	SW6020A	Uranium in Water by ICPMS	92858	10	09/27/19 05:22 PM	ICP-MS5_190927B
1909161-06B	MW-202	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:30 AM	CETAC2_HG_190930A
	MW-202	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 01:55 PM	ICP-MS4_190923A
1909161-06C	MW-202	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909161-06D	MW-202	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 11:37 AM	TITRATOR_190923A
	MW-202	Aqueous	E300	Anions by IC method - Water	92851	1000	09/19/19 10:31 PM	IC4_190919A
	MW-202	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 03:51 AM	IC4_190919A
	MW-202	Aqueous	E300	Anions by IC method - Water	92851	10	09/19/19 06:31 PM	IC4_190919A

Lab Order: 1909161
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909161-06D	MW-202	Aqueous	M2540C	Total Dissolved Solids	92879	1	09/24/19 04:00 PM	WC_190924B
1909161-07A	MW3-4B	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:50 PM	CETAC2_HG_190925C
	MW3-4B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1000	10/02/19 03:14 PM	ICP-MS4_191002C
	MW3-4B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1	09/25/19 03:41 PM	ICP-MS5_190925A
	MW3-4B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1000	09/27/19 04:31 PM	ICP-MS5_190927A
	MW3-4B	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	100	09/27/19 05:26 PM	ICP-MS5_190927A
	MW3-4B	Aqueous	SW6020A	Uranium in Water by ICPMS	92858	100	09/27/19 05:26 PM	ICP-MS5_190927B
	MW3-4B	Aqueous	SW6020A	Uranium in Water by ICPMS	92858	10	09/30/19 05:25 PM	ICP-MS5_190930C
1909161-07B	MW3-4B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:33 AM	CETAC2_HG_190930A
	MW3-4B	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 01:57 PM	ICP-MS4_190923A
1909161-07C	MW3-4B	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909161-07D	MW3-4B	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 11:56 AM	TITRATOR_190923A
	MW3-4B	Aqueous	E300	Anions by IC method - Water	92851	10	09/19/19 06:47 PM	IC4_190919A
	MW3-4B	Aqueous	E300	Anions by IC method - Water	92851	1000	09/19/19 10:47 PM	IC4_190919A
	MW3-4B	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 04:07 AM	IC4_190919A
	MW3-4B	Aqueous	M2540C	Total Dissolved Solids	92879	1	09/24/19 04:00 PM	WC_190924B
1909161-08A	MW4-1	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:52 PM	CETAC2_HG_190925C
	MW4-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1000	10/02/19 03:16 PM	ICP-MS4_191002C
	MW4-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1	09/25/19 03:43 PM	ICP-MS5_190925A
	MW4-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	500	09/27/19 04:33 PM	ICP-MS5_190927A
	MW4-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	10	09/27/19 05:31 PM	ICP-MS5_190927A
	MW4-1	Aqueous	SW6020A	Uranium in Water by ICPMS	92858	10	09/27/19 05:31 PM	ICP-MS5_190927B
1909161-08B	MW4-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:35 AM	CETAC2_HG_190930A
	MW4-1	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 01:59 PM	ICP-MS4_190923A
1909161-08C	MW4-1	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909161-08D	MW4-1	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 12:23 PM	TITRATOR_190923A

Lab Order: 1909161
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909161-08D	MW4-1	Aqueous	E300	Anions by IC method - Water	92851	10	09/19/19 04:55 PM	IC4_190919A
	MW4-1	Aqueous	E300	Anions by IC method - Water	92851	1000	09/19/19 11:03 PM	IC4_190919A
	MW4-1	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 05:43 AM	IC4_190919A
	MW4-1	Aqueous	M2540C	Total Dissolved Solids	92869	1	09/20/19 04:30 PM	WC_190920E
1909161-09A	MW4-7	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:54 PM	CETAC2_HG_190925C
	MW4-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	10	09/27/19 05:35 PM	ICP-MS5_190927A
	MW4-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	500	09/27/19 04:35 PM	ICP-MS5_190927A
	MW4-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1	09/25/19 03:45 PM	ICP-MS5_190925A
	MW4-7	Aqueous	SW6020A	Uranium in Water by ICPMS	92858	10	09/27/19 05:35 PM	ICP-MS5_190927B
1909161-09B	MW4-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:37 AM	CETAC2_HG_190930A
	MW4-7	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 02:01 PM	ICP-MS4_190923A
1909161-09C	MW4-7	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909161-09D	MW4-7	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 12:41 PM	TITRATOR_190923A
	MW4-7	Aqueous	E300	Anions by IC method - Water	92851	10	09/19/19 07:03 PM	IC4_190919A
	MW4-7	Aqueous	E300	Anions by IC method - Water	92851	1000	09/19/19 11:19 PM	IC4_190919A
	MW4-7	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 05:59 AM	IC4_190919A
	MW4-7	Aqueous	M2540C	Total Dissolved Solids	92879	1	09/24/19 04:00 PM	WC_190924B
1909161-10A	MW4-4	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:57 PM	CETAC2_HG_190925C
	MW4-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	10	09/27/19 05:40 PM	ICP-MS5_190927A
	MW4-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1	09/25/19 03:47 PM	ICP-MS5_190925A
	MW4-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	500	09/27/19 04:38 PM	ICP-MS5_190927A
	MW4-4	Aqueous	SW6020A	Uranium in Water by ICPMS	92858	10	09/27/19 05:40 PM	ICP-MS5_190927B
1909161-10B	MW4-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:39 AM	CETAC2_HG_190930A
	MW4-4	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 02:03 PM	ICP-MS4_190923A
1909161-10C	MW4-4	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909161-10D	MW4-4	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 12:55 PM	TITRATOR_190923A

Lab Order: 1909161
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909161-10D	MW4-4	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 06:15 AM	IC4_190919A
	MW4-4	Aqueous	E300	Anions by IC method - Water	92851	10	09/19/19 07:19 PM	IC4_190919A
	MW4-4	Aqueous	E300	Anions by IC method - Water	92851	1000	09/19/19 11:35 PM	IC4_190919A
	MW4-4	Aqueous	M2540C	Total Dissolved Solids	92879	1	09/24/19 04:00 PM	WC_190924B
1909161-11A	MW3-2	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 01:59 PM	CETAC2_HG_190925C
	MW3-2	Aqueous	SW7470A	Mercury Total: Aqueous	92890	5	09/25/19 02:27 PM	CETAC2_HG_190925C
	MW3-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1	09/25/19 03:30 PM	ICP-MS5_190925A
	MW3-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	500	09/27/19 04:20 PM	ICP-MS5_190927A
	MW3-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	10	09/27/19 05:06 PM	ICP-MS5_190927A
	MW3-2	Aqueous	SW6020A	Uranium in Water by ICPMS	92858	500	09/27/19 04:20 PM	ICP-MS5_190927B
	MW3-2	Aqueous	SW6020A	Uranium in Water by ICPMS	92858	10	09/27/19 05:06 PM	ICP-MS5_190927B
1909161-11B	MW3-2	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:42 AM	CETAC2_HG_190930A
	MW3-2	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	5	09/30/19 12:01 PM	CETAC2_HG_190930A
	MW3-2	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 12:18 PM	ICP-MS4_190923A
1909161-11C	MW3-2	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909161-11D	MW3-2	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 01:17 PM	TITRATOR_190923A
	MW3-2	Aqueous	E300	Anions by IC method - Water	92851	1000	09/20/19 01:11 AM	IC4_190919A
	MW3-2	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 06:31 AM	IC4_190919A
	MW3-2	Aqueous	E300	Anions by IC method - Water	92851	10	09/20/19 07:19 AM	IC4_190919A
	MW3-2	Aqueous	M2540C	Total Dissolved Solids	92879	1	09/24/19 04:00 PM	WC_190924B
1909161-12A	MW3-3	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 02:11 PM	CETAC2_HG_190925C
	MW3-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1	09/25/19 03:52 PM	ICP-MS5_190925A
	MW3-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	500	09/27/19 04:42 PM	ICP-MS5_190927A
	MW3-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	10	09/27/19 05:49 PM	ICP-MS5_190927A
	MW3-3	Aqueous	SW6020A	Uranium in Water by ICPMS	92858	10	09/27/19 05:44 PM	ICP-MS5_190927B

Lab Order: 1909161
Client: Golder
Project: Copano GW Sampling 3Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909161-12B	MW3-3	Aqueous	SW7470A	Mercury (0.45µ Filtered)	92988	1	09/30/19 10:53 AM	CETAC2_HG_190930A
	MW3-3	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92871	1	09/23/19 02:05 PM	ICP-MS4_190923A
1909161-12C	MW3-3	Aqueous	M4500-NH3-D	Ammonia aqueous	92953	1	09/27/19 05:00 PM	WC_190927A
1909161-12D	MW3-3	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 01:49 PM	TITRATOR_190923A
	MW3-3	Aqueous	E300	Anions by IC method - Water	92851	1000	09/20/19 01:59 AM	IC4_190919A
	MW3-3	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 06:47 AM	IC4_190919A
	MW3-3	Aqueous	E300	Anions by IC method - Water	92851	10	09/20/19 07:35 AM	IC4_190919A
	MW3-3	Aqueous	M2540C	Total Dissolved Solids	92879	1	09/24/19 04:00 PM	WC_190924B
1909161-13A	MW-6R	Aqueous	SW7470A	Mercury Total: Aqueous	92890	1	09/25/19 02:13 PM	CETAC2_HG_190925C
	MW-6R	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	500	09/27/19 04:40 PM	ICP-MS5_190927A
	MW-6R	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	10	09/27/19 05:44 PM	ICP-MS5_190927A
	MW-6R	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92858	1	09/25/19 03:50 PM	ICP-MS5_190925A
	MW-6R	Aqueous	SW6020A	Uranium in Water by ICPMS	92858	10	09/27/19 05:49 PM	ICP-MS5_190927B
1909161-13B	MW-6R	Aqueous	SW7470A	Mercury (0.45µ Filtered)	93029	1	10/01/19 02:48 PM	CETAC2_HG_191001C
	MW-6R	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92891	1	09/25/19 01:42 PM	ICP-MS4_190925B
	MW-6R	Aqueous	SW6020A	Metals-ICPMS (0.45µ filtered)	92891	1	09/24/19 12:36 PM	ICP-MS5_190924A
1909161-13C	MW-6R	Aqueous	M4500-NH3-D	Ammonia aqueous	92999	1	09/30/19 02:30 PM	WC_190930A
1909161-13D	MW-6R	Aqueous	M2320 B	Alkalinity	92875	1	09/23/19 02:26 PM	TITRATOR_190923A
	MW-6R	Aqueous	E300	Anions by IC method - Water	92851	1000	09/20/19 02:15 AM	IC4_190919A
	MW-6R	Aqueous	E300	Anions by IC method - Water	92851	100	09/20/19 07:03 AM	IC4_190919A
	MW-6R	Aqueous	E300	Anions by IC method - Water	92851	10	09/20/19 07:51 AM	IC4_190919A
	MW-6R	Aqueous	E300	Anions by IC method - Water	93077	1000	10/03/19 11:11 AM	IC4_191003A
	MW-6R	Aqueous	M2540C	Total Dissolved Solids	92879	1	09/24/19 04:00 PM	WC_190924B

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-01
Project No:	19125525	**Collection Date:**	09/18/19 11:40 AM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0111	0.0100	0.0300	J	mg/L	1	09/23/19 12:38 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 12:38 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:38 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:38 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 12:38 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/23/19 12:38 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 12:38 PM
Dissolved Vanadium	0.00207	0.000500	0.00100		mg/L	1	09/23/19 12:38 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0305	0.0100	0.0300		mg/L	1	09/24/19 02:34 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 02:34 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 02:34 PM
Calcium	1240	100	300		mg/L	1000	10/02/19 03:12 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 02:34 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 02:34 PM
Magnesium	1640	100	300		mg/L	1000	10/02/19 03:12 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/24/19 02:34 PM
Potassium	66.7	1.00	3.00		mg/L	10	09/25/19 01:36 PM
Sodium	11000	100	300		mg/L	1000	10/02/19 03:12 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 02:34 PM
Vanadium	0.00232	0.000500	0.00100		mg/L	1	09/24/19 02:34 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:14 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:32 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.107	0.00300	0.0100	N	mg/L	1	09/24/19 02:34 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.106	0.00300	0.0100	N	mg/L	1	09/23/19 12:38 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	18900	300	1000		mg/L	1000	09/19/19 09:11 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/19/19 05:11 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/19/19 05:11 PM
Sulfate	3630	100	300		mg/L	100	09/20/19 02:31 AM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-01
Project No:	19125525	**Collection Date:**	09/18/19 11:40 AM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	214	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 10:07 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 10:07 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 10:07 AM
Alkalinity, Total (As CaCO3)	214	20.0	20.0		mg/L @ pH 4.54	1	09/23/19 10:07 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	40800	1000	1000		mg/L	1	09/24/19 04:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-02
Project No:	19125525	**Collection Date:**	09/18/19 12:19 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0151	0.0100	0.0300	J	mg/L	1	09/23/19 01:47 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 01:47 PM
Dissolved Arsenic	0.00232	0.00200	0.00500	J	mg/L	1	09/23/19 01:47 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 01:47 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 01:47 PM
Dissolved Nickel	0.00684	0.00300	0.0100	J	mg/L	1	09/23/19 01:47 PM
Dissolved Thallium	0.000767	0.000500	0.00150	J	mg/L	1	09/23/19 01:47 PM
Dissolved Vanadium	0.000871	0.000500	0.00100	J	mg/L	1	09/23/19 01:47 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0257	0.0100	0.0300	J	mg/L	1	09/24/19 02:37 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 02:37 PM
Arsenic	0.00212	0.00200	0.00500	J	mg/L	1	09/24/19 02:37 PM
Calcium	1450	100	300		mg/L	1000	09/25/19 01:11 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 02:37 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 02:37 PM
Magnesium	1690	100	300		mg/L	1000	09/25/19 01:11 PM
Nickel	0.00700	0.00300	0.0100	J	mg/L	1	09/24/19 02:37 PM
Potassium	94.6	1.00	3.00		mg/L	10	09/25/19 01:38 PM
Sodium	10700	100	300		mg/L	1000	09/25/19 01:11 PM
Thallium	0.000772	0.000500	0.00150	J	mg/L	1	09/24/19 02:37 PM
Vanadium	0.000997	0.000500	0.00100	J	mg/L	1	09/24/19 02:37 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:17 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:34 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0656	0.00300	0.0100	N	mg/L	1	09/24/19 02:37 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0664	0.00300	0.0100	N	mg/L	1	09/23/19 01:47 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	22500	300	1000		mg/L	1000	09/19/19 09:27 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/19/19 05:27 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/19/19 05:27 PM
Sulfate	4400	100	300		mg/L	100	09/20/19 02:47 AM

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-02
Project No:	19125525	**Collection Date:**	09/18/19 12:19 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	257	10.0	20.0		mg/L @ pH 4.53	1	09/23/19 10:27 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/23/19 10:27 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/23/19 10:27 AM
Alkalinity, Total (As CaCO3)	257	20.0	20.0		mg/L @ pH 4.53	1	09/23/19 10:27 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.206	0.100	0.250	J	mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	38600	1000	1000		mg/L	1	09/24/19 04:00 PM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-6
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-03
Project No:	19125525	**Collection Date:**	09/18/19 01:25 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0123	0.0100	0.0300	J	mg/L	1	09/23/19 01:49 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 01:49 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 01:49 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 01:49 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 01:49 PM
Dissolved Nickel	0.00465	0.00300	0.0100	J	mg/L	1	09/23/19 01:49 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 01:49 PM
Dissolved Vanadium	0.00124	0.000500	0.00100		mg/L	1	09/23/19 01:49 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0303	0.0100	0.0300		mg/L	1	09/24/19 02:39 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 02:39 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 02:39 PM
Calcium	1140	100	300		mg/L	1000	09/25/19 01:13 PM
Chromium	0.00251	0.00200	0.00500	J	mg/L	1	09/24/19 02:39 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 02:39 PM
Magnesium	1640	100	300		mg/L	1000	09/25/19 01:13 PM
Nickel	0.00495	0.00300	0.0100	J	mg/L	1	09/24/19 02:39 PM
Potassium	59.3	1.00	3.00		mg/L	10	09/25/19 01:40 PM
Sodium	11200	100	300		mg/L	1000	09/25/19 01:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 02:39 PM
Vanadium	0.00138	0.000500	0.00100		mg/L	1	09/24/19 02:39 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:24 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:36 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.105	0.00300	0.0100	N	mg/L	1	09/24/19 02:39 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.109	0.00300	0.0100	N	mg/L	1	09/23/19 01:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	19300	300	1000		mg/L	1000	09/19/19 09:43 PM
Fluoride	1.82	1.00	4.00	J	mg/L	10	09/19/19 05:43 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/19/19 05:43 PM
Sulfate	4950	100	300		mg/L	100	09/20/19 03:03 AM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-6
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-03
Project No:	19125525	**Collection Date:**	09/18/19 01:25 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	267	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 10:47 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 10:47 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 10:47 AM
Alkalinity, Total (As CaCO3)	267	20.0	20.0		mg/L @ pH 4.54	1	09/23/19 10:47 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.116	0.100	0.250	J	mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	38800	1000	1000		mg/L	1	09/24/19 04:00 PM

Qualifiers:

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-5
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-04
Project No:	19125525	**Collection Date:**	09/18/19 02:08 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0174	0.0100	0.0300	J	mg/L	1	09/23/19 01:51 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 01:51 PM
Dissolved Arsenic	0.00265	0.00200	0.00500	J	mg/L	1	09/23/19 01:51 PM
Dissolved Chromium	0.00502	0.00200	0.00500		mg/L	1	09/23/19 01:51 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 01:51 PM
Dissolved Nickel	0.00657	0.00300	0.0100	J	mg/L	1	09/23/19 01:51 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 01:51 PM
Dissolved Vanadium	0.00672	0.000500	0.00100		mg/L	1	09/23/19 01:51 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0235	0.0100	0.0300	J	mg/L	1	09/25/19 03:34 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 03:34 PM
Arsenic	0.00252	0.00200	0.00500	J	mg/L	1	09/25/19 03:34 PM
Calcium	782	50.0	150		mg/L	500	09/27/19 04:24 PM
Chromium	0.00543	0.00200	0.00500		mg/L	1	09/25/19 03:34 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 03:34 PM
Magnesium	1050	50.0	150		mg/L	500	09/27/19 04:24 PM
Nickel	0.00440	0.00300	0.0100	J	mg/L	1	09/25/19 03:34 PM
Potassium	79.6	1.00	3.00		mg/L	10	09/27/19 05:13 PM
Sodium	9570	50.0	150		mg/L	500	09/27/19 04:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 03:34 PM
Vanadium	0.00645	0.000500	0.00100		mg/L	1	09/25/19 03:34 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:26 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:38 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0795	0.0300	0.100	JN	mg/L	10	09/27/19 05:13 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0801	0.00300	0.0100	N	mg/L	1	09/23/19 01:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	18000	300	1000		mg/L	1000	09/19/19 09:59 PM
Fluoride	1.84	1.00	4.00	J	mg/L	10	09/19/19 05:59 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/19/19 05:59 PM
Sulfate	3670	100	300		mg/L	100	09/20/19 03:19 AM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-5
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-04
Project No:	19125525	**Collection Date:**	09/18/19 02:08 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	194	10.0	20.0		mg/L @ pH 4.53	1	09/23/19 11:00 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/23/19 11:00 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/23/19 11:00 AM
Alkalinity, Total (As CaCO3)	194	20.0	20.0		mg/L @ pH 4.53	1	09/23/19 11:00 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	34300	1000	1000		mg/L	1	09/24/19 04:00 PM

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-05
Project No:	19125525	**Collection Date:**	09/18/19 03:10 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	09/23/19 01:53 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 01:53 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 01:53 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 01:53 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 01:53 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/23/19 01:53 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 01:53 PM
Dissolved Vanadium	0.00142	0.000500	0.00100		mg/L	1	09/23/19 01:53 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0148	0.0100	0.0300	J	mg/L	1	09/25/19 03:36 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 03:36 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:36 PM
Calcium	1240	100	300		mg/L	1000	09/27/19 04:26 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:36 PM
Lead	0.000632	0.000300	0.00100	J	mg/L	1	09/25/19 03:36 PM
Magnesium	1970	100	300		mg/L	1000	09/27/19 04:26 PM
Nickel	0.00309	0.00300	0.0100	J	mg/L	1	09/25/19 03:36 PM
Potassium	129	1.00	3.00		mg/L	10	09/27/19 05:17 PM
Sodium	14400	100	300		mg/L	1000	09/27/19 04:26 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 03:36 PM
Vanadium	0.00140	0.000500	0.00100		mg/L	1	09/25/19 03:36 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:28 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:41 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.129	0.0300	0.100	N	mg/L	10	09/27/19 05:17 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.135	0.00300	0.0100	N	mg/L	1	09/23/19 01:53 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	29000	300	1000		mg/L	1000	09/19/19 10:15 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/19/19 06:15 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/19/19 06:15 PM
Sulfate	4910	100	300		mg/L	100	09/20/19 03:35 AM

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S - Spike Recovery outside control limits
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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-05
Project No:	19125525	**Collection Date:**	09/18/19 03:10 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	228	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 11:19 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 11:19 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 11:19 AM
Alkalinity, Total (As CaCO3)	228	20.0	20.0		mg/L @ pH 4.54	1	09/23/19 11:19 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.131	0.100	0.250	J	mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	53000	1000	1000		mg/L	1	09/24/19 04:00 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-202
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-06
Project No:	19125525	**Collection Date:**	09/18/19 03:15 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	09/23/19 01:55 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 01:55 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 01:55 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 01:55 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 01:55 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/23/19 01:55 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 01:55 PM
Dissolved Vanadium	0.00151	0.000500	0.00100		mg/L	1	09/23/19 01:55 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0158	0.0100	0.0300	J	mg/L	1	09/25/19 03:39 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 03:39 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:39 PM
Calcium	1230	100	300		mg/L	1000	09/27/19 04:29 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:39 PM
Lead	0.000544	0.000300	0.00100	J	mg/L	1	09/25/19 03:39 PM
Magnesium	1950	100	300		mg/L	1000	09/27/19 04:29 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/25/19 03:39 PM
Potassium	129	1.00	3.00		mg/L	10	09/27/19 05:22 PM
Sodium	14200	100	300		mg/L	1000	09/27/19 04:29 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 03:39 PM
Vanadium	0.00117	0.000500	0.00100		mg/L	1	09/25/19 03:39 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:30 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:48 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.129	0.0300	0.100	N	mg/L	10	09/27/19 05:22 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.136	0.00300	0.0100	N	mg/L	1	09/23/19 01:55 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	26900	300	1000		mg/L	1000	09/19/19 10:31 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/19/19 06:31 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/19/19 06:31 PM
Sulfate	4920	100	300		mg/L	100	09/20/19 03:51 AM

Qualifiers:

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N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-202
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-06
Project No:	19125525	**Collection Date:**	09/18/19 03:15 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	228	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 11:37 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 11:37 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 11:37 AM
Alkalinity, Total (As CaCO3)	228	20.0	20.0		mg/L @ pH 4.54	1	09/23/19 11:37 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.123	0.100	0.250	J	mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	52900	1000	1000		mg/L	1	09/24/19 04:00 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-07
Project No:	19125525	**Collection Date:**	09/18/19 04:09 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	09/23/19 01:57 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 01:57 PM
Dissolved Arsenic	0.00369	0.00200	0.00500	J	mg/L	1	09/23/19 01:57 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 01:57 PM
Dissolved Lead	0.000421	0.000300	0.00100	J	mg/L	1	09/23/19 01:57 PM
Dissolved Nickel	0.00803	0.00300	0.0100	J	mg/L	1	09/23/19 01:57 PM
Dissolved Thallium	0.00146	0.000500	0.00150	J	mg/L	1	09/23/19 01:57 PM
Dissolved Vanadium	0.00628	0.000500	0.00100		mg/L	1	09/23/19 01:57 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0678	0.0100	0.0300		mg/L	1	09/25/19 03:41 PM
Antimony	0.00104	0.000800	0.00250	J	mg/L	1	09/25/19 03:41 PM
Arsenic	0.00331	0.00200	0.00500	J	mg/L	1	09/25/19 03:41 PM
Calcium	1380	100	300		mg/L	1000	10/02/19 03:14 PM
Chromium	0.00270	0.00200	0.00500	J	mg/L	1	09/25/19 03:41 PM
Lead	0.000500	0.000300	0.00100	J	mg/L	1	09/25/19 03:41 PM
Magnesium	3070	100	300		mg/L	1000	10/02/19 03:14 PM
Nickel	0.00846	0.00300	0.0100	J	mg/L	1	09/25/19 03:41 PM
Potassium	302	10.0	30.0		mg/L	100	09/27/19 05:26 PM
Sodium	22900	100	300		mg/L	1000	10/02/19 03:14 PM
Thallium	0.00138	0.000500	0.00150	J	mg/L	1	09/25/19 03:41 PM
Vanadium	0.00623	0.000500	0.00100		mg/L	1	09/25/19 03:41 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:33 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:50 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.114	0.0300	0.100	N	mg/L	10	09/30/19 05:25 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.124	0.00300	0.0100	N	mg/L	1	09/23/19 01:57 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	45300	300	1000		mg/L	1000	09/19/19 10:47 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/19/19 06:47 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/19/19 06:47 PM
Sulfate	6670	100	300		mg/L	100	09/20/19 04:07 AM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4B
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-07
Project No:	19125525	**Collection Date:**	09/18/19 04:09 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	218	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 11:56 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 11:56 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 11:56 AM
Alkalinity, Total (As CaCO3)	218	20.0	20.0		mg/L @ pH 4.54	1	09/23/19 11:56 AM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.103	0.100	0.250	J	mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	82000	5000	5000		mg/L	1	09/24/19 04:00 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-1
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-08
Project No:	19125525	**Collection Date:**	09/17/19 05:45 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0244	0.0100	0.0300	J	mg/L	1	09/23/19 01:59 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 01:59 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 01:59 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 01:59 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 01:59 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/23/19 01:59 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 01:59 PM
Dissolved Vanadium	0.000962	0.000500	0.00100	J	mg/L	1	09/23/19 01:59 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0487	0.0100	0.0300		mg/L	1	09/25/19 03:43 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 03:43 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:43 PM
Calcium	773	50.0	150		mg/L	500	09/27/19 04:33 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:43 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 03:43 PM
Magnesium	892	50.0	150		mg/L	500	09/27/19 04:33 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/25/19 03:43 PM
Potassium	38.7	1.00	3.00		mg/L	10	09/27/19 05:31 PM
Sodium	6680	100	300		mg/L	1000	10/02/19 03:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 03:43 PM
Vanadium	0.00113	0.000500	0.00100		mg/L	1	09/25/19 03:43 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:35 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:52 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.123	0.0300	0.100	N	mg/L	10	09/27/19 05:31 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.131	0.00300	0.0100	N	mg/L	1	09/23/19 01:59 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	13500	300	1000		mg/L	1000	09/19/19 11:03 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/19/19 04:55 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/19/19 04:55 PM
Sulfate	3230	100	300		mg/L	100	09/20/19 05:43 AM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-1
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-08
Project No:	19125525	**Collection Date:**	09/17/19 05:45 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	363	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 12:23 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 12:23 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 12:23 PM
Alkalinity, Total (As CaCO3)	363	20.0	20.0		mg/L @ pH 4.54	1	09/23/19 12:23 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	25000	1000	1000		mg/L	1	09/20/19 04:30 PM

Qualifiers:

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-09
Project No:	19125525	**Collection Date:**	09/18/19 12:00 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0154	0.0100	0.0300	J	mg/L	1	09/23/19 02:01 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 02:01 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 02:01 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 02:01 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 02:01 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/23/19 02:01 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 02:01 PM
Dissolved Vanadium	0.00191	0.000500	0.00100		mg/L	1	09/23/19 02:01 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0165	0.0100	0.0300	J	mg/L	1	09/25/19 03:45 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 03:45 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:45 PM
Calcium	703	50.0	150		mg/L	500	09/27/19 04:35 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:45 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 03:45 PM
Magnesium	845	50.0	150		mg/L	500	09/27/19 04:35 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/25/19 03:45 PM
Potassium	50.1	1.00	3.00		mg/L	10	09/27/19 05:35 PM
Sodium	7490	50.0	150		mg/L	500	09/27/19 04:35 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 03:45 PM
Vanadium	0.000976	0.000500	0.00100	J	mg/L	1	09/25/19 03:45 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:37 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:54 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0621	0.0300	0.100	JN	mg/L	10	09/27/19 05:35 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0647	0.00300	0.0100	N	mg/L	1	09/23/19 02:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	14200	300	1000		mg/L	1000	09/19/19 11:19 PM
Fluoride	1.81	1.00	4.00	J	mg/L	10	09/19/19 07:03 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/19/19 07:03 PM
Sulfate	2700	100	300		mg/L	100	09/20/19 05:59 AM

Qualifiers:

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- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-09
Project No:	19125525	**Collection Date:**	09/18/19 12:00 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	256	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 12:41 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 12:41 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 12:41 PM
Alkalinity, Total (As CaCO3)	256	20.0	20.0		mg/L @ pH 4.54	1	09/23/19 12:41 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	27700	1000	1000		mg/L	1	09/24/19 04:00 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-4
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-10
Project No:	19125525	**Collection Date:**	09/18/19 12:40 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0128	0.0100	0.0300	J	mg/L	1	09/23/19 02:03 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 02:03 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 02:03 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 02:03 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 02:03 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/23/19 02:03 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 02:03 PM
Dissolved Vanadium	0.00259	0.000500	0.00100		mg/L	1	09/23/19 02:03 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0148	0.0100	0.0300	J	mg/L	1	09/25/19 03:47 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 03:47 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:47 PM
Calcium	1090	50.0	150		mg/L	500	09/27/19 04:38 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:47 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 03:47 PM
Magnesium	1200	50.0	150		mg/L	500	09/27/19 04:38 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/25/19 03:47 PM
Potassium	50.4	1.00	3.00		mg/L	10	09/27/19 05:40 PM
Sodium	9030	50.0	150		mg/L	500	09/27/19 04:38 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 03:47 PM
Vanadium	0.00175	0.000500	0.00100		mg/L	1	09/25/19 03:47 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:39 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:57 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.0914	0.0300	0.100	JN	mg/L	10	09/27/19 05:40 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0964	0.00300	0.0100	N	mg/L	1	09/23/19 02:03 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	17500	300	1000		mg/L	1000	09/19/19 11:35 PM
Fluoride	2.01	1.00	4.00	J	mg/L	10	09/19/19 07:19 PM
Nitrate-N	1.37	1.00	5.00	J	mg/L	10	09/19/19 07:19 PM
Sulfate	4920	100	300		mg/L	100	09/20/19 06:15 AM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-4
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-10
Project No:	19125525	**Collection Date:**	09/18/19 12:40 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	177	10.0	20.0		mg/L @ pH 4.53	1	09/23/19 12:55 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/23/19 12:55 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/23/19 12:55 PM
Alkalinity, Total (As CaCO3)	177	20.0	20.0		mg/L @ pH 4.53	1	09/23/19 12:55 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	34400	1000	1000		mg/L	1	09/24/19 04:00 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-2
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-11
Project No:	19125525	**Collection Date:**	09/18/19 01:40 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0169	0.0100	0.0300	J	mg/L	1	09/23/19 12:18 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 12:18 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:18 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 12:18 PM
Dissolved Lead	0.000650	0.000300	0.00100	J	mg/L	1	09/23/19 12:18 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/23/19 12:18 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 12:18 PM
Dissolved Vanadium	0.00192	0.000500	0.00100		mg/L	1	09/23/19 12:18 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0573	0.0100	0.0300		mg/L	1	09/25/19 03:30 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 03:30 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:30 PM
Calcium	811	50.0	150		mg/L	500	09/27/19 04:20 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:30 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 03:30 PM
Magnesium	1270	50.0	150		mg/L	500	09/27/19 04:20 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	09/25/19 03:30 PM
Potassium	50.9	1.00	3.00		mg/L	10	09/27/19 05:06 PM
Sodium	9150	50.0	150		mg/L	500	09/27/19 04:20 PM
Thallium	0.000518	0.000500	0.00150	J	mg/L	1	09/25/19 03:30 PM
Vanadium	0.00220	0.000500	0.00100		mg/L	1	09/25/19 03:30 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:42 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 01:59 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.129	0.0300	0.100	N	mg/L	10	09/27/19 05:06 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.132	0.00300	0.0100	N	mg/L	1	09/23/19 12:18 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	17100	300	1000		mg/L	1000	09/20/19 01:11 AM
Fluoride	2.05	1.00	4.00	J	mg/L	10	09/20/19 07:19 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 07:19 AM
Sulfate	3710	100	300		mg/L	100	09/20/19 06:31 AM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-2
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-11
Project No:	19125525	**Collection Date:**	09/18/19 01:40 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	227	10.0	20.0		mg/L @ pH 4.53	1	09/23/19 01:17 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/23/19 01:17 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	09/23/19 01:17 PM
Alkalinity, Total (As CaCO3)	227	20.0	20.0		mg/L @ pH 4.53	1	09/23/19 01:17 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	35500	1000	1000		mg/L	1	09/24/19 04:00 PM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-3
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-12
Project No:	19125525	**Collection Date:**	09/18/19 02:50 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0131	0.0100	0.0300	J	mg/L	1	09/23/19 02:05 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/23/19 02:05 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 02:05 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/23/19 02:05 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/23/19 02:05 PM
Dissolved Nickel	0.00350	0.00300	0.0100	J	mg/L	1	09/23/19 02:05 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/23/19 02:05 PM
Dissolved Vanadium	0.00300	0.000500	0.00100		mg/L	1	09/23/19 02:05 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0781	0.0100	0.0300		mg/L	1	09/25/19 03:52 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 03:52 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:52 PM
Calcium	1100	50.0	150		mg/L	500	09/27/19 04:42 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:52 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 03:52 PM
Magnesium	1400	50.0	150		mg/L	500	09/27/19 04:42 PM
Nickel	0.00350	0.00300	0.0100	J	mg/L	1	09/25/19 03:52 PM
Potassium	57.5	1.00	3.00		mg/L	10	09/27/19 05:49 PM
Sodium	9680	50.0	150		mg/L	500	09/27/19 04:42 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 03:52 PM
Vanadium	0.00229	0.000500	0.00100		mg/L	1	09/25/19 03:52 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/30/19 10:53 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 02:11 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.430	0.0300	0.100	N	mg/L	10	09/27/19 05:44 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.129	0.00300	0.0100	N	mg/L	1	09/23/19 02:05 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	18400	300	1000		mg/L	1000	09/20/19 01:59 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	09/20/19 07:35 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 07:35 AM
Sulfate	5250	100	300		mg/L	100	09/20/19 06:47 AM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-3
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-12
Project No:	19125525	**Collection Date:**	09/18/19 02:50 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	205	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 01:49 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 01:49 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 01:49 PM
Alkalinity, Total (As CaCO3)	205	20.0	20.0		mg/L @ pH 4.54	1	09/23/19 01:49 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.136	0.100	0.250	J	mg/L	1	09/27/19 05:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	37400	1000	1000		mg/L	1	09/24/19 04:00 PM

Qualifiers:

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6R
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-13
Project No:	19125525	**Collection Date:**	09/18/19 04:30 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Aluminum	0.0166	0.0100	0.0300	J	mg/L	1	09/24/19 12:36 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/24/19 12:36 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 12:36 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/24/19 12:36 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	09/24/19 12:36 PM
Dissolved Nickel	0.00628	0.00300	0.0100	J	mg/L	1	09/24/19 12:36 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/24/19 12:36 PM
Dissolved Vanadium	0.00744	0.000500	0.00100		mg/L	1	09/25/19 01:42 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Aluminum	0.0165	0.0100	0.0300	J	mg/L	1	09/25/19 03:50 PM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/25/19 03:50 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:50 PM
Calcium	637	50.0	150		mg/L	500	09/27/19 04:40 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/25/19 03:50 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/25/19 03:50 PM
Magnesium	590	50.0	150		mg/L	500	09/27/19 04:40 PM
Nickel	0.00511	0.00300	0.0100	J	mg/L	1	09/25/19 03:50 PM
Potassium	25.7	1.00	3.00		mg/L	10	09/27/19 05:44 PM
Sodium	7830	50.0	150		mg/L	500	09/27/19 04:40 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/25/19 03:50 PM
Vanadium	0.00705	0.000500	0.00100		mg/L	1	09/25/19 03:50 PM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/01/19 02:48 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/25/19 02:13 PM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **RO**
Uranium	0.124	0.0300	0.100	N	mg/L	10	09/27/19 05:49 PM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.483	0.00300	0.0100	N	mg/L	1	09/24/19 12:36 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	11800	300	1000		mg/L	1000	10/03/19 11:11 AM
Fluoride	2.09	1.00	4.00	J	mg/L	10	09/20/19 07:51 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	09/20/19 07:51 AM
Sulfate	4350	100	300		mg/L	100	09/20/19 07:03 AM

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DHL Analytical, Inc.

Date: *28-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW-6R
Project:	Copano GW Sampling 3Q19	**Lab ID:**	1909161-13
Project No:	19125525	**Collection Date:**	09/18/19 04:30 PM
Lab Order:	1909161	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	592	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 02:26 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 02:26 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	09/23/19 02:26 PM
Alkalinity, Total (As CaCO3)	592	20.0	20.0		mg/L @ pH 4.54	1	09/23/19 02:26 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	09/30/19 02:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	24100	1000	1000		mg/L	1	09/24/19 04:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190916A

Sample ID: **DCS-92776** Batch ID: **92776** TestNo: **SW7470A** Units: **mg/L**
SampType: **DCS** Run ID: **CETAC2_HG_190916A** Analysis Date: **9/16/2019 12:35:58 PM** Prep Date: **9/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000183	0.000200	0.000200	0	91.5	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190925C

The QC data in batch 92890 applies to the following samples: 1909161-01A, 1909161-02A, 1909161-03A, 1909161-04A, 1909161-05A, 1909161-06A, 1909161-07A, 1909161-08A, 1909161-09A, 1909161-10A, 1909161-11A, 1909161-12A, 1909161-13A

Sample ID: **MB-92890** Batch ID: **92890** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_190925C** Analysis Date: **9/25/2019 1:16:14 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-92890** Batch ID: **92890** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_190925C** Analysis Date: **9/25/2019 1:18:30 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00203	0.000200	0.00200	0	102	85	115			

Sample ID: **LCSD-92890** Batch ID: **92890** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_190925C** Analysis Date: **9/25/2019 1:20:46 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.000200	0.00200	0	102	85	115	0.491	15	

Sample ID: **1909161-11A SD** Batch ID: **92890** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_190925C** Analysis Date: **9/25/2019 2:06:47 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1909161-11A PDS** Batch ID: **92890** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_190925C** Analysis Date: **9/25/2019 2:09:03 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00102	0.000200	0.00250	0	40.8	85	115			S

Sample ID: **1909161-11A MS** Batch ID: **92890** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_190925C** Analysis Date: **9/25/2019 2:29:35 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.00100	0.00200	0	99.8	80	120			

Sample ID: **1909161-11A MSD** Batch ID: **92890** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_190925C** Analysis Date: **9/25/2019 2:31:52 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.00100	0.00200	0	102	80	120	2.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190925C

Sample ID: **ICV-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 9:27:41 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00390	0.000200	0.00400	0	97.5	90	110			

Sample ID: **CCV4-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 12:45:01 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Sample ID: **CCV5-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 1:43:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV6-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:20:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV7-190925**	Batch ID: **R106554**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190925C**	Analysis Date: **9/25/2019 2:34:10 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190930A

The QC data in batch 92988 applies to the following samples: 1909161-01B, 1909161-02B, 1909161-03B, 1909161-04B, 1909161-05B, 1909161-06B, 1909161-07B, 1909161-08B, 1909161-09B, 1909161-10B, 1909161-11B, 1909161-12B

Sample ID: **MB-92988** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 9:50:01 AM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-92988** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 9:52:17 AM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00206	0.000200	0.00200	0	103	85	115			

Sample ID: **LCSD-92988** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 9:54:33 AM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00208	0.000200	0.00200	0	104	85	115	0.966	15	

Sample ID: **1909161-11B SD** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 10:49:02 AM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1909161-11B PDS** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 10:51:18 AM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000910	0.000200	0.00250	0	36.4	85	115			S

Sample ID: **1909161-11B MS** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 12:03:23 PM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00206	0.00100	0.00200	0	103	80	120			

Sample ID: **1909161-11B MSD** Batch ID: **92988** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_190930A** Analysis Date: **9/30/2019 12:05:40 PM** Prep Date: **9/29/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.00100	0.00200	0	102	80	120	1.22	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190930A

Sample ID: **ICV-190930**	Batch ID: **R106626**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190930A**	Analysis Date: **9/30/2019 9:45:27 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00391	0.000200	0.00400	0	97.8	90	110			

Sample ID: **CCV1-190930**	Batch ID: **R106626**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190930A**	Analysis Date: **9/30/2019 10:19:30 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Sample ID: **CCV2-190930**	Batch ID: **R106626**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190930A**	Analysis Date: **9/30/2019 10:55:53 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00205	0.000200	0.00200	0	103	90	110			

Sample ID: **CCV3-190930**	Batch ID: **R106626**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190930A**	Analysis Date: **9/30/2019 12:07:58 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191001C

The QC data in batch 93029 applies to the following samples: 1909161-13B

Sample ID: **MB-93029**	Batch ID: **93029**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 2:41:24 PM**	Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-93029**	Batch ID: **93029**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 2:43:40 PM**	Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00219	0.000200	0.00200	0	110	85	115			

Sample ID: **LCSD-93029**	Batch ID: **93029**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 2:45:56 PM**	Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00209	0.000200	0.00200	0	104	85	115	4.67	15	

Sample ID: **1909176-01B SD**	Batch ID: **93029**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 2:57:15 PM**	Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1909176-01B PDS**	Batch ID: **93029**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 2:59:31 PM**	Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00125	0.000200	0.00250	0	50.0	85	115			S

Sample ID: **1909176-01B MS**	Batch ID: **93029**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 4:52:10 PM**	Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00216	0.00100	0.00200	0	108	80	120			

Sample ID: **1909176-01B MSD**	Batch ID: **93029**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 4:54:26 PM**	Prep Date: **10/1/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00222	0.00100	0.00200	0	111	80	120	2.75	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191001C

Sample ID: **ICV-191001**	Batch ID: **R106673**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 2:36:50 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00388	0.000200	0.00400	0	97.0	90	110			

Sample ID: **CCV1-191001**	Batch ID: **R106673**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 3:19:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV3-191001**	Batch ID: **R106673**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 4:38:31 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID: **CCV4-191001**	Batch ID: **R106673**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191001C**	Analysis Date: **10/1/2019 4:56:44 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00206	0.000200	0.00200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

Sample ID: **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:24:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0353	0.0300	0.0300	0	118	70	130	0	0	
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	
Magnesium	0.323	0.300	0.300	0	108	70	130	0	0	
Potassium	0.303	0.300	0.300	0	101	70	130	0	0	
Sodium	0.300	0.300	0.300	0	100	70	130	0	0	

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:27:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00522	0.00500	0.00500	0	104	70	130	0	0	
Chromium	0.00523	0.00500	0.00500	0	105	70	130	0	0	
Nickel	0.00557	0.0100	0.00500	0	111	70	130	0	0	

Sample ID: **DCS1-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:34:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.000904	0.00250	0.00100	0	90.4	70	130	0	0	
Lead	0.000475	0.00100	0.000500	0	95.0	70	130	0	0	
Thallium	0.000471	0.00150	0.000500	0	94.2	70	130	0	0	
Vanadium	0.000464	0.00100	0.000500	0	92.8	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923A

The QC data in batch 92871 applies to the following samples: 1909161-01B, 1909161-02B, 1909161-03B, 1909161-04B, 1909161-05B, 1909161-06B, 1909161-07B, 1909161-08B, 1909161-09B, 1909161-10B, 1909161-11B, 1909161-12B

Sample ID: **MB-92871** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:10:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-92871** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:12:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0	99.7	80	120			
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Chromium	0.217	0.00500	0.200	0	108	80	120			
Lead	0.202	0.00100	0.200	0	101	80	120			
Nickel	0.208	0.0100	0.200	0	104	80	120			
Thallium	0.206	0.00150	0.200	0	103	80	120			
Vanadium	0.209	0.00100	0.200	0	105	80	120			

Sample ID: **LCSD-92871** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:14:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.96	0.0300	5.00	0	99.1	80	120	0.542	15	
Antimony	0.204	0.00250	0.200	0	102	80	120	0.833	15	
Arsenic	0.202	0.00500	0.200	0	101	80	120	0.769	15	
Chromium	0.214	0.00500	0.200	0	107	80	120	1.47	15	
Lead	0.206	0.00100	0.200	0	103	80	120	2.36	15	
Nickel	0.210	0.0100	0.200	0	105	80	120	0.986	15	
Thallium	0.205	0.00150	0.200	0	103	80	120	0.206	15	
Vanadium	0.206	0.00100	0.200	0	103	80	120	1.36	15	

Sample ID: **1909161-11B SD** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:20:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923A

Sample ID: **1909161-11B SD** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:20:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0169				0	10	
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0.000650				0	10	
Nickel	<0.0150	0.0500	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	0.00299	0.00500	0	0.00192				43.3	10	R

Sample ID: **1909161-11B PDS** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:40:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.65	0.0300	5.00	0.0169	92.7	80	120			
Antimony	0.178	0.00250	0.200	0	88.9	80	120			
Arsenic	0.171	0.00500	0.200	0	85.5	80	120			
Chromium	0.160	0.00500	0.200	0	80.0	80	120			
Lead	0.206	0.00100	0.200	0.000650	103	80	120			
Nickel	0.135	0.0100	0.200	0	67.5	80	120			S
Thallium	0.214	0.00150	0.200	0	107	80	120			
Vanadium	0.172	0.00100	0.200	0.00192	85.0	80	120			

Sample ID: **1909161-11B MS** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:42:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.93	0.0300	5.00	0.0169	98.3	80	120			
Dissolved Antimony	0.183	0.00250	0.200	0	91.3	80	120			
Dissolved Arsenic	0.188	0.00500	0.200	0	93.8	80	120			
Dissolved Chromium	0.160	0.00500	0.200	0	80.0	80	120			
Dissolved Lead	0.215	0.00100	0.200	0.000650	107	80	120			
Dissolved Nickel	0.142	0.0100	0.200	0	71.1	80	120			S
Dissolved Thallium	0.223	0.00150	0.200	0	111	80	120			
Dissolved Vanadium	0.173	0.00100	0.200	0.00192	85.5	80	120			

Sample ID: **1909161-11B MSD** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:44:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.97	0.0300	5.00	0.0169	99.0	80	120	0.730	15	
Dissolved Antimony	0.182	0.00250	0.200	0	91.0	80	120	0.280	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923A

Sample ID: **1909161-11B MSD** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 12:44:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Arsenic	0.192	0.00500	0.200	0	96.2	80	120	2.53	15	
Dissolved Chromium	0.163	0.00500	0.200	0	81.4	80	120	1.79	15	
Dissolved Lead	0.216	0.00100	0.200	0.000650	108	80	120	0.468	15	
Dissolved Nickel	0.147	0.0100	0.200	0	73.5	80	120	3.33	15	S
Dissolved Thallium	0.224	0.00150	0.200	0	112	80	120	0.546	15	
Dissolved Vanadium	0.175	0.00100	0.200	0.00192	86.6	80	120	1.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923A

Sample ID: **ICV-190923** Batch ID: **R106510** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 11:39:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.44	0.0300	2.50	0	97.5	90	110			
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Chromium	0.109	0.00500	0.100	0	109	90	110			
Lead	0.0995	0.00100	0.100	0	99.5	90	110			
Nickel	0.108	0.0100	0.100	0	108	90	110			
Thallium	0.0995	0.00150	0.100	0	99.5	90	110			
Vanadium	0.104	0.00100	0.100	0	104	90	110			

Sample ID: **LCVL-190923** Batch ID: **R106510** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 11:45:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.101	0.0300	0.100	0	101	70	130			
Antimony	0.00206	0.00250	0.00200	0	103	70	130			
Arsenic	0.00526	0.00500	0.00500	0	105	70	130			
Chromium	0.00537	0.00500	0.00500	0	107	70	130			
Lead	0.000980	0.00100	0.00100	0	98.0	70	130			
Nickel	0.00542	0.0100	0.00500	0	108	70	130			
Thallium	0.000965	0.00150	0.00100	0	96.5	70	130			
Vanadium	0.00110	0.00100	0.00100	0	110	70	130			

Sample ID: **CCV1-190923** Batch ID: **R106510** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 1:21:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.97	0.0300	5.00	0	99.5	90	110			
Antimony	0.196	0.00250	0.200	0	98.2	90	110			
Arsenic	0.195	0.00500	0.200	0	97.5	90	110			
Chromium	0.201	0.00500	0.200	0	100	90	110			
Lead	0.198	0.00100	0.200	0	98.8	90	110			
Nickel	0.189	0.0100	0.200	0	94.3	90	110			
Thallium	0.198	0.00150	0.200	0	99.0	90	110			
Vanadium	0.197	0.00100	0.200	0	98.5	90	110			

Sample ID: **CCV2-190923** Batch ID: **R106510** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190923A** Analysis Date: **9/23/2019 2:23:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.01	0.0300	5.00	0	100	90	110			
Antimony	0.196	0.00250	0.200	0	97.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923A

Sample ID: **CCV2-190923**	Batch ID: **R106510**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190923A**	Analysis Date: **9/23/2019 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.203	0.00500	0.200	0	101	90	110			
Chromium	0.195	0.00500	0.200	0	97.3	90	110			
Lead	0.195	0.00100	0.200	0	97.3	90	110			
Nickel	0.190	0.0100	0.200	0	95.2	90	110			
Thallium	0.194	0.00150	0.200	0	97.0	90	110			
Vanadium	0.192	0.00100	0.200	0	96.2	90	110			

Sample ID: **LCVL2-190923**	Batch ID: **R106510**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190923A**	Analysis Date: **9/23/2019 2:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.104	0.0300	0.100	0	104	70	130			
Antimony	0.00192	0.00250	0.00200	0	96.2	70	130			
Arsenic	0.00524	0.00500	0.00500	0	105	70	130			
Chromium	0.00503	0.00500	0.00500	0	101	70	130			
Lead	0.000909	0.00100	0.00100	0	90.9	70	130			
Nickel	0.00494	0.0100	0.00500	0	98.8	70	130			
Thallium	0.000928	0.00150	0.00100	0	92.8	70	130			
Vanadium	0.00156	0.00100	0.00100	0	156	70	130			S

Sample ID: **LCVL1-190923**	Batch ID: **R106510**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190923A**	Analysis Date: **9/23/2019 1:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	70	130			
Antimony	0.00205	0.00250	0.00200	0	103	70	130			
Arsenic	0.00512	0.00500	0.00500	0	102	70	130			
Chromium	0.00519	0.00500	0.00500	0	104	70	130			
Lead	0.000928	0.00100	0.00100	0	92.8	70	130			
Nickel	0.00615	0.0100	0.00500	0	123	70	130			
Thallium	0.000931	0.00150	0.00100	0	93.1	70	130			
Vanadium	0.00125	0.00100	0.00100	0	125	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923B

The QC data in batch 92871 applies to the following samples: 1909161-01B, 1909161-02B, 1909161-03B, 1909161-04B, 1909161-05B, 1909161-06B, 1909161-07B, 1909161-08B, 1909161-09B, 1909161-10B, 1909161-11B, 1909161-12B

Sample ID: **MB-92871** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190923B** Analysis Date: **9/23/2019 12:10:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-92871** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190923B** Analysis Date: **9/23/2019 12:12:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0	97.4	80	120			N

Sample ID: **LCSD-92871** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190923B** Analysis Date: **9/23/2019 12:14:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.191	0.0100	0.200	0	95.7	80	120	1.73	15	N

Sample ID: **1909161-11B SD** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190923B** Analysis Date: **9/23/2019 12:20:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.128	0.0500	0	0.132				3.38	20	N

Sample ID: **1909161-11B PDS** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190923B** Analysis Date: **9/23/2019 12:40:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.323	0.0100	0.200	0.132	95.6	75	125			N

Sample ID: **1909161-11B MS** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_190923B** Analysis Date: **9/23/2019 12:42:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.334	0.0100	0.200	0.132	101	75	125			N

Sample ID: **1909161-11B MSD** Batch ID: **92871** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190923B** Analysis Date: **9/23/2019 12:44:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.335	0.0100	0.200	0.132	101	75	125	0.254	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190923B

Sample ID: **ICV-190923**	Batch ID: **R109097**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 11:39:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0951	0.0100	0.100	0	95.1	90	110			N

Sample ID: **LCVL-190923**	Batch ID: **R109097**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 11:45:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00459	0.0100	0.00500	0	91.7	80	120			N

Sample ID: **CCV1-190923**	Batch ID: **R109097**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 1:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.188	0.0100	0.200	0	93.9	90	110			N

Sample ID: **LCVL1-190923**	Batch ID: **R109097**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 1:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00443	0.0100	0.00500	0	88.6	80	120			N

Sample ID: **CCV2-190923**	Batch ID: **R109097**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.184	0.0100	0.200	0	92.2	90	110			N

Sample ID: **LCVL2-190923**	Batch ID: **R109097**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190923B**	Analysis Date: **9/23/2019 2:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00440	0.0100	0.00500	0	88.0	80	120			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190925B

Sample ID: **ICV-190925**	Batch ID: **R106555**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190925B**	Analysis Date: **9/25/2019 11:40:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.62	0.300	2.50	0	105	90	110			
Magnesium	2.53	0.300	2.50	0	101	90	110			
Potassium	2.57	0.300	2.50	0	103	90	110			
Sodium	2.62	0.300	2.50	0	105	90	110			
Vanadium	0.102	0.00100	0.100	0	102	90	110			

Sample ID: **LCVL-190925**	Batch ID: **R106555**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190925B**	Analysis Date: **9/25/2019 11:44:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.126	0.300	0.100	0	126	70	130			
Magnesium	0.0908	0.300	0.100	0	90.8	70	130			
Potassium	0.101	0.300	0.100	0	101	70	130			
Sodium	0.0895	0.300	0.100	0	89.5	70	130			
Vanadium	0.00106	0.00100	0.00100	0	106	70	130			

Sample ID: **CCV1-190925**	Batch ID: **R106555**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190925B**	Analysis Date: **9/25/2019 12:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.01	0.300	5.00	0	100	90	110			
Magnesium	5.13	0.300	5.00	0	103	90	110			
Sodium	5.13	0.300	5.00	0	103	90	110			

Sample ID: **LCVL1-190925**	Batch ID: **R106555**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190925B**	Analysis Date: **9/25/2019 12:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0996	0.300	0.100	0	99.6	70	130			
Magnesium	0.0904	0.300	0.100	0	90.4	70	130			
Sodium	0.0763	0.300	0.100	0	76.3	70	130			

Sample ID: **CCV2-190925**	Batch ID: **R106555**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190925B**	Analysis Date: **9/25/2019 1:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.10	0.300	5.00	0	102	90	110			
Magnesium	5.15	0.300	5.00	0	103	90	110			
Potassium	5.05	0.300	5.00	0	101	90	110			
Sodium	5.08	0.300	5.00	0	102	90	110			
Vanadium	0.202	0.00100	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190925B

Sample ID: **LCVL2-190925**	Batch ID: **R106555**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190925B**	Analysis Date: **9/25/2019 1:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.110	0.300	0.100	0	110	70	130			
Magnesium	0.0953	0.300	0.100	0	95.3	70	130			
Potassium	0.0957	0.300	0.100	0	95.7	70	130			
Sodium	0.0559	0.300	0.100	0	55.9	70	130			S
Vanadium	0.00101	0.00100	0.00100	0	101	70	130			

Sample ID: **CCV3-190925**	Batch ID: **R106555**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190925B**	Analysis Date: **9/25/2019 2:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	5.07	0.300	5.00	0	101	90	110			
Vanadium	0.202	0.00100	0.200	0	101	90	110			

Sample ID: **LCVL3-190925**	Batch ID: **R106555**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190925B**	Analysis Date: **9/25/2019 2:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.101	0.300	0.100	0	101	70	130			
Vanadium	0.00102	0.00100	0.00100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191001C

Sample ID: **DCS2-92934** Batch ID: **92934** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS4_191001C** Analysis Date: **10/1/2019 10:55:00 AM** Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.291	0.300	0.300	0	97.0	70	130	0	0	
Magnesium	0.319	0.300	0.300	0	106	70	130	0	0	
Sodium	0.325	0.300	0.300	0	108	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191002C

Sample ID: **ICV-191002**	Batch ID: **R106702**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_191002C**	Analysis Date: **10/2/2019 10:48:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.51	0.300	2.50	0	100	90	110			
Magnesium	2.50	0.300	2.50	0	99.8	90	110			
Sodium	2.54	0.300	2.50	0	102	90	110			

Sample ID: **LCVL-191002**	Batch ID: **R106702**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191002C**	Analysis Date: **10/2/2019 10:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.107	0.300	0.100	0	107	70	130			
Magnesium	0.108	0.300	0.100	0	108	70	130			
Sodium	0.113	0.300	0.100	0	113	70	130			

Sample ID: **CCV6-191002**	Batch ID: **R106702**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191002C**	Analysis Date: **10/2/2019 3:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.99	0.300	5.00	0	99.8	90	110			
Magnesium	5.24	0.300	5.00	0	105	90	110			
Sodium	5.09	0.300	5.00	0	102	90	110			

Sample ID: **LCVL6-191002**	Batch ID: **R106702**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191002C**	Analysis Date: **10/2/2019 3:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.106	0.300	0.100	0	106	70	130			
Magnesium	0.105	0.300	0.100	0	105	70	130			
Sodium	0.105	0.300	0.100	0	105	70	130			

Sample ID: **CCV7-191002**	Batch ID: **R106702**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191002C**	Analysis Date: **10/2/2019 3:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.96	0.300	5.00	0	99.3	90	110			
Magnesium	5.16	0.300	5.00	0	103	90	110			
Sodium	5.09	0.300	5.00	0	102	90	110			

Sample ID: **LCVL7-191002**	Batch ID: **R106702**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191002C**	Analysis Date: **10/2/2019 3:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.107	0.300	0.100	0	107	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191002C

Sample ID: **LCVL7-191002** Batch ID: **R106702** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_191002C** Analysis Date: **10/2/2019 3:31:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	0.107	0.300	0.100	0	107	70	130			
Sodium	0.107	0.300	0.100	0	107	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621A

Sample ID: **DCS1-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:12:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00103	0.00250	0.00100	0	103	70	130	0	0	
Lead	0.000545	0.00100	0.000500	0	109	70	130	0	0	
Thallium	0.000527	0.00150	0.000500	0	105	70	130	0	0	
Vanadium	0.000614	0.00100	0.000500	0	123	70	130	0	0	

Sample ID: **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:14:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0383	0.0300	0.0300	0	128	70	130	0	0	
Calcium	0.305	0.300	0.300	0	102	70	130	0	0	
Magnesium	0.315	0.300	0.300	0	105	70	130	0	0	
Potassium	0.319	0.300	0.300	0	106	70	130	0	0	
Sodium	0.295	0.300	0.300	0	98.4	70	130	0	0	

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:16:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00512	0.00500	0.00500	0	102	70	130	0	0	
Chromium	0.00500	0.00500	0.00500	0	100	70	130	0	0	
Nickel	0.00513	0.0100	0.00500	0	103	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621D

Sample ID: **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS**	Run ID: **ICP-MS5_190621D**	Analysis Date: **6/21/2019 11:16:00 AM**		Prep Date: **6/20/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00501	0.0100	0.00500	0	100	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190924A**

The QC data in batch 92876 applies to the following samples: 1909161-01A, 1909161-02A, 1909161-03A

Sample ID: **MB-92876** Batch ID: **92876** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190924A** Analysis Date: **9/24/2019 2:12:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-92876** Batch ID: **92876** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190924A** Analysis Date: **9/24/2019 2:14:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.04	0.0300	5.00	0	101	80	120			
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.200	0.00500	0.200	0	99.9	80	120			
Chromium	0.195	0.00500	0.200	0	97.5	80	120			
Lead	0.195	0.00100	0.200	0	97.4	80	120			
Nickel	0.204	0.0100	0.200	0	102	80	120			
Thallium	0.196	0.00150	0.200	0	98.1	80	120			
Vanadium	0.197	0.00100	0.200	0	98.6	80	120			

Sample ID: **LCSD-92876** Batch ID: **92876** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190924A** Analysis Date: **9/24/2019 2:16:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.97	0.0300	5.00	0	99.4	80	120	1.50	15	
Antimony	0.203	0.00250	0.200	0	102	80	120	0.813	15	
Arsenic	0.204	0.00500	0.200	0	102	80	120	2.19	15	
Chromium	0.193	0.00500	0.200	0	96.7	80	120	0.862	15	
Lead	0.198	0.00100	0.200	0	98.8	80	120	1.44	15	
Nickel	0.205	0.0100	0.200	0	103	80	120	0.686	15	
Thallium	0.199	0.00150	0.200	0	99.3	80	120	1.26	15	
Vanadium	0.195	0.00100	0.200	0	97.7	80	120	0.916	15	

Sample ID: **1909140-03A SD** Batch ID: **92876** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190924A** Analysis Date: **9/24/2019 2:23:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0				0	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190924A

Sample ID: **1909140-03A SD**	Batch ID: **92876**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 2:23:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Nickel	<0.0150	0.0500	0	0.00465				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	<0.00250	0.00500	0	0.000644				0	10	

Sample ID: **1909140-03A PDS**	Batch ID: **92876**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 2:45:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.82	0.0300	5.00	0	96.4	80	120			
Antimony	0.195	0.00250	0.200	0	97.6	80	120			
Arsenic	0.186	0.00500	0.200	0	93.0	80	120			
Chromium	0.176	0.00500	0.200	0	88.2	80	120			
Lead	0.188	0.00100	0.200	0	93.9	80	120			
Nickel	0.182	0.0100	0.200	0.00465	88.9	80	120			
Thallium	0.190	0.00150	0.200	0	95.1	80	120			
Vanadium	0.183	0.00100	0.200	0.000644	91.0	80	120			

Sample ID: **1909140-03A MS**	Batch ID: **92876**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 2:48:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.77	0.0300	5.00	0	95.3	80	120			
Antimony	0.191	0.00250	0.200	0	95.4	80	120			
Arsenic	0.187	0.00500	0.200	0	93.7	80	120			
Chromium	0.172	0.00500	0.200	0	85.9	80	120			
Lead	0.187	0.00100	0.200	0	93.4	80	120			
Nickel	0.176	0.0100	0.200	0.00465	85.9	80	120			
Thallium	0.189	0.00150	0.200	0	94.5	80	120			
Vanadium	0.179	0.00100	0.200	0.000644	89.3	80	120			

Sample ID: **1909140-03A MSD**	Batch ID: **92876**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 2:50:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.82	0.0300	5.00	0	96.5	80	120	1.22	15	
Antimony	0.194	0.00250	0.200	0	97.1	80	120	1.76	15	
Arsenic	0.190	0.00500	0.200	0	94.8	80	120	1.13	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190924A

Sample ID: **1909140-03A MSD** Batch ID: **92876** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190924A** Analysis Date: **9/24/2019 2:50:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.173	0.00500	0.200	0	86.3	80	120	0.542	15	
Lead	0.184	0.00100	0.200	0	92.2	80	120	1.35	15	
Nickel	0.177	0.0100	0.200	0.00465	86.3	80	120	0.452	15	
Thallium	0.186	0.00150	0.200	0	93.2	80	120	1.37	15	
Vanadium	0.180	0.00100	0.200	0.000644	89.8	80	120	0.628	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190924A**

The QC data in batch 92891 applies to the following samples: 1909161-13B

Sample ID: **MB-92891**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 12:05:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-92891**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 12:07:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.01	0.0300	5.00	0	100	80	120			
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Chromium	0.194	0.00500	0.200	0	97.0	80	120			
Lead	0.196	0.00100	0.200	0	98.1	80	120			
Nickel	0.205	0.0100	0.200	0	102	80	120			
Thallium	0.197	0.00150	0.200	0	98.6	80	120			
Vanadium	0.194	0.00100	0.200	0	96.9	80	120			

Sample ID: **LCSD-92891**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 12:09:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.02	0.0300	5.00	0	100	80	120	0.172	15	
Antimony	0.201	0.00250	0.200	0	101	80	120	0.474	15	
Arsenic	0.207	0.00500	0.200	0	104	80	120	1.41	15	
Chromium	0.193	0.00500	0.200	0	96.3	80	120	0.773	15	
Lead	0.198	0.00100	0.200	0	98.9	80	120	0.846	15	
Nickel	0.207	0.0100	0.200	0	104	80	120	1.19	15	
Thallium	0.200	0.00150	0.200	0	99.8	80	120	1.22	15	
Vanadium	0.194	0.00100	0.200	0	97.2	80	120	0.330	15	

Sample ID: **1909173-01B SD**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 12:16:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.175	0.150	0	0.158				10.4	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190924A

Sample ID: **1909173-01B SD**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 12:16:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00789				0	10	
Chromium	0.0270	0.0250	0	0.0266				1.52	10	
Lead	<0.00150	0.00500	0	0.000404				0	10	
Nickel	<0.0150	0.0500	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	
Vanadium	0.0380	0.00500	0	0.0370				2.59	10	

Sample ID: **1909173-01B PDS**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 12:39:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.13	0.0300	5.00	0.157	99.4	80	120			
Antimony	0.201	0.00250	0.200	0	101	80	120			
Arsenic	0.202	0.00500	0.200	0.00789	97.0	80	120			
Chromium	0.208	0.00500	0.200	0.0266	90.8	80	120			
Lead	0.194	0.00100	0.200	0.000404	96.6	80	120			
Nickel	0.190	0.0100	0.200	0	95.1	80	120			
Thallium	0.195	0.00150	0.200	0	97.4	80	120			
Vanadium	0.220	0.00100	0.200	0.0370	91.5	80	120			

Sample ID: **1909173-01B MS**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 12:46:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.21	0.0300	5.00	0.157	101	80	120			
Antimony	0.199	0.00250	0.200	0	99.4	80	120			
Arsenic	0.204	0.00500	0.200	0.00789	98.2	80	120			
Chromium	0.214	0.00500	0.200	0.0266	93.6	80	120			
Lead	0.195	0.00100	0.200	0.000404	97.5	80	120			
Nickel	0.196	0.0100	0.200	0	98.0	80	120			
Thallium	0.197	0.00150	0.200	0	98.5	80	120			
Vanadium	0.228	0.00100	0.200	0.0370	95.3	80	120			

Sample ID: **1909173-01B MSD**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 12:53:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.21	0.0300	5.00	0.157	101	80	120	0.061	15	
Antimony	0.200	0.00250	0.200	0	100	80	120	0.622	15	
Arsenic	0.205	0.00500	0.200	0.00789	98.7	80	120	0.456	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190924A

Sample ID: **1909173-01B MSD** Batch ID: **92891** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190924A** Analysis Date: **9/24/2019 12:53:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.216	0.00500	0.200	0.0266	94.6	80	120	0.904	15	
Lead	0.194	0.00100	0.200	0.000404	96.6	80	120	0.915	15	
Nickel	0.197	0.0100	0.200	0	98.4	80	120	0.459	15	
Thallium	0.195	0.00150	0.200	0	97.6	80	120	0.960	15	
Vanadium	0.230	0.00100	0.200	0.0370	96.6	80	120	1.12	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190924A

Sample ID: **ICV-190924**	Batch ID: **R106543**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 11:23:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.46	0.0300	2.50	0	98.5	90	110			
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.100	0.00500	0.100	0	100	90	110			
Calcium	2.58	0.300	2.50	0	103	90	110			
Chromium	0.0994	0.00500	0.100	0	99.4	90	110			
Lead	0.0992	0.00100	0.100	0	99.2	90	110			
Magnesium	2.49	0.300	2.50	0	99.4	90	110			
Nickel	0.103	0.0100	0.100	0	103	90	110			
Potassium	2.56	0.300	2.50	0	103	90	110			
Sodium	2.49	0.300	2.50	0	99.5	90	110			
Thallium	0.0997	0.00150	0.100	0	99.7	90	110			
Vanadium	0.0995	0.00100	0.100	0	99.5	90	110			

Sample ID: **LCVL-190924**	Batch ID: **R106543**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 11:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.110	0.0300	0.100	0	110	70	130			
Antimony	0.00201	0.00250	0.00200	0	100	70	130			
Arsenic	0.00506	0.00500	0.00500	0	101	70	130			
Calcium	0.100	0.300	0.100	0	100	70	130			
Chromium	0.00495	0.00500	0.00500	0	99.1	70	130			
Lead	0.000940	0.00100	0.00100	0	94.0	70	130			
Magnesium	0.101	0.300	0.100	0	101	70	130			
Nickel	0.00520	0.0100	0.00500	0	104	70	130			
Potassium	0.0859	0.300	0.100	0	85.9	70	130			
Sodium	0.0703	0.300	0.100	0	70.3	70	130			
Thallium	0.000972	0.00150	0.00100	0	97.2	70	130			
Vanadium	0.00104	0.00100	0.00100	0	104	70	130			

Sample ID: **CCV1-190924**	Batch ID: **R106543**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 1:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.18	0.0300	5.00	0	104	90	110			
Antimony	0.198	0.00250	0.200	0	99.2	90	110			
Arsenic	0.204	0.00500	0.200	0	102	90	110			
Chromium	0.190	0.00500	0.200	0	95.2	90	110			
Lead	0.193	0.00100	0.200	0	96.7	90	110			
Nickel	0.205	0.0100	0.200	0	103	90	110			
Thallium	0.194	0.00150	0.200	0	97.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190924A

Sample ID: **LCVL1-190924** Batch ID: **R106543** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190924A** Analysis Date: **9/24/2019 1:11:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.108	0.0300	0.100	0	108	70	130			
Antimony	0.00208	0.00250	0.00200	0	104	70	130			
Arsenic	0.00486	0.00500	0.00500	0	97.2	70	130			
Chromium	0.00495	0.00500	0.00500	0	99.0	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Nickel	0.00529	0.0100	0.00500	0	106	70	130			
Thallium	0.000975	0.00150	0.00100	0	97.5	70	130			

Sample ID: **CCV2-190924** Batch ID: **R106543** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190924A** Analysis Date: **9/24/2019 1:45:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.14	0.0300	5.00	0	103	90	110			
Antimony	0.199	0.00250	0.200	0	99.3	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Chromium	0.193	0.00500	0.200	0	96.7	90	110			
Lead	0.195	0.00100	0.200	0	97.5	90	110			
Nickel	0.206	0.0100	0.200	0	103	90	110			
Thallium	0.196	0.00150	0.200	0	98.1	90	110			
Vanadium	0.196	0.00100	0.200	0	98.2	90	110			

Sample ID: **LCVL2-190924** Batch ID: **R106543** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190924A** Analysis Date: **9/24/2019 2:07:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.107	0.0300	0.100	0	107	70	130			
Antimony	0.00200	0.00250	0.00200	0	100	70	130			
Arsenic	0.00502	0.00500	0.00500	0	100	70	130			
Chromium	0.00491	0.00500	0.00500	0	98.3	70	130			
Lead	0.000994	0.00100	0.00100	0	99.4	70	130			
Nickel	0.00518	0.0100	0.00500	0	104	70	130			
Thallium	0.000998	0.00150	0.00100	0	99.8	70	130			
Vanadium	0.00110	0.00100	0.00100	0	110	70	130			

Sample ID: **CCV3-190924** Batch ID: **R106543** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190924A** Analysis Date: **9/24/2019 3:27:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0	103	90	110			
Antimony	0.199	0.00250	0.200	0	99.6	90	110			
Arsenic	0.201	0.00500	0.200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190924A

Sample ID: **CCV3-190924**	Batch ID: **R106543**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 3:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.190	0.00500	0.200	0	95.2	90	110			
Lead	0.193	0.00100	0.200	0	96.5	90	110			
Nickel	0.199	0.0100	0.200	0	99.7	90	110			
Thallium	0.194	0.00150	0.200	0	96.8	90	110			
Vanadium	0.196	0.00100	0.200	0	97.8	90	110			

Sample ID: **LCVL3-190924**	Batch ID: **R106543**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190924A**	Analysis Date: **9/24/2019 3:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	70	130			
Antimony	0.00178	0.00250	0.00200	0	89.2	70	130			
Arsenic	0.00489	0.00500	0.00500	0	97.8	70	130			
Chromium	0.00484	0.00500	0.00500	0	96.8	70	130			
Lead	0.000984	0.00100	0.00100	0	98.4	70	130			
Nickel	0.00505	0.0100	0.00500	0	101	70	130			
Thallium	0.000989	0.00150	0.00100	0	98.9	70	130			
Vanadium	0.00125	0.00100	0.00100	0	125	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190924B

The QC data in batch 92876 applies to the following samples: 1909161-01A, 1909161-02A, 1909161-03A

Sample ID: **MB-92876**	Batch ID: **92876**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 2:12:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-92876**	Batch ID: **92876**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 2:14:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.191	0.0100	0.200	0	95.7	80	120			N

Sample ID: **LCSD-92876**	Batch ID: **92876**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 2:16:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.194	0.0100	0.200	0	96.9	80	120	1.23	25	N

Sample ID: **1909140-03A SD**	Batch ID: **92876**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 2:23:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.0150	0.0500	0	0.0103				0	10	N

Sample ID: **1909140-03A PDS**	Batch ID: **92876**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 2:45:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0.0103	92.4	80	120			N

Sample ID: **1909140-03A MS**	Batch ID: **92876**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 2:48:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0.0103	92.9	80	120			N

Sample ID: **1909140-03A MSD**	Batch ID: **92876**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 2:50:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0.0103	91.5	80	120	1.38	25	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190924B

Sample ID: **ICV-190924**	Batch ID: **R106545**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 11:23:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0973	0.0100	0.100	0	97.3	90	110			N

Sample ID: **LCVL-190924**	Batch ID: **R106545**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 11:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00483	0.0100	0.00500	0	96.6	70	130			N

Sample ID: **CCV2-190924**	Batch ID: **R106545**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 1:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.192	0.0100	0.200	0	95.8	90	110			N

Sample ID: **LCVL2-190924**	Batch ID: **R106545**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 2:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00491	0.0100	0.00500	0	98.1	70	130			N

Sample ID: **CCV3-190924**	Batch ID: **R106545**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 3:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.186	0.0100	0.200	0	93.0	90	110			N

Sample ID: **LCVL3-190924**	Batch ID: **R106545**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190924B**	Analysis Date: **9/24/2019 3:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00481	0.0100	0.00500	0	96.1	70	130			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190924C**

The QC data in batch 92891 applies to the following samples: 1909161-13B

Sample ID: **MB-92891**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_190924C**	Analysis Date: **9/24/2019 12:05:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-92891**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_190924C**	Analysis Date: **9/24/2019 12:07:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0	96.6	80	120			N

Sample ID: **LCSD-92891**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190924C**	Analysis Date: **9/24/2019 12:09:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.194	0.0100	0.200	0	97.2	80	120	0.675	15	N

Sample ID: **1909173-01B SD**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190924C**	Analysis Date: **9/24/2019 12:16:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.0150	0.0500	0	0.00400				0	20	N

Sample ID: **1909173-01B PDS**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190924C**	Analysis Date: **9/24/2019 12:39:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0.00400	94.4	75	125			N

Sample ID: **1909173-01B MS**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190924C**	Analysis Date: **9/24/2019 12:46:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.197	0.0100	0.200	0.00400	96.4	75	125			N

Sample ID: **1909173-01B MSD**	Batch ID: **92891**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190924C**	Analysis Date: **9/24/2019 12:53:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.195	0.0100	0.200	0.00400	95.7	75	125	0.643	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190924C

Sample ID: **ICV-190924**	Batch ID: **R109128**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190924C**	Analysis Date: **9/24/2019 11:23:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0973	0.0100	0.100	0	97.3	90	110			N

Sample ID: **LCVL-190924**	Batch ID: **R109128**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190924C**	Analysis Date: **9/24/2019 11:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00483	0.0100	0.00500	0	96.6	80	120			N

Sample ID: **CCV1-190924**	Batch ID: **R109128**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190924C**	Analysis Date: **9/24/2019 1:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.191	0.0100	0.200	0	95.3	90	110			N

Sample ID: **LCVL1-190924**	Batch ID: **R109128**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190924C**	Analysis Date: **9/24/2019 1:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00491	0.0100	0.00500	0	98.3	80	120			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925A

The QC data in batch 92858 applies to the following samples: 1909161-04A, 1909161-05A, 1909161-06A, 1909161-07A, 1909161-08A, 1909161-09A, 1909161-10A, 1909161-11A, 1909161-12A, 1909161-13A

Sample ID: **MB-92858** Batch ID: **92858** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 3:21:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-92858** Batch ID: **92858** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 3:23:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.01	0.0300	5.00	0	100	80	120			
Antimony	0.203	0.00250	0.200	0	102	80	120			
Arsenic	0.202	0.00500	0.200	0	101	80	120			
Calcium	4.85	0.300	5.00	0	96.9	80	120			
Chromium	0.191	0.00500	0.200	0	95.4	80	120			
Lead	0.192	0.00100	0.200	0	96.2	80	120			
Magnesium	5.06	0.300	5.00	0	101	80	120			
Nickel	0.197	0.0100	0.200	0	98.7	80	120			
Potassium	5.23	0.300	5.00	0	105	80	120			
Thallium	0.191	0.00150	0.200	0	95.6	80	120			
Vanadium	0.192	0.00100	0.200	0	96.0	80	120			

Sample ID: **LCSD-92858** Batch ID: **92858** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 3:25:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.08	0.0300	5.00	0	102	80	120	1.40	15	
Antimony	0.203	0.00250	0.200	0	102	80	120	0.186	15	
Arsenic	0.201	0.00500	0.200	0	101	80	120	0.278	15	
Calcium	4.86	0.300	5.00	0	97.3	80	120	0.374	15	
Chromium	0.191	0.00500	0.200	0	95.4	80	120	0.049	15	
Lead	0.193	0.00100	0.200	0	96.3	80	120	0.092	15	
Magnesium	5.08	0.300	5.00	0	102	80	120	0.494	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925A

Sample ID: **LCSD-92858** Batch ID: **92858** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 3:25:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.198	0.0100	0.200	0	99.1	80	120	0.402	15	
Potassium	5.22	0.300	5.00	0	104	80	120	0.163	15	
Thallium	0.190	0.00150	0.200	0	95.2	80	120	0.331	15	
Vanadium	0.192	0.00100	0.200	0	96.0	80	120	0.040	15	

Sample ID: **1909161-11A SD** Batch ID: **92858** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 3:32:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0638	0.150	0	0.0573				10.7	10	R
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Nickel	<0.0150	0.0500	0	0				0	10	
Thallium	<0.00250	0.00750	0	0.000518				0	10	
Vanadium	<0.00250	0.00500	0	0.00220				0	10	

Sample ID: **1909161-11A PDS** Batch ID: **92858** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 3:54:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.80	0.0300	5.00	0.0573	94.8	80	120			
Antimony	0.193	0.00250	0.200	0	96.4	80	120			
Arsenic	0.181	0.00500	0.200	0	90.5	80	120			
Chromium	0.160	0.00500	0.200	0	80.2	80	120			
Lead	0.202	0.00100	0.200	0	101	80	120			
Nickel	0.155	0.0100	0.200	0	77.5	80	120			S
Thallium	0.203	0.00150	0.200	0.000518	101	80	120			
Vanadium	0.170	0.00100	0.200	0.00220	84.1	80	120			

Sample ID: **1909161-11A MS** Batch ID: **92858** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 3:56:00 PM** Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0.0573	98.5	80	120			
Antimony	0.196	0.00250	0.200	0	98.2	80	120			
Arsenic	0.185	0.00500	0.200	0	92.3	80	120			
Calcium	930	0.300	5.00	886	893	80	120			S
Chromium	0.159	0.00500	0.200	0	79.6	80	120			
Lead	0.206	0.00100	0.200	0	103	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925A

Sample ID: **1909161-11A MS**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 3:56:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	1190	0.300	5.00	1230	-758	80	120			S
Nickel	0.151	0.0100	0.200	0	75.7	80	120			S
Potassium	68.7	0.300	5.00	56.2	251	80	120			S
Thallium	0.208	0.00150	0.200	0.000518	104	80	120			
Vanadium	0.171	0.00100	0.200	0.00220	84.5	80	120			

Sample ID: **1909161-11A MSD**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 3:58:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.01	0.0300	5.00	0.0573	99.0	80	120	0.486	15	
Antimony	0.196	0.00250	0.200	0	97.9	80	120	0.273	15	
Arsenic	0.185	0.00500	0.200	0	92.3	80	120	0.020	15	
Calcium	936	0.300	5.00	886	1010	80	120	0.606	15	S
Chromium	0.159	0.00500	0.200	0	79.7	80	120	0.024	15	
Lead	0.206	0.00100	0.200	0	103	80	120	0.164	15	
Magnesium	1190	0.300	5.00	1230	-833	80	120	0.317	15	S
Nickel	0.152	0.0100	0.200	0	75.9	80	120	0.264	15	S
Potassium	68.3	0.300	5.00	56.2	243	80	120	0.627	15	S
Thallium	0.206	0.00150	0.200	0.000518	103	80	120	1.08	15	
Vanadium	0.171	0.00100	0.200	0.00220	84.5	80	120	0.044	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925A

Sample ID: **ICV-190925**	Batch ID: **R106568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 11:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.44	0.0300	2.50	0	97.4	90	110			
Antimony	0.100	0.00250	0.100	0	100	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Calcium	2.60	0.300	2.50	0	104	90	110			
Chromium	0.100	0.00500	0.100	0	100	90	110			
Lead	0.0978	0.00100	0.100	0	97.8	90	110			
Magnesium	2.49	0.300	2.50	0	99.8	90	110			
Nickel	0.103	0.0100	0.100	0	103	90	110			
Potassium	2.56	0.300	2.50	0	102	90	110			
Thallium	0.0966	0.00150	0.100	0	96.6	90	110			
Vanadium	0.0978	0.00100	0.100	0	97.8	90	110			

Sample ID: **LCVL-190925**	Batch ID: **R106568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 12:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.101	0.0300	0.100	0	101	70	130			
Antimony	0.00204	0.00250	0.00200	0	102	70	130			
Arsenic	0.00503	0.00500	0.00500	0	101	70	130			
Calcium	0.0848	0.300	0.100	0	84.8	70	130			
Chromium	0.00471	0.00500	0.00500	0	94.1	70	130			
Lead	0.000956	0.00100	0.00100	0	95.6	70	130			
Magnesium	0.0989	0.300	0.100	0	98.9	70	130			
Nickel	0.00500	0.0100	0.00500	0	100	70	130			
Potassium	0.0876	0.300	0.100	0	87.6	70	130			
Thallium	0.000971	0.00150	0.00100	0	97.1	70	130			
Vanadium	0.000841	0.00100	0.00100	0	84.1	70	130			

Sample ID: **CCV2-190925**	Batch ID: **R106568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 2:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0	103	90	110			
Antimony	0.204	0.00250	0.200	0	102	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Calcium	4.95	0.300	5.00	0	99.0	90	110			
Chromium	0.188	0.00500	0.200	0	94.1	90	110			
Lead	0.194	0.00100	0.200	0	97.1	90	110			
Magnesium	5.03	0.300	5.00	0	101	90	110			
Nickel	0.197	0.0100	0.200	0	98.5	90	110			
Potassium	5.29	0.300	5.00	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925A

Sample ID: **CCV2-190925**	Batch ID: **R106568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 2:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.192	0.00150	0.200	0	96.1	90	110			
Vanadium	0.190	0.00100	0.200	0	95.2	90	110			

Sample ID: **LCVL2-190925**	Batch ID: **R106568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 3:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.105	0.0300	0.100	0	105	70	130			
Antimony	0.00200	0.00250	0.00200	0	100	70	130			
Arsenic	0.00512	0.00500	0.00500	0	102	70	130			
Calcium	0.0751	0.300	0.100	0	75.1	70	130			
Chromium	0.00478	0.00500	0.00500	0	95.6	70	130			
Lead	0.000956	0.00100	0.00100	0	95.6	70	130			
Magnesium	0.106	0.300	0.100	0	106	70	130			
Nickel	0.00500	0.0100	0.00500	0	100	70	130			
Potassium	0.112	0.300	0.100	0	112	70	130			
Thallium	0.000944	0.00150	0.00100	0	94.4	70	130			
Vanadium	0.00126	0.00100	0.00100	0	126	70	130			

Sample ID: **CCV3-190925**	Batch ID: **R106568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 4:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0	103	90	110			
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Calcium	5.02	0.300	5.00	0	100	90	110			
Chromium	0.181	0.00500	0.200	0	90.3	90	110			
Lead	0.191	0.00100	0.200	0	95.5	90	110			
Magnesium	4.93	0.300	5.00	0	98.6	90	110			
Nickel	0.191	0.0100	0.200	0	95.6	90	110			
Potassium	5.54	0.300	5.00	0	111	90	110			S
Thallium	0.189	0.00150	0.200	0	94.3	90	110			
Vanadium	0.186	0.00100	0.200	0	93.0	90	110			

Sample ID: **LCVL3-190925**	Batch ID: **R106568**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190925A**	Analysis Date: **9/25/2019 4:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.108	0.0300	0.100	0	108	70	130			
Antimony	0.00206	0.00250	0.00200	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190925A

Sample ID: **LCVL3-190925** Batch ID: **R106568** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190925A** Analysis Date: **9/25/2019 4:49:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00507	0.00500	0.00500	0	101	70	130			
Calcium	0.100	0.300	0.100	0	100	70	130			
Chromium	0.00458	0.00500	0.00500	0	91.6	70	130			
Lead	0.000927	0.00100	0.00100	0	92.7	70	130			
Magnesium	0.100	0.300	0.100	0	100	70	130			
Nickel	0.00470	0.0100	0.00500	0	93.9	70	130			
Potassium	0.141	0.300	0.100	0	141	70	130			S
Thallium	0.000937	0.00150	0.00100	0	93.7	70	130			
Vanadium	0.00143	0.00100	0.00100	0	143	70	130			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190926A

Sample ID: **DCS2-92934** Batch ID: **92934** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS5_190926A** Analysis Date: **9/26/2019 12:44:00 PM** Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.299	0.300	0.300	0	99.8	70	130	0	0	
Magnesium	0.322	0.300	0.300	0	107	70	130	0	0	
Potassium	0.291	0.300	0.300	0	96.9	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190927A

The QC data in batch 92858 applies to the following samples: 1909161-04A, 1909161-05A, 1909161-06A, 1909161-07A, 1909161-08A, 1909161-09A, 1909161-10A, 1909161-11A, 1909161-12A, 1909161-13A

Sample ID: **MB-92858**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 4:11:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	<0.100	0.300								

Sample ID: **LCS-92858**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 4:13:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	4.83	0.300	5.00	0	96.6	80	120			

Sample ID: **LCSD-92858**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 4:15:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	4.90	0.300	5.00	0	98.1	80	120	1.48	15	

Sample ID: **1909161-11A SD**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 4:47:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	877	750	0	811				7.86	10	
Magnesium	1340	750	0	1270				5.08	10	
Sodium	9190	750	0	9150				0.448	10	

Sample ID: **1909161-11A PDS**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 4:49:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	3240	150	2500	811	97.2	80	120			
Magnesium	3660	150	2500	1270	95.3	80	120			
Sodium	11500	150	2500	9150	93.8	80	120			

Sample ID: **1909161-11A MS**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 4:51:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	9500	150	5.00	9150	6990	80	120			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190927A

Sample ID: **1909161-11A MSD**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 4:53:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	9360	150	5.00	9150	4150	80	120	1.51	15	S

Sample ID: **1909161-11A SD**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 5:11:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	50.1	15.0	0	51.0				1.58	10	

Sample ID: **1909161-11A PDS**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 5:53:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	103	3.00	50.0	50.9	104	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190927A

Sample ID: **ICV-190927**	Batch ID: **R106616**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 1:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.51	0.300	2.50	0	100	90	110			
Magnesium	2.46	0.300	2.50	0	98.3	90	110			
Potassium	2.56	0.300	2.50	0	102	90	110			
Sodium	2.49	0.300	2.50	0	99.6	90	110			

Sample ID: **LCVL-190927**	Batch ID: **R106616**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.108	0.300	0.100	0	108	70	130			
Magnesium	0.101	0.300	0.100	0	101	70	130			
Potassium	0.110	0.300	0.100	0	110	70	130			
Sodium	0.0740	0.300	0.100	0	74.0	70	130			

Sample ID: **CCV2-190927**	Batch ID: **R106616**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 3:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.85	0.300	5.00	0	97.1	90	110			
Magnesium	4.95	0.300	5.00	0	98.9	90	110			
Sodium	4.82	0.300	5.00	0	96.4	90	110			

Sample ID: **LCVL2-190927**	Batch ID: **R106616**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 3:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0995	0.300	0.100	0	99.5	70	130			
Magnesium	0.0974	0.300	0.100	0	97.4	70	130			
Sodium	0.0348	0.300	0.100	0	34.8	70	130			S

Sample ID: **CCV3-190927**	Batch ID: **R106616**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 4:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.95	0.300	5.00	0	99.0	90	110			
Magnesium	5.00	0.300	5.00	0	99.9	90	110			
Potassium	5.05	0.300	5.00	0	101	90	110			
Sodium	4.86	0.300	5.00	0	97.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190927A

Sample ID: **LCVL3-190927**	Batch ID: **R106616**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 5:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0968	0.300	0.100	0	96.8	70	130			
Magnesium	0.0997	0.300	0.100	0	99.7	70	130			
Potassium	0.0899	0.300	0.100	0	89.9	70	130			
Sodium	0.0323	0.300	0.100	0	32.3	70	130			S

Sample ID: **CCV4-190927**	Batch ID: **R106616**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 6:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	5.15	0.300	5.00	0	103	90	110			

Sample ID: **LCVL4-190927**	Batch ID: **R106616**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190927A**	Analysis Date: **9/27/2019 6:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.127	0.300	0.100	0	127	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190927B

The QC data in batch 92858 applies to the following samples: 1909161-04A, 1909161-05A, 1909161-06A, 1909161-07A, 1909161-08A, 1909161-09A, 1909161-10A, 1909161-11A, 1909161-12A, 1909161-13A

Sample ID: **MB-92858**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 4:11:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-92858**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 4:13:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	97.8	80	120			N

Sample ID: **LCSD-92858**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 4:15:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	98.0	80	120	0.275	25	N

Sample ID: **1909161-11A MS**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 4:51:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<1.50	5.00	0.200	0	0	80	120			SN

Sample ID: **1909161-11A MSD**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 4:53:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<1.50	5.00	0.200	0	0	80	120	0	25	SN

Sample ID: **1909161-11A SD**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 5:11:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.120	0.500	0	0.129				7.83	10	N

Sample ID: **1909161-11A PDS**	Batch ID: **92858**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 5:53:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	2.13	0.100	2.00	0.129	100	80	120			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190927B

Sample ID: **ICV-190927**	Batch ID: **R106632**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 1:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0980	0.0100	0.100	0	98.0	90	110			N

Sample ID: **LCVL-190927**	Batch ID: **R106632**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00496	0.0100	0.00500	0	99.2	70	130			N

Sample ID: **CCV2-190927**	Batch ID: **R106632**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 3:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.197	0.0100	0.200	0	98.6	90	110			N

Sample ID: **LCVL2-190927**	Batch ID: **R106632**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 3:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00492	0.0100	0.00500	0	98.3	70	130			N

Sample ID: **CCV3-190927**	Batch ID: **R106632**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 4:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.197	0.0100	0.200	0	98.7	90	110			N

Sample ID: **LCVL3-190927**	Batch ID: **R106632**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 5:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00494	0.0100	0.00500	0	98.8	70	130			N

Sample ID: **CCV4-190927**	Batch ID: **R106632**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 6:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	97.9	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190927B

Sample ID: **LCVL4-190927**	Batch ID: **R106632**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **LCVL**	Run ID: **ICP-MS5_190927B**	Analysis Date: **9/27/2019 6:05:00 PM**		Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00486	0.0100	0.00500	0	97.3	70	130			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190930C

Sample ID: **ICV-190930**	Batch ID: **R106656**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190930C**	Analysis Date: **9/30/2019 11:24:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0965	0.0100	0.100	0	96.5	90	110			N

Sample ID: **LCVL-190930**	Batch ID: **R106656**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190930C**	Analysis Date: **9/30/2019 12:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00483	0.0100	0.00500	0	96.7	70	130			N

Sample ID: **CCV5-190930**	Batch ID: **R106656**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190930C**	Analysis Date: **9/30/2019 4:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.192	0.0100	0.200	0	95.8	90	110			N

Sample ID: **LCVL5-190930**	Batch ID: **R106656**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190930C**	Analysis Date: **9/30/2019 5:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00474	0.0100	0.00500	0	94.8	70	130			N

Sample ID: **CCV6-190930**	Batch ID: **R106656**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190930C**	Analysis Date: **9/30/2019 5:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.189	0.0100	0.200	0	94.3	90	110			N

Sample ID: **LCVL6-190930**	Batch ID: **R106656**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190930C**	Analysis Date: **9/30/2019 5:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00480	0.0100	0.00500	0	96.0	70	130			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190904A

Sample ID: **DCS2-92650** Batch ID: **92650** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC4_190904A** Analysis Date: **9/4/2019 11:15:50 AM** Prep Date: **9/4/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.504	1.00	0.5000	0	101	65	135	0	0	
Fluoride	0.235	0.400	0.2000	0	118	65	135	0	0	
Nitrate-N	0.223	0.0500	0.2500	0	89.1	60	140	0	0	
Sulfate	1.71	3.00	1.500	0	114	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190919A

The QC data in batch 92851 applies to the following samples: 1909161-01D, 1909161-02D, 1909161-03D, 1909161-04D, 1909161-05D, 1909161-06D, 1909161-07D, 1909161-08D, 1909161-09D, 1909161-10D, 1909161-11D, 1909161-12D, 1909161-13D

Sample ID: **MB-92851** Batch ID: **92851** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_190919A** Analysis Date: **9/19/2019 12:02:02 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-92851** Batch ID: **92851** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_190919A** Analysis Date: **9/19/2019 12:18:02 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.68	1.00	10.00	0	96.8	90	110			
Fluoride	3.73	0.400	4.000	0	93.2	90	110			
Nitrate-N	4.73	0.500	5.000	0	94.6	90	110			
Sulfate	29.0	3.00	30.00	0	96.8	90	110			

Sample ID: **LCSD-92851** Batch ID: **92851** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_190919A** Analysis Date: **9/19/2019 12:34:02 PM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.66	1.00	10.00	0	96.6	90	110	0.137	20	
Fluoride	3.73	0.400	4.000	0	93.3	90	110	0.138	20	
Nitrate-N	4.70	0.500	5.000	0	94.0	90	110	0.711	20	
Sulfate	29.2	3.00	30.00	0	97.3	90	110	0.515	20	

Sample ID: **1909161-11DMS** Batch ID: **92851** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_190919A** Analysis Date: **9/20/2019 1:27:55 AM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	35600	1000	20000	17060	92.8	90	110			
Fluoride	20300	400	20000	0	102	90	110			
Nitrate-N	4070	500	4516	0	90.1	90	110			
Sulfate	23100	3000	20000	3782	96.7	90	110			

Sample ID: **1909161-11DMSD** Batch ID: **92851** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_190919A** Analysis Date: **9/20/2019 1:43:55 AM** Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	35500	1000	20000	17060	92.1	90	110	0.416	20	
Fluoride	20200	400	20000	0	101	90	110	0.865	20	
Nitrate-N	4010	500	4516	0	88.8	90	110	1.45	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190919A

Sample ID: **1909161-11DMSD**	Batch ID: **92851**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_190919A**	Analysis Date: **9/20/2019 1:43:55 AM**	Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	22800	3000	20000	3782	94.9	90	110	1.60	20	

Sample ID: **1909148-06CMS**	Batch ID: **92851**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_190919A**	Analysis Date: **9/20/2019 8:23:55 AM**	Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	467	10.0	200.0	288.3	89.4	90	110			S
Fluoride	691	4.00	200.0	635.8	27.6	90	110			S
Nitrate-N	40.9	5.00	45.16	0	90.5	90	110			
Sulfate	229	30.0	200.0	36.64	96.1	90	110			

Sample ID: **1909148-06CMSD**	Batch ID: **92851**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_190919A**	Analysis Date: **9/20/2019 8:39:55 AM**	Prep Date: **9/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	465	10.0	200.0	288.3	88.2	90	110	0.538	20	S
Fluoride	691	4.00	200.0	635.8	27.7	90	110	0.009	20	S
Nitrate-N	40.4	5.00	45.16	0	89.5	90	110	1.13	20	S
Sulfate	225	30.0	200.0	36.64	94.0	90	110	1.89	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190919A

Sample ID: **ICV-190919**	Batch ID: **R106466**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_190919A**	Analysis Date: **9/19/2019 9:36:13 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.6	1.00	25.00	0	98.4	90	110			
Fluoride	9.30	0.400	10.00	0	93.0	90	110			
Nitrate-N	12.1	0.500	12.50	0	97.1	90	110			
Sulfate	74.4	3.00	75.00	0	99.2	90	110			

Sample ID: **CCV1-190919**	Batch ID: **R106466**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919A**	Analysis Date: **9/19/2019 8:39:55 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.76	1.00	10.00	0	97.6	90	110			
Fluoride	3.80	0.400	4.000	0	95.0	90	110			
Nitrate-N	4.74	0.500	5.000	0	94.9	90	110			
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Sample ID: **CCV2-190919**	Batch ID: **R106466**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919A**	Analysis Date: **9/20/2019 12:39:55 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.69	1.00	10.00	0	96.9	90	110			
Fluoride	3.91	0.400	4.000	0	97.8	90	110			
Nitrate-N	4.74	0.500	5.000	0	94.8	90	110			
Sulfate	29.4	3.00	30.00	0	98.0	90	110			

Sample ID: **CCV3-190919**	Batch ID: **R106466**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919A**	Analysis Date: **9/20/2019 5:11:55 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.70	1.00	10.00	0	97.0	90	110			
Fluoride	3.98	0.400	4.000	0	99.5	90	110			
Nitrate-N	4.76	0.500	5.000	0	95.2	90	110			
Sulfate	29.5	3.00	30.00	0	98.2	90	110			

Sample ID: **CCV4-190919**	Batch ID: **R106466**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190919A**	Analysis Date: **9/20/2019 9:43:55 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.86	1.00	10.00	0	98.6	90	110			
Fluoride	4.07	0.400	4.000	0	102	90	110			
Nitrate-N	4.66	0.500	5.000	0	93.2	90	110			
Sulfate	29.8	3.00	30.00	0	99.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191003A

The QC data in batch 93077 applies to the following samples: 1909161-13D

Sample ID: **MB-93077**	Batch ID: **93077**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC4_191003A**	Analysis Date: **10/3/2019 10:13:21 AM**	Prep Date: **10/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-93077**	Batch ID: **93077**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC4_191003A**	Analysis Date: **10/3/2019 10:29:21 AM**	Prep Date: **10/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.56	1.00	10.00	0	95.6	90	110			

Sample ID: **LCSD-93077**	Batch ID: **93077**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC4_191003A**	Analysis Date: **10/3/2019 10:45:21 AM**	Prep Date: **10/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.59	1.00	10.00	0	95.9	90	110	0.363	20	

Sample ID: **1910021-01BMS**	Batch ID: **93077**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_191003A**	Analysis Date: **10/3/2019 12:15:15 PM**	Prep Date: **10/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	220	10.0	200.0	26.04	97.1	90	110			

Sample ID: **1910021-01BMSD**	Batch ID: **93077**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_191003A**	Analysis Date: **10/3/2019 12:31:15 PM**	Prep Date: **10/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	220	10.0	200.0	26.04	97.1	90	110	0.065	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191003A

Sample ID: **ICV-191003**	Batch ID: **R106734**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_191003A**	Analysis Date: **10/3/2019 9:41:21 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.6	1.00	25.00	0	98.3	90	110			

Sample ID: **CCV1-191003**	Batch ID: **R106734**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_191003A**	Analysis Date: **10/3/2019 1:49:40 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.52	1.00	10.00	0	95.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190923A

The QC data in batch 92875 applies to the following samples: 1909161-01D, 1909161-02D, 1909161-03D, 1909161-04D, 1909161-05D, 1909161-06D, 1909161-07D, 1909161-08D, 1909161-09D, 1909161-10D, 1909161-11D, 1909161-12D, 1909161-13D

Sample ID: **MB-92875** Batch ID: **92875** TestNo: **M2320 B** Units: **mg/L @ pH 4.2**
SampType: **MBLK** Run ID: **TITRATOR_190923A** Analysis Date: **9/23/2019 9:13:00 AM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-92875** Batch ID: **92875** TestNo: **M2320 B** Units: **mg/L @ pH 4.11**
SampType: **LCS** Run ID: **TITRATOR_190923A** Analysis Date: **9/23/2019 9:18:00 AM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.7	20.0	50.00	0	105	74	129			

Sample ID: **1909161-11D-DUP** Batch ID: **92875** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_190923A** Analysis Date: **9/23/2019 1:34:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	231	20.0	0	227.2				1.62	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	231	20.0	0	227.2				1.62	20	

Sample ID: **1909173-01C-DUP** Batch ID: **92875** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_190923A** Analysis Date: **9/23/2019 2:49:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	229	20.0	0	222.7				2.61	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	229	20.0	0	222.7				2.61	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190923A

Sample ID: **ICV-190923**	Batch ID: **R106529**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.23**
SampType: **ICV**	Run ID: **TITRATOR_190923A**	Analysis Date: **9/23/2019 9:12:00 AM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	11.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	88.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.5	20.0	100.0	0	99.5	98	102			

Sample ID: **CCV1-190923**	Batch ID: **R106529**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.41**
SampType: **CCV**	Run ID: **TITRATOR_190923A**	Analysis Date: **9/23/2019 1:00:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	32.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	66.6	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.8	20.0	100.0	0	98.8	90	110			

Sample ID: **CCV2-190923**	Batch ID: **R106529**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.5**
SampType: **CCV**	Run ID: **TITRATOR_190923A**	Analysis Date: **9/23/2019 3:41:00 PM**	Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	44.6	20.0	0							
Alkalinity, Carbonate (As CaCO3)	50.4	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	95.0	20.0	100.0	0	95.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190830A

Sample ID: **DCS-92622**	Batch ID: **92622**	TestNo: **M4500-NH3-D**		Units: **mg/L**	
SampType: **DCS**	Run ID: **WC_190830A**	Analysis Date: **8/30/2019 12:30:00 PM**		Prep Date: **8/30/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.0759	0.250	0.1000	0	75.9	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190920E

The QC data in batch 92869 applies to the following samples: 1909161-08D

Sample ID: **MB-92869**	Batch ID: **92869**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_190920E**	Analysis Date: **9/20/2019 4:30:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-92869**	Batch ID: **92869**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_190920E**	Analysis Date: **9/20/2019 4:30:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	762	10.0	745.6	0	102	90	113			

Sample ID: **1909142-04D-DUP**	Batch ID: **92869**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190920E**	Analysis Date: **9/20/2019 4:30:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	34100	1000	0	30900				9.85	5	R

Sample ID: **1909142-05D-DUP**	Batch ID: **92869**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_190920E**	Analysis Date: **9/20/2019 4:30:00 PM**	Prep Date: **9/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	40300	1000	0	41700				3.41	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190924B

The QC data in batch 92879 applies to the following samples: 1909161-01D, 1909161-02D, 1909161-03D, 1909161-04D, 1909161-05D, 1909161-06D, 1909161-07D, 1909161-09D, 1909161-10D, 1909161-11D, 1909161-12D, 1909161-13D

Sample ID: **MB-92879** Batch ID: **92879** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_190924B** Analysis Date: **9/24/2019 4:00:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-92879** Batch ID: **92879** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_190924B** Analysis Date: **9/24/2019 4:00:00 PM** Prep Date: **9/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	758	10.0	745.6	0	102	90	113			

Sample ID: **1909158-05C-DUP** Batch ID: **92879** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_190924B** Analysis Date: **9/24/2019 4:00:00 PM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1160	50.0	0	1130				2.19	5	

Sample ID: **1909158-07C-DUP** Batch ID: **92879** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_190924B** Analysis Date: **9/24/2019 4:00:00 PM** Prep Date: **9/24/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	18000	200	0	18040				0.000	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190927A

The QC data in batch 92953 applies to the following samples: 1909161-01C, 1909161-02C, 1909161-03C, 1909161-04C, 1909161-05C, 1909161-06C, 1909161-07C, 1909161-08C, 1909161-09C, 1909161-10C, 1909161-11C, 1909161-12C

Sample ID: **MB-92953** Batch ID: **92953** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_190927A** Analysis Date: **9/27/2019 5:00:00 PM** Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-92953** Batch ID: **92953** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **LCS** Run ID: **WC_190927A** Analysis Date: **9/27/2019 5:00:00 PM** Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.44	0.250	5.000	0	88.8	80	120			

Sample ID: **1909142-02CMS** Batch ID: **92953** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_190927A** Analysis Date: **9/27/2019 5:00:00 PM** Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.45	0.250	5.000	0	89.0	80	120			

Sample ID: **1909142-02CMSD** Batch ID: **92953** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_190927A** Analysis Date: **9/27/2019 5:00:00 PM** Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.08	0.250	5.000	0	81.6	80	120	8.68	25	

Sample ID: **1909161-11CMS** Batch ID: **92953** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_190927A** Analysis Date: **9/27/2019 5:00:00 PM** Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.84	0.250	5.000	0	117	80	120			

Sample ID: **1909161-11CMSD** Batch ID: **92953** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_190927A** Analysis Date: **9/27/2019 5:00:00 PM** Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.10	0.250	5.000	0	102	80	120	13.5	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190927A

Sample ID: **ICV-190927**	Batch ID: **R106617**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_190927A**	Analysis Date: **9/27/2019 5:00:00 PM**	Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.79	0.250	2.500	0	112	80	120			

Sample ID: **CCV1-190927**	Batch ID: **R106617**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_190927A**	Analysis Date: **9/27/2019 5:00:00 PM**	Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.38	0.250	5.000	0	87.6	80	120			

Sample ID: **CCV2-190927**	Batch ID: **R106617**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_190927A**	Analysis Date: **9/27/2019 5:00:00 PM**	Prep Date: **9/27/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.79	0.250	5.000	0	116	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190930A

The QC data in batch 92999 applies to the following samples: 1909161-13C

Sample ID: **MB-92999**	Batch ID: **92999**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_190930A**	Analysis Date: **9/30/2019 2:30:00 PM**	Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-92999**	Batch ID: **92999**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_190930A**	Analysis Date: **9/30/2019 2:30:00 PM**	Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.80	0.250	5.000	0	96.0	80	120			

Sample ID: **1909176-01CMS**	Batch ID: **92999**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_190930A**	Analysis Date: **9/30/2019 2:30:00 PM**	Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.03	0.250	5.000	0.7590	85.4	80	120			

Sample ID: **1909176-01CMSD**	Batch ID: **92999**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_190930A**	Analysis Date: **9/30/2019 2:30:00 PM**	Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.45	0.250	5.000	0.7590	93.8	80	120	8.02	25	

Sample ID: **1909176-13CMS**	Batch ID: **92999**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_190930A**	Analysis Date: **9/30/2019 2:30:00 PM**	Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	3.39	0.250	5.000	0	67.8	80	120			S

Sample ID: **1909176-13CMSD**	Batch ID: **92999**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_190930A**	Analysis Date: **9/30/2019 2:30:00 PM**	Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	3.37	0.250	5.000	0	67.4	80	120	0.592	25	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190930A

Sample ID: **ICV-190930**	Batch ID: **R106631**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_190930A**	Analysis Date: **9/30/2019 2:30:00 PM**	Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.65	0.250	2.500	0	106	80	120			

Sample ID: **CCV1-190930**	Batch ID: **R106631**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_190930A**	Analysis Date: **9/30/2019 2:30:00 PM**	Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.66	0.250	5.000	0	93.2	80	120			

Sample ID: **CCV2-190930**	Batch ID: **R106631**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_190930A**	Analysis Date: **9/30/2019 2:30:00 PM**	Prep Date: **9/30/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.19	0.250	5.000	0	83.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *23-Oct-19*

CLIENT: Golder
Work Order: 1909161
Project: Copano GW Sampling 3Q19

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ng/L @ pH 4.**	**ng/L @ pH 4.**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 22, 2019

DHL Analytical, Inc.

Sample Delivery Group:	L1142545
Samples Received:	09/24/2019
Project Number:	1909161
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

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MW4-3 L1142545-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/18/19 11:40	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/15/19 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:20	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:20	RGT	Mt. Juliet, TN

MW4-3B L1142545-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/18/19 12:19	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/15/19 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN

MW3-6 L1142545-03 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/18/19 13:25	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/15/19 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN

MW3-5 L1142545-04 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/18/19 14:08	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/15/19 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN

MW3-4 L1142545-05 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/18/19 15:10	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/15/19 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN

MW-202 L1142545-06 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/18/19 15:15	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/15/19 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN

MW3-4B L1142545-07 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/18/19 16:09	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/15/19 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN

MW4-1 L1142545-08 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/17/19 17:45	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/16/19 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN

MW4-7 L1142545-09 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/18/19 12:00	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/16/19 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:27	RGT	Mt. Juliet, TN

MW4-4 L1142545-10 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/18/19 12:40	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/16/19 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:32	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:32	RGT	Mt. Juliet, TN

MW3-2 L1142545-11 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/18/19 13:40	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/16/19 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:32	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:32	RGT	Mt. Juliet, TN

MW3-3 L1142545-12 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/18/19 14:50	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/16/19 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:32	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:32	RGT	Mt. Juliet, TN

MW-6R L1142545-13 Non-Potable Water

	Collected by	Collected date/time	Received date/time
		09/18/19 16:30	09/24/19 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1360436	1	10/10/19 08:19	10/16/19 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1362709	1	10/15/19 10:18	10/16/19 14:32	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1362709	1	10/15/19 10:18	10/16/19 14:32	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.84		0.553	0.43	10/15/2019 14:10	WG1360436
(T) Barium	*98.9*			*62.0-143*	*10/15/2019 14:10*	WG1360436
(T) Yttrium	*106*			*79.0-136*	*10/15/2019 14:10*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.18		0.801	0.682	10/16/2019 14:20	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.343		0.248	0.252	10/16/2019 14:20	WG1362709
(T) Barium-133	*83.9*			*30.0-143*	*10/16/2019 14:20*	WG1362709

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.887		0.585	0.433	10/15/2019 14:10	WG1360436
(T) Barium	*105*			*62.0-143*	*10/15/2019 14:10*	WG1360436
(T) Yttrium	*106*			*79.0-136*	*10/15/2019 14:10*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.36		0.884	0.699	10/16/2019 14:27	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.478		0.299	0.266	10/16/2019 14:27	WG1362709
(T) Barium-133	*82.8*			*30.0-143*	*10/16/2019 14:27*	WG1362709

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.10		0.614	0.469	10/15/2019 14:10	WG1360436
(T) Barium	*118*			*62.0-143*	*10/15/2019 14:10*	WG1360436
(T) Yttrium	*107*			*79.0-136*	*10/15/2019 14:10*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.36		0.815	0.683	10/16/2019 14:27	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.260		0.201	0.214	10/16/2019 14:27	WG1362709
(T) Barium-133	*88.9*			*30.0-143*	*10/16/2019 14:27*	WG1362709

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.329		0.486	0.404	10/15/2019 14:10	WG1360436
(T) Barium	*116*			*62.0-143*	*10/15/2019 14:10*	WG1360436
(T) Yttrium	*107*			*79.0-136*	*10/15/2019 14:10*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.0761		0.715	0.769	10/16/2019 14:27	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0761		0.229	0.365	10/16/2019 14:27	WG1362709
(T) Barium-133	*84.3*			*30.0-143*	*10/16/2019 14:27*	WG1362709

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	2.91		0.607	0.422	10/15/2019 14:10	WG1360436
(T) Barium	*96.1*			*62.0-143*	*10/15/2019 14:10*	WG1360436
(T) Yttrium	*107*			*79.0-136*	*10/15/2019 14:10*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	3.95		1.03	0.653	10/16/2019 14:27	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	1.04		0.424	0.231	10/16/2019 14:27	WG1362709
(T) Barium-133	*79.2*			*30.0-143*	*10/16/2019 14:27*	WG1362709

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	3.41		0.607	0.376	10/15/2019 14:10	WG1360436
(T) Barium	*110*			*62.0-143*	*10/15/2019 14:10*	WG1360436
(T) Yttrium	*99.6*			*79.0-136*	*10/15/2019 14:10*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	4.55		1.18	0.952	10/16/2019 14:27	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.15		0.568	0.576	10/16/2019 14:27	WG1362709
(T) Barium-133	*52.9*			*30.0-143*	*10/16/2019 14:27*	WG1362709

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	16.3		0.736	0.382	10/15/2019 14:10	WG1360436
(T) Barium	*91.5*			*62.0-143*	*10/15/2019 14:10*	WG1360436
(T) Yttrium	*118*			*79.0-136*	*10/15/2019 14:10*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	19.7		1.45	0.601	10/16/2019 14:27	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	3.45		0.712	0.219	10/16/2019 14:27	WG1362709
(T) Barium-133	*85.3*			*30.0-143*	*10/16/2019 14:27*	WG1362709

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.30		0.602	0.405	10/16/2019 10:15	WG1360436
(T) Barium	*106*			*62.0-143*	*10/16/2019 10:15*	WG1360436
(T) Yttrium	*109*			*79.0-136*	*10/16/2019 10:15*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.68		0.842	0.596	10/16/2019 14:27	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.384		0.240	0.191	10/16/2019 14:27	WG1362709
(T) Barium-133	*88.0*			*30.0-143*	*10/16/2019 14:27*	WG1362709

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.49		0.486	0.325	10/16/2019 10:15	WG1360436
(T) Barium	*111*			*62.0-143*	*10/16/2019 10:15*	WG1360436
(T) Yttrium	*101*			*79.0-136*	*10/16/2019 10:15*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	3.41		0.863	0.561	10/16/2019 14:27	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.917		0.377	0.236	10/16/2019 14:27	WG1362709
(T) Barium-133	*88.9*			*30.0-143*	*10/16/2019 14:27*	WG1362709

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.90		0.549	0.358	10/16/2019 10:15	WG1360436
(T) Barium	*101*			*62.0-143*	*10/16/2019 10:15*	WG1360436
(T) Yttrium	*109*			*79.0-136*	*10/16/2019 10:15*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.25		0.882	0.78	10/16/2019 14:32	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.354		0.333	0.422	10/16/2019 14:32	WG1362709
(T) Barium-133	*78.8*			*30.0-143*	*10/16/2019 14:32*	WG1362709

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.14		0.553	0.39	10/16/2019 10:15	WG1360436
(T) Barium	*108*			*62.0-143*	*10/16/2019 10:15*	WG1360436
(T) Yttrium	*107*			*79.0-136*	*10/16/2019 10:15*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.45		0.797	0.604	10/16/2019 14:32	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.315		0.244	0.214	10/16/2019 14:32	WG1362709
(T) Barium-133	*81.5*			*30.0-143*	*10/16/2019 14:32*	WG1362709

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.106		0.585	0.506	10/16/2019 10:15	WG1360436
(T) Barium	*100*			*62.0-143*	*10/16/2019 10:15*	WG1360436
(T) Yttrium	*112*			*79.0-136*	*10/16/2019 10:15*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.598		0.900	0.738	10/16/2019 14:32	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.493		0.315	0.232	10/16/2019 14:32	WG1362709
(T) Barium-133	*74.8*			*30.0-143*	*10/16/2019 14:32*	WG1362709

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.70		0.518	0.392	10/16/2019 10:15	WG1360436
(T) Barium	*103*			*62.0-143*	*10/16/2019 10:15*	WG1360436
(T) Yttrium	*112*			*79.0-136*	*10/16/2019 10:15*	WG1360436

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	3.24		0.834	0.692	10/16/2019 14:32	WG1362709

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.543		0.316	0.3	10/16/2019 14:32	WG1362709
(T) Barium-133	*89.5*			*30.0-143*	*10/16/2019 14:32*	WG1362709

Method Blank (MB)

(MB) R3462394-1 10/15/19 14:10

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-228	-0.235		0.261
(T) Barium	*103*		
(T) Yttrium	*103*		

L1144042-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1144042-01 10/16/19 10:15 • (DUP) R3462394-5 10/15/19 14:10

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-228	0.175	1.74	1	163	1.42		20	3
(T) Barium	*95.2*	*110*						
(T) Yttrium	*107*	*105*						

Laboratory Control Sample (LCS)

(LCS) R3462394-2 10/15/19 14:10

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-228	5.00	5.33	107	80.0-120	
(T) Barium			*112*		
(T) Yttrium			*101*		

L1142545-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1142545-11 10/16/19 10:15 • (MS) R3462394-3 10/15/19 14:10 • (MSD) R3462394-4 10/15/19 14:10

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-228	10.0	2.14	10.8	10.4	86.2	82.2	1	70.0-130			3.79		20
(T) Barium		*108*			*114*	*106*							
(T) Yttrium		*107*			*107*	*111*							

Method Blank (MB)

(MB) R3463495-1 10/16/19 14:20

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	-0.0116		0.0803
(T) Barium-133	*85.9*		

L1142545-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1142545-02 10/16/19 14:27 • (DUP) R3463495-5 10/16/19 14:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.478	0.213	1	76.8	0.727		20	3
(T) Barium-133	*82.8*	*85.6*						

Laboratory Control Sample (LCS)

(LCS) R3463495-2 10/16/19 14:20

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	4.44	88.5	80.0-120	
(T) Barium-133			*78.1*		

L1142545-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1142545-11 10/16/19 14:32 • (MS) R3463495-3 10/16/19 14:20 • (MSD) R3463495-4 10/16/19 14:20

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	0.315	19.2	17.1	93.9	83.4	1	75.0-125			11.7		20
(T) Barium-133		*81.5*			*77.1*	*81.8*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client:	PHLERTX	SDG#:	1142545
Cooler Received/Opened On:	9/24/19	Temperature:	Amb
Received By:	Hailey Melson		
Signature:			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?		✓	
Preservation Correct / Checked?			

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

H023

Work Order: 1909161

1142545

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

19-Sep-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra228 E904.0	Ra226 M7500 Ra B M	Requested Tests			
MW4-3	Aqueous	-01E	09/18/19 11:40 AM	1LHDPEHNO3	1					-01
MW4-3	Aqueous	-01F	09/18/19 11:40 AM	1LHDPEHNO3		1				
MW4-3B	Aqueous	-02E	09/18/19 12:19 PM	1LHDPEHNO3	1					02
MW4-3B	Aqueous	-02F	09/18/19 12:19 PM	1LHDPEHNO3		1				
MW3-6	Aqueous	-03E	09/18/19 01:25 PM	1LHDPEHNO3	1					03
MW3-6	Aqueous	-03F	09/18/19 01:25 PM	1LHDPEHNO3		1				
MW3-5	Aqueous	-04E	09/18/19 02:08 PM	1LHDPEHNO3	1					04
MW3-5	Aqueous	-04F	09/18/19 02:08 PM	1LHDPEHNO3		1				
MW3-4	Aqueous	-05E	09/18/19 03:10 PM	1LHDPEHNO3	1					05
MW3-4	Aqueous	-05F	09/18/19 03:10 PM	1LHDPEHNO3		1				
MW-202	Aqueous	-06E	09/18/19 03:15 PM	1LHDPEHNO3	1					06
MW-202	Aqueous	-06F	09/18/19 03:15 PM	1LHDPEHNO3		1				
MW3-4B	Aqueous	-07E	09/18/19 04:09 PM	1LHDPEHNO3	1					07
MW3-4B	Aqueous	-07F	09/18/19 04:09 PM	1LHDPEHNO3		1				
MW4-1	Aqueous	-08E	09/17/19 05:45 PM	1LHDPEHNO3	1					08
MW4-1	Aqueous	-08F	09/17/19 05:45 PM	1LHDPEHNO3		1				
MW4-7	Aqueous	-09E	09/18/19 12:00 PM	1LHDPEHNO3	1					09
MW4-7	Aqueous	-09F	09/18/19 12:00 PM	1LHDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

RAD SCREEN: <0.5 mR/hr

		Date/Time			Date/Time
Relinquished by:		9/20/19 1700	Received by:		9/24/19 10:09
Relinquished by:			Received by:		

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: (512) 388-8222 FAX: (512) 388-8229

CHAIN-OF-CUSTODY RECORD

Work Order: 1909161

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

19-Sep-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	M7500 Ra B M				
MW4-4	Aqueous	-10E	09/18/19 12:40 PM	1LHDPEHNO3	1					10
MW4-4	Aqueous	-10F	09/18/19 12:40 PM	1LHDPEHNO3		1				
MW3-2	Aqueous	-11E	09/18/19 01:40 PM	1LHDPEHNO3	2 *					11
MW3-2	Aqueous	-11F	09/18/19 01:40 PM	1LHDPEHNO3		2 *				
MW3-3	Aqueous	-12E	09/18/19 02:50 PM	1LHDPEHNO3	1					12
MW3-3	Aqueous	-12F	09/18/19 02:50 PM	1LHDPEHNO3		1				
MW-6R	Aqueous	-13E	09/18/19 04:30 PM	1LHDPEHNO3	1					13
MW-6R	Aqueous	-13F	09/18/19 04:30 PM	1LHDPEHNO3		1				

*Extra volume for QC

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

RAD SCREEN: <0.5 mR/hr

	Date/Time		Date/Time
Relinquished by:	9/20/19 1700	Received by:	9/24/19 10:00
Relinquished by:		Received by:	

February 26, 2020

Kevin Dworsky
Golder
620 E. Airline
Victoria, TX 77901
TEL: (361) 573-6442
FAX (361) 553-6449

Order No.: 1912030

RE: Copano GW Sampling 4Q19

Dear Kevin Dworsky:

DHL Analytical, Inc. received 13 sample(s) on 12/5/2019 for the analyses presented in the following report.

REVISION#1: This revision consists of adding Dissolved Uranium to the list of test parameters for all samples as per the client. Please replace the original report with this revised report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 80175

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Rd
PHONE: 361-573-6149 FAX/E-MAIL: R_Urwin@Golder.com
DATA REPORTED TO: Kevin Dworsky, Greg Logan
ADDITIONAL REPORT COPIES TO: Richard Urwin

DATE: 12/4/19 PAGE 1 OF
PO #: DHL WORK ORDER #: 191203.
PROJECT LOCATION OR NAME: Copano 4Q19
CLENT PROJECT #: 19125525 COLLECTOR: R. Urwin

Authorize 5% surcharge for TRRP Report? ~~Yes~~ ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT
P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 / NaOH ❑	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
MW4-2	01	12/4/19	09:19	W	P	6	X	X	X	X	X	Total As, Anions, Ra 226/228	
MW4-3B	02	12/4/19	09:56										
MW4-3	03	12/4/19	10:36										
MW4-4	04	12/4/19	11:20										
MW4-102	05	12/4/19	11:32										
MW4-7	06	12/4/19	12:31										
MW4-7A	07	12/4/19	13:18										
MW4-7B	08	12/4/19	14:04										

SEE Attached for Full list of tests!

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	12/4/19 17:12	FEDEX
Fed Ex	12/5/19 0940	

~~DHL DISPOSAL @ $5.00 each~~ ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.9/1.1/5.6/1.3 THERM #: 73
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 80176

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 620 E. Airline Victoria, Tx 77901
PHONE: 361 573 6674 FAX/E-MAIL: Kevin_Dworsky@golder.com
DATA REPORTED TO: Kevin Dworsky
ADDITIONAL REPORT COPIES TO: Greg Logan

DATE: 12/4/19 PAGE 2 OF 2
PO #: DHL WORK ORDER #: 1912030
PROJECT LOCATION OR NAME: Copano 4Q19 GWS
CLENT PROJECT #: COLLECTOR: S. Fenner

Authorize 5% surcharge for TRRP Report? ☑ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 | NaOH ☐ ☑ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☑ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | Total Metals 2a 226/228 (Radium)

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4	ICE	UNPRESERVED	FIELD NOTES
MW-3-1	09	12/4/19	1133	W	P	18		X	X	X		
MW-3-2	10	12/4/19	1258			6						
MW-3-3	11	12/4/19	1341			6						
MW-3-4	12	12/4/19	1422			6						
MW-3-4B	13	12/4/19	1512			6						

RELINQUISHED BY: (Signature) DATE/TIME 12/4 17:06 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
Fed Ex 12/5/19 0940
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☑
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.9/1.1/5.6/1.3 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

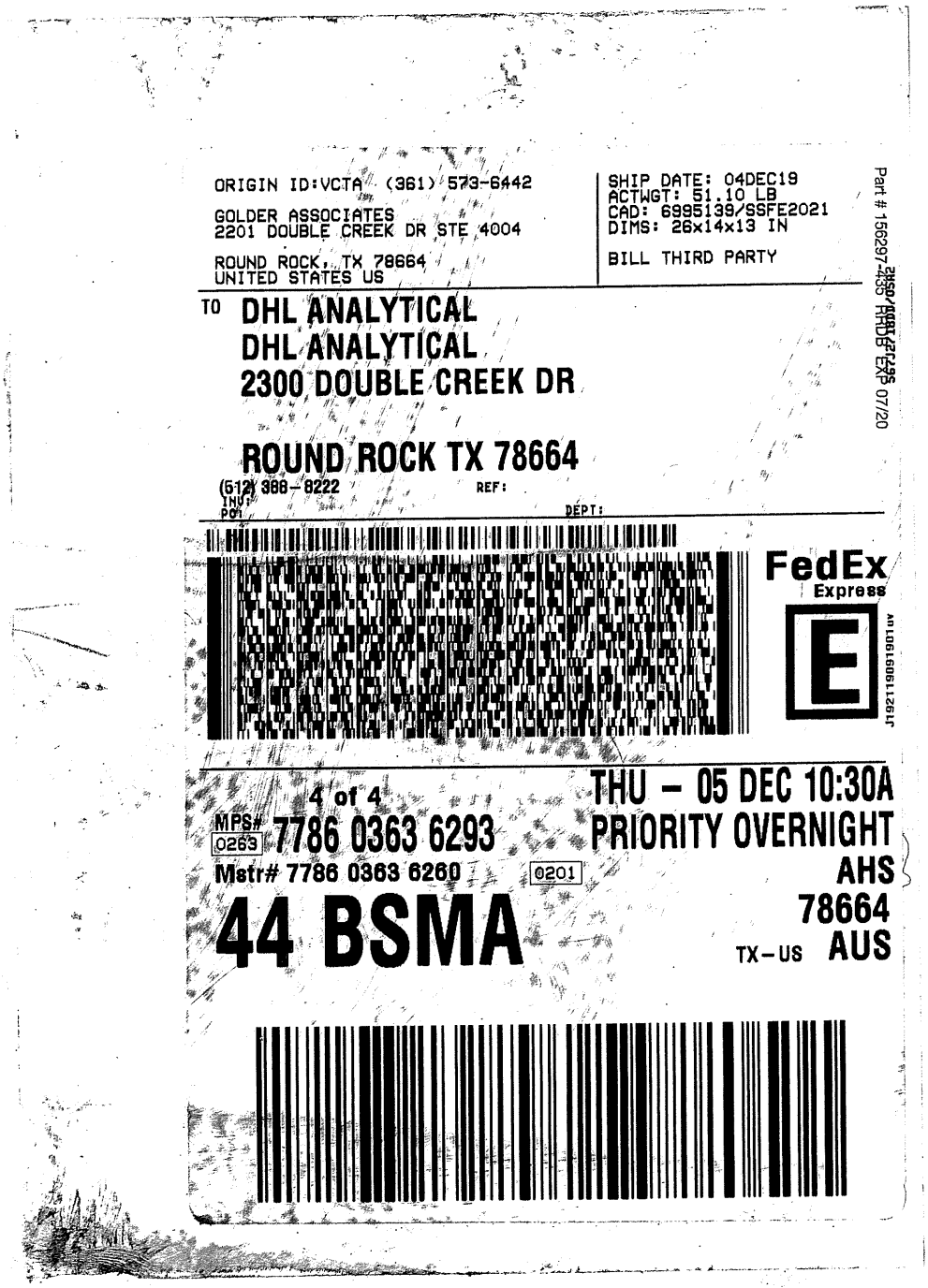
TABLE 3-2
ANALYTICAL METHODS AND SAMPLE REQUIREMENTS
CE RANCH LLC
COPANO PROPERTY

ANALYTE	METHOD	MINIMUM VOLUME	CONTAINER	PRESERVATION	HOLDING TIME[2]
Metals[1]	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Dissolved Metals[1]	SW6020A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Metals.
Mercury	SW7470A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Dissolved Mercury	SW7470A	250 mL	Plastic	Cool to ≤ 6°C	Filter at lab as soon as feasible with 0.45µ filter, then acidify with HNO3 to pH<2. Holdtime same as Mercury.
TDS	M2540C	500 mL	Plastic	Cool to ≤ 6°C	7 days
Ammonia Nitrogen	MH4500-NH3-D	250 mL	Plastic	H_2SO_4, Cool to ≤ 6°C	28 days
Radionuclides:					
Uranium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 226	SM7500Ra B M	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Radium 228	904	500 mL	Plastic	HNO_3, Cool to ≤ 6°C	6 months
Cations:					
Calcium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Magnesium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Sodium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Potassium	SW6020A	250 mL	Plastic	HNO_3, Cool to ≤ 6°C	28 days
Anions:					
Chloride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Bicarbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Carbonate (alkalinity)	SM2320B	250 mL	Plastic	Cool to ≤ 6°C	14 days
Fluoride	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Sulfate	E300	250 mL	Plastic	Cool to ≤ 6°C	28 days
Nitrate	E300	100 mL	Plastic	Cool to ≤ 6°C	48 hours

Notes:

1) Metals: Aluminum, Antimony, Arsenic, Chromium, Lead, Mercury, Nickel, Thallium, Vanadium, Uranium

2) From time of sample collection



ORIGIN ID:VCTA (361) 573-6442

GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 04DEC19
ACTWGT: 51.10 LB
CAD: 6995139/SSFE2021
DIMS: 26x14x13 IN

BILL THIRD PARTY

Part # 156297-2435 RRDB EXP 07/20

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-6222 REF:

INV:
PO: DEPT:

FedEx Express

4 of 4

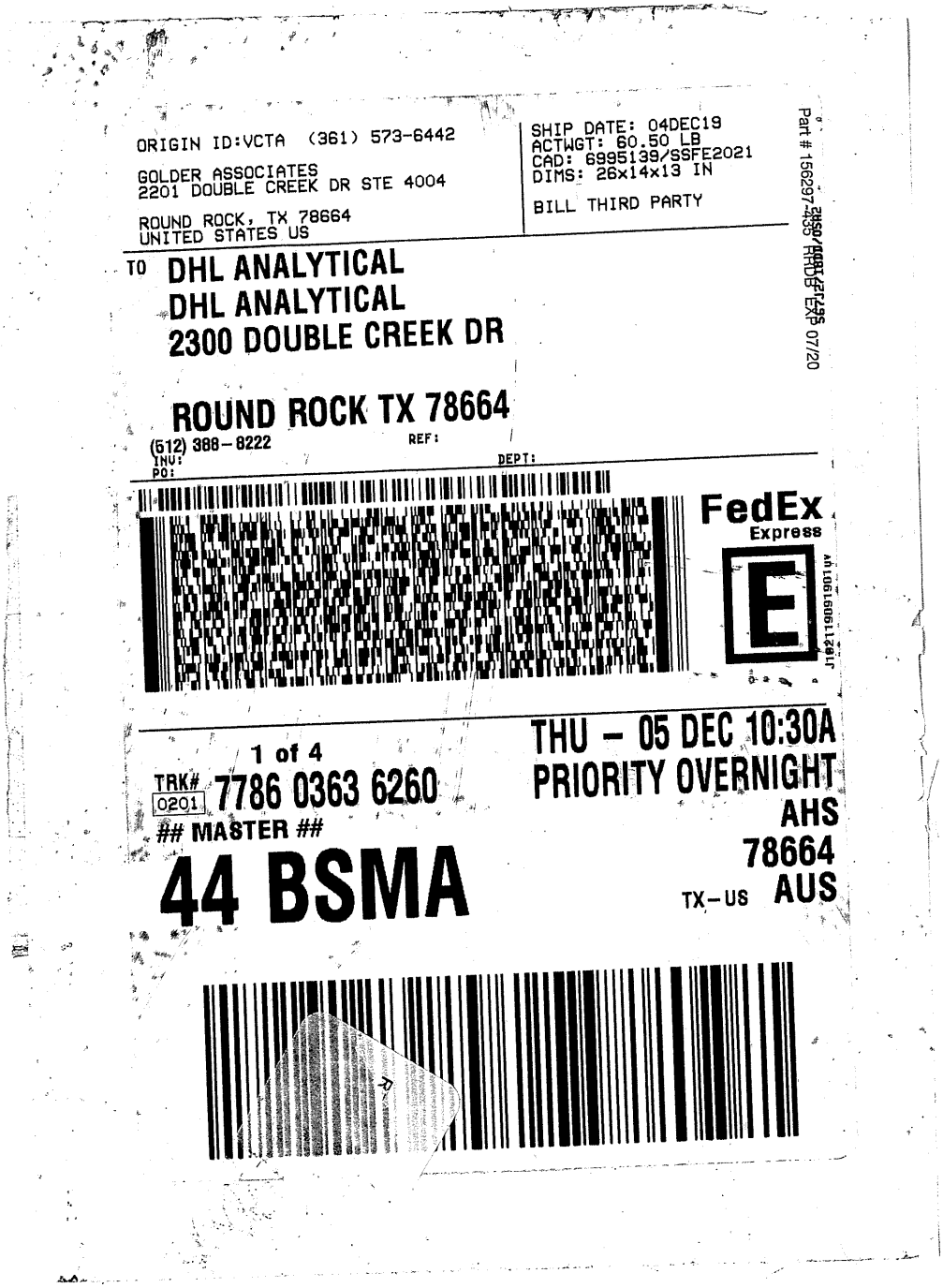
MPS# 0263 7786 0363 6293

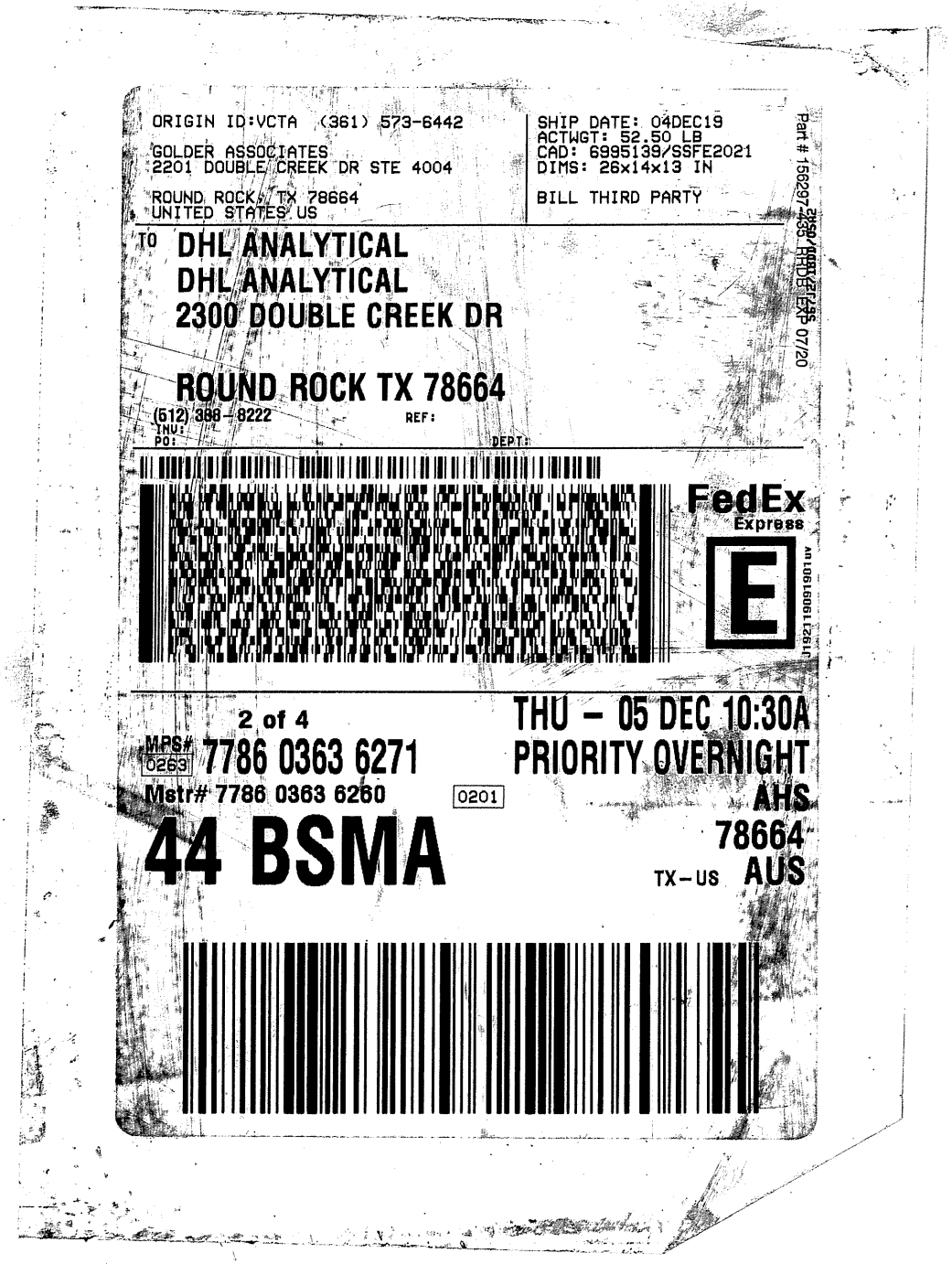
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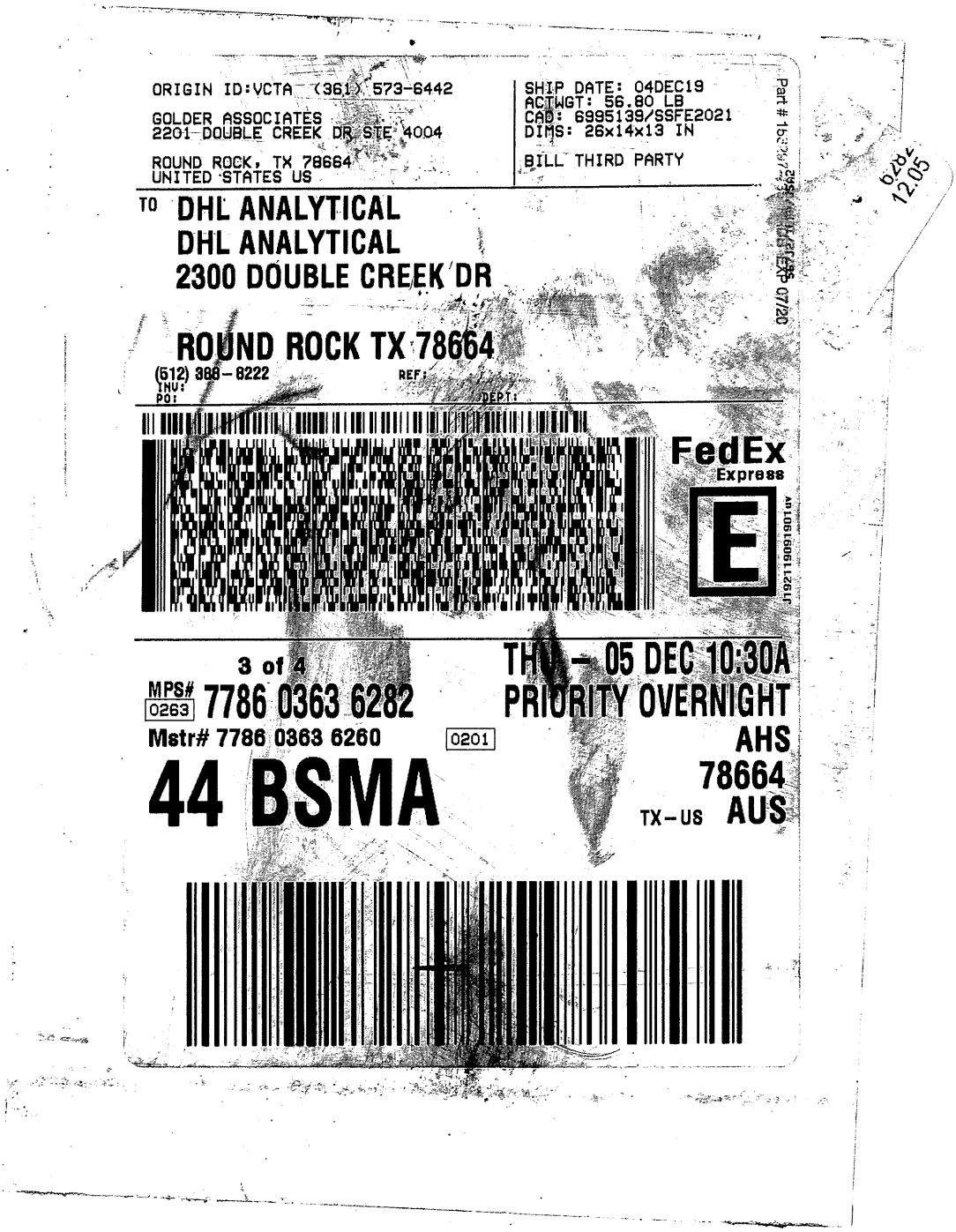
THU - 05 DEC 10:30A
PRIORITY OVERNIGHT

AHS
78664
TX-US AUS

44 BSMA


ORIGIN ID:VCTA (361) 573-6442
GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 04DEC19
ACTWGT: 60.50 LB
CAD: 6995139/SSFE2021
DIMS: 26x14x13 IN
BILL THIRD PARTY
TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
1 of 4
TRK# 0201 7786 0363 6260
MASTER
44 BSMA
THU - 05 DEC 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS


ORIGIN ID:VCTA (361) 573-6442
GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 04DEC19
ACTWGT: 52.50 LB
CAD: 6995139/SSFE2021
DIMS: 26x14x13 IN
BILL THIRD PARTY
TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 386-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
2 of 4
MPS# 0263 7786 0363 6271
Mstr# 7786 0363 6260
0201
THU - 05 DEC 10:30A
PRIORITY OVERNIGHT
AHS
78664
44 BSMA
TX-US AUS



ORIGIN ID:VCTA (361) 573-6442
GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 04DEC19
ACTWGT: 56.80 LB
CAD: 6995139/SSFE2021
DIMS: 26x14x13 IN
BILL THIRD PARTY

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

3 of 4
MPS# 0263 7786 0363 6282
Mstr# 7786 0363 6260 0201

THU - 05 DEC 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

44 BSMA

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder**

Date Received: **12/5/2019**

Work Order Number **1912030**

Received by: **CC**

Checklist completed by: _____ 12/5/2019
Signature | Date

Reviewed by CC 12/5/2019
Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.9 °C/1.1/5.6/1.3°C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EC
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Copano GW Sampling 4Q19	**LRC Date:** 1/14/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1912030
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?		**X**			**R5-04**
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?		**X**			**R5-05**
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?		**X**			**R7-04**
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Copano GW Sampling 4Q19	**LRC Date:** 1/14/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1912030
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?		X			**S2-02**
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?		X			**S2-04**
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager



Signature

02/26/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

CLIENT: Golder
Project: Copano GW Sampling 4Q19
Lab Order: 1912030

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis (total & dissolved)
Method SW6020B - Uranium in Water Analysis (this parameter is not NELACP certified)
Method SW7470A - Mercury Analysis (total & dissolved)
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-NH3-D - Ammonia Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 Analyses by Methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 12/5/19. A total of 13 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R5-04

For Dissolved Metals analysis performed on 12/12/19 (batch 94054) Aluminum and Vanadium were detected below the reporting limits in the method blank (MB-94054).

Exception Report R5-05

For Dissolved Metals analysis (batch 94054) all samples may be biased high for Aluminum and Vanadium. No further corrective actions were taken.

Exception Report R7-03 & R7-04

For Total Metals analysis performed on 12/12/19 (batch 94052) the matrix spike and matrix spike duplicate recoveries were out of control limits for a total of six analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Dissolved Mercury analysis performed on 12/10/19 (batch 94004) the matrix spike and matrix spike duplicate recoveries were below control limits. This was due to matrix effect. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits. No further corrective actions were taken.

For Anions analysis performed on 12/5/19 and 12/9/19 (batches 93972 & 93999) the matrix spikes and matrix spike duplicate recoveries (1912030-09 MS/MSD, 1912035-02 MS/MSD, 1912026-01 MS & 1912035-01 MS/MSD) were below control limits for a total of three analytes. In addition, the matrix spike and matrix spike duplicate (batch 93999 1912035-01 MS/MSD) had the RPD slightly above control limits for Sulfate. These were due to matrix effect. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate (batch 93972 1912030-09 MS/MSD) was from this work order. The samples selected for the matrix spikes and matrix spike duplicates (batches 93972 1912035-02 MS/MSD, batch 93999 1912026-01 MS & 1912035-01 MS/MSD) were not from this work order. The LCSs were within control limits for these analytes . No further corrective actions were taken.

Exception Report R10-01

For Total and Dissolved Metals analyses some dissolved results were slightly higher than the total results for all samples. In addition, the Dissolved Uranium results were slightly higher than the Total Uranium results for all samples except for samples MW3-3, MW3-4 and MW3-4B . These are within the acceptable variation limits. No further corrective actions were taken.

No further corrective actions were taken.

For Anions analysis all samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride & Sulfate).

For Total & Dissolved Mercury analyses sample MW3-1 was diluted prior to analysis due to the nature of the sample (matrix).

Exception Report S2-02

For Anions analysis performed on 12/20/19 CCV3-191220 was above control limits for Chloride. This is flagged accordingly in the QC summary report. The associated sample MW4-3B was detected greater than 10 times the amount in the CCV. No further corrective actions were taken.

Exception Report S2-04

For Dissolved Metals analysis performed on 12/12/19 Vanadium was detected below the reporting limit in CCB4-191212 and CCB5-191212. All associated samples may be biased high for thhis analyte. No further corrective actions were taken.

For Anions analysis performed on 12/20/19 Chloride was detected above the reporting limit in CCB3-191220. The associated sample MW4-3B was detected greater than 10 times the amount in the CCB. No further corrective actions were taken.

CLIENT:	Golder
Project:	Copano GW Sampling 4Q19
Lab Order:	1912030

CASE NARRATIVE

Exception Report S9-01

For Total Metals analysis performed on 12/12/19 (batch 94052) the PDS recovery was slightly below control limits for Chromium and Nickel. These are flagged accordingly in the QC summary report. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

For Dissolved Metals analysis performed on 12/12/19 (batch 94054) the RPD for the serial dilution was above control limits for Vanadium. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Total Mercury analysis performed on 12/16/19 (batch 94083) the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

For Dissolved Mercury analysis performed on 12/10/19 and 12/17/19 (batches 94004 & 94085) the PDS recoveries were below control limits. This was due to matrix effect. These are flagged accordingly. The serial dilutions were within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *14-Jan-20*

CLIENT: Golder
Project: Copano GW Sampling 4Q19
Lab Order: 1912030

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1912030-01	MW4-2		12/04/19 09:19 AM	12/5/2019
1912030-02	MW4-3B		12/04/19 09:56 AM	12/5/2019
1912030-03	MW4-3		12/04/19 10:36 AM	12/5/2019
1912030-04	MW4-4		12/04/19 11:20 AM	12/5/2019
1912030-05	MW4-102		12/04/19 11:32 AM	12/5/2019
1912030-06	MW4-7		12/04/19 12:31 PM	12/5/2019
1912030-07	MW4-7A		12/04/19 01:18 PM	12/5/2019
1912030-08	MW4-7B		12/04/19 02:04 PM	12/5/2019
1912030-09	MW3-1		12/04/19 11:33 AM	12/5/2019
1912030-10	MW3-2		12/04/19 12:58 PM	12/5/2019
1912030-11	MW3-3		12/04/19 01:41 PM	12/5/2019
1912030-12	MW3-4		12/04/19 02:22 PM	12/5/2019
1912030-13	MW3-4B		12/04/19 03:12 PM	12/5/2019

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912030-01A	MW4-2	12/04/19 09:19 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-2	12/04/19 09:19 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-2	12/04/19 09:19 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-2	12/04/19 09:19 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-2	12/04/19 09:19 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-01B	MW4-2	12/04/19 09:19 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW4-2	12/04/19 09:19 AM	Aqueous	SW7470A	Mercury Aq Prep	12/09/19 08:47 AM	94004
1912030-01C	MW4-2	12/04/19 09:19 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/09/19 01:35 PM	94015
1912030-01D	MW4-2	12/04/19 09:19 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW4-2	12/04/19 09:19 AM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972
	MW4-2	12/04/19 09:19 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW4-2	12/04/19 09:19 AM	Aqueous	M2540C	TDS Preparation	12/06/19 02:31 PM	93989
1912030-02A	MW4-3B	12/04/19 09:56 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-3B	12/04/19 09:56 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-3B	12/04/19 09:56 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-3B	12/04/19 09:56 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-3B	12/04/19 09:56 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-02B	MW4-3B	12/04/19 09:56 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW4-3B	12/04/19 09:56 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912030-02C	MW4-3B	12/04/19 09:56 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912030-02D	MW4-3B	12/04/19 09:56 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW4-3B	12/04/19 09:56 AM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972
	MW4-3B	12/04/19 09:56 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW4-3B	12/04/19 09:56 AM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	94219
	MW4-3B	12/04/19 09:56 AM	Aqueous	M2540C	TDS Preparation	12/09/19 02:30 PM	94016
1912030-03A	MW4-3	12/04/19 10:36 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-3	12/04/19 10:36 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-3	12/04/19 10:36 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912030-03A	MW4-3	12/04/19 10:36 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-3	12/04/19 10:36 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-03B	MW4-3	12/04/19 10:36 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW4-3	12/04/19 10:36 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912030-03C	MW4-3	12/04/19 10:36 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912030-03D	MW4-3	12/04/19 10:36 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW4-3	12/04/19 10:36 AM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972
	MW4-3	12/04/19 10:36 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW4-3	12/04/19 10:36 AM	Aqueous	M2540C	TDS Preparation	12/09/19 02:30 PM	94016
1912030-04A	MW4-4	12/04/19 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-4	12/04/19 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-4	12/04/19 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-4	12/04/19 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-4	12/04/19 11:20 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-04B	MW4-4	12/04/19 11:20 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW4-4	12/04/19 11:20 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912030-04C	MW4-4	12/04/19 11:20 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912030-04D	MW4-4	12/04/19 11:20 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW4-4	12/04/19 11:20 AM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972
	MW4-4	12/04/19 11:20 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW4-4	12/04/19 11:20 AM	Aqueous	M2540C	TDS Preparation	12/09/19 02:30 PM	94016
1912030-05A	MW4-102	12/04/19 11:32 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-102	12/04/19 11:32 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-102	12/04/19 11:32 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-102	12/04/19 11:32 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-102	12/04/19 11:32 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-05B	MW4-102	12/04/19 11:32 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW4-102	12/04/19 11:32 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912030-05C	MW4-102	12/04/19 11:32 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912030-05D	MW4-102	12/04/19 11:32 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW4-102	12/04/19 11:32 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW4-102	12/04/19 11:32 AM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972
	MW4-102	12/04/19 11:32 AM	Aqueous	M2540C	TDS Preparation	12/09/19 02:30 PM	94016
1912030-06A	MW4-7	12/04/19 12:31 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-7	12/04/19 12:31 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-7	12/04/19 12:31 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-7	12/04/19 12:31 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-7	12/04/19 12:31 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-06B	MW4-7	12/04/19 12:31 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW4-7	12/04/19 12:31 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912030-06C	MW4-7	12/04/19 12:31 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912030-06D	MW4-7	12/04/19 12:31 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW4-7	12/04/19 12:31 PM	Aqueous	E300	Anion Preparation	12/09/19 08:35 AM	93999
	MW4-7	12/04/19 12:31 PM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972
	MW4-7	12/04/19 12:31 PM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW4-7	12/04/19 12:31 PM	Aqueous	M2540C	TDS Preparation	12/09/19 02:30 PM	94016
1912030-07A	MW4-7A	12/04/19 01:18 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-7A	12/04/19 01:18 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-7A	12/04/19 01:18 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-7A	12/04/19 01:18 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-7A	12/04/19 01:18 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-07B	MW4-7A	12/04/19 01:18 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW4-7A	12/04/19 01:18 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912030-07C	MW4-7A	12/04/19 01:18 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912030-07D	MW4-7A	12/04/19 01:18 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW4-7A	12/04/19 01:18 PM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912030-07D	MW4-7A	12/04/19 01:18 PM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW4-7A	12/04/19 01:18 PM	Aqueous	E300	Anion Preparation	12/09/19 08:35 AM	93999
	MW4-7A	12/04/19 01:18 PM	Aqueous	M2540C	TDS Preparation	12/09/19 02:30 PM	94016
1912030-08A	MW4-7B	12/04/19 02:04 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-7B	12/04/19 02:04 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-7B	12/04/19 02:04 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-7B	12/04/19 02:04 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW4-7B	12/04/19 02:04 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-08B	MW4-7B	12/04/19 02:04 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW4-7B	12/04/19 02:04 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912030-08C	MW4-7B	12/04/19 02:04 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912030-08D	MW4-7B	12/04/19 02:04 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW4-7B	12/04/19 02:04 PM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972
	MW4-7B	12/04/19 02:04 PM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW4-7B	12/04/19 02:04 PM	Aqueous	M2540C	TDS Preparation	12/09/19 02:30 PM	94016
1912030-09A	MW3-1	12/04/19 11:33 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-1	12/04/19 11:33 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-1	12/04/19 11:33 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-1	12/04/19 11:33 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-1	12/04/19 11:33 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
	MW3-1	12/04/19 11:33 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-09B	MW3-1	12/04/19 11:33 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW3-1	12/04/19 11:33 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
	MW3-1	12/04/19 11:33 AM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912030-09C	MW3-1	12/04/19 11:33 AM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912030-09D	MW3-1	12/04/19 11:33 AM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW3-1	12/04/19 11:33 AM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972
	MW3-1	12/04/19 11:33 AM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912030-09D	MW3-1	12/04/19 11:33 AM	Aqueous	M2540C	TDS Preparation	12/09/19 02:30 PM	94016
1912030-10A	MW3-2	12/04/19 12:58 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-2	12/04/19 12:58 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-2	12/04/19 12:58 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-2	12/04/19 12:58 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-2	12/04/19 12:58 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-10B	MW3-2	12/04/19 12:58 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW3-2	12/04/19 12:58 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912030-10C	MW3-2	12/04/19 12:58 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912030-10D	MW3-2	12/04/19 12:58 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW3-2	12/04/19 12:58 PM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972
	MW3-2	12/04/19 12:58 PM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW3-2	12/04/19 12:58 PM	Aqueous	M2540C	TDS Preparation	12/10/19 10:43 AM	94039
1912030-11A	MW3-3	12/04/19 01:41 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-3	12/04/19 01:41 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-3	12/04/19 01:41 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-3	12/04/19 01:41 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-3	12/04/19 01:41 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-11B	MW3-3	12/04/19 01:41 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW3-3	12/04/19 01:41 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912030-11C	MW3-3	12/04/19 01:41 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912030-11D	MW3-3	12/04/19 01:41 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW3-3	12/04/19 01:41 PM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972
	MW3-3	12/04/19 01:41 PM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW3-3	12/04/19 01:41 PM	Aqueous	M2540C	TDS Preparation	12/10/19 10:43 AM	94039
1912030-12A	MW3-4	12/04/19 02:22 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-4	12/04/19 02:22 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-4	12/04/19 02:22 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1912030-12A	MW3-4	12/04/19 02:22 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-4	12/04/19 02:22 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-12B	MW3-4	12/04/19 02:22 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW3-4	12/04/19 02:22 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912030-12C	MW3-4	12/04/19 02:22 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912030-12D	MW3-4	12/04/19 02:22 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW3-4	12/04/19 02:22 PM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972
	MW3-4	12/04/19 02:22 PM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW3-4	12/04/19 02:22 PM	Aqueous	M2540C	TDS Preparation	12/10/19 10:43 AM	94039
1912030-13A	MW3-4B	12/04/19 03:12 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-4B	12/04/19 03:12 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-4B	12/04/19 03:12 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-4B	12/04/19 03:12 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/11/19 08:35 AM	94052
	MW3-4B	12/04/19 03:12 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94083
1912030-13B	MW3-4B	12/04/19 03:12 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	12/11/19 08:39 AM	94054
	MW3-4B	12/04/19 03:12 PM	Aqueous	SW7470A	Mercury Aq Prep	12/13/19 08:30 AM	94085
1912030-13C	MW3-4B	12/04/19 03:12 PM	Aqueous	M4500-NH3-D	Ammonia Preparation	12/10/19 10:06 AM	94035
1912030-13D	MW3-4B	12/04/19 03:12 PM	Aqueous	M2320 B	Alkalinity Preparation	12/09/19 04:12 PM	94019
	MW3-4B	12/04/19 03:12 PM	Aqueous	E300	Anion Preparation	12/05/19 11:36 AM	93972
	MW3-4B	12/04/19 03:12 PM	Aqueous	E300	Anion Preparation	12/06/19 10:08 AM	93986
	MW3-4B	12/04/19 03:12 PM	Aqueous	M2540C	TDS Preparation	12/10/19 10:43 AM	94039

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912030-01A	MW4-2	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 09:47 AM	CETAC2_HG_191216A
	MW4-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 10:44 AM	ICP-MS4_191212A
	MW4-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:09 PM	ICP-MS5_191212C
	MW4-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:09 PM	ICP-MS5_191212C
	MW4-2	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 10:44 AM	ICP-MS4_191212B
1912030-01B	MW4-2	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94004	1	12/10/19 01:51 PM	CETAC2_HG_191210B
	MW4-2	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 01:47 PM	ICP-MS4_191212A
1912030-01C	MW4-2	Aqueous	M4500-NH3-D	Ammonia aqueous	94015	1	12/09/19 05:30 PM	WC_191209A
1912030-01D	MW4-2	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 05:31 PM	TITRATOR_191209A
	MW4-2	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 04:42 PM	IC2_191205A
	MW4-2	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 12:35 AM	IC2_191206A
	MW4-2	Aqueous	M2540C	Total Dissolved Solids	93989	1	12/06/19 05:30 PM	WC_191206B
1912030-02A	MW4-3B	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 09:49 AM	CETAC2_HG_191216A
	MW4-3B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 10:46 AM	ICP-MS4_191212A
	MW4-3B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:11 PM	ICP-MS5_191212C
	MW4-3B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:11 PM	ICP-MS5_191212C
	MW4-3B	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 10:46 AM	ICP-MS4_191212B
1912030-02B	MW4-3B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 10:36 AM	CETAC2_HG_191217B
	MW4-3B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 01:49 PM	ICP-MS4_191212A
1912030-02C	MW4-3B	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912030-02D	MW4-3B	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 05:50 PM	TITRATOR_191209A
	MW4-3B	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 04:58 PM	IC2_191205A
	MW4-3B	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 02:11 AM	IC2_191206A
	MW4-3B	Aqueous	E300	Anions by IC method - Water	94219	1000	12/20/19 11:35 PM	IC2_191220A
	MW4-3B	Aqueous	M2540C	Total Dissolved Solids	94016	1	12/09/19 05:05 PM	WC_191209B
1912030-03A	MW4-3	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 09:51 AM	CETAC2_HG_191216A

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912030-03A	MW4-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 10:47 AM	ICP-MS4_191212A
	MW4-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:13 PM	ICP-MS5_191212C
	MW4-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:13 PM	ICP-MS5_191212C
	MW4-3	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 10:47 AM	ICP-MS4_191212B
1912030-03B	MW4-3	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 10:38 AM	CETAC2_HG_191217B
	MW4-3	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 01:51 PM	ICP-MS4_191212A
1912030-03C	MW4-3	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912030-03D	MW4-3	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 05:57 PM	TITRATOR_191209A
	MW4-3	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 05:14 PM	IC2_191205A
	MW4-3	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 02:27 AM	IC2_191206A
	MW4-3	Aqueous	M2540C	Total Dissolved Solids	94016	1	12/09/19 05:05 PM	WC_191209B
1912030-04A	MW4-4	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 09:54 AM	CETAC2_HG_191216A
	MW4-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:15 PM	ICP-MS5_191212C
	MW4-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:15 PM	ICP-MS5_191212C
	MW4-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 10:49 AM	ICP-MS4_191212A
	MW4-4	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 10:49 AM	ICP-MS4_191212B
1912030-04B	MW4-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 10:40 AM	CETAC2_HG_191217B
	MW4-4	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 01:53 PM	ICP-MS4_191212A
1912030-04C	MW4-4	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912030-04D	MW4-4	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 06:08 PM	TITRATOR_191209A
	MW4-4	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 05:30 PM	IC2_191205A
	MW4-4	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 02:43 AM	IC2_191206A
	MW4-4	Aqueous	M2540C	Total Dissolved Solids	94016	1	12/09/19 05:05 PM	WC_191209B
1912030-05A	MW4-102	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 09:56 AM	CETAC2_HG_191216A
	MW4-102	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:18 PM	ICP-MS5_191212C
	MW4-102	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 10:51 AM	ICP-MS4_191212A

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912030-05A	MW4-102	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:18 PM	ICP-MS5_191212C
	MW4-102	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 10:51 AM	ICP-MS4_191212B
1912030-05B	MW4-102	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 10:42 AM	CETAC2_HG_191217B
	MW4-102	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 01:55 PM	ICP-MS4_191212A
1912030-05C	MW4-102	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912030-05D	MW4-102	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 06:14 PM	TITRATOR_191209A
	MW4-102	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 02:59 AM	IC2_191206A
	MW4-102	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 05:46 PM	IC2_191205A
	MW4-102	Aqueous	M2540C	Total Dissolved Solids	94016	1	12/09/19 05:05 PM	WC_191209B
1912030-06A	MW4-7	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 09:58 AM	CETAC2_HG_191216A
	MW4-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 10:53 AM	ICP-MS4_191212A
	MW4-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:20 PM	ICP-MS5_191212C
	MW4-7	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:20 PM	ICP-MS5_191212C
	MW4-7	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 10:53 AM	ICP-MS4_191212B
1912030-06B	MW4-7	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 10:45 AM	CETAC2_HG_191217B
	MW4-7	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 01:57 PM	ICP-MS4_191212A
1912030-06C	MW4-7	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912030-06D	MW4-7	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 06:22 PM	TITRATOR_191209A
	MW4-7	Aqueous	E300	Anions by IC method - Water	93999	100	12/10/19 11:42 AM	IC4_191209B
	MW4-7	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 06:02 PM	IC2_191205A
	MW4-7	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 03:15 AM	IC2_191206A
	MW4-7	Aqueous	M2540C	Total Dissolved Solids	94016	1	12/09/19 05:05 PM	WC_191209B
1912030-07A	MW4-7A	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 10:00 AM	CETAC2_HG_191216A
	MW4-7A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 10:55 AM	ICP-MS4_191212A
	MW4-7A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:22 PM	ICP-MS5_191212C
	MW4-7A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:22 PM	ICP-MS5_191212C

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912030-07A	MW4-7A	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 10:55 AM	ICP-MS4_191212B
1912030-07B	MW4-7A	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 10:47 AM	CETAC2_HG_191217B
	MW4-7A	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 01:59 PM	ICP-MS4_191212A
1912030-07C	MW4-7A	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912030-07D	MW4-7A	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 06:32 PM	TITRATOR_191209A
	MW4-7A	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 06:18 PM	IC2_191205A
	MW4-7A	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 03:31 AM	IC2_191206A
	MW4-7A	Aqueous	E300	Anions by IC method - Water	93999	100	12/10/19 11:58 AM	IC4_191209B
	MW4-7A	Aqueous	M2540C	Total Dissolved Solids	94016	1	12/09/19 05:05 PM	WC_191209B
1912030-08A	MW4-7B	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 10:03 AM	CETAC2_HG_191216A
	MW4-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:24 PM	ICP-MS5_191212C
	MW4-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:24 PM	ICP-MS5_191212C
	MW4-7B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 10:57 AM	ICP-MS4_191212A
	MW4-7B	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 10:57 AM	ICP-MS4_191212B
1912030-08B	MW4-7B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 10:49 AM	CETAC2_HG_191217B
	MW4-7B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 02:01 PM	ICP-MS4_191212A
1912030-08C	MW4-7B	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912030-08D	MW4-7B	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 06:41 PM	TITRATOR_191209A
	MW4-7B	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 06:34 PM	IC2_191205A
	MW4-7B	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 03:47 AM	IC2_191206A
	MW4-7B	Aqueous	M2540C	Total Dissolved Solids	94016	1	12/09/19 05:05 PM	WC_191209B
1912030-09A	MW3-1	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 10:05 AM	CETAC2_HG_191216A
	MW3-1	Aqueous	SW7470A	Mercury Total: Aqueous	94083	5	12/17/19 11:50 AM	CETAC2_HG_191217A
	MW3-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 10:40 AM	ICP-MS4_191212A
	MW3-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	500	12/12/19 12:04 PM	ICP-MS5_191212C
	MW3-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	50	12/12/19 01:04 PM	ICP-MS5_191212C

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912030-09A	MW3-1	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 10:40 AM	ICP-MS4_191212B
1912030-09B	MW3-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 10:51 AM	CETAC2_HG_191217B
	MW3-1	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	5	12/17/19 11:57 AM	CETAC2_HG_191217B
	MW3-1	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 01:43 PM	ICP-MS4_191212A
1912030-09C	MW3-1	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912030-09D	MW3-1	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 06:48 PM	TITRATOR_191209A
	MW3-1	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 06:50 PM	IC2_191205A
	MW3-1	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 04:03 AM	IC2_191206A
	MW3-1	Aqueous	M2540C	Total Dissolved Solids	94016	1	12/09/19 05:05 PM	WC_191209B
1912030-10A	MW3-2	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 10:16 AM	CETAC2_HG_191216A
	MW3-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 10:59 AM	ICP-MS4_191212A
	MW3-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:26 PM	ICP-MS5_191212C
	MW3-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:26 PM	ICP-MS5_191212C
	MW3-2	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 10:59 AM	ICP-MS4_191212B
1912030-10B	MW3-2	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 11:03 AM	CETAC2_HG_191217B
	MW3-2	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 02:02 PM	ICP-MS4_191212A
1912030-10C	MW3-2	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912030-10D	MW3-2	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 07:02 PM	TITRATOR_191209A
	MW3-2	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 09:30 PM	IC2_191205A
	MW3-2	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 04:51 AM	IC2_191206A
	MW3-2	Aqueous	M2540C	Total Dissolved Solids	94039	1	12/10/19 05:00 PM	WC_191210B
1912030-11A	MW3-3	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 10:23 AM	CETAC2_HG_191216A
	MW3-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 11:38 AM	ICP-MS4_191212A
	MW3-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:42 PM	ICP-MS5_191212C
	MW3-3	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:39 PM	ICP-MS5_191212C
	MW3-3	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 11:38 AM	ICP-MS4_191212B

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912030-11B	MW3-3	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 11:05 AM	CETAC2_HG_191217B
	MW3-3	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 02:46 PM	ICP-MS5_191212C
1912030-11C	MW3-3	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912030-11D	MW3-3	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 07:08 PM	TITRATOR_191209A
	MW3-3	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 09:46 PM	IC2_191205A
	MW3-3	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 05:07 AM	IC2_191206A
	MW3-3	Aqueous	M2540C	Total Dissolved Solids	94039	1	12/10/19 05:00 PM	WC_191210B
1912030-12A	MW3-4	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 10:25 AM	CETAC2_HG_191216A
	MW3-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:44 PM	ICP-MS5_191212C
	MW3-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:42 PM	ICP-MS5_191212C
	MW3-4	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 11:40 AM	ICP-MS4_191212A
	MW3-4	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 11:40 AM	ICP-MS4_191212B
1912030-12B	MW3-4	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 11:12 AM	CETAC2_HG_191217B
	MW3-4	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 02:48 PM	ICP-MS5_191212C
1912030-12C	MW3-4	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912030-12D	MW3-4	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 07:15 PM	TITRATOR_191209A
	MW3-4	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 10:02 PM	IC2_191205A
	MW3-4	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 06:43 AM	IC2_191206A
	MW3-4	Aqueous	M2540C	Total Dissolved Solids	94039	1	12/10/19 05:00 PM	WC_191210B
1912030-13A	MW3-4B	Aqueous	SW7470A	Mercury Total: Aqueous	94083	1	12/16/19 10:28 AM	CETAC2_HG_191216A
	MW3-4B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	100	12/12/19 01:44 PM	ICP-MS5_191212C
	MW3-4B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1	12/12/19 11:42 AM	ICP-MS4_191212A
	MW3-4B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	94052	1000	12/12/19 12:46 PM	ICP-MS5_191212C
	MW3-4B	Aqueous	SW6020B	Uranium in Water by ICPMS	94052	1	12/12/19 11:42 AM	ICP-MS4_191212B
1912030-13B	MW3-4B	Aqueous	SW7470A	Mercury (0.45µ Filtered)	94085	1	12/17/19 11:14 AM	CETAC2_HG_191217B
	MW3-4B	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	94054	1	12/12/19 02:50 PM	ICP-MS5_191212C

Lab Order: 1912030
Client: Golder
Project: Copano GW Sampling 4Q19

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1912030-13C	MW3-4B	Aqueous	M4500-NH3-D	Ammonia aqueous	94035	1	12/10/19 02:00 PM	WC_191210A
1912030-13D	MW3-4B	Aqueous	M2320 B	Alkalinity	94019	1	12/09/19 07:28 PM	TITRATOR_191209A
	MW3-4B	Aqueous	E300	Anions by IC method - Water	93972	10	12/05/19 10:18 PM	IC2_191205A
	MW3-4B	Aqueous	E300	Anions by IC method - Water	93986	1000	12/07/19 06:59 AM	IC2_191206A
	MW3-4B	Aqueous	M2540C	Total Dissolved Solids	94039	1	12/10/19 05:00 PM	WC_191210B

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-01
Project No:	19125525	**Collection Date:**	12/04/19 09:19 AM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0122	0.0100	0.0300	J	mg/L	1	12/12/19 01:47 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:47 PM
Dissolved Arsenic	0.00220	0.00200	0.00500	J	mg/L	1	12/12/19 01:47 PM
Dissolved Chromium	0.00508	0.00200	0.00500		mg/L	1	12/12/19 01:47 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:47 PM
Dissolved Nickel	0.00706	0.00300	0.0100	J	mg/L	1	12/12/19 01:47 PM
Dissolved Thallium	0.000585	0.000500	0.00150	J	mg/L	1	12/12/19 01:47 PM
Dissolved Vanadium	0.00471	0.000500	0.00100		mg/L	1	12/12/19 01:47 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0242	0.0100	0.0300	J	mg/L	1	12/12/19 10:44 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 10:44 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:44 AM
Calcium	1280	10.0	30.0		mg/L	100	12/12/19 01:09 PM
Chromium	0.00659	0.00200	0.00500		mg/L	1	12/12/19 10:44 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 10:44 AM
Magnesium	1740	10.0	30.0		mg/L	100	12/12/19 01:09 PM
Nickel	0.00603	0.00300	0.0100	J	mg/L	1	12/12/19 10:44 AM
Potassium	84.6	10.0	30.0		mg/L	100	12/12/19 01:09 PM
Sodium	11900	100	300		mg/L	1000	12/12/19 12:09 PM
Thallium	0.000571	0.000500	0.00150	J	mg/L	1	12/12/19 10:44 AM
Vanadium	0.00368	0.000500	0.00100		mg/L	1	12/12/19 10:44 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/10/19 01:51 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/16/19 09:47 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.111	0.00300	0.0100	N	mg/L	1	12/12/19 10:44 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.119	0.00300	0.0100	N	mg/L	1	12/12/19 01:47 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21800	300	1000		mg/L	1000	12/07/19 12:35 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 04:42 PM
Nitrate-N	2.82	1.00	5.00	J	mg/L	10	12/05/19 04:42 PM
Sulfate	4940	1000	3000		mg/L	1000	12/07/19 12:35 AM

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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-2
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-01
Project No:	19125525	**Collection Date:**	12/04/19 09:19 AM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	230	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:31 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:31 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:31 PM
Alkalinity, Total (As CaCO3)	230	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:31 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/09/19 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	52400	1000	1000		mg/L	1	12/06/19 05:30 PM

Qualifiers:

ND - Not Detected at the SDL
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DF- Dilution Factor
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3B
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-02
Project No:	19125525	**Collection Date:**	12/04/19 09:56 AM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0101	0.0100	0.0300	J	mg/L	1	12/12/19 01:49 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:49 PM
Dissolved Arsenic	0.00268	0.00200	0.00500	J	mg/L	1	12/12/19 01:49 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:49 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:49 PM
Dissolved Nickel	0.00698	0.00300	0.0100	J	mg/L	1	12/12/19 01:49 PM
Dissolved Thallium	0.000730	0.000500	0.00150	J	mg/L	1	12/12/19 01:49 PM
Dissolved Vanadium	0.00135	0.000500	0.00100		mg/L	1	12/12/19 01:49 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0231	0.0100	0.0300	J	mg/L	1	12/12/19 10:46 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 10:46 AM
Arsenic	0.00238	0.00200	0.00500	J	mg/L	1	12/12/19 10:46 AM
Calcium	1340	10.0	30.0		mg/L	100	12/12/19 01:11 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:46 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 10:46 AM
Magnesium	1590	10.0	30.0		mg/L	100	12/12/19 01:11 PM
Nickel	0.00675	0.00300	0.0100	J	mg/L	1	12/12/19 10:46 AM
Potassium	93.0	10.0	30.0		mg/L	100	12/12/19 01:11 PM
Sodium	9930	100	300		mg/L	1000	12/12/19 12:11 PM
Thallium	0.000823	0.000500	0.00150	J	mg/L	1	12/12/19 10:46 AM
Vanadium	0.000523	0.000500	0.00100	J	mg/L	1	12/12/19 10:46 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 10:36 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/16/19 09:49 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0636	0.00300	0.0100	N	mg/L	1	12/12/19 10:46 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0675	0.00300	0.0100	N	mg/L	1	12/12/19 01:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21600	300	1000		mg/L	1000	12/20/19 11:35 PM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 04:58 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 04:58 PM
Sulfate	4490	1000	3000		mg/L	1000	12/07/19 02:11 AM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3B
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-02
Project No:	19125525	**Collection Date:**	12/04/19 09:56 AM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	255	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:50 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:50 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:50 PM
Alkalinity, Total (As CaCO3)	255	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 05:50 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.656	0.100	0.250		mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	39800	1000	1000		mg/L	1	12/09/19 05:05 PM

Qualifiers:

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-03
Project No:	19125525	**Collection Date:**	12/04/19 10:36 AM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	12/12/19 01:51 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:51 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:51 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:51 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:51 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 01:51 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:51 PM
Dissolved Vanadium	0.00300	0.000500	0.00100		mg/L	1	12/12/19 01:51 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0134	0.0100	0.0300	J	mg/L	1	12/12/19 10:47 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 10:47 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:47 AM
Calcium	1250	10.0	30.0		mg/L	100	12/12/19 01:13 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:47 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 10:47 AM
Magnesium	1610	10.0	30.0		mg/L	100	12/12/19 01:13 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 10:47 AM
Potassium	65.8	10.0	30.0		mg/L	100	12/12/19 01:13 PM
Sodium	10800	100	300		mg/L	1000	12/12/19 12:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 10:47 AM
Vanadium	0.00191	0.000500	0.00100		mg/L	1	12/12/19 10:47 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 10:38 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/16/19 09:51 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.104	0.00300	0.0100	N	mg/L	1	12/12/19 10:47 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.112	0.00300	0.0100	N	mg/L	1	12/12/19 01:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21700	300	1000		mg/L	1000	12/07/19 02:27 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 05:14 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 05:14 PM
Sulfate	4050	1000	3000		mg/L	1000	12/07/19 02:27 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-3
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-03
Project No:	19125525	**Collection Date:**	12/04/19 10:36 AM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	212	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 05:57 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 05:57 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 05:57 PM
Alkalinity, Total (As CaCO3)	212	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 05:57 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	0.309	0.100	0.250		mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	41600	1000	1000		mg/L	1	12/09/19 05:05 PM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-4
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-04
Project No:	19125525	**Collection Date:**	12/04/19 11:20 AM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	12/12/19 01:53 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:53 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:53 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:53 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:53 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 01:53 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:53 PM
Dissolved Vanadium	0.00272	0.000500	0.00100		mg/L	1	12/12/19 01:53 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0122	0.0100	0.0300	J	mg/L	1	12/12/19 10:49 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 10:49 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:49 AM
Calcium	1130	10.0	30.0		mg/L	100	12/12/19 01:15 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:49 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 10:49 AM
Magnesium	1210	10.0	30.0		mg/L	100	12/12/19 01:15 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 10:49 AM
Potassium	49.0	10.0	30.0		mg/L	100	12/12/19 01:15 PM
Sodium	8750	100	300		mg/L	1000	12/12/19 12:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 10:49 AM
Vanadium	0.00175	0.000500	0.00100		mg/L	1	12/12/19 10:49 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 10:40 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/16/19 09:54 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0910	0.00300	0.0100	N	mg/L	1	12/12/19 10:49 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0993	0.00300	0.0100	N	mg/L	1	12/12/19 01:53 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	17100	300	1000		mg/L	1000	12/07/19 02:43 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 05:30 PM
Nitrate-N	3.11	1.00	5.00	J	mg/L	10	12/05/19 05:30 PM
Sulfate	4550	1000	3000		mg/L	1000	12/07/19 02:43 AM

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- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-4
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-04
Project No:	19125525	**Collection Date:**	12/04/19 11:20 AM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	182	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:08 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:08 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:08 PM
Alkalinity, Total (As CaCO3)	182	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:08 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	34900	1000	1000		mg/L	1	12/09/19 05:05 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-102
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-05
Project No:	19125525	**Collection Date:**	12/04/19 11:32 AM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	<0.0100	0.0100	0.0300		mg/L	1	12/12/19 01:55 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:55 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:55 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:55 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:55 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 01:55 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:55 PM
Dissolved Vanadium	0.00266	0.000500	0.00100		mg/L	1	12/12/19 01:55 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0145	0.0100	0.0300	J	mg/L	1	12/12/19 10:51 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 10:51 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:51 AM
Calcium	1120	10.0	30.0		mg/L	100	12/12/19 01:18 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:51 AM
Lead	0.00105	0.000300	0.00100		mg/L	1	12/12/19 10:51 AM
Magnesium	1180	10.0	30.0		mg/L	100	12/12/19 01:18 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 10:51 AM
Potassium	48.1	10.0	30.0		mg/L	100	12/12/19 01:18 PM
Sodium	8590	100	300		mg/L	1000	12/12/19 12:18 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 10:51 AM
Vanadium	0.00167	0.000500	0.00100		mg/L	1	12/12/19 10:51 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 10:42 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/16/19 09:56 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0908	0.00300	0.0100	N	mg/L	1	12/12/19 10:51 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.101	0.00300	0.0100	N	mg/L	1	12/12/19 01:55 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	17100	300	1000		mg/L	1000	12/07/19 02:59 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 05:46 PM
Nitrate-N	3.27	1.00	5.00	J	mg/L	10	12/05/19 05:46 PM
Sulfate	4550	1000	3000		mg/L	1000	12/07/19 02:59 AM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-102
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-05
Project No:	19125525	**Collection Date:**	12/04/19 11:32 AM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	178	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:14 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:14 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:14 PM
Alkalinity, Total (As CaCO3)	178	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:14 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	35400	1000	1000		mg/L	1	12/09/19 05:05 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-06
Project No:	19125525	**Collection Date:**	12/04/19 12:31 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0116	0.0100	0.0300	J	mg/L	1	12/12/19 01:57 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:57 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:57 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:57 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:57 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 01:57 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:57 PM
Dissolved Vanadium	0.00182	0.000500	0.00100		mg/L	1	12/12/19 01:57 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0131	0.0100	0.0300	J	mg/L	1	12/12/19 10:53 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 10:53 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:53 AM
Calcium	732	10.0	30.0		mg/L	100	12/12/19 01:20 PM
Chromium	0.00235	0.00200	0.00500	J	mg/L	1	12/12/19 10:53 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 10:53 AM
Magnesium	831	10.0	30.0		mg/L	100	12/12/19 01:20 PM
Nickel	0.00374	0.00300	0.0100	J	mg/L	1	12/12/19 10:53 AM
Potassium	47.1	10.0	30.0		mg/L	100	12/12/19 01:20 PM
Sodium	6960	100	300		mg/L	1000	12/12/19 12:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 10:53 AM
Vanadium	<0.000500	0.000500	0.00100		mg/L	1	12/12/19 10:53 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 10:45 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/16/19 09:58 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0575	0.00300	0.0100	N	mg/L	1	12/12/19 10:53 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0689	0.00300	0.0100	N	mg/L	1	12/12/19 01:57 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	13500	300	1000		mg/L	1000	12/07/19 03:15 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 06:02 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 06:02 PM
Sulfate	2440	100	300		mg/L	100	12/10/19 11:42 AM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-06
Project No:	19125525	**Collection Date:**	12/04/19 12:31 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	253	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 06:22 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 06:22 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 06:22 PM
Alkalinity, Total (As CaCO3)	253	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 06:22 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	25800	1000	1000		mg/L	1	12/09/19 05:05 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7A
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-07
Project No:	19125525	**Collection Date:**	12/04/19 01:18 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0154	0.0100	0.0300	J	mg/L	1	12/12/19 01:59 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:59 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:59 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:59 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:59 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 01:59 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:59 PM
Dissolved Vanadium	0.00329	0.000500	0.00100		mg/L	1	12/12/19 01:59 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0566	0.0100	0.0300		mg/L	1	12/12/19 10:55 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 10:55 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:55 AM
Calcium	652	10.0	30.0		mg/L	100	12/12/19 01:22 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:55 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 10:55 AM
Magnesium	1000	10.0	30.0		mg/L	100	12/12/19 01:22 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 10:55 AM
Potassium	69.7	10.0	30.0		mg/L	100	12/12/19 01:22 PM
Sodium	8730	100	300		mg/L	1000	12/12/19 12:22 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 10:55 AM
Vanadium	0.00208	0.000500	0.00100		mg/L	1	12/12/19 10:55 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 10:47 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/16/19 10:00 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.107	0.00300	0.0100	N	mg/L	1	12/12/19 10:55 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.114	0.00300	0.0100	N	mg/L	1	12/12/19 01:59 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	16200	300	1000		mg/L	1000	12/07/19 03:31 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 06:18 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 06:18 PM
Sulfate	2550	100	300		mg/L	100	12/10/19 11:58 AM

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E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7A
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-07
Project No:	19125525	**Collection Date:**	12/04/19 01:18 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	320	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:32 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:32 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:32 PM
Alkalinity, Total (As CaCO3)	320	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:32 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	30500	1000	1000		mg/L	1	12/09/19 05:05 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7B
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-08
Project No:	19125525	**Collection Date:**	12/04/19 02:04 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0141	0.0100	0.0300	J	mg/L	1	12/12/19 02:01 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 02:01 PM
Dissolved Arsenic	0.00272	0.00200	0.00500	J	mg/L	1	12/12/19 02:01 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:01 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 02:01 PM
Dissolved Nickel	0.00586	0.00300	0.0100	J	mg/L	1	12/12/19 02:01 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 02:01 PM
Dissolved Vanadium	0.00548	0.000500	0.00100		mg/L	1	12/12/19 02:01 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0285	0.0100	0.0300	J	mg/L	1	12/12/19 10:57 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 10:57 AM
Arsenic	0.00262	0.00200	0.00500	J	mg/L	1	12/12/19 10:57 AM
Calcium	1320	10.0	30.0		mg/L	100	12/12/19 01:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:57 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 10:57 AM
Magnesium	1900	10.0	30.0		mg/L	100	12/12/19 01:24 PM
Nickel	0.00559	0.00300	0.0100	J	mg/L	1	12/12/19 10:57 AM
Potassium	104	10.0	30.0		mg/L	100	12/12/19 01:24 PM
Sodium	13000	100	300		mg/L	1000	12/12/19 12:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 10:57 AM
Vanadium	0.00326	0.000500	0.00100		mg/L	1	12/12/19 10:57 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 10:49 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/16/19 10:03 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.0583	0.00300	0.0100	N	mg/L	1	12/12/19 10:57 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.0648	0.00300	0.0100	N	mg/L	1	12/12/19 02:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	24800	300	1000		mg/L	1000	12/07/19 03:47 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 06:34 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 06:34 PM
Sulfate	4120	1000	3000		mg/L	1000	12/07/19 03:47 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW4-7B
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-08
Project No:	19125525	**Collection Date:**	12/04/19 02:04 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	254	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 06:41 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 06:41 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 06:41 PM
Alkalinity, Total (As CaCO3)	254	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 06:41 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	48000	1000	1000		mg/L	1	12/09/19 05:05 PM

Qualifiers:

ND - Not Detected at the SDL
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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-1
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-09
Project No:	19125525	**Collection Date:**	12/04/19 11:33 AM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0282	0.0100	0.0300	J	mg/L	1	12/12/19 01:43 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 01:43 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 01:43 PM
Dissolved Chromium	0.00764	0.00200	0.00500		mg/L	1	12/12/19 01:43 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 01:43 PM
Dissolved Nickel	0.00556	0.00300	0.0100	J	mg/L	1	12/12/19 01:43 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 01:43 PM
Dissolved Vanadium	0.00231	0.000500	0.00100		mg/L	1	12/12/19 01:43 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0568	0.0100	0.0300		mg/L	1	12/12/19 10:40 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 10:40 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:40 AM
Calcium	1080	5.00	15.0		mg/L	50	12/12/19 01:04 PM
Chromium	0.00756	0.00200	0.00500		mg/L	1	12/12/19 10:40 AM
Lead	0.000398	0.000300	0.00100	J	mg/L	1	12/12/19 10:40 AM
Magnesium	1250	50.0	150		mg/L	500	12/12/19 12:04 PM
Nickel	0.00398	0.00300	0.0100	J	mg/L	1	12/12/19 10:40 AM
Potassium	40.4	5.00	15.0		mg/L	50	12/12/19 01:04 PM
Sodium	9430	50.0	150		mg/L	500	12/12/19 12:04 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 10:40 AM
Vanadium	0.00136	0.000500	0.00100		mg/L	1	12/12/19 10:40 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.000400	0.000400	0.00100		mg/L	5	12/17/19 11:57 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.000400	0.000400	0.00100		mg/L	5	12/17/19 11:50 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.125	0.00300	0.0100	N	mg/L	1	12/12/19 10:40 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.131	0.00300	0.0100	N	mg/L	1	12/12/19 01:43 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	17500	300	1000		mg/L	1000	12/07/19 04:03 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 06:50 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 06:50 PM
Sulfate	4060	1000	3000		mg/L	1000	12/07/19 04:03 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-1
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-09
Project No:	19125525	**Collection Date:**	12/04/19 11:33 AM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	217	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:48 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:48 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:48 PM
Alkalinity, Total (As CaCO3)	217	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 06:48 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	37800	1000	1000		mg/L	1	12/09/19 05:05 PM

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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-2
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-10
Project No:	19125525	**Collection Date:**	12/04/19 12:58 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0173	0.0100	0.0300	J	mg/L	1	12/12/19 02:02 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 02:02 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:02 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:02 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 02:02 PM
Dissolved Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 02:02 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 02:02 PM
Dissolved Vanadium	0.00330	0.000500	0.00100		mg/L	1	12/12/19 02:02 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0303	0.0100	0.0300		mg/L	1	12/12/19 10:59 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 10:59 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:59 AM
Calcium	849	10.0	30.0		mg/L	100	12/12/19 01:26 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 10:59 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 10:59 AM
Magnesium	1300	10.0	30.0		mg/L	100	12/12/19 01:26 PM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	12/12/19 10:59 AM
Potassium	50.4	10.0	30.0		mg/L	100	12/12/19 01:26 PM
Sodium	9650	100	300		mg/L	1000	12/12/19 12:26 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 10:59 AM
Vanadium	0.00202	0.000500	0.00100		mg/L	1	12/12/19 10:59 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 11:03 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/16/19 10:16 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.121	0.00300	0.0100	N	mg/L	1	12/12/19 10:59 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.132	0.00300	0.0100	N	mg/L	1	12/12/19 02:02 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	16700	300	1000		mg/L	1000	12/07/19 04:51 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 09:30 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 09:30 PM
Sulfate	3730	1000	3000		mg/L	1000	12/07/19 04:51 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-2
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-10
Project No:	19125525	**Collection Date:**	12/04/19 12:58 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	228	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 07:02 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 07:02 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 07:02 PM
Alkalinity, Total (As CaCO3)	228	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 07:02 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	33000	1000	1000		mg/L	1	12/10/19 05:00 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-3
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-11
Project No:	19125525	**Collection Date:**	12/04/19 01:41 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0117	0.0100	0.0300	J	mg/L	1	12/12/19 02:46 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 02:46 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:46 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:46 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 02:46 PM
Dissolved Nickel	0.00352	0.00300	0.0100	J	mg/L	1	12/12/19 02:46 PM
Dissolved Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 02:46 PM
Dissolved Vanadium	0.00229	0.000500	0.00100		mg/L	1	12/12/19 02:46 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0194	0.0100	0.0300	J	mg/L	1	12/12/19 11:38 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 11:38 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 11:38 AM
Calcium	1070	10.0	30.0		mg/L	100	12/12/19 01:39 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 11:38 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 11:38 AM
Magnesium	1370	10.0	30.0		mg/L	100	12/12/19 01:39 PM
Nickel	0.00329	0.00300	0.0100	J	mg/L	1	12/12/19 11:38 AM
Potassium	53.5	10.0	30.0		mg/L	100	12/12/19 01:39 PM
Sodium	9830	100	300		mg/L	1000	12/12/19 12:42 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/12/19 11:38 AM
Vanadium	0.00216	0.000500	0.00100		mg/L	1	12/12/19 11:38 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 11:05 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/16/19 10:23 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.127	0.00300	0.0100	N	mg/L	1	12/12/19 11:38 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.121	0.00300	0.0100	N	mg/L	1	12/12/19 02:46 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	19200	300	1000		mg/L	1000	12/07/19 05:07 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 09:46 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 09:46 PM
Sulfate	4640	1000	3000		mg/L	1000	12/07/19 05:07 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-3
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-11
Project No:	19125525	**Collection Date:**	12/04/19 01:41 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	205	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 07:08 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 07:08 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	12/09/19 07:08 PM
Alkalinity, Total (As CaCO3)	205	20.0	20.0		mg/L @ pH 4.52	1	12/09/19 07:08 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	35700	1000	1000		mg/L	1	12/10/19 05:00 PM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-12
Project No:	19125525	**Collection Date:**	12/04/19 02:22 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0130	0.0100	0.0300	J	mg/L	1	12/12/19 02:48 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 02:48 PM
Dissolved Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:48 PM
Dissolved Chromium	0.00263	0.00200	0.00500	J	mg/L	1	12/12/19 02:48 PM
Dissolved Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 02:48 PM
Dissolved Nickel	0.0114	0.00300	0.0100		mg/L	1	12/12/19 02:48 PM
Dissolved Thallium	0.00116	0.000500	0.00150	J	mg/L	1	12/12/19 02:48 PM
Dissolved Vanadium	0.00341	0.000500	0.00100		mg/L	1	12/12/19 02:48 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0120	0.0100	0.0300	J	mg/L	1	12/12/19 11:40 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 11:40 AM
Arsenic	0.00224	0.00200	0.00500	J	mg/L	1	12/12/19 11:40 AM
Calcium	1290	10.0	30.0		mg/L	100	12/12/19 01:42 PM
Chromium	0.00356	0.00200	0.00500	J	mg/L	1	12/12/19 11:40 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/12/19 11:40 AM
Magnesium	2030	10.0	30.0		mg/L	100	12/12/19 01:42 PM
Nickel	0.00851	0.00300	0.0100	J	mg/L	1	12/12/19 11:40 AM
Potassium	127	10.0	30.0		mg/L	100	12/12/19 01:42 PM
Sodium	15000	100	300		mg/L	1000	12/12/19 12:44 PM
Thallium	0.00126	0.000500	0.00150	J	mg/L	1	12/12/19 11:40 AM
Vanadium	0.00336	0.000500	0.00100		mg/L	1	12/12/19 11:40 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 11:12 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/16/19 10:25 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.145	0.00300	0.0100	N	mg/L	1	12/12/19 11:40 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.138	0.00300	0.0100	N	mg/L	1	12/12/19 02:48 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	29900	300	1000		mg/L	1000	12/07/19 06:43 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 10:02 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	12/05/19 10:02 PM
Sulfate	4660	1000	3000		mg/L	1000	12/07/19 06:43 AM

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DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-12
Project No:	19125525	**Collection Date:**	12/04/19 02:22 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	218	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 07:15 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 07:15 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 07:15 PM
Alkalinity, Total (As CaCO3)	218	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 07:15 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	49600	1000	1000		mg/L	1	12/10/19 05:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4B
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-13
Project No:	19125525	**Collection Date:**	12/04/19 03:12 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Aluminum	0.0125	0.0100	0.0300	J	mg/L	1	12/12/19 02:50 PM
Dissolved Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 02:50 PM
Dissolved Arsenic	0.00278	0.00200	0.00500	J	mg/L	1	12/12/19 02:50 PM
Dissolved Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/12/19 02:50 PM
Dissolved Lead	0.000643	0.000300	0.00100	J	mg/L	1	12/12/19 02:50 PM
Dissolved Nickel	0.00701	0.00300	0.0100	J	mg/L	1	12/12/19 02:50 PM
Dissolved Thallium	0.00143	0.000500	0.00150	J	mg/L	1	12/12/19 02:50 PM
Dissolved Vanadium	0.00656	0.000500	0.00100		mg/L	1	12/12/19 02:50 PM
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0263	0.0100	0.0300	J	mg/L	1	12/12/19 11:42 AM
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/12/19 11:42 AM
Arsenic	0.00367	0.00200	0.00500	J	mg/L	1	12/12/19 11:42 AM
Calcium	1360	10.0	30.0		mg/L	100	12/12/19 01:44 PM
Chromium	0.00294	0.00200	0.00500	J	mg/L	1	12/12/19 11:42 AM
Lead	0.000413	0.000300	0.00100	J	mg/L	1	12/12/19 11:42 AM
Magnesium	2920	100	300		mg/L	1000	12/12/19 12:46 PM
Nickel	0.0101	0.00300	0.0100		mg/L	1	12/12/19 11:42 AM
Potassium	298	10.0	30.0		mg/L	100	12/12/19 01:44 PM
Sodium	21900	100	300		mg/L	1000	12/12/19 12:46 PM
Thallium	0.00158	0.000500	0.00150		mg/L	1	12/12/19 11:42 AM
Vanadium	0.00572	0.000500	0.00100		mg/L	1	12/12/19 11:42 AM
MERCURY (0.45µ FILTERED)		**SW7470A**					Analyst: **BM**
Dissolved Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/17/19 11:14 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/16/19 10:28 AM
URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Uranium	0.118	0.00300	0.0100	N	mg/L	1	12/12/19 11:42 AM
DISSOLVED URANIUM IN WATER BY ICPMS		**SW6020B**					Analyst: **SP**
Dissolved Uranium	0.111	0.00300	0.0100	N	mg/L	1	12/12/19 02:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	41100	300	1000		mg/L	1000	12/07/19 06:59 AM
Fluoride	<1.00	1.00	4.00		mg/L	10	12/05/19 10:18 PM
Nitrate-N	2.54	1.00	5.00	J	mg/L	10	12/05/19 10:18 PM
Sulfate	5490	1000	3000		mg/L	1000	12/07/19 06:59 AM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-Feb-20*

CLIENT:	Golder	**Client Sample ID:**	MW3-4B
Project:	Copano GW Sampling 4Q19	**Lab ID:**	1912030-13
Project No:	19125525	**Collection Date:**	12/04/19 03:12 PM
Lab Order:	1912030	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	217	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 07:28 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 07:28 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	12/09/19 07:28 PM
Alkalinity, Total (As CaCO3)	217	20.0	20.0		mg/L @ pH 4.53	1	12/09/19 07:28 PM
AMMONIA AQUEOUS		**M4500-NH3-D**					Analyst: **RBW**
Ammonia-N (As N)	<0.100	0.100	0.250		mg/L	1	12/10/19 02:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	76000	5000	5000		mg/L	1	12/10/19 05:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191203A

Sample ID: **DCS-93925** Batch ID: **93925** TestNo: **SW7470A** Units: **mg/L**
SampType: **DCS** Run ID: **CETAC2_HG_191203A** Analysis Date: **12/3/2019 2:43:30 PM** Prep Date: **12/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000184	0.000200	0.000200	0	92.0	82	119	0	0	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	Page 1 of 52
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191210B

The QC data in batch 94004 applies to the following samples: 1912030-01B

Sample ID: **MB-94004**	Batch ID: **94004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 12:47:38 P**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-94004**	Batch ID: **94004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 12:49:53 P**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00187	0.000200	0.00200	0	93.5	85	115			

Sample ID: **LCSD-94004**	Batch ID: **94004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 12:52:09 P**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00184	0.000200	0.00200	0	92.0	85	115	1.62	15	

Sample ID: **1912022-01B SD**	Batch ID: **94004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 1:01:13 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1912022-01B PDS**	Batch ID: **94004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 1:03:29 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200	0.00250	0	0	85	115			S

Sample ID: **1912022-01B MS**	Batch ID: **94004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 2:18:01 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000755	0.00100	0.00200	0	37.8	80	120			S

Sample ID: **1912022-01B MSD**	Batch ID: **94004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 2:20:16 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.000780	0.00100	0.00200	0	39.0	80	120	3.26	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191210B

Sample ID: **ICV-191210**	Batch ID: **R107843**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 9:11:47 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00393	0.000200	0.00400	0	98.2	90	110			

Sample ID: **CCV6-191210**	Batch ID: **R107843**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 12:43:04 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV7-191210**	Batch ID: **R107843**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 1:26:11 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV8-191210**	Batch ID: **R107843**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 1:53:30 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID: **CCV9-191210**	Batch ID: **R107843**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191210B**	Analysis Date: **12/10/2019 2:22:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00184	0.000200	0.00200	0	92.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191216A

The QC data in batch 94083 applies to the following samples: 1912030-01A, 1912030-02A, 1912030-03A, 1912030-04A, 1912030-05A, 1912030-06A, 1912030-07A, 1912030-08A, 1912030-09A, 1912030-10A, 1912030-11A, 1912030-12A, 1912030-13A

Sample ID: **MB-94083** Batch ID: **94083** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_191216A** Analysis Date: **12/16/2019 9:40:29 AM** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-94083** Batch ID: **94083** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_191216A** Analysis Date: **12/16/2019 9:42:44 AM** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00183	0.000200	0.00200	0	91.5	85	115			

Sample ID: **LCSD-94083** Batch ID: **94083** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_191216A** Analysis Date: **12/16/2019 9:45:00 AM** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00178	0.000200	0.00200	0	89.0	85	115	2.77	15	

Sample ID: **1912030-09A SD** Batch ID: **94083** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_191216A** Analysis Date: **12/16/2019 10:12:11 A** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1912030-09A PDS** Batch ID: **94083** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_191216A** Analysis Date: **12/16/2019 10:14:27 A** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00142	0.000200	0.00250	0	56.8	85	115			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191216A

Sample ID: **ICV-191216**	Batch ID: **R107929**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_191216A**	Analysis Date: **12/16/2019 9:35:55 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00394	0.000200	0.00400	0	98.5	90	110			

Sample ID: **CCV1-191216**	Batch ID: **R107929**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191216A**	Analysis Date: **12/16/2019 10:19:01 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00181	0.000200	0.00200	0	90.5	90	110			

Sample ID: **CCV2-191216**	Batch ID: **R107929**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191216A**	Analysis Date: **12/16/2019 10:46:20 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00180	0.000200	0.00200	0	90.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191217B

The QC data in batch 94085 applies to the following samples: 1912030-02B, 1912030-03B, 1912030-04B, 1912030-05B, 1912030-06B, 1912030-07B, 1912030-08B, 1912030-09B, 1912030-10B, 1912030-11B, 1912030-12B, 1912030-13B

Sample ID: **MB-94085** Batch ID: **94085** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_191217B** Analysis Date: **12/17/2019 10:29:12 A** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	<0.0000800	0.000200								

Sample ID: **LCS-94085** Batch ID: **94085** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_191217B** Analysis Date: **12/17/2019 10:31:28 A** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00197	0.000200	0.00200	0	98.5	85	115			

Sample ID: **LCSD-94085** Batch ID: **94085** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_191217B** Analysis Date: **12/17/2019 10:33:44 A** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00199	0.000200	0.00200	0	99.5	85	115	1.01	15	

Sample ID: **1912030-09B SD** Batch ID: **94085** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_191217B** Analysis Date: **12/17/2019 10:58:38 A** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **1912030-09B PDS** Batch ID: **94085** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_191217B** Analysis Date: **12/17/2019 11:00:55 A** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00137	0.000200	0.00250	0	54.8	85	115			S

Sample ID: **1912030-09B MS** Batch ID: **94085** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_191217B** Analysis Date: **12/17/2019 12:00:05 P** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00190	0.00100	0.00200	0	95.2	80	120			

Sample ID: **1912030-09B MSD** Batch ID: **94085** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_191217B** Analysis Date: **12/17/2019 12:02:22 P** Prep Date: **12/13/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00190	0.00100	0.00200	0	95.0	80	120	0.263	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_191217B

Sample ID: **ICV-191217**	Batch ID: **R107959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 9:14:12 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00393	0.000200	0.00400	0	98.2	90	110			

Sample ID: **CCV2-191217**	Batch ID: **R107959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 10:24:38 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV3-191217**	Batch ID: **R107959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 11:07:45 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV4-191217**	Batch ID: **R107959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 11:37:20 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV5-191217**	Batch ID: **R107959**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_191217B**	Analysis Date: **12/17/2019 12:04:40 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191001C

Sample ID: **DCS1-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_191001C**	Analysis Date: **10/1/2019 10:53:00 AM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0249	0.0300	0.0200	0	124	70	130	0	0	
Antimony	0.00103	0.00250	0.00100	0	103	70	130	0	0	
Lead	0.000538	0.00100	0.000500	0	108	70	130	0	0	
Thallium	0.000502	0.00150	0.000500	0	100	70	130	0	0	
Vanadium	0.000494	0.00100	0.000500	0	98.8	70	130	0	0	

Sample ID: **DCS2-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_191001C**	Analysis Date: **10/1/2019 10:55:00 AM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.291	0.300	0.300	0	97.0	70	130	0	0	
Magnesium	0.319	0.300	0.300	0	106	70	130	0	0	
Potassium	0.324	0.300	0.300	0	108	70	130	0	0	

Sample ID: **DCS3-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_191001C**	Analysis Date: **10/1/2019 10:57:00 AM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00518	0.00500	0.00500	0	104	70	130	0	0	
Chromium	0.00559	0.00500	0.00500	0	112	70	130	0	0	
Nickel	0.00560	0.0100	0.00500	0	112	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191001G

Sample ID: **DCS1-92934** Batch ID: **92934** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS** Run ID: **ICP-MS4_191001G** Analysis Date: **10/1/2019 10:53:00 AM** Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.000455	0.0100	0.000500	0	91.0	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_191212A**

The QC data in batch 94052 applies to the following samples: 1912030-01A, 1912030-02A, 1912030-03A, 1912030-04A, 1912030-05A, 1912030-06A, 1912030-07A, 1912030-08A, 1912030-09A, 1912030-10A, 1912030-11A, 1912030-12A, 1912030-13A

Sample ID: **MB-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:32:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Magnesium	<0.100	0.300								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Thallium	<0.000500	0.00150								
Vanadium	<0.000500	0.00100								

Sample ID: **LCS-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:34:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0	99.6	80	120			
Antimony	0.199	0.00250	0.200	0	99.6	80	120			
Arsenic	0.203	0.00500	0.200	0	102	80	120			
Calcium	5.01	0.300	5.00	0	100	80	120			
Chromium	0.208	0.00500	0.200	0	104	80	120			
Lead	0.199	0.00100	0.200	0	99.4	80	120			
Magnesium	5.18	0.300	5.00	0	104	80	120			
Nickel	0.208	0.0100	0.200	0	104	80	120			
Potassium	5.21	0.300	5.00	0	104	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			
Vanadium	0.203	0.00100	0.200	0	102	80	120			

Sample ID: **LCSD-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:36:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.96	0.0300	5.00	0	99.2	80	120	0.428	15	
Antimony	0.201	0.00250	0.200	0	100	80	120	0.788	15	
Arsenic	0.201	0.00500	0.200	0	101	80	120	0.997	15	
Calcium	4.85	0.300	5.00	0	97.1	80	120	3.26	15	
Chromium	0.206	0.00500	0.200	0	103	80	120	1.21	15	
Lead	0.201	0.00100	0.200	0	101	80	120	1.35	15	
Magnesium	5.14	0.300	5.00	0	103	80	120	0.946	15	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **LCSD-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:36:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.208	0.0100	0.200	0	104	80	120	0.215	15	
Potassium	5.08	0.300	5.00	0	102	80	120	2.57	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	0.768	15	
Vanadium	0.201	0.00100	0.200	0	100	80	120	1.30	15	

Sample ID: **1912030-09A SD** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:42:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0554	0.150	0	0.0568				2.54	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0				0	20	
Chromium	<0.0100	0.0250	0	0.00756				0	20	
Lead	<0.00150	0.00500	0	0.000398				0	20	
Nickel	<0.0150	0.0500	0	0.00398				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	<0.00250	0.00500	0	0.00136				0	20	

Sample ID: **1912030-09A PDS** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 11:01:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.96	0.0300	5.00	0.0568	98.0	75	125			
Antimony	0.182	0.00250	0.200	0	90.8	75	125			
Arsenic	0.196	0.00500	0.200	0	98.1	75	125			
Chromium	0.155	0.00500	0.200	0.00756	73.7	75	125			S
Lead	0.209	0.00100	0.200	0.000398	104	75	125			
Nickel	0.151	0.0100	0.200	0.00398	73.7	75	125			S
Thallium	0.216	0.00150	0.200	0	108	75	125			
Vanadium	0.163	0.00100	0.200	0.00136	80.9	75	125			

Sample ID: **1912030-09A MS** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 11:07:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0.0568	102	75	125			
Antimony	0.177	0.00250	0.200	0	88.5	75	125			
Arsenic	0.201	0.00500	0.200	0	100	75	125			
Calcium	1050	0.300	5.00	1070	-298	75	125			S
Chromium	0.156	0.00500	0.200	0.00756	74.3	75	125			S
Lead	0.209	0.00100	0.200	0.000398	104	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **1912030-09A MS**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 11:07:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	1070	0.300	5.00	1160	-1880	75	125			S
Nickel	0.152	0.0100	0.200	0.00398	74.2	75	125			S
Potassium	54.4	0.300	5.00	48.0	128	75	125			S
Thallium	0.215	0.00150	0.200	0	107	75	125			
Vanadium	0.164	0.00100	0.200	0.00136	81.6	75	125			

Sample ID: **1912030-09A MSD**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 11:08:00 A**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.15	0.0300	5.00	0.0568	102	75	125	0.115	15	
Antimony	0.179	0.00250	0.200	0	89.5	75	125	1.14	15	
Arsenic	0.200	0.00500	0.200	0	100	75	125	0.326	15	
Calcium	1070	0.300	5.00	1070	75.3	75	125	1.76	15	
Chromium	0.155	0.00500	0.200	0.00756	73.7	75	125	0.863	15	S
Lead	0.212	0.00100	0.200	0.000398	106	75	125	1.46	15	
Magnesium	1070	0.300	5.00	1160	-1850	75	125	0.150	15	S
Nickel	0.151	0.0100	0.200	0.00398	73.3	75	125	1.18	15	S
Potassium	55.9	0.300	5.00	48.0	157	75	125	2.66	15	S
Thallium	0.219	0.00150	0.200	0	109	75	125	1.78	15	
Vanadium	0.162	0.00100	0.200	0.00136	80.4	75	125	1.41	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_191212A**

The QC data in batch 94054 applies to the following samples: 1912030-01B, 1912030-02B, 1912030-03B, 1912030-04B, 1912030-05B, 1912030-06B, 1912030-07B, 1912030-08B, 1912030-09B, 1912030-10B, 1912030-11B, 1912030-12B, 1912030-13B

Sample ID: **MB-94054** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 1:35:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0148	0.0300								
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Chromium	<0.00200	0.00500								
Lead	<0.000300	0.00100								
Nickel	<0.00300	0.0100								
Thallium	<0.000500	0.00150								
Vanadium	0.000877	0.00100								

Sample ID: **LCS-94054** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 1:37:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.00	0.0300	5.00	0	99.9	80	120			
Antimony	0.194	0.00250	0.200	0	96.9	80	120			
Arsenic	0.191	0.00500	0.200	0	95.3	80	120			
Chromium	0.189	0.00500	0.200	0	94.4	80	120			
Lead	0.194	0.00100	0.200	0	96.8	80	120			
Nickel	0.175	0.0100	0.200	0	87.5	80	120			
Thallium	0.193	0.00150	0.200	0	96.4	80	120			
Vanadium	0.188	0.00100	0.200	0	93.8	80	120			

Sample ID: **LCSD-94054** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 1:39:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.12	0.0300	5.00	0	102	80	120	2.47	15	
Antimony	0.194	0.00250	0.200	0	97.0	80	120	0.074	15	
Arsenic	0.188	0.00500	0.200	0	93.9	80	120	1.45	15	
Chromium	0.188	0.00500	0.200	0	94.2	80	120	0.172	15	
Lead	0.193	0.00100	0.200	0	96.5	80	120	0.304	15	
Nickel	0.174	0.0100	0.200	0	87.0	80	120	0.503	15	
Thallium	0.191	0.00150	0.200	0	95.6	80	120	0.793	15	
Vanadium	0.189	0.00100	0.200	0	94.4	80	120	0.596	15	

Sample ID: **1912030-09B SD** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 1:45:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **1912030-09B SD**	Batch ID: **94054**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 1:45:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0282				0	20	
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0				0	20	
Chromium	<0.0100	0.0250	0	0.00764				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Nickel	<0.0150	0.0500	0	0.00556				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	
Vanadium	0.00476	0.00500	0	0.00231				69.5	20	R

Sample ID: **1912030-09B PDS**	Batch ID: **94054**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 2:04:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.62	0.0300	5.00	0.0282	91.8	75	125			
Antimony	0.184	0.00250	0.200	0	91.8	75	125			
Arsenic	0.206	0.00500	0.200	0	103	75	125			
Chromium	0.173	0.00500	0.200	0.00764	82.7	75	125			
Lead	0.213	0.00100	0.200	0	107	75	125			
Nickel	0.161	0.0100	0.200	0.00556	77.7	75	125			
Thallium	0.219	0.00150	0.200	0	110	75	125			
Vanadium	0.179	0.00100	0.200	0.00231	88.4	75	125			

Sample ID: **1912030-09B MS**	Batch ID: **94054**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 2:07:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.72	0.0300	5.00	0.0282	93.9	75	125			
Dissolved Antimony	0.180	0.00250	0.200	0	90.0	75	125			
Dissolved Arsenic	0.209	0.00500	0.200	0	105	75	125			
Dissolved Chromium	0.167	0.00500	0.200	0.00764	79.8	75	125			
Dissolved Lead	0.212	0.00100	0.200	0	106	75	125			
Dissolved Nickel	0.156	0.0100	0.200	0.00556	75.2	75	125			
Dissolved Thallium	0.216	0.00150	0.200	0	108	75	125			
Dissolved Vanadium	0.176	0.00100	0.200	0.00231	86.9	75	125			

Sample ID: **1912030-09B MSD**	Batch ID: **94054**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 2:09:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Aluminum	4.83	0.0300	5.00	0.0282	96.0	75	125	2.27	15	
Dissolved Antimony	0.183	0.00250	0.200	0	91.3	75	125	1.53	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **1912030-09B MSD** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 2:09:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Arsenic	0.211	0.00500	0.200	0	105	75	125	0.852	15	
Dissolved Chromium	0.170	0.00500	0.200	0.00764	81.3	75	125	1.75	15	
Dissolved Lead	0.214	0.00100	0.200	0	107	75	125	1.10	15	
Dissolved Nickel	0.158	0.0100	0.200	0.00556	76.3	75	125	1.32	15	
Dissolved Thallium	0.220	0.00150	0.200	0	110	75	125	1.56	15	
Dissolved Vanadium	0.180	0.00100	0.200	0.00231	88.9	75	125	2.16	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **ICV-191212** Batch ID: **R107877** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:19:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.47	0.0300	2.50	0	98.7	90	110			
Antimony	0.103	0.00250	0.100	0	103	90	110			
Arsenic	0.0994	0.00500	0.100	0	99.4	90	110			
Calcium	2.57	0.300	2.50	0	103	90	110			
Chromium	0.109	0.00500	0.100	0	109	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Magnesium	2.55	0.300	2.50	0	102	90	110			
Nickel	0.106	0.0100	0.100	0	106	90	110			
Potassium	2.64	0.300	2.50	0	106	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			
Vanadium	0.105	0.00100	0.100	0	105	90	110			

Sample ID: **LCVL-191212** Batch ID: **R107877** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 10:25:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.102	0.0300	0.100	0	102	80	120			
Antimony	0.00196	0.00250	0.00200	0	98.2	80	120			
Arsenic	0.00511	0.00500	0.00500	0	102	80	120			
Calcium	0.112	0.300	0.100	0	112	80	120			
Chromium	0.00536	0.00500	0.00500	0	107	80	120			
Lead	0.000961	0.00100	0.00100	0	96.1	80	120			
Magnesium	0.104	0.300	0.100	0	104	80	120			
Nickel	0.00541	0.0100	0.00500	0	108	80	120			
Potassium	0.106	0.300	0.100	0	106	80	120			
Thallium	0.000954	0.00150	0.00100	0	95.4	80	120			
Vanadium	0.000953	0.00100	0.00100	0	95.3	80	120			

Sample ID: **CCV1-191212** Batch ID: **R107877** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_191212A** Analysis Date: **12/12/2019 11:33:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.11	0.0300	5.00	0	102	90	110			
Antimony	0.196	0.00250	0.200	0	97.8	90	110			
Arsenic	0.195	0.00500	0.200	0	97.7	90	110			
Calcium	4.94	0.300	5.00	0	98.8	90	110			
Chromium	0.191	0.00500	0.200	0	95.5	90	110			
Lead	0.187	0.00100	0.200	0	93.7	90	110			
Magnesium	4.87	0.300	5.00	0	97.4	90	110			
Nickel	0.190	0.0100	0.200	0	95.0	90	110			
Potassium	5.20	0.300	5.00	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212A

Sample ID: **CCV1-191212**	Batch ID: **R107877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 11:33:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.186	0.00150	0.200	0	92.9	90	110			
Vanadium	0.190	0.00100	0.200	0	95.0	90	110			

Sample ID: **CCV2-191212**	Batch ID: **R107877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 12:14:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.24	0.0300	5.00	0	105	90	110			
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.200	0.00500	0.200	0	99.9	90	110			
Chromium	0.192	0.00500	0.200	0	96.2	90	110			
Lead	0.195	0.00100	0.200	0	97.6	90	110			
Nickel	0.191	0.0100	0.200	0	95.6	90	110			
Thallium	0.194	0.00150	0.200	0	97.0	90	110			
Vanadium	0.193	0.00100	0.200	0	96.6	90	110			

Sample ID: **CCV4-191212**	Batch ID: **R107877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.09	0.0300	5.00	0	102	90	110			
Antimony	0.196	0.00250	0.200	0	97.8	90	110			
Arsenic	0.196	0.00500	0.200	0	98.0	90	110			
Chromium	0.185	0.00500	0.200	0	92.3	90	110			
Lead	0.192	0.00100	0.200	0	96.0	90	110			
Nickel	0.181	0.0100	0.200	0	90.6	90	110			
Thallium	0.192	0.00150	0.200	0	95.8	90	110			
Vanadium	0.186	0.00100	0.200	0	92.8	90	110			

Sample ID: **CCV5-191212**	Batch ID: **R107877**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212A**	Analysis Date: **12/12/2019 2:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.02	0.0300	5.00	0	100	90	110			
Antimony	0.194	0.00250	0.200	0	96.9	90	110			
Arsenic	0.200	0.00500	0.200	0	100	90	110			
Chromium	0.183	0.00500	0.200	0	91.7	90	110			
Lead	0.191	0.00100	0.200	0	95.3	90	110			
Nickel	0.179	0.0100	0.200	0	89.5	90	110			
Thallium	0.189	0.00150	0.200	0	94.5	90	110			
Vanadium	0.184	0.00100	0.200	0	91.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212B

The QC data in batch 94052 applies to the following samples: 1912030-01A, 1912030-02A, 1912030-03A, 1912030-04A, 1912030-05A, 1912030-06A, 1912030-07A, 1912030-08A, 1912030-09A, 1912030-10A, 1912030-11A, 1912030-12A, 1912030-13A

Sample ID: **MB-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_191212B** Analysis Date: **12/12/2019 10:32:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_191212B** Analysis Date: **12/12/2019 10:34:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.190	0.0100	0.200	0	95.2	80	120			N

Sample ID: **LCSD-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191212B** Analysis Date: **12/12/2019 10:36:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.193	0.0100	0.200	0	96.3	80	120	1.14	15	N

Sample ID: **1912030-09A SD** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_191212B** Analysis Date: **12/12/2019 10:42:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.116	0.0500	0	0.124				7.49	20	N

Sample ID: **1912030-09A PDS** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_191212B** Analysis Date: **12/12/2019 11:01:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.314	0.0100	0.200	0.125	94.7	75	125			N

Sample ID: **1912030-09A MS** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_191212B** Analysis Date: **12/12/2019 11:07:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.320	0.0100	0.200	0.125	97.8	75	125			N

Sample ID: **1912030-09A MSD** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_191212B** Analysis Date: **12/12/2019 11:08:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.325	0.0100	0.200	0.125	100	75	125	1.41	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_191212B

Sample ID: **ICV-191212**	Batch ID: **R107881**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 10:19:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0957	0.0100	0.100	0	95.7	90	110			N

Sample ID: **LCVL-191212**	Batch ID: **R107881**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 10:25:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00444	0.0100	0.00500	0	88.9	80	120			N

Sample ID: **CCV1-191212**	Batch ID: **R107881**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 11:33:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.185	0.0100	0.200	0	92.7	90	110			N

Sample ID: **CCV2-191212**	Batch ID: **R107881**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212B**	Analysis Date: **12/12/2019 12:14:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.190	0.0100	0.200	0	95.2	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_191212C**

The QC data in batch 94054 applies to the following samples: 1912030-01B, 1912030-02B, 1912030-03B, 1912030-04B, 1912030-05B, 1912030-06B, 1912030-07B, 1912030-08B, 1912030-09B, 1912030-10B, 1912030-11B, 1912030-12B, 1912030-13B

Sample ID: **MB-94054** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 1:35:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	<0.00300	0.0100								N

Sample ID: **LCS-94054** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 1:37:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.185	0.0100	0.200	0	92.4	80	120			N

Sample ID: **LCSD-94054** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 1:39:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.184	0.0100	0.200	0	91.8	80	120	0.629	15	N

Sample ID: **1912030-09B SD** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 1:45:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.116	0.0500	0	0.131				12.4	20	N

Sample ID: **1912030-09B PDS** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 2:04:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.345	0.0100	0.200	0.131	107	75	125			N

Sample ID: **1912030-09B MS** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 2:07:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.347	0.0100	0.200	0.131	108	75	125			N

Sample ID: **1912030-09B MSD** Batch ID: **94054** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_191212C** Analysis Date: **12/12/2019 2:09:00 PM** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Uranium	0.351	0.0100	0.200	0.131	110	75	125	1.08	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_191212C**

Sample ID: **ICV-191212**	Batch ID: **R109088**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_191212C**	Analysis Date: **12/12/2019 10:19:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0957	0.0100	0.100	0	95.7	90	110			N

Sample ID: **LCVL-191212**	Batch ID: **R109088**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_191212C**	Analysis Date: **12/12/2019 10:25:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00444	0.0100	0.00500	0	88.9	80	120			N

Sample ID: **CCV4-191212**	Batch ID: **R109088**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212C**	Analysis Date: **12/12/2019 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.180	0.0100	0.200	0	89.8	90	110			N

Sample ID: **CCV5-191212**	Batch ID: **R109088**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_191212C**	Analysis Date: **12/12/2019 2:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.181	0.0100	0.200	0	90.7	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190926A

Sample ID: **DCS1-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_190926A**	Analysis Date: **9/26/2019 12:41:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00104	0.00250	0.00100	0	104	70	130	0	0	
Lead	0.000553	0.00100	0.000500	0	111	70	130	0	0	
Thallium	0.000516	0.00150	0.000500	0	103	70	130	0	0	
Vanadium	0.000478	0.00100	0.000500	0	95.6	70	130	0	0	

Sample ID: **DCS2-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_190926A**	Analysis Date: **9/26/2019 12:44:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0340	0.0300	0.0300	0	113	70	130	0	0	
Calcium	0.299	0.300	0.300	0	99.8	70	130	0	0	
Magnesium	0.322	0.300	0.300	0	107	70	130	0	0	
Potassium	0.291	0.300	0.300	0	96.9	70	130	0	0	

Sample ID: **DCS3-92934**	Batch ID: **92934**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_190926A**	Analysis Date: **9/26/2019 12:46:00 PM**	Prep Date: **9/25/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00494	0.00500	0.00500	0	98.8	70	130	0	0	
Chromium	0.00521	0.00500	0.00500	0	104	70	130	0	0	
Nickel	0.00511	0.0100	0.00500	0	102	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190926B

Sample ID: **DCS1-92934**	Batch ID: **92934**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **DCS**	Run ID: **ICP-MS5_190926B**	Analysis Date: **9/26/2019 12:41:00 PM**		Prep Date: **9/25/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.000491	0.0100	0.000500	0	98.2	60	140	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_191212C**

The QC data in batch 94052 applies to the following samples: 1912030-01A, 1912030-02A, 1912030-03A, 1912030-04A, 1912030-05A, 1912030-06A, 1912030-07A, 1912030-08A, 1912030-09A, 1912030-10A, 1912030-11A, 1912030-12A, 1912030-13A

Sample ID: **MB-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_191212C** Analysis Date: **12/12/2019 11:55:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	<0.100	0.300								

Sample ID: **LCS-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_191212C** Analysis Date: **12/12/2019 11:57:00 A** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	4.94	0.300	5.00	0	98.9	80	120			

Sample ID: **LCSD-94052** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_191212C** Analysis Date: **12/12/2019 12:00:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	4.98	0.300	5.00	0	99.6	80	120	0.764	15	

Sample ID: **1912030-09A SD** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_191212C** Analysis Date: **12/12/2019 12:06:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	1280	750	0	1250				2.21	20	
Sodium	9280	750	0	9430				1.59	20	

Sample ID: **1912030-09A PDS** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_191212C** Analysis Date: **12/12/2019 12:29:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	3740	150	2500	1250	99.3	75	125			
Sodium	12200	150	2500	9430	111	75	125			

Sample ID: **1912030-09A MS** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_191212C** Analysis Date: **12/12/2019 12:33:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	9540	150	5.00	9430	2170	75	125			S

Sample ID: **1912030-09A MSD** Batch ID: **94052** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_191212C** Analysis Date: **12/12/2019 12:35:00 P** Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	9580	150	5.00	9430	2980	75	125	0.423	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191212C

Sample ID: **1912030-09A SD**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 1:06:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1090	75.0	0	1080				1.06	20	
Potassium	39.1	75.0	0	40.4				3.14	20	

Sample ID: **1912030-09A PDS**	Batch ID: **94052**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 1:29:00 PM**	Prep Date: **12/11/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1330	15.0	250	1080	101	75	125			
Potassium	286	15.0	250	40.4	98.2	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191212C

Sample ID: **ICV-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 10:26:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.44	0.0300	2.50	0	97.6	90	110			
Antimony	0.103	0.00250	0.100	0	103	90	110			
Arsenic	0.100	0.00500	0.100	0	100	90	110			
Calcium	2.60	0.300	2.50	0	104	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Lead	0.0983	0.00100	0.100	0	98.3	90	110			
Magnesium	2.49	0.300	2.50	0	99.8	90	110			
Nickel	0.106	0.0100	0.100	0	106	90	110			
Potassium	2.54	0.300	2.50	0	102	90	110			
Sodium	2.53	0.300	2.50	0	101	90	110			
Thallium	0.0975	0.00150	0.100	0	97.5	90	110			
Vanadium	0.101	0.00100	0.100	0	101	90	110			

Sample ID: **LCVL-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 10:33:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.101	0.0300	0.100	0	101	80	120			
Antimony	0.00204	0.00250	0.00200	0	102	80	120			
Arsenic	0.00511	0.00500	0.00500	0	102	80	120			
Calcium	0.110	0.300	0.100	0	110	80	120			
Chromium	0.00511	0.00500	0.00500	0	102	80	120			
Lead	0.000991	0.00100	0.00100	0	99.1	80	120			
Magnesium	0.103	0.300	0.100	0	103	80	120			
Nickel	0.00527	0.0100	0.00500	0	105	80	120			
Potassium	0.0983	0.300	0.100	0	98.3	80	120			
Sodium	0.105	0.300	0.100	0	105	80	120			
Thallium	0.00101	0.00150	0.00100	0	101	80	120			
Vanadium	0.000948	0.00100	0.00100	0	94.8	80	120			

Sample ID: **CCV1-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 11:12:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	5.09	0.300	5.00	0	102	90	110			
Sodium	5.06	0.300	5.00	0	101	90	110			

Sample ID: **CCV2-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 12:37:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191212C

Sample ID: **CCV2-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 12:37:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	5.13	0.300	5.00	0	103	90	110			
Sodium	5.03	0.300	5.00	0	101	90	110			

Sample ID: **CCV3-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 1:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.07	0.300	5.00	0	101	90	110			
Magnesium	5.17	0.300	5.00	0	103	90	110			
Potassium	5.10	0.300	5.00	0	102	90	110			

Sample ID: **CCV4-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 1:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.05	0.300	5.00	0	101	90	110			
Magnesium	5.11	0.300	5.00	0	102	90	110			
Potassium	5.07	0.300	5.00	0	101	90	110			

Sample ID: **CCV5-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 1:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.06	0.0300	5.00	0	101	90	110			
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Chromium	0.196	0.00500	0.200	0	98.2	90	110			
Lead	0.192	0.00100	0.200	0	95.9	90	110			
Nickel	0.208	0.0100	0.200	0	104	90	110			
Thallium	0.191	0.00150	0.200	0	95.6	90	110			
Vanadium	0.197	0.00100	0.200	0	98.5	90	110			

Sample ID: **CCV6-191212**	Batch ID: **R107883**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212C**	Analysis Date: **12/12/2019 3:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.16	0.0300	5.00	0	103	90	110			
Antimony	0.195	0.00250	0.200	0	97.5	90	110			
Arsenic	0.203	0.00500	0.200	0	101	90	110			
Chromium	0.185	0.00500	0.200	0	92.7	90	110			
Lead	0.186	0.00100	0.200	0	93.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_191212C**

Sample ID: **CCV6-191212** Batch ID: **R107883** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_191212C** Analysis Date: **12/12/2019 3:39:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.201	0.0100	0.200	0	101	90	110			
Thallium	0.186	0.00150	0.200	0	93.0	90	110			
Vanadium	0.188	0.00100	0.200	0	94.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_191212D

Sample ID: **ICV-191212**	Batch ID: **R109089**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_191212D**	Analysis Date: **12/12/2019 10:26:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.0964	0.0100	0.100	0	96.4	90	110			N

Sample ID: **LCVL-191212**	Batch ID: **R109089**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_191212D**	Analysis Date: **12/12/2019 10:33:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.00484	0.0100	0.00500	0	96.7	80	120			N

Sample ID: **CCV5-191212**	Batch ID: **R109089**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212D**	Analysis Date: **12/12/2019 1:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.204	0.0100	0.200	0	102	90	110			N

Sample ID: **CCV6-191212**	Batch ID: **R109089**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_191212D**	Analysis Date: **12/12/2019 3:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	0.196	0.0100	0.200	0	97.8	90	110			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191126A

Sample ID: **DCS2-93877** Batch ID: **93877** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_191126A** Analysis Date: **11/26/2019 12:11:04 P** Prep Date: **11/26/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.501	1.00	0.5000	0	100	65	135	0	0	
Fluoride	0.249	0.400	0.2000	0	125	65	135	0	0	
Nitrate-N	0.237	0.0500	0.2500	0	94.9	60	140	0	0	
Sulfate	1.72	3.00	1.500	0	115	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191205A

The QC data in batch 93972 applies to the following samples: 1912030-01D, 1912030-02D, 1912030-03D, 1912030-04D, 1912030-05D, 1912030-06D, 1912030-07D, 1912030-08D, 1912030-09D, 1912030-10D, 1912030-11D, 1912030-12D, 1912030-13D

Sample ID: **MB-93972** Batch ID: **93972** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_191205A** Analysis Date: **12/5/2019 1:26:59 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								

Sample ID: **LCS-93972** Batch ID: **93972** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_191205A** Analysis Date: **12/5/2019 1:42:59 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.09	0.400	4.000	0	102	90	110			
Nitrate-N	4.94	0.500	5.000	0	98.9	90	110			

Sample ID: **LCSD-93972** Batch ID: **93972** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_191205A** Analysis Date: **12/5/2019 1:58:59 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.13	0.400	4.000	0	103	90	110	1.05	20	
Nitrate-N	4.96	0.500	5.000	0	99.3	90	110	0.397	20	

Sample ID: **1912035-02AMS** Batch ID: **93972** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_191205A** Analysis Date: **12/5/2019 4:10:30 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	18.9	0.400	20.00	0.4842	91.9	90	110			
Nitrate-N	23.5	0.500	4.516	20.48	67.7	90	110			S

Sample ID: **1912035-02AMSD** Batch ID: **93972** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_191205A** Analysis Date: **12/5/2019 4:26:30 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	20.5	0.400	20.00	0.4842	100	90	110	8.25	20	
Nitrate-N	23.8	0.500	4.516	20.48	74.4	90	110	1.28	20	S

Sample ID: **1912030-09DMS** Batch ID: **93972** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_191205A** Analysis Date: **12/5/2019 7:06:30 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	159	4.00	200.0	0	79.3	90	110			S
Nitrate-N	41.9	5.00	45.16	0	92.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191205A

Sample ID: **1912030-09DMSD** Batch ID: **93972** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_191205A** Analysis Date: **12/5/2019 7:22:30 PM** Prep Date: **12/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	175	4.00	200.0	0	87.6	90	110	9.97	20	S
Nitrate-N	46.4	5.00	45.16	0	103	90	110	10.1	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191205A

Sample ID: **ICV-191205**	Batch ID: **R107765**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_191205A**	Analysis Date: **12/5/2019 12:54:59 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	10.4	0.400	10.00	0	104	90	110			
Nitrate-N	12.9	0.500	12.50	0	103	90	110			

Sample ID: **CCV1-191205**	Batch ID: **R107765**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191205A**	Analysis Date: **12/5/2019 8:58:30 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.37	0.400	4.000	0	109	90	110			
Nitrate-N	5.03	0.500	5.000	0	101	90	110			

Sample ID: **CCV2-191205**	Batch ID: **R107765**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191205A**	Analysis Date: **12/5/2019 11:54:29 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.15	0.400	4.000	0	104	90	110			
Nitrate-N	5.01	0.500	5.000	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191206A

The QC data in batch 93986 applies to the following samples: 1912030-01D, 1912030-02D, 1912030-03D, 1912030-04D, 1912030-05D, 1912030-06D, 1912030-07D, 1912030-08D, 1912030-09D, 1912030-10D, 1912030-11D, 1912030-12D, 1912030-13D

Sample ID: **MB-93986** Batch ID: **93986** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_191206A** Analysis Date: **12/6/2019 11:00:01 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-93986** Batch ID: **93986** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_191206A** Analysis Date: **12/6/2019 11:16:01 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.70	1.00	10.00	0	97.0	90	110			
Fluoride	4.03	0.400	4.000	0	101	90	110			
Nitrate-N	4.80	0.500	5.000	0	96.0	90	110			
Sulfate	29.6	3.00	30.00	0	98.6	90	110			

Sample ID: **LCSD-93986** Batch ID: **93986** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_191206A** Analysis Date: **12/6/2019 11:32:01 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.78	1.00	10.00	0	97.8	90	110	0.883	20	
Fluoride	4.06	0.400	4.000	0	101	90	110	0.622	20	
Nitrate-N	4.84	0.500	5.000	0	96.8	90	110	0.811	20	
Sulfate	29.6	3.00	30.00	0	98.7	90	110	0.086	20	

Sample ID: **1912030-09DMS** Batch ID: **93986** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_191206A** Analysis Date: **12/7/2019 4:19:42 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	36900	1000	20000	17510	96.8	90	110			
Fluoride	20800	400	20000	159.2	103	90	110			
Nitrate-N	4380	500	4516	0	96.9	90	110			
Sulfate	23100	3000	20000	4061	95.3	90	110			

Sample ID: **1912030-09DMSD** Batch ID: **93986** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_191206A** Analysis Date: **12/7/2019 4:35:42 AM** Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	36800	1000	20000	17510	96.5	90	110	0.160	20	
Fluoride	20800	400	20000	159.2	103	90	110	0.084	20	
Nitrate-N	4370	500	4516	0	96.9	90	110	0.055	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191206A

Sample ID: **1912030-09DMSD**	Batch ID: **93986**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_191206A**	Analysis Date: **12/7/2019 4:35:42 AM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	23100	3000	20000	4061	95.0	90	110	0.231	20	

Sample ID: **1912058-01DMS**	Batch ID: **93986**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_191206A**	Analysis Date: **12/7/2019 7:31:42 AM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	39900	1000	20000	21470	92.1	90	110			
Fluoride	20600	400	20000	138.8	103	90	110			
Nitrate-N	4340	500	4516	0	96.2	90	110			
Sulfate	23900	3000	20000	4881	95.3	90	110			

Sample ID: **1912058-01DMSD**	Batch ID: **93986**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_191206A**	Analysis Date: **12/7/2019 7:47:42 AM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	40000	1000	20000	21470	92.5	90	110	0.196	20	
Fluoride	20700	400	20000	138.8	103	90	110	0.076	20	
Nitrate-N	4350	500	4516	0	96.3	90	110	0.192	20	
Sulfate	24000	3000	20000	4881	95.5	90	110	0.153	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191206A

Sample ID: **ICV-191206**	Batch ID: **R107791**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_191206A**	Analysis Date: **12/6/2019 10:28:01 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.2	1.00	25.00	0	101	90	110			
Fluoride	10.3	0.400	10.00	0	103	90	110			
Nitrate-N	12.6	0.500	12.50	0	101	90	110			
Sulfate	77.4	3.00	75.00	0	103	90	110			

Sample ID: **CCV1-191206**	Batch ID: **R107791**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191206A**	Analysis Date: **12/6/2019 4:17:24 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.14	0.400	4.000	0	103	90	110			
Nitrate-N	4.90	0.500	5.000	0	98.1	90	110			
Sulfate	30.0	3.00	30.00	0	99.9	90	110			

Sample ID: **CCV2-191206**	Batch ID: **R107791**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191206A**	Analysis Date: **12/6/2019 9:39:42 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.88	1.00	10.00	0	98.8	90	110			
Sulfate	29.8	3.00	30.00	0	99.4	90	110			

Sample ID: **CCV3-191206**	Batch ID: **R107791**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191206A**	Analysis Date: **12/7/2019 1:39:42 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.91	1.00	10.00	0	99.1	90	110			
Fluoride	4.14	0.400	4.000	0	103	90	110			
Nitrate-N	4.92	0.500	5.000	0	98.4	90	110			
Sulfate	29.8	3.00	30.00	0	99.3	90	110			

Sample ID: **CCV4-191206**	Batch ID: **R107791**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191206A**	Analysis Date: **12/7/2019 6:11:42 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.91	1.00	10.00	0	99.1	90	110			
Fluoride	4.17	0.400	4.000	0	104	90	110			
Nitrate-N	4.94	0.500	5.000	0	98.8	90	110			
Sulfate	30.0	3.00	30.00	0	99.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191206A

Sample ID: **CCV5-191206** Batch ID: **R107791** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC2_191206A** Analysis Date: **12/7/2019 10:43:42 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	4.21	0.400	4.000	0	105	90	110			
Nitrate-N	4.97	0.500	5.000	0	99.5	90	110			
Sulfate	30.0	3.00	30.00	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191220A

The QC data in batch 94219 applies to the following samples: 1912030-02D

Sample ID: **1912215-01CMS**	Batch ID: **94219**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_191220A**	Analysis Date: **12/21/2019 7:19:41 AM**	Prep Date: **12/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	310	10.0	200.0	111.1	99.3	90	110			

Sample ID: **1912215-01CMSD**	Batch ID: **94219**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_191220A**	Analysis Date: **12/21/2019 7:35:41 AM**	Prep Date: **12/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	312	10.0	200.0	111.1	101	90	110	0.865	20	

Sample ID: **1912221-01CMS**	Batch ID: **94219**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_191220A**	Analysis Date: **12/21/2019 9:27:41 AM**	Prep Date: **12/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	30.9	1.00	20.00	12.54	91.6	90	110			

Sample ID: **1912221-01CMSD**	Batch ID: **94219**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_191220A**	Analysis Date: **12/21/2019 9:43:41 AM**	Prep Date: **12/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	30.9	1.00	20.00	12.54	91.7	90	110	0.075	20	

Sample ID: **MB-94219**	Batch ID: **94219**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC2_191220A**	Analysis Date: **12/21/2019 12:07:41 P**	Prep Date: **12/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-94219**	Batch ID: **94219**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC2_191220A**	Analysis Date: **12/21/2019 12:55:41 P**	Prep Date: **12/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.97	1.00	10.00	0	99.7	90	110			

Sample ID: **LCSD-94219**	Batch ID: **94219**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC2_191220A**	Analysis Date: **12/21/2019 1:11:41 PM**	Prep Date: **12/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110	0.618	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_191220A

Sample ID: **ICV-191220**	Batch ID: **R108052**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_191220A**	Analysis Date: **12/20/2019 9:08:12 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.8	1.00	25.00	0	103	90	110			

Sample ID: **CCV3-191220**	Batch ID: **R108052**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191220A**	Analysis Date: **12/20/2019 11:03:41 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	12.7	1.00	10.00	0	127	90	110			S

Sample ID: **CCV4-191220**	Batch ID: **R108052**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191220A**	Analysis Date: **12/21/2019 3:35:41 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			

Sample ID: **CCV5-191220**	Batch ID: **R108052**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191220A**	Analysis Date: **12/21/2019 8:39:41 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			

Sample ID: **CCV6-191220**	Batch ID: **R108052**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_191220A**	Analysis Date: **12/21/2019 11:35:41 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.9	1.00	10.00	0	109	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191008B

Sample ID: **DCS2-93136**	Batch ID: **93136**	TestNo: **E300**		Units: **mg/L**	
SampType: **DCS2**	Run ID: **IC4_191008B**	Analysis Date: **10/8/2019 1:58:25 PM**		Prep Date: **10/8/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	1.73	3.00	1.500	0	115	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191209B

The QC data in batch 93999 applies to the following samples: 1912030-06D, 1912030-07D

Sample ID: **MB-93999**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC4_191209B**	Analysis Date: **12/9/2019 9:42:07 AM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<1.00	3.00								

Sample ID: **LCS-93999**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC4_191209B**	Analysis Date: **12/9/2019 9:58:07 AM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.1	3.00	30.00	0	96.9	90	110			

Sample ID: **LCSD-93999**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC4_191209B**	Analysis Date: **12/9/2019 10:14:07 AM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	28.6	3.00	30.00	0	95.4	90	110	1.49	20	

Sample ID: **1912026-01BMS**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 1:50:34 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	430	30.0	200.0	255.4	87.2	90	110			S

Sample ID: **1912026-01BMSD**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 2:06:34 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	448	30.0	200.0	255.4	96.2	90	110	4.08	20	

Sample ID: **1912035-01AMS**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 2:38:34 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	196	30.0	200.0	57.16	69.7	90	110			S

Sample ID: **1912035-01AMSD**	Batch ID: **93999**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 3:13:46 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	248	30.0	200.0	57.16	95.4	90	110	23.2	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_191209B

Sample ID: **ICV-191209**	Batch ID: **R107841**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_191209B**	Analysis Date: **12/9/2019 9:10:07 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	75.5	3.00	75.00	0	101	90	110			

Sample ID: **CCV1-191209**	Batch ID: **R107841**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 9:02:34 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.2	3.00	30.00	0	97.2	90	110			

Sample ID: **CCV2-191209**	Batch ID: **R107841**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 1:02:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.7	3.00	30.00	0	98.8	90	110			

Sample ID: **CCV3-191209**	Batch ID: **R107841**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_191209B**	Analysis Date: **12/10/2019 6:41:46 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	30.0	3.00	30.00	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191209A

The QC data in batch 94019 applies to the following samples: 1912030-01D, 1912030-02D, 1912030-03D, 1912030-04D, 1912030-05D, 1912030-06D, 1912030-07D, 1912030-08D, 1912030-09D, 1912030-10D, 1912030-11D, 1912030-12D, 1912030-13D

Sample ID: **MB-94019** Batch ID: **94019** TestNo: **M2320 B** Units: **mg/L @ pH 4.28**
SampType: **MBLK** Run ID: **TITRATOR_191209A** Analysis Date: **12/9/2019 4:17:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-94019** Batch ID: **94019** TestNo: **M2320 B** Units: **mg/L @ pH 4.18**
SampType: **LCS** Run ID: **TITRATOR_191209A** Analysis Date: **12/9/2019 4:21:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	53.4	20.0	50.00	0	107	74	129			

Sample ID: **1912030-01D-DUP** Batch ID: **94019** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_191209A** Analysis Date: **12/9/2019 5:42:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	230	20.0	0	229.7				0.217	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	230	20.0	0	229.7				0.217	20	

Sample ID: **1912030-09D-DUP** Batch ID: **94019** TestNo: **M2320 B** Units: **mg/L @ pH 4.52**
SampType: **DUP** Run ID: **TITRATOR_191209A** Analysis Date: **12/9/2019 6:55:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	219	20.0	0	216.5				0.919	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	219	20.0	0	216.5				0.919	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_191209A

Sample ID: **ICV-191209**	Batch ID: **R107845**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.11**
SampType: **ICV**	Run ID: **TITRATOR_191209A**	Analysis Date: **12/9/2019 10:26:00 AM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	13.3	20.0	0							
Alkalinity, Carbonate (As CaCO3)	87.7	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	101	20.0	100.0	0	101	98	102			

Sample ID: **CCV2-191209**	Batch ID: **R107845**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.25**
SampType: **CCV**	Run ID: **TITRATOR_191209A**	Analysis Date: **12/9/2019 2:02:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	17.8	20.0	0							
Alkalinity, Carbonate (As CaCO3)	82.4	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Sample ID: **CCV3-191209**	Batch ID: **R107845**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.28**
SampType: **CCV**	Run ID: **TITRATOR_191209A**	Analysis Date: **12/9/2019 6:02:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	25.9	20.0	0							
Alkalinity, Carbonate (As CaCO3)	73.9	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.8	20.0	100.0	0	99.8	90	110			

Sample ID: **CCV4-191209**	Batch ID: **R107845**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.31**
SampType: **CCV**	Run ID: **TITRATOR_191209A**	Analysis Date: **12/9/2019 7:20:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	30.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	69.4	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Sample ID: **CCV5-191209**	Batch ID: **R107845**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.3**
SampType: **CCV**	Run ID: **TITRATOR_191209A**	Analysis Date: **12/9/2019 7:33:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	31.4	20.0	0							
Alkalinity, Carbonate (As CaCO3)	68.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.7	20.0	100.0	0	99.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191202B

Sample ID: **DCS-93917**	Batch ID: **93917**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **DCS**	Run ID: **WC_191202B**	Analysis Date: **12/2/2019 3:30:00 PM**	Prep Date: **12/2/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	0.123	0.100	0.1000	0	123	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191206B

The QC data in batch 93989 applies to the following samples: 1912030-01D

Sample ID: **MB-93989**	Batch ID: **93989**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_191206B**	Analysis Date: **12/6/2019 5:30:00 PM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-93989**	Batch ID: **93989**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_191206B**	Analysis Date: **12/6/2019 5:30:00 PM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	757	10.0	745.6	0	102	90	113			

Sample ID: **1912022-01D-DUP**	Batch ID: **93989**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_191206B**	Analysis Date: **12/6/2019 5:30:00 PM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	26400	1000	0	26300				0.380	5	

Sample ID: **1912022-02D-DUP**	Batch ID: **93989**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_191206B**	Analysis Date: **12/6/2019 5:30:00 PM**	Prep Date: **12/6/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	22000	1000	0	21700				1.37	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191209A

The QC data in batch 94015 applies to the following samples: 1912030-01C

Sample ID: **MB-94015**	Batch ID: **94015**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_191209A**	Analysis Date: **12/9/2019 5:30:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-94015**	Batch ID: **94015**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_191209A**	Analysis Date: **12/9/2019 5:30:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.91	0.250	5.000	0	98.2	80	120			

Sample ID: **1912022-01CMS**	Batch ID: **94015**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_191209A**	Analysis Date: **12/9/2019 5:30:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.78	0.250	5.000	1.350	88.6	80	120			

Sample ID: **1912022-01CMSD**	Batch ID: **94015**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_191209A**	Analysis Date: **12/9/2019 5:30:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	5.86	0.250	5.000	1.350	90.2	80	120	1.37	25	

Sample ID: **1912022-11CMS**	Batch ID: **94015**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MS**	Run ID: **WC_191209A**	Analysis Date: **12/9/2019 5:30:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.01	0.250	5.000	0	80.2	80	120			

Sample ID: **1912022-11CMSD**	Batch ID: **94015**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **MSD**	Run ID: **WC_191209A**	Analysis Date: **12/9/2019 5:30:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.04	0.250	5.000	0	80.8	80	120	0.745	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191209A

Sample ID: **ICV-191209**	Batch ID: **R107815**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_191209A**	Analysis Date: **12/9/2019 5:30:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.87	0.250	2.500	0	115	80	120			

Sample ID: **CCV1-191209**	Batch ID: **R107815**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_191209A**	Analysis Date: **12/9/2019 5:30:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.20	0.250	5.000	0	84.0	80	120			

Sample ID: **CCV2-191209**	Batch ID: **R107815**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_191209A**	Analysis Date: **12/9/2019 5:30:00 PM**	Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.10	0.250	5.000	0	82.0	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191209B

The QC data in batch 94016 applies to the following samples: 1912030-02D, 1912030-03D, 1912030-04D, 1912030-05D, 1912030-06D, 1912030-07D, 1912030-08D, 1912030-09D

Sample ID: **MB-94016** Batch ID: **94016** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_191209B** Analysis Date: **12/9/2019 5:05:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-94016** Batch ID: **94016** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_191209B** Analysis Date: **12/9/2019 5:05:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	756	10.0	745.6	0	101	90	113			

Sample ID: **1912025-02A-DUP** Batch ID: **94016** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_191209B** Analysis Date: **12/9/2019 5:05:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1070	50.0	0	1040				2.38	5	

Sample ID: **1912030-02D-DUP** Batch ID: **94016** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_191209B** Analysis Date: **12/9/2019 5:05:00 PM** Prep Date: **12/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	39800	1000	0	39800				0	5	

Qualifiers:				
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
	RL	Reporting Limit	S	Spike Recovery outside control limits
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191210A

The QC data in batch 94035 applies to the following samples: 1912030-02C, 1912030-03C, 1912030-04C, 1912030-05C, 1912030-06C, 1912030-07C, 1912030-08C, 1912030-09C, 1912030-10C, 1912030-11C, 1912030-12C, 1912030-13C

Sample ID: **MB-94035** Batch ID: **94035** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_191210A** Analysis Date: **12/10/2019 2:00:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	<0.100	0.250								

Sample ID: **LCS-94035** Batch ID: **94035** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **LCS** Run ID: **WC_191210A** Analysis Date: **12/10/2019 2:00:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.27	0.250	5.000	0	85.4	80	120			

Sample ID: **1912030-09CMSD** Batch ID: **94035** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_191210A** Analysis Date: **12/10/2019 2:00:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.07	0.250	5.000	0	81.4	80	120			

Sample ID: **1912030-09CMSDD** Batch ID: **94035** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_191210A** Analysis Date: **12/10/2019 2:00:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.51	0.250	5.000	0	90.2	80	120	10.3	25	

Sample ID: **1912030-12CMS** Batch ID: **94035** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MS** Run ID: **WC_191210A** Analysis Date: **12/10/2019 2:00:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.35	0.250	5.000	0	87.0	80	120			

Sample ID: **1912030-12CMSD** Batch ID: **94035** TestNo: **M4500-NH3-D** Units: **mg/L**
SampType: **MSD** Run ID: **WC_191210A** Analysis Date: **12/10/2019 2:00:00 PM** Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.18	0.250	5.000	0	83.6	80	120	3.99	25	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191210A

Sample ID: **ICV-191210**	Batch ID: **R107826**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **ICV**	Run ID: **WC_191210A**	Analysis Date: **12/10/2019 2:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	2.57	0.250	2.500	0	103	80	120			

Sample ID: **CCV1-191210**	Batch ID: **R107826**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_191210A**	Analysis Date: **12/10/2019 2:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.37	0.250	5.000	0	87.4	80	120			

Sample ID: **CCV2-191210**	Batch ID: **R107826**	TestNo: **M4500-NH3-D**	Units: **mg/L**
SampType: **CCV**	Run ID: **WC_191210A**	Analysis Date: **12/10/2019 2:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ammonia-N (As N)	4.13	0.250	5.000	0	82.6	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

ANALYTICAL QC SUMMARY REPORT

RunID: WC_191210B

The QC data in batch 94039 applies to the following samples: 1912030-10D, 1912030-11D, 1912030-12D, 1912030-13D

Sample ID: **MB-94039**	Batch ID: **94039**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_191210B**	Analysis Date: **12/10/2019 5:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-94039**	Batch ID: **94039**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_191210B**	Analysis Date: **12/10/2019 5:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	746	10.0	745.6	0	100	90	113			

Sample ID: **1912030-10D-DUP**	Batch ID: **94039**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_191210B**	Analysis Date: **12/10/2019 5:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	32800	1000	0	33000				0.608	5	

Sample ID: **1912030-11D-DUP**	Batch ID: **94039**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_191210B**	Analysis Date: **12/10/2019 5:00:00 PM**	Prep Date: **12/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	34700	1000	0	35700				2.84	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1912030
Project: Copano GW Sampling 4Q19

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Nickel	0.00300	0.0100
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Lead	0.000300	0.00100
Magnesium	0.100	0.300
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Sodium	0.100	0.300
Thallium	0.000500	0.00150
Vanadium	0.000500	0.00100

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.2**	**g/L @ pH 4.2**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M4500-NH3-D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Ammonia-N (As N)	0.100	0.250

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Uranium, Total	0.00300	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

January 10, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1169668
Samples Received:	12/11/2019
Project Number:	1912030
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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MW4-2 L1169668-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/04/19 09:19	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	12/31/19 09:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/03/20 15:10	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/03/20 15:10	RRE	Mt. Juliet, TN

MW4-3B L1169668-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/04/19 09:56	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	12/31/19 09:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/03/20 15:10	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/03/20 15:10	RRE	Mt. Juliet, TN

MW4-3 L1169668-03 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/04/19 10:36	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	12/31/19 09:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/03/20 15:10	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/03/20 15:10	RRE	Mt. Juliet, TN

MW4-4 L1169668-04 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/04/19 11:20	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	12/31/19 09:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN

MW4-102 L1169668-05 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/04/19 11:32	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	12/31/19 09:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN

MW47 L1169668-06 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/04/19 12:31	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	12/31/19 09:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN

MW4-7A L1169668-07 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/04/19 13:18	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	12/31/19 09:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN

MW4-7B L1169668-08 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/04/19 14:04	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	12/31/19 09:40	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/09/20 12:43	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/09/20 12:43	RRE	Mt. Juliet, TN

MW3-1 L1169668-09 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/04/19 11:33	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	01/02/20 09:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN

MW3-2 L1169668-10 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/04/19 12:58	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	01/02/20 09:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN

MW3-3 L1169668-11 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/04/19 13:41	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	01/02/20 09:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/03/20 15:48	RRE	Mt. Juliet, TN

MW3-4 L1169668-12 Non-Potable Water

Collected by	Collected date/time	Received date/time
	12/04/19 14:22	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	01/02/20 09:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/04/20 15:37	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/04/20 15:37	RRE	Mt. Juliet, TN

	Collected by	Collected date/time	Received date/time
MW3-4B L1169668-13 Non-Potable Water		12/04/19 15:12	12/11/19 10:25

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1398801	1	12/26/19 14:10	01/02/20 09:30	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1402460	1	12/30/19 13:16	01/04/20 15:37	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1402460	1	12/30/19 13:16	01/04/20 15:37	RRE	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	3.83		0.459	0.583	12/31/2019 09:40	WG1398801
(T) Barium	*101*			*62.0-143*	*12/31/2019 09:40*	WG1398801
(T) Yttrium	*107*			*79.0-136*	*12/31/2019 09:40*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	4.41		0.767	0.839	01/03/2020 15:10	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.582		0.308	0.256	01/03/2020 15:10	WG1402460
(T) Barium-133	*88.4*			*30.0-143*	*01/03/2020 15:10*	WG1402460

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.74		0.444	0.62	12/31/2019 09:40	WG1398801
(T) Barium	*121*			*62.0-143*	*12/31/2019 09:40*	WG1398801
(T) Yttrium	*111*			*79.0-136*	*12/31/2019 09:40*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.16		0.686	0.82	01/03/2020 15:10	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.424		0.242	0.2	01/03/2020 15:10	WG1402460
(T) Barium-133	*100*			*30.0-143*	*01/03/2020 15:10*	WG1402460

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.93		0.457	0.681	12/31/2019 09:40	WG1398801
(T) Barium	*113*			*62.0-143*	*12/31/2019 09:40*	WG1398801
(T) Yttrium	*108*			*79.0-136*	*12/31/2019 09:40*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.41		0.721	0.892	01/03/2020 15:10	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.481		0.264	0.211	01/03/2020 15:10	WG1402460
(T) Barium-133	*105*			*30.0-143*	*01/03/2020 15:10*	WG1402460

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.750		0.398	0.647	12/31/2019 09:40	WG1398801
(T) Barium	*99.3*			*62.0-143*	*12/31/2019 09:40*	WG1398801
(T) Yttrium	*113*			*79.0-136*	*12/31/2019 09:40*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.19		0.704	0.985	01/03/2020 15:48	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.438		0.306	0.338	01/03/2020 15:48	WG1402460
(T) Barium-133	*106*			*30.0-143*	*01/03/2020 15:48*	WG1402460

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.48		0.438	0.665	12/31/2019 09:40	WG1398801
(T) Barium	*85.9*			*62.0-143*	*12/31/2019 09:40*	WG1398801
(T) Yttrium	*105*			*79.0-136*	*12/31/2019 09:40*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	3.05		0.749	0.93	01/03/2020 15:48	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.565		0.311	0.265	01/03/2020 15:48	WG1402460
(T) Barium-133	*107*			*30.0-143*	*01/03/2020 15:48*	WG1402460

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.99		0.445	0.636	12/31/2019 09:40	WG1398801
(T) Barium	*90.2*			*62.0-143*	*12/31/2019 09:40*	WG1398801
(T) Yttrium	*95.9*			*79.0-136*	*12/31/2019 09:40*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.68		0.776	0.872	01/03/2020 15:48	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.691		0.331	0.236	01/03/2020 15:48	WG1402460
(T) Barium-133	*113*			*30.0-143*	*01/03/2020 15:48*	WG1402460

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	3.86		0.451	0.576	12/31/2019 09:40	WG1398801
(T) Barium	*118*			*62.0-143*	*12/31/2019 09:40*	WG1398801
(T) Yttrium	*109*			*79.0-136*	*12/31/2019 09:40*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	5.32		0.920	0.885	01/03/2020 15:48	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.45		0.469	0.309	01/03/2020 15:48	WG1402460
(T) Barium-133	*104*			*30.0-143*	*01/03/2020 15:48*	WG1402460

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	15.0		0.621	0.611	12/31/2019 09:40	WG1398801
(T) Barium	*119*			*62.0-143*	*12/31/2019 09:40*	WG1398801
(T) Yttrium	*115*			*79.0-136*	*12/31/2019 09:40*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	16.2		1.04	0.916	01/09/2020 12:43	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.19		0.420	0.305	01/09/2020 12:43	WG1402460
(T) Barium-133	*102*			*30.0-143*	*01/09/2020 12:43*	WG1402460

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.782		0.414	0.595	01/02/2020 09:30	WG1398801
(T) Barium	*139*			*62.0-143*	*01/02/2020 09:30*	WG1398801
(T) Yttrium	*102*			*79.0-136*	*01/02/2020 09:30*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.782		0.878	1.33	01/03/2020 15:48	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	-0.221		0.464	0.738	01/03/2020 15:48	WG1402460
(T) Barium-133	*99.6*			*30.0-143*	*01/03/2020 15:48*	WG1402460

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.01		0.407	0.54	01/02/2020 09:30	WG1398801
(T) Barium	*108*			*62.0-143*	*01/02/2020 09:30*	WG1398801
(T) Yttrium	*105*			*79.0-136*	*01/02/2020 09:30*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.03		0.594	0.895	01/03/2020 15:48	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0161		0.187	0.355	01/03/2020 15:48	WG1402460
(T) Barium-133	*104*			*30.0-143*	*01/03/2020 15:48*	WG1402460

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.94		0.466	0.645	01/02/2020 09:30	WG1398801
(T) Barium	*95.0*			*62.0-143*	*01/02/2020 09:30*	WG1398801
(T) Yttrium	*104*			*79.0-136*	*01/02/2020 09:30*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.26		0.754	0.996	01/03/2020 15:48	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.322		0.288	0.351	01/03/2020 15:48	WG1402460
(T) Barium-133	*90.6*			*30.0-143*	*01/03/2020 15:48*	WG1402460

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.59		0.447	0.639	01/02/2020 09:30	WG1398801
(T) Barium	*123*			*62.0-143*	*01/02/2020 09:30*	WG1398801
(T) Yttrium	*108*			*79.0-136*	*01/02/2020 09:30*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.07		0.772	1.01	01/04/2020 15:37	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.476		0.325	0.37	01/04/2020 15:37	WG1402460
(T) Barium-133	*102*			*30.0-143*	*01/04/2020 15:37*	WG1402460

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	24.8		0.703	0.856	01/02/2020 09:30	WG1398801
(T) Barium	*82.8*			*62.0-143*	*01/02/2020 09:30*	WG1398801
(T) Yttrium	*103*			*79.0-136*	*01/02/2020 09:30*	WG1398801

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	26.1		1.13	1.16	01/04/2020 15:37	WG1402460

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.26		0.429	0.305	01/04/2020 15:37	WG1402460
(T) Barium-133	*108*			*30.0-143*	*01/04/2020 15:37*	WG1402460

Method Blank (MB)

(MB) R3488600-1 12/31/19 09:40

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.189		0.415
(T) Barium	*106*		
(T) Yttrium	*113*		

L1169668-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1169668-09 01/02/20 09:30 • (DUP) R3488600-5 12/31/19 09:40

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.782	-0.0208	1	200	1.08		20	3
(T) Barium	*139*	*118*						
(T) Yttrium	*102*	*102*						

Laboratory Control Sample (LCS)

(LCS) R3488600-2 12/31/19 09:40

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.31	106	80.0-120	
(T) Barium			*118*		
(T) Yttrium			*111*		

L1169668-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1169668-09 01/02/20 09:30 • (MS) R3488600-3 12/31/19 09:40 • (MSD) R3488600-4 12/31/19 09:40

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	0.782	12.3	12.8	115	120	1	70.0-130			4.38		20
(T) Barium		*139*			*118*	*109*							
(T) Yttrium		*102*			*110*	*110*							

Method Blank (MB)

(MB) R3489608-1 01/03/20 15:10

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	0.0142		0.0643
(T) Barium-133	*104*		

L1169668-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1169668-05 01/03/20 15:48 • (DUP) R3489608-5 01/03/20 15:10

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.565	1.17	1	69.4	1.15		20	3
(T) Barium-133	*107*	*88.4*						

Laboratory Control Sample (LCS)

(LCS) R3489608-2 01/03/20 15:10

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	4.92	98.0	80.0-120	
(T) Barium-133			*105*		

L1169668-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1169668-09 01/03/20 15:48 • (MS) R3489608-3 01/03/20 15:10 • (MSD) R3489608-4 01/03/20 15:10

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	-0.221	17.1	18.3	85.1	91.0	1	75.0-125			6.72		20
(T) Barium-133		*99.6*			*99.6*	*99.4*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

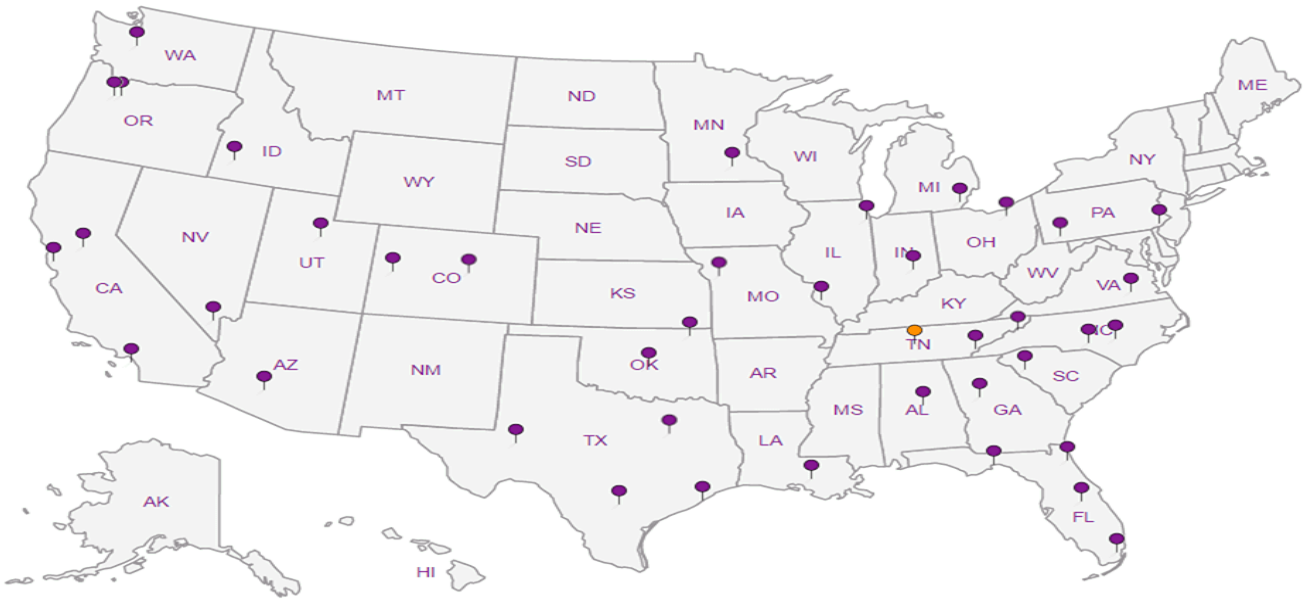
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

1100

Work Order: 1912030

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

1169668

09-Dec-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra 228 E904.0	Ra 226 M7500 Ra B M	Requested Tests			
MW4-2	Aqueous	-01E	12/04/19 09:19 AM	1LHDPEHNO3	1					-01
MW4-2	Aqueous	-01F	12/04/19 09:19 AM	1LHDPEHNO3		1				01
MW4-3B	Aqueous	-02E	12/04/19 09:56 AM	1LHDPEHNO3	1					02
MW4-3B	Aqueous	-02F	12/04/19 09:56 AM	1LHDPEHNO3		1				1
MW4-3	Aqueous	-03E	12/04/19 10:36 AM	1LHDPEHNO3	1					03
MW4-3	Aqueous	-03F	12/04/19 10:36 AM	1LHDPEHNO3		1				1
MW4-4	Aqueous	-04E	12/04/19 11:20 AM	1LHDPEHNO3	1					04
MW4-4	Aqueous	-04F	12/04/19 11:20 AM	1LHDPEHNO3		1				1
MW4-102	Aqueous	-05E	12/04/19 11:32 AM	1LHDPEHNO3	1					05
MW4-102	Aqueous	-05F	12/04/19 11:32 AM	1LHDPEHNO3		1				1
MW4-7	Aqueous	-06E	12/04/19 12:31 PM	1LHDPEHNO3	1					06
MW4-7	Aqueous	-06F	12/04/19 12:31 PM	1LHDPEHNO3		1				1
MW4-7A	Aqueous	-07E	12/04/19 01:18 PM	1LHDPEHNO3	1					07
MW4-7A	Aqueous	-07F	12/04/19 01:18 PM	1LHDPEHNO3		1				1
MW4-7B	Aqueous	-08E	12/04/19 02:04 PM	1LHDPEHNO3	1					08
MW4-7B	Aqueous	-08F	12/04/19 02:04 PM	1LHDPEHNO3		1				1
MW3-1	Aqueous	-09E	12/04/19 11:33 AM	1LHDPEHNO3	3					09
MW3-1	Aqueous	-09F	12/04/19 11:33 AM	1LHDPEHNO3		3				1

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

	Date/Time		Date/Time
Relinquished by:	12/9/19 1720	Received by:	12/11/19 10:25
Relinquished by:		Received by:	

Amb RAD SCREEN: <0.5 mR/hr

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1912030

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

1169668

09-Dec-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra. 228 E904.0	Ra. 226 M7500 Ra B M	Requested Tests			
MW3-2	Aqueous	-10E	12/04/19 12:58 PM	1LHDPEHNO3	1					10
MW3-2	Aqueous	-10F	12/04/19 12:58 PM	1LHDPEHNO3		1				1
MW3-3	Aqueous	-11E	12/04/19 01:41 PM	1LHDPEHNO3	1					11
MW3-3	Aqueous	-11F	12/04/19 01:41 PM	1LHDPEHNO3		1				1
MW3-4	Aqueous	-12E	12/04/19 02:22 PM	1LHDPEHNO3	1					12
MW3-4	Aqueous	-12F	12/04/19 02:22 PM	1LHDPEHNO3		1				1
MW3-4B	Aqueous	-13E	12/04/19 03:12 PM	1LHDPEHNO3	1					13
MW3-4B	Aqueous	-13F	12/04/19 03:12 PM	1LHDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

	Date/Time		Date/Time
Relinquished by:	12/5/19 1700	Received by:	
Relinquished by:		Received by:	

AMB RAD SCREEN: <0.5 mR/hr

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHCRRTX	1169664
Cooler Received/Opened On: 2/11/19 Temperature:	Amb
Received By: Carol Kemp	
Signature: Carol Kemp	

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

Appendix 12

Waste Characterization and Disposition Documentation

All investigation-derived waste (IDW), including purged groundwater, was disposed of at the on-site waste management units.

Appendix 14

Standard Operating Procedures

TECHNICAL GUIDELINE FOR CHAIN OF CUSTODY

TG-1.2-23

Rev. #2

8/20/2009

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TG-1.2-23 Chain of Custody

1.0 PURPOSE

This technical guideline establishes the requirements for documenting and maintaining environmental sample chain of custody from point of origin to receipt of the sample at the analytical laboratory.

2.0 APPLICABILITY

When specifically invoked by project work plans, sampling plans, or QA plans, this technical guideline shall apply to all types of air, soil, water, sediment, biological, and/or core samples to be analytically tested in support of environmental investigations by Golder Associates Inc., and is applicable from the time of sample acquisition until custody of the sample is transferred to an analytical laboratory.

3.0 DEFINITIONS

3.1. Custody

Custody refers to the physical responsibility for sample integrity, handling, and/or transportation. Custody responsibilities are effectively met if the samples are:

- in the responsible individual's physical possession;
- in the responsible individual's visual range after having taken possession;
- secured by the responsible individual so that no tampering can occur; or
- secured or locked by the responsible individual in an area in which access is restricted to authorized personnel.

3.2. Chain of Custody

Chain of custody refers to the history of the physical transfer of samples between the sampler, the transporter, or carrier, and the laboratory technician. Chain of custody documentation is required as evidence that the integrity of samples was maintained during transfer.

4.0 DISCUSSION

Environmental samples must be tracked, handled and transported in a manner such that sample integrity and identification (to the location and interval at which they were obtained) is maintained. The sample custodian must maintain proper storage and custody of samples from the time of collection until transport to the laboratory. The sampler shall initiate Chain of Custody forms which accompany samples from the collection site to the laboratory and provide documentation of any transfer of custody throughout transport. Sample identification and integrity shall be ensured by the application of seals and labels to the sample containers at the time of sample collection. Seals and labels shall be verified upon receipt of samples at the analytical laboratory; unacceptable samples shall be identified on the Chain of Custody form, and referred to the Geologist/Field Engineer or Project Manager for evaluation and appropriate disposition.

5.0 RESPONSIBILITIES

5.1. Project Manager

The Project Manager is responsible for the overall management of environmental sampling activities, for designating the sample shipment method (considering permitted sample holding times), for delegating

sampling responsibilities to qualified personnel, and reviewing any Field Change Requests that may be initiated during the investigation.

5.2. Geologist/Field Engineer

The Geologist/Field Engineer is responsible for: 1) providing general supervision of sampling operations as directed by the Project Manager; 2) ensuring proper temporary storage of samples and proper transportation of samples from the sampling site to the laboratory; and 3) initiating Field Change Requests when required. The Geologist/Field Engineer is also responsible for tracking Chain of Custody forms for samples to ensure timely receipt of the completed original, for reviewing Chain of Custody forms to ensure appropriate documentation of sample transfers, and for advising the Project Manager of any problems observed that are related to sample integrity and chain of custody. The Geologist/Field Engineer may delegate document tracking and review responsibilities to suitably qualified personnel.

5.3. Sampler

The sampler may be the same individual as the Geologist/Field Engineer and is responsible for: 1) sample acquisition in compliance with applicable guidelines and procedures; 2) checking sample integrity and documentation prior to transfer; 3) initiating the Chain of Custody form; 4) maintaining custody of the samples while completing the sampling project; and 5) physically transferring the samples to the transporter or directly to the laboratory.

5.4. Laboratory Sample Custodian

The laboratory sample custodian or designated sample receiving technician is responsible for: 1) inspecting transferred samples to ensure that seals are intact, that labels are affixed, that sample condition is acceptable, and that Sample Integrity Data Sheets are completed, when required for a particular project; 2) completing the Chain of Custody form upon receipt; 3)forwarding copies of the completed Chain of Custody form to the Project Manager; and 4) segregating and identifying unacceptable samples, and subsequently notifying the Golder Project Manager.

5.5. Document Custodian

The document custodian (project manager or administrative assistant) is responsible for maintaining completed Chain of Custody forms in the project files.

6.0 EQUIPMENT AND MATERIALS

- Seals and labels (Exhibit A)
- Sample Integrity Data Sheets (Exhibit B), if required by the applicable sampling procedure, work plan, sampling plan, or quality assurance (QA) plan, or if requested by the Project Manager
- Chain of Custody forms (Exhibit C)
- Field Change Request form (Exhibit D)
- Packing and shipping materials, which may include coolers or insulated packing boxes, ice, "blue ice" or dry ice, cardboard packing boxes, wooden core storage boxes, and shipping labels. If dry ice is used, caution should be used so that samples do not freeze resulting in broken jars and negative impact to other samples in the same carrier.

7.0 GUIDELINE

7.1. Seals, Labels, and Initial Storage

At the time of collection, all samples shall be sealed, labeled, and appropriately stored in the custody of the sample custodian as defined in 3.1 above. Examples of standard seals and labels are included in Exhibit A.

7.2. Sample Packaging

All samples shall be packaged appropriately for shipping to protect them from damage, to ensure that moisture content is maintained where necessary, and to ensure that appropriate temperatures are maintained as required. All sample shipping containers shall be sealed (see Exhibit A) to prevent tampering.

Environmental core sample boxing, marking, and labeling shall be in compliance with TG-1.2-2, "Geotechnical Rock Core Logging." Other types of environmental samples stored in jars or bottles may be packaged in insulated coolers, or, if sample temperature is not a concern, in the original sample container packing boxes. Where cooling is required, samples shall be shipped in insulated coolers containing bagged or pre-packaged ice sufficient to keep the samples at 4°C ± 2°. All samples should be carefully placed in the appropriate container(s) and packaged with paper or bubble-wrap to prevent significant movement or breakage during transport.

Samples from boreholes shall be packaged, where appropriate, by placing the jars in shipping containers from the top right corner downward, and from left to right, beginning with the first sample taken as shown in Figure 8-1. An alternative packaging order may be appropriate to isolate contaminated samples to minimize the risk for cross-contamination.

A label containing the following information should be affixed to the front of each shipping container containing environmental samples:

- Project Number
- Location
- Borehole number(s) (if appropriate)
- Date collected
- Sample numbers enclosed

Boxes should be numbered consecutively; the last box from a borehole or drillhole shall also be identified "EOH," (i.e., end of hole).

7.3. Sample Examination

Prior to transfer of samples, the sampler shall ensure that:

- labels and seals are affixed and completely filled out;
- Chain of Custody documentation corresponds to the samples in the shipment;
- special handling and storage requirements are identified where required;
- Sample Integrity Data Sheets are available where required by applicable sampling guidelines or the Project Manager;

- there are no indications of sample container leaks or other questionable conditions that may affect the integrity of the sample; and
- hazardous and/or radioactive samples are clearly identified as such.

Samples that do not meet the requirements for initial transfer shall be referred to the Geologist/Field Engineer or Project Manager for disposition.

7.4. Chain of Custody Form Initiation

The sampler shall initiate the Chain of Custody form (Exhibit C) for the initial transfer of samples. Chain of Custody forms supplied by the analytical laboratory may be used in lieu of the form shown in Exhibit C. At a minimum, the following information shall be entered on the form:

- the destination of the samples and the transporter or carrier;
- the project identification and sampling site;
- the date and time of sample collection;
- the sample identification numbers and descriptions (e.g., media, container);
- analysis required for samples included in the shipment; and
- QA and reporting instructions for the laboratory.

When all required information has been entered the sampler shall sign and date the Chain of Custody form as the initiator.

7.5. Transfer of Custody

To document the initial transfer of samples, the sampler relinquishing custody and the transporter accepting custody shall sign, date, and note the time of transfer on the Chain of Custody form. If the transporter is not an employee of Golder Associates Inc., the sampler may identify the carrier and reference the bill of lading number in lieu of the transporter's signature. The Chain of Custody form should be in triplicate. One copy of the Chain of Custody form shall be forwarded to the Geologist/Field Engineer by the sampler. The original form and the remaining copy shall accompany the samples.

7.6. Receipt at Destination

The laboratory sample custodian shall inspect the transferred samples to ensure that:

- the seals are intact;
- the labels are affixed and legible;
- Sample Integrity Data Sheets are available where required;
- the physical condition of the samples is acceptable; and
- the samples being transferred directly correspond to those listed on the Chain of Custody form.

If the integrity of the samples is questionable, the laboratory technician shall notify the Golder Project Manager, segregate the unacceptable samples and identify them on the Chain of Custody Form. Otherwise, the laboratory sample custodian and the transporter shall sign, date, and note the time of transfer on the Chain of Custody form. If the transporter is not an employee of Golder Associates Inc., the laboratory sample custodian may identify the carrier and reference the bill of lading number in lieu of

the transporter's signature. The laboratory sample custodian shall retain the remaining copy of the Chain of Custody form and forward the original signed copy to the Geologist/Field Engineer. Appropriate laboratory custody procedures shall be initiated upon completion of transfer of custody in compliance with the laboratory's internal QA program requirements.

7.7. Document Tracking

The copy of the Chain of Custody form recording the initial transfer of samples shall be forwarded to the Geologist/Field Engineer, followed by the completed original. The Geologist/Field Engineer shall track the Chain of Custody form to ensure timely completion and receipt of the original, based on the laboratory acknowledgement due date indicated on the form and/or subcontractor agreement.

After receipt of the completed original, the Geologist/Field Engineer may discard the copy. The completed original Chain of Custody form shall be placed in the project files. Chain of Custody forms determined to be overdue or incorrectly completed shall be referred to the Project Manager for appropriate action.

7.8. Field Change Request

Variation from established guideline requirements may be necessary due to unique circumstances encountered on individual projects. All variations from established guidelines shall be documented on a Field Change Request form (Exhibit D) and reviewed by the Project Manager.

The Project Manager may authorize individual Geologist/Field Engineers to initiate necessary variations. If possible, the request for variation shall be reviewed by the Project Manager prior to implementation. If prior review is not possible, the variation may be implemented immediately at the direction of the Geologist/Field Engineer, provided that the Project Manager is notified of the variation within 24 hours of the implementation, and the Field Change Request is forwarded to the Project Manager within 2 working days of implementation. If the variation is unacceptable to either reviewer, the activity shall be redone or action shall be taken as indicated in the comments section of the reviewed Field Change Request. All completed Field Change Requests shall be maintained in project records.

8.0 REFERENCED GUIDELINES

Golder Associates Technical Guideline TG-1.2-2, "Geotechnical Rock Core Logging."

9.0 ADDITIONAL GUIDELINES AND PROCEDURES

EPA, 2002, “Standard Operating Procedure for Chain of Custody of Samples,” EPA Region 1 Office of Environmental Measurement and Evaluation, North Chelmsford, Massachusetts.

American Society for Testing and Materials, 2004. Standard Guide for Sampling Chain-of-Custody Procedures, ASTM D-4840-99(2004).

Figure 8-1

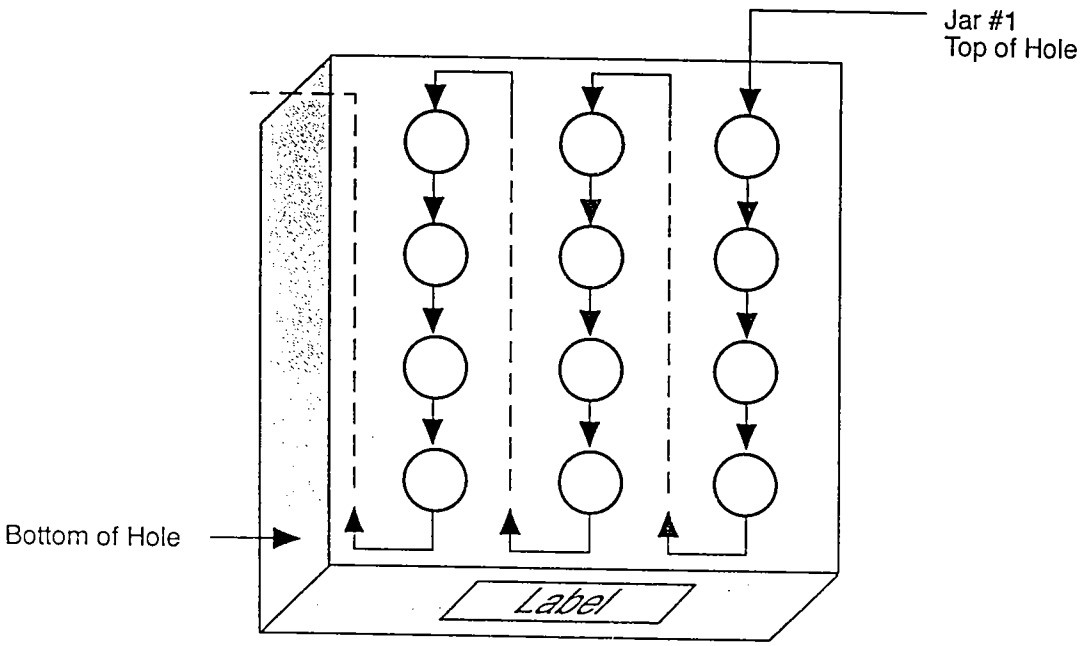


FIGURE **8-1**
SAMPLE CONTAINER PACKING ARRANGEMENT
TP-1.2-23

PROJECT NO IP3 1024.200 DRAWING NO. 66972 DATE 8/15/96 DRAWN BY EA

Golder Associates

EXHIBIT A



Location _____
Job No. _____ Date _____
Boring No. ____ Sample No. _____
Depth _____ Blows _____
Description _____
_____
_____
_____
Driller _____ Engr. _____



Sample I.D. No.

Date _____ Time _____
Station _____ Depth _____
Media _____
Preservative _____
Sampled by _____

Golder Associates

Seal Number
2455



Sent By: _____
Date: _____

EXHIBIT **A**
SEALS AND LABELS
TP-1.2-23

PROJECT NO.IP3-1024 DRAWING NO. 67021 DATE 8/7/96/96 DRAWN BY DD

Golder Associates

EXHIBIT B

SAMPLE INTEGRITY DATA SHEET

Plant/Site _____ Project No. _____
Site Location _____ Sample ID _____
Sampling Location _____

Technical Procedure Reference(s) _____
Type of Sampler _____
Date _____ Time _____
Media _____ Station _____
Sample Type: grab time composite space composite
Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

Sample Description _____

Field Measurements on Sample(pH, conductivity, etc.) _____

Aliquot Amount	Container	Preservation/Amount

Sampler (signature) _____ Date _____
Superviser (signature) _____ Date _____

Golder Associates

EXHIBIT **B**
Sample Integrity Data Sheet
TP-1.2-23

PROJECT NO. IPE-1024 DRAWING NO. 67020 DATE 7/17/96 DRAWN BY DD

Golder Associates

EXHIBIT C

PROJECT NO. IP3 1024 DRAWING NO. 67019 DATE 7/17/96 DRAWN BY CB

CHAIN OF CUSTODY RECORD

PROJ. NO.	SITE/LOCATION					NO. OF CON-TAINERS	AMOUNT/ PRESERVATIVE						SEAL NO.	SEAL INTACT ? (Y or N)	REMARKS (with initials)
SAMPLERS: *(Signature)*															
STA. NO.	DATE	TIME	SAMPLE TYPE	MEDIA	SAMPLE IDENTIFICATION										

Relinquished by: *(Signature/Firm)*	Date/Time	Received by: *(Signature/Firm)*	Relinquished by: *(Signature/Firm)*	Date/Time	Received by: *(Signature/Firm)*
Relinquished by: *(Signature/Firm)*	Date/Time	Received by: *(Signature/Firm)*	Relinquished by: *(Signature/Firm)*	Date/Time	Received by: *(Signature/Firm)*
Relinquished by: *(Signature/Firm)*	Date/Time	Received by: *(Signature/Firm)*	Date/Time	Remarks (attachments if necessary)	

EXHIBIT C
CHAIN OF CUSTODY FORM
TP-1.2-23

Golder Associates

EXHIBIT D

FIELD CHANGE REQUEST

Golder Associates

Job/Task Number: _____

Other Affected Documents: _____

Requested Change: _____

Reason for Change: _____

Change Requested by: _____ Date _____

Reviewed by: _____ Date _____
GAI Project Manager

Comments: _____

Reviewed by: _____ Date _____
GAI QA Manager

Comments: _____

Golder Associates Inc.

EXHIBIT **D**
FIELD CHANGE REQUEST FORM
TP-1.2-23

TECHNICAL GUIDELINE FOR MANUAL GROUNDWATER LEVEL MEASUREMENT TG-1.4-6a

Rev. #5
8/21/2009

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Exhibit A Record of Water Level Readings

TG-1.4-6a Manual groundwater level measurement

1.0 PURPOSE

This technical guideline is to be used to establish a uniform procedure for measuring groundwater levels in borings, drill holes, monitoring wells, and piezometers, by manual methods using an electric water-level sounder.

An alternate technical guideline (TG-1.4-6b, “Automated Groundwater Level Measurement”) is to be used in conjunction with this guideline when making automatic water-level measurements using a pressure transducer and datalogger system.

2.0 APPLICABILITY

This technical guideline is applicable to all personnel measuring water levels in wells manually using a calibrated electric water-level sounder. It is not applicable to the measurement of water levels in flowing (Artesian) wells, unless sufficient additional casing is added to prevent the flowing conditions.

This guideline is not applicable for the measurement of water levels by other methods, such as wetted tape, air line, or pressure transducer.

3.0 DEFINITIONS

3.1. Electric Water Level Sounder

An instrument for manually measuring water levels in wells or boreholes. Electric water-level sounders are available in a variety of different types, but each works in essentially the same way, and consists of an open circuit involving a battery, ammeter, bulb, and/or audible beeper mounted within a reel of insulated two-wire electric cable. At the end of the two-wire cable is a weighted metal probe containing a partly-shielded electrode. The cable is graduated or marked to indicate the length of cable above the tip of the electrode in the probe. The circuit is closed when the exposed electrode in the probe is immersed in water. Current flow through the closed circuit is registered on the meter by illumination of the bulb and/or sounding of the beeper on the reel. This indicates that the probe has contacted water. Some sounders may have a sensitivity adjustment.

3.2. Well or Borehole

For the purpose of this guideline, any hole in the ground (cased or open) that may contain groundwater, e.g., a boring, borehole, drill hole, test pit, water well, monitoring well, observation well, pumping well, or standpipe piezometer.

3.3. Measuring Point (MP)

A reference or datum established to provide a consistent point from which the water level is measured, usually a mark on the casing at the top of a well or borehole. The elevation of the measuring point should be established by surveying (differential leveling) from a bench mark of known elevation above the local or national vertical datum. The elevation of the measuring point should be established to an accuracy of 0.01 ft or better. Use of the ground surface as a measuring point is acceptable for measuring water levels in wells and boreholes during drilling, and in other situations (e.g., test pits) where no other stable reference point is available. The measuring point should be clearly described in the field notes so that measurements to the same reference point can be reproduced, if necessary.

3.4. Diptube

A small-diameter (1- to 2-inch) tube (usually PVC) with slots over the lower 1 or 2 feet that is placed in a pumping well to provide a stilling effect that counteracts turbulence.

3.5. Pressure Transducer

A piece of electronic equipment used for measuring pressure (see TG-1.4-6b).

3.6. Datalogger

An electronic unit designed to collect and store data from a pressure transducer (see TG-1.4-6b).

3.7. Wetted Tape

Use of chalk on a measuring tape to sound the depth of water in a well. (This method is no longer in common use.)

4.0 DISCUSSION

4.1. Accuracy, Precision and Repeatability

The prime objectives in measuring a groundwater level are to obtain the depth to groundwater below a measuring point of known elevation, at a specific time, and in a manner that is both precise, accurate and repeatable (if the water level is static). Measurement precision of 0.01 ft is achievable with the fully graduated tapes available on modern electric water-level sounders. However, practical difficulties of calibrating long sounder tapes (e.g., >500 feet), and their sensitivity to stretching, reduce the accuracy of readings to, at best, 0.05 ft. This is usually adequate for most practical purposes. However, if a fixed measuring point is not available and the measurement is made in relation to the ground surface, this degree of accuracy and precision is not practical. Measurements made to ground surface should be recorded to the nearest 0.5 or 1.0 foot, and noted in the water-level record.

4.2. Measurements in Pumping Wells

Turbulence caused by pumping can make measurements of dynamic water levels difficult in wells that are being pumped. In this situation, a small-diameter diptube can be used to act as a stilling well. Measurements should be made inside the tube, provided it is long enough for the end of the tube to be submerged by at least 5 ft. If the top of the diptube is higher than the measuring point, this may be used as an alternate measuring point, but the difference must be recorded in the field notebook and on the Water Level Reading Forms (Exhibit A).

4.3. Potential Sources of Error

Be aware of the potential sources of error that can affect water-level measurements:

- Dirt, scum, oil, or floating product on the water surface can affect closure of the electric circuit in the water-level probe.
- The meter may not register if the electrical conductivity of the water is extremely low (e.g., deionized water).
- Cascading water, leaking casing, drilling mud, or excessive condensation in the wellbore can cause the water-level probe to signal contact with water before the probe encounters the static water level in the well. This effect may be overcome using the sensitivity adjustment (if

available).

- Changes in air pressure can cause small fluctuations in the water level.
- The water-level probe will not produce a signal if the battery is flat, if the switch on the reel is in the "Off" position, or if the sensitivity adjustment is set too low.
- In very deep wells (i.e., over 500 ft), the measurement of the water levels may be affected by non-verticality of the well, and by stretching of the electrical sounder tape.
- It is all too easy to misread the calibrated tape. Check each reading again immediately after noting it down.

4.4. Care of the Equipment

The electric water-level sounder is an expensive piece of equipment that should be treated with care:

- Avoid situations where the probe may become caught or stuck down-hole, for example, near casing centralizers or pump riser columns.
- Exercise control over the tape as it unwinds, especially into deep and/or uncased holes.
- Avoid abrasion of the electric tape against the lip of the casing: this causes excessive wear and eventual failure of the electric wires inside the tape.
- Rewind the tape evenly with markings visible, and avoid twisting or pulling on the tape.
- Clean and dry the tape and probe as they are removed from each well.
- Replace the probe in its protective sleeve (if available) after cleaning.
- Store the electric water-level sounder in a clean and dry, secure place.

5.0 RESPONSIBILITY

5.1. Field Engineer/Geologist/Hydrogeologist/Technician

Responsible for making and recording measurements in compliance with this technical guideline and taking reasonable care of the equipment while it is in their possession.

5.2. Task Leader

Responsible for:

- Direct supervision of personnel taking the measurements
- Designation of measuring points on wells or boreholes
- Determination of the maximum cable length required for the electric water-level sounder
- Guidance on the purpose, number, timing, and/or frequency of water-level measurements required
- Assurance that equipment and materials are available to complete the task

5.3. Equipment Manager (Where Applicable)

Responsible for:

- Maintenance of the electric water-level sounder in full working order
- Replacement or repair of damaged tape, probe, or other malfunctioning parts of the sounder
- Periodic calibration of the sounder tape to ensure markings are correct
- Procuring, checking, calibrating, and returning any water-level sounder obtained by rental.

6.0 EQUIPMENT AND MATERIAL

- Electric water-level sounder with integral cable of sufficient length for the well(s) being measured.
- Field notebook and/or appropriate Water Level Reading forms (Exhibit A).
- Data on well locations, identification number, depth, measuring point description and elevation above survey datum, and previous or most recent water-level measurements (if available).
- Decontamination solution, distilled/deionized rinse water, and a clean cloth or paper towels.
- Indelible ink pens.
- Spare battery for electric water-level sounder.

7.0 GUIDELINE

- Each water level probe or measuring tape used for recording water levels shall have the depth graduations calibrated by the Equipment Manager. Confirm that calibration is current by checking the “next due” date on the calibration sticker located on the equipment.
- Record project number, project name, location, and state.
- At each well, record the date, time, well identification number, measuring point description (e.g., top of PVC casing), measuring device type, manufacturer, and serial number and Golder equipment identification number (if applicable).
- Clean all downhole instruments and equipment before and after measurements and between wells with a non-phosphate detergent rinse followed by a rinse with approved tap water, then rinse with organic-free distilled/deionized water. The probe should be dried with a clean cloth or paper towel after cleaning.
- At least once at each well: measure and record the approximate distance from ground level to the measuring point. Measure the vertical distance from the top of casing, standpipe, monument, or other relevant points of reference to the measuring point, as appropriate.
- Turn on the electric water-level sounder, check the battery using the test switch or button, lower the probe into the well and stop at the depth where the bulb or audible beeper indicates a completed circuit. Raise and lower the water-level sounder a small distance to break and remake the circuit, confirming that the water level can be repeatedly identified, and carefully establish the point at which the sounder circuit just closes. Record the length of the tape

below the measuring point by reading the value indicated on the tape directly level with the measuring point, to the nearest 0.01 ft.

- Enter all water level measurements in a field notebook, or directly on a Water Level Readings Form (Exhibit A). The personnel making the measurement should initial or sign each measurement recorded, and make any additional comments pertinent to the data collected.
- If a field notebook is used, water-level measurements should be carefully transferred to a Water Level Readings Form (Exhibit A), if required, at the earliest convenient time. All water level measurement records shall be maintained in the project records files.
- Water-level measurements should be tabulated in a spreadsheet or entered into an electronic database file for project use. The spreadsheet or database should facilitate the calculation of water levels as elevations relative to the appropriate survey datum. New water levels should be reviewed for consistency with previous measurements from the same location (for example, by plotting a hydrograph). Significant deviations that lack a clear physical cause (e.g., seasonal recharge, influence of pumping, borehole construction changes, use of packers or slug tests, barometric influences, etc.) should be investigated. If necessary, spurious water-level measurements should be retaken and erroneous values annotated in the data record.

8.0 REFERENCED GUIDELINES

Golder Technical Guideline TG-1.4-6b, “Automated Groundwater Level Measurement”.

9.0 ADDITIONAL GUIDELINES AND PROCEDURES

Driscoll, F.G., 1986. Groundwater and Wells. (2nd Edition) Johnson Filtration Systems Inc., St. Paul, Minnesota.

American Society for Testing and Materials, 2001. Standard Test Method for Determining Subsurface Liquid Levels in a Borehole or Monitoring Well (Observation Well), ASTM D-4750-87(2001).

EXHIBIT A

RECORD OF WATER LEVEL READINGS

Job. No. _____ Project Name _____ Location _____

Bore-Hole No.	Date	Time	Measuring Device/ Serial No.	Measurement Point (M.P.)	Water Level below M.P.	Correction to Survey Mark	Survey Mark Elevation	Water Level Elevation	By	Comments

TECHNICAL GUIDELINE FOR COLLECTION OF GROUNDWATER QUALITY SAMPLES TG-1.2-20

Rev. #3
8/20/2009

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Table 1 Sample Container Codes, Types, Volumes, Preparation, Special Handling, Preservation, Holding Times

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EXHIBIT A Sample Labels
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EXHIBIT D Field Report Form
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EXHIBIT F Field Change Request Form

TG-1.2-20 Collection of groundwater quality samples

1.0 PURPOSE

This technical training guideline establishes a standard methodology for collecting groundwater samples for chemical analysis that are representative of aquifer water quality.

2.0 APPLICABILITY

This technical training guideline is applicable to field personnel engaged in the collection of groundwater samples from wells for purposes of chemical analysis. This document should be read in conjunction with any and all regulatory, workplan, order, client specific, and other project-specific guidelines.

3.0 DEFINITIONS

3.1. Dedicated Pump System

A dedicated pump system is a permanently installed device for removing water from a well. The system is not removed from the well and does not have the potential to become cross-contaminated between uses.

3.2. Well Bore Storage Volume

Well bore storage volume is defined as the volume of water enclosed by the well casing and screen gravel/sand pack at equilibrium.

3.3. Bailer

A bailer is a tubular device with a check-valve at the top and/or bottom for collecting and removing groundwater from wells.

3.4. Non-Dedicated Sampling Apparatus

Non-dedicated sampling apparatus is sampling equipment that may contact groundwater samples from more than one well. This term is also used to describe equipment that is only used for sampling a single well, but is removed from the well and could potentially become contaminated.

3.5. Groundwater Sample

A groundwater sample is defined as water acquired from a well for analyses of chemical or biological parameters that is representative of groundwater within the aquifer or the portion of the groundwater in the subsurface being sampled.

3.6. Positive Pressure Pump

A positive pressure pump is a device for removing water from a well by forcing water to the surface through positive pressure when operated below the well's water level. A positive pressure pump may be operated electrically, mechanically, or by gas pressure. Submersible impeller, bladder, and check valve pumps are common types of positive pressure pumps.

3.7. Negative Pressure Pump

A negative pressure pump is a device for removing groundwater from a well by suction (negative pressure). Peristaltic and centripetal pumps are common types of negative pressure pumps. The limitation for lifting water by suction is usually 20 to 25 feet. These pumps are typically only acceptable

for non-volatile analytes and analytes that are not affected by aeration or changes in pH or pressure. They are useful as purging devices for shallow groundwater wells.

3.8. Sample Bottles

Sample bottles are containers specifically designed and prepared for storing aliquots of a sample. Sample container type, material, size, and type of lid are specific for particular groups of analytes. Sample bottles must typically be properly cleaned and prepared by a certified laboratory.

3.9. Acceptable Material

Acceptable materials are defined as the only materials that are allowed to contact groundwater samples, and are dependent on the analytes being tested.

3.10. Permissible Pump

Permissible pumps are defined as pump systems that have acceptable effects on water quality when used to obtain groundwater samples from wells. The use of permissible pumps is dependent on the analyses being conducted on the acquired samples. The parts of permissible pumps that will contact the groundwater sample contain only acceptable materials.

4.0 DISCUSSION

In order to generate appropriate, quality data using these guidelines, it is incumbent on the field personnel to have reviewed these guidelines as well as other referenced and/or pertinent technical guidelines. This document should be read in conjunction with any and all regulatory requirements, site-specific work plans, administrative orders, and client- specific or other project-specific guidelines.

Groundwater samples shall be collected in quantities and types as directed by the Project Manager and project work documents. If applicable, sampling or monitoring shall be conducted for any potential floating immiscible layers prior to well purging and sampling. All instruments used for field analyses shall be calibrated in accordance with appropriate guidelines. The guidelines in Golder Associates Quality Procedure QP-1, "Calibration and Maintenance of Measuring and Test Equipment" may be applicable, however it is important to be familiar with local regulatory and project-specific requirements.

All non-dedicated sampling equipment shall be decontaminated before and after each use. If directed by the Project Manager or as specified in project work documents, purge water and decontamination fluids shall be captured and contained for disposal. Samples shall be collected in properly prepared containers of the appropriate size and type (see Table 1). All samples shall be appropriately labeled and sealed (see Exhibit A) an appropriate groundwater sample collection forms (Exhibit B) must be used to document raw field information for each sample. Chain of custody (see Exhibit C) shall be maintained in accordance with guideline TG-1.2-23, "Chain of Custody." The Field Report Form (see Exhibit D) and Sample Integrity Data Sheet (see Exhibit E) and bound field notebooks shall be used to document daily site activities and sample collection. All variations from established guideline shall be documented on the Field Change Request (see Exhibit F) and shall be approved by the Project Manager.

5.0 RESPONSIBILITIES

5.1. Sampling Technician

The Sampling Technician is responsible for sample collection, sample custody in the field, preservation, field testing, total and accurate completion of data sheets, sample shipment and delivery of data to the Project Manager, all as described in this technical guideline.

5.2. Task Leader

The Task Leader is responsible for supervising Sampling Technicians. Supervision includes ensuring that samples are collected, documented, preserved, field analyzed, handled and shipped to the appropriate laboratory as specified in project work documents and this technical guideline. In many cases, the Task Leader will also fill the role of the Sampling Technician.

5.3. Project Manager

The Project Manager has overall management responsibilities for the project, is responsible for designing the sampling program, for arranging the logistics of the program, and for providing any required clarifications in the use of this guideline.

6.0 EQUIPMENT AND MATERIALS

If wells are equipped with permissible and dedicated pump systems, equipment to operate the dedicated pump systems (i.e., air compressor, compressed air or nitrogen cylinders, electric generator, etc.); non-dedicated sampling apparatus such as surface discharge tubing and valving; or bailer(s) for sampling free floating product may be necessary.

If wells do not have permissible and dedicated pump systems, permissible pump systems or bailers and accessories of small enough diameter to enter the wells will be necessary. All equipment that could contact the sample shall be made of acceptable materials.

Additional supplies should include: sample bottles, properly cleaned and prepared by a certified laboratory with preservatives appropriate for the parameters to be sampled.

Field test equipment

- multi parameter meter and calibration standards (meter should be capable of measuring pH, specific conductance, redox, dissolved oxygen and temperature);
- turbidity meter and calibration standards;
- flow through cell for collection of field measurements;
- Filtration apparatus (0.45 micron and prefilter), if necessary;
- Depth to water measuring device;
- Interface probe if necessary;
- Well specifications;
- Sample labels and seals (Exhibit A);
- Groundwater Sample Collection Forms (Exhibit B);
- Chain of Custody Forms (Exhibit C);
- Field Report Forms (Exhibit D);
- Sample Integrity Data Sheet (Exhibit E);
- Coolers and ice packs or wet ice contained in zippered plastic bags;
- HPLC/distilled/deionized/Type II water as necessary;

- Isopropyl alcohol;
- 1% solution of trace metal grade nitric acid;
- Cleaning equipment and solutions;
- Indelible ink pens;
- Field notebooks;
- Container(s) for capturing, containing, treating and measuring waste decontamination solutions, if necessary;
- OVA or OVM with accessories and calibration gases;
- As required, 55 gallon steel drums fitted with bung holes, or suitable vessels(s) for containing purged groundwater;
- Field Change Request (Exhibit F);and
- Appropriate PPE, notably suitable gloves for handling samples. Various gloves may react to potential contaminants, so glove selection should be made carefully prior to mobilizing to the field.

7.0 GUIDELINE

7.1. General Considerations

7.1.1. Regulatory Considerations

At most locations, groundwater sampling and the characterization and disposal of purge fluids are specifically regulated by local, or state regulations, or may have client specific requirements. All such client and regulatory requirements must be reviewed before groundwater sampling. At a minimum, the following actions must be taken:

Ensure that groundwater sampling is performed by an entity that meets all requirements for conducting such operations in that particular location; and

Ensure that all follow up well reports required by appropriate agencies are submitted to the appropriate authorities or in some cases that we have informed the client of such requirements.

7.1.2. Decontamination

All non-dedicated sampling equipment that may contact the sample must be decontaminated before and after each use. Non-dedicated pumps or bailers require decontamination of internal and external parts prior to being lowered into the well. Non-dedicated equipment shall typically first be washed with clean tap water (whose chemistry is known and acceptable), non-phosphate detergent (e.g., Alconox), and rinsed with clean tap water. For inorganic analytes 1% nitric acid solution shall be used for a second rinse. For organic analytes, reagent-grade isopropyl alcohol is often used for the second rinse. A final rinse with HPLC/distilled/deionized/Type II water shall complete the decontamination. At a minimum, all acid and isopropyl alcohol wash solutions must be captured (see Section 7.4.2).

7.1.3. Sample Quantities, Types, and Documentation

Samples shall be collected in quantities and types as directed by the Project Manager or as specified in the project work documents. The Field Report Form (Exhibit D) or field notebook and the Sample Integrity Data Sheet (Exhibit E) shall be used to document daily site activities and sample collection (see Section 7.5). Samples shall be transferred to the analytical laboratory under formal chain of custody, which shall be documented (Exhibit C) and maintained in accordance with guideline TG-1.2-23, "Chain of Custody".

7.1.4. Sample Containers

Table 1 provides a summary of the typical type and minimum size of the sample bottles, preservation, storage/handling requirements, and maximum holding times for some common chemical analyses performed on groundwater samples for environmental investigations. All sample bottles must be properly cleaned and prepared by a certified laboratory. All groundwater samples shall be labeled and typically sealed (see Section 7.5) and immediately placed in coolers that have been pre-cooled to 4°C or less and that have securely closed lids for storage and transport. Samples must be received by the analytical laboratory in sufficient time to conduct the requested analyses within the specified holding time. All samples should be placed on ice and stored at 4°C immediately following sampling unless otherwise indicated in the site-specific work plan.

7.1.5. Acceptable Materials

The choice of materials used in the construction of sampling devices should be based upon knowledge of what analytes may be present in the sampling environment and how the sample material may interact.

Typically acceptable materials that may contact groundwater sample are stainless steel and fluorocarbon resin (Teflon, PTFE, FEP, or PFA). Glass is an acceptable material for contacting some samples. Plastics (PVC, polyethylene, polypropylene, tygon) are an acceptable material for contacting some samples, often when the analyses are for inorganic analytes (metals, radionuclides, anions, cations).

7.1.6. Sample Acquisition

Groundwater samples shall typically be removed from the well with the use of a permissible pump or bailer. Electric positive-pressure pumps made of acceptable materials as defined in Section 3.0 are permissible to use for acquiring any groundwater sample. Gaseous, typically air or nitrogen pressure activated positive-pressure pumps made of acceptable materials are permissible to use for acquiring any groundwater sample if the gas does not contact the sample. Positive-pressure pumps operated by mechanically forcing water through check valves are often permissible for acquiring any groundwater samples. Bailers made of acceptable materials are permissible for acquiring groundwater samples in some circumstances.

Peristaltic pumps and air-lift pumps are not preferred for acquiring groundwater samples but are often permissible when samples are to be analyzed for analytes that are not affected by aeration, and are not affected by changes in pH or pressure.

Other types of pumps (peristaltic, centrifugal, air lift, recirculation, etc.) may typically be used for purging groundwater from wells prior to sample acquisition, if: (1) pump materials contacting well water are acceptable; (2) pumping does not aerate or change the pH of the remaining well water; and (3) pumped water does not mix with remaining well water during pumping or after the pumping is stopped.

The appropriate pump should be selected by the Project Manager prior to mobilizing to the field.

7.2. Groundwater Sample Acquisition

7.2.1. Floating or Sinking Non-Aqueous Fluids

Groundwater shall be examined for the presence of any floating or sinking non-aqueous fluids, in unknown situations or where they may be potentially present, at the direction of the Project Manager. If detected, they shall be sampled prior to purging any water from the well. An interface probe is often used for this purpose along with measurement of the liquid/water level. Guideline TG-1.4-6, "Water Level Measurement" may be applicable. A bailer (preferably with a check valve at the bottom only and made of transparent Teflon or glass) may be lowered into the well to retrieve a sample of floating non-aqueous fluid. The bailer shall not become completely submerged. A sample of sinking non-aqueous fluid can often be obtained using a stainless steel device designed specifically for discrete interval sampling. If a non-aqueous fluid is sampled, it may be transferred to a 40 ml or 125 ml glass vial with an air-tight, Teflon-lined septum cap. The sample shall not be filtered or preserved with additives, but shall typically be placed in a metal can with vermiculite and then in a cooler that has been pre-cooled to 4°C and secured for storage and transport. There are often very stringent requirements for transport of such samples.

7.2.2. Purging the Well

It is often preferable to conduct well purging using a low flow/low stress methodology. Purging shall be conducted by starting the pump at its lowest setting and slowly increasing the pumping rate until flow occurs (typically flow rates on the order of 0.1 to 0.4 l/min). Ideally at this pumping rate, there should be a minimum level of water level drawdown (generally less than 10 cm). Monitor and record the pumping rate and water level as appropriate during purging. During purging, monitor indicator field parameters (e.g., turbidity, temperature, specific conductance, pH, ORP, DO) every three to five minutes. Purging is considered complete and sampling may begin when the indicator parameters have stabilized. Stabilization is considered to be achieved when three consecutive readings, taken on 3 to 5–minute intervals, are within the following tolerance:

- Turbidity (within 10% and preferably less than 5 NTU);
- Temperature (within 0.5 degrees C);
- Specific conductance (within 10%);
- pH (within 0.1 stnd pH units);
- ORP (within 10%); and
- DO (within 10%).

If the low flow/low stress methodology is not used, the pump or bailer shall be used and operated in accordance with the manufacturer's operational manual. Before collecting the actual groundwater sample field parameters of at least pH, redox, temperature, and specific conductivity should come to stabilize or approach asymptotical values. In general this will require that a minimum of three (3) well bore storage volumes of water shall be purged from the well by pumping. Calculate this volume by measuring the depth to water and subtracting this depth from the total depth of the well. If a gravel/sand pack surrounds the screen the pore volume of the gravel/sand pack (assume a porosity of 25 percent if unknown) shall be added to the total well volume. While purging water from the well, parameters specified by the Project Manager will be monitored.

A flow-through cell is advantageous for the monitoring of field indicators. Typically, if the parameters are within the ranges specified above, then the water has stabilized. Rarely are more than ten well volumes removed before sampling using these criteria. If the parameters of interest in the investigation include VOCs, care must be taken to ensure that purging does not induce degassing within the well. Where the well screen and sand pack are completely below the water table, the rate of purging should be controlled such that it does not draw the water level in the well below the top of the well screen. Where the well screen and sandpack are intersected by the groundwater level, the rate of purging should correspond with the rate of sampling, if continuous sampling methods are used. Large drawdowns in water table wells should be avoided. Purged groundwater that has a reasonable potential of containing hazardous substances shall be captured and characterized prior to discharge or disposal (see Section 7.4.1). Where a low yielding well is encountered, the Project Manager shall be contacted for direction (see Section 7.6).

7.2.3. Samples for Major Cation, Metal and Metallic Radionuclide Analyses

Samples for major cations and metallic radionuclide analyses are sometimes filtered immediately or within two hours after acquisition. However, most projects require that samples for cations are not filtered. Filtration is best accomplished with the use of an in-line filter system in which the sample is directly fed from the discharge port of permissible positive-pressure pump through the filter and into the appropriate sample bottle. A less preferred but acceptable method is the collection of an adequate amount of sample from a permissible positive-pressure pump or bailer into a properly cleaned and prepared high-density linear polyethylene or glass prefiltration bottle. The prefiltration bottle does not contain any chemical preservative. Aliquots shall be immediately fed through the filter and collected directly into the appropriate sample bottle. The final filter pore size should typically be 0.45 microns. (Note: New filters made of material specified by the Project Manager shall be used for each sample and the filter system must be decontaminated before and after each sample.) These groundwater samples shall be preserved with nitric acid (HNO3) to a pH less than 2. A new capillary tube can be used to remove fluid from the bottle and dabbed onto pH indicator paper to check that the pH is less than 2.

An unfiltered aliquot of a sample can typically be obtained (in addition to the filtered aliquot) directly from a permissible positive-pressure pump discharge port or from the bailer into appropriate sample bottles (see Table 1) and preserved with nitric acid to a pH less than 2. Note that for various cations, including chromium VI, no acid and typically no other chemical preservative is added to the aliquot.

7.2.4. Samples for Semi-Volatile Organics Including Extractable Base-Neutral/Acid Compounds, Phenolic Compounds, Pesticides, PCBs and Herbicides

Samples for semi-volatile organics including extractable base-neutral/acid compounds, phenolic compounds, PCBs, pesticides, or herbicides analyses shall typically be collected directly from a positive-pressure pump discharge port or bailer in appropriate sample bottles often with a Teflon lined lid and in some cases an appropriate chemical preservative. Sample should not be allowed to overflow the sample bottle and in the vast majority of cases shall not be filtered unless specified in a project-specific work plan.

7.2.5. Samples for Purgeable Volatile Organics

Samples for purgeable volatile organics are obtained before samples for other analytes have been acquired for each well. In wells with low productivity, volatile organics should be the first samples taken, unless otherwise directed by the Project Manager. Samples for purgeable volatile organics shall typically be obtained from the well using a permissible positive-pressure pump or bailer and shall be collected directly from the pump discharge tube or bailer into properly cleaned and prepared 40 ml vial.

The sample should not be allowed to overflow the sample bottle as this may remove acid preservative that is usually added at the laboratory either prior to sample shipment to the field or by field staff before filling the vials. The pH of the aliquot should be checked if acid preservative is used and the buffering capacity of the groundwater is high or unknown or more turbid than usual from a carbonate rich strata. A new capillary tube can be used to remove fluid from the bottle and dabbed onto pH indicator paper to check that the pH is less that specified by the methodology for acid preserved samples – often less than pH 2.

Air contact and sample agitation should be minimized. Pumping rates should be significantly reduced during sampling for volatile organics to reduce potential agitation of the sample. These samples shall not be filtered or preserved except as noted below. The bottle should be filled until there is a convex meniscus to facilitate an airtight seal when capped. Immediately after collection, a Teflon lined silicon septum cap shall be placed Teflon side down tightened onto the vial. There should be no air bubbles remaining within the vial once the cap has been fastened; if air is present, a new sample shall be taken by the same guideline.

Samples for many volatile methods are preserved with hydrochloric acid (HCl) to increase holding time. However, in some waters the acid will react with the sample producing bubbles due to production of carbon dioxide or sulfur compounds. If bubbles are found due to reactions with the acid, contact the Project Manager if this eventuality has not been described in the work plan. The Project Manager may require that samples are taken without acid preservative with the resulting shorter holding times. In this case a new unpreserved vial should be used. An unpreserved sample vial can be obtained by pouring the acid out of a preserved vial if no unpreserved vials are available. It is unlikely that the remaining acid will be sufficient to produce bubbles. However, if bubbles are still found one may slowly fill and empty the vial once or more times to remove the remaining acid. Samples that are not preserved should be noted as such on both the bottle labels and the Chain of Custody documents.

7.2.6. Samples for Cyanide Analyses

Samples for cyanide analyses shall be collected directly into appropriate sample bottles from the bailer or the port of a permissible positive-pressure pump. Samples shall not be filtered nor shall they be allowed to overflow the sample bottle. A pre-preserved bottle is typically made available. Otherwise, samples shall be immediately preserved with sodium hydroxide (NaOH) to a pH greater than 12. A new capillary tube can be used to remove fluid from the bottle and dabbed onto pH indicator paper to check that the pH is greater than pH 12.

7.2.7. Samples for Major Anion and Biological Oxygen Demand (BOD) Analyses

Samples for major anions (chloride, fluoride, sulfate, alkalinity, acidity, total silica, bromide) and for biological oxygen demand shall be collected directly into appropriate sample bottles from the port of the pump or from the bailer. These samples do not require filtration, but may be filtered if explicitly required in the sampling plan. Chemical preservatives shall only be added as required by the method.

7.2.8. Samples for Total Phosphate and Orthophosphate Analyses

Groundwater samples for total phosphate and orthophosphate analyses shall typically be immediately filtered after initial sample acquisition. However, these parameters often are specified to be taken without filtration. Filtration is best accomplished with an in-line system in which a positive-pressure pump discharge port feeds groundwater directly through the filter system into an appropriate sample bottle. A less preferred but acceptable method to obtain a filtered sample is to collect a liter of sample from a permissible positive-pressure pump or bailer in a properly cleaned and prepared high-density

polyethylene or glass bottle, and then immediately feed the sample through a filter system (e.g., syringe filters) which discharges into the appropriate sample bottle. This process should be completed within two hours; otherwise, the results will be suspect. The final filter pore size shall typically be 0.45 micron. (Note: New filters made of most any material must be used for each sample and the filter system must be decontaminated before and after each use.) Samples shall be immediately placed on ice and preserved by cooling to 4°C or lower.

7.2.9. Samples for Total Phosphorus, Nitrogen Compounds, Chemical Oxygen Demand, Total Organic Carbon, and Total Organic Halogen Analyses

Groundwater samples for total phosphorus, nitrogen compounds, chemical oxygen demand, and total organic carbon analyses shall be collected directly into appropriate sample bottles from a permissible positive pressure pump discharge port or from the bailer. These samples shall not be filtered and shall be chemically preserved as required by the various methods.

7.2.10. Samples for Analysis of Total Dissolved Solids

Groundwater samples for analyses of total dissolved solids shall be immediately filtered in the field by methods discussed in Section 7.2.3 above or collected without filtration depending on sampling plan, and put directly into an appropriate sample bottle. Samples shall not be preserved with chemicals.

7.2.11. Samples for Oil and Grease or Hydrocarbons

Groundwater samples for oil and grease or hydrocarbons shall be collected directly into the appropriate sample container from the discharge port of a permissible positive pressure pump or from the bailer. These samples shall not be filtered and in some cases shall be preserved with hydrochloride acid (HCL, 1 + 1 Vol/Vol) to a pH less than 2. A new capillary tube can be used to remove fluid from the bottle and dabbed onto pH indicator paper to check that the pH is less than 2. Do not preserve with sulfuric acid due to potential interferences in the analytical procedure from co-extraction of elemental sulfur.

7.2.12. Samples for Fuel Fingerprinting

Groundwater sample for fuel fingerprinting shall be collected directly into the appropriate sample container using a permissible positive pressure pump or bailer and shall be collected directly from the pump discharge tube or bailer. Some guidelines require that the sample be allowed to overflow approximately 2 to 3 sample container volumes minimizing agitation and contact with air. These samples shall not be filtered but typically must be preserved to a pH <2 with HCL (1:1 vol/vol). A new capillary tube can be used to remove fluid from the bottle and dabbed onto pH indicator paper to check that the pH is less than 2. The sample container is then often capped with a Teflon lined silicon septum cap excluding all headspace. Otherwise the sample is often split into two or three aliquots for different analyses as dictated in the sampling plan or as specified by the Project Manager.

7.3. Field Analyses

7.3.1. Calibration of Instruments

All instruments used for field analyses shall be calibrated in accordance with guidelines required by the sampling and analysis plan; or by the most strict single guideline or combination of guidelines compiled from procedure QP-1, "Calibration and Maintenance of Measuring and Test Equipment;" or by the method or manufacturer's procedure. Only equipment with a calibration tag showing a validity date later than the anticipated date of use shall be taken to the field unless, as is usual, field calibration is performed. Each

instrument should be accompanied by a copy of the manufacturer's operation manual and appropriate instrument calibration records.

7.3.2. Water Temperature

A meter and a flow though cell are the preferred tools for measuring this parameter. The meter shall be calibrated in accordance with the sampling plan, and if more stringent, with the manufacturer's procedures (provided with the instrument). If a meter is unavailable, a thermometer shall be used to measure the temperature of the water on an aliquot of purged water obtained just before sampling. The thermometer reading shall be allowed to stabilize and shall be recorded to the nearest 0.5°C. The thermometer shall be rinsed with distilled/deionized water before and after each use.

7.3.3. pH Measurement

A meter and a flow though cell are the preferred tools for measuring this parameter. Alternately, a pH meter may be used to measure the pH of the sample on an aliquot of purged water that was obtained just before sampling. Measurements shall be made immediately on the obtained aliquot. (Note: If possible, measure pH continuously on the purged water in an air-space free and closed flow-through system.) Calibration shall be in accordance with the sampling plan or, if more stringent, with the manufacturer's procedures (provided with the instrument). At a minimum, calibration shall be performed at the beginning and ending of each day's use and every four hours in between. Calibration shall be performed with standardized buffered pH solutions and conducted as required by the more stringent of the sampling plan or manufacturer's specifications. Typically, the probe shall be thoroughly rinsed with distilled/deionized water after each sample when using a flow through cell or after each sample reading when the probe is placed in a discrete aliquot of sample. The pH shall be recorded to one-hundredth, if the meter is stable enough of a pH unit.

7.3.4. Conductivity Measurement

A meter and a flow though cell are the preferred tools for measuring this parameter. Alternately, a conductivity probe may be used for conductivity measurement on an aliquot of purged water obtained just before sampling. Measurements shall be made as soon as possible on the obtained aliquot. The meter shall be calibrated in accordance with sampling plan or, if more stringent with the manufacturer's procedures (provided with the instrument) with standardized calibration solutions. It is preferable to have a range of calibration solutions that bracket the site conductivity range. At a minimum calibration shall be performed at the beginning and ending of each day's use and every four hours in between. The conductivity shall typically be recorded to two significant figures and rarely more than three significant figures. The temperature of the sample at the time of conductivity measurement shall also be recorded. The probe must be thoroughly rinsed with distilled/deionized water before and after each use. It is imperative that the Sampling Technician record the correct units in which the conductivity measurements were taken.

7.3.5. Dissolved Oxygen Measurement

A meter and a flow though cell are the preferred tools for measuring this parameter. Alternately, a dissolved oxygen meter is used to measure dissolved oxygen (DO) in water samples. This test should be at best considered a rough estimation with most meters as the measurements are subject to a number of environmental interferences that may affect the results. Measurements shall be made immediately on aliquots obtained just before sample acquisition. (Note: If possible, measure DO continuously on the purge water in a closed flow-through system.)

The meter shall be calibrated in accordance with the sampling plan or, if more stringent, with the manufacturer's procedures (provided with the instrument). Any salinity adjustment shall be made to the approximate salinity of the water (one may use knowledge of the subsurface or some conductivity meters or dedicated salinity meters to obtain the salinity of the water). The probe must be thoroughly rinsed with distilled/deionized water before and after each use. Measurements shall typically be recorded to the nearest 0.1 ppm concentration.

7.3.6. Turbidity Measurements

A turbidity meter shall typically be used to make turbidity measurements on aliquots of water samples obtained just before sample acquisition. Measurements shall be made as soon as possible on the obtained aliquot. Operation and calibration shall be in accordance with the sampling plan or, if more stringent, with the manufacturer's procedures (provided with the instrument). It is preferable to have a range of calibration solutions that bracket the site turbidity range. At a minimum calibration shall be performed at the beginning and ending of each day's use and every four hours in between. Calibration shall be performed with calibration solution specified for the project. Measurements shall be recorded to the nearest 0.1 NTU when less than 1 NTU; the nearest 1 NTU when between 1 and 10 NTU; and the nearest 10 NTU when between 10 and 100 NTU.

7.3.7. Redox Potential Measurements

A meter and a flow though cell is a preferred way to measure this parameter. Alternately, a redox meter may be used to obtain redox potential measurements. However, there are many other ways to measure redox couples. When a meter is used the reading should be obtained on an aliquot of purged water that was obtained just before sampling. Measurements shall be made immediately on the obtained aliquot. (Note: The best results using a redox meter usually come from measuring the redox on the purged water in an air-space free and closed flow-through system.) Calibration and operation shall be in accordance with the sampling plan and if more stringent with the manufacturer's procedures (provided with the instrument). It is preferable to have a range of calibration solutions that bracket the site redox potential range. At a minimum calibration shall be performed at the beginning and ending of each day's use and every four hours in between. Calibration shall be performed with calibration solution specified for the project. Typically, the probe shall be thoroughly rinsed with distilled/deionized water after each sample when using a flow through cell or after each sample reading when the probe is placed in a discrete aliquot of sample. The redox using a probe shall be recorded in millivolts to the number of significant figures required by the sampling plan - which is typically three significant figures.

7.4. Capture and Disposal of Purge Water and Decontamination Solutions

7.4.1. Purge Water

Purged groundwater shall be handled as specified in the sampling plan. Typically purge water will be captured and contained in 55-gallon steel drums or suitable vessel(s). If required, each drum or tank containing captured purge water shall be properly labeled with a weather proof label as to the contents, the well(s) from which the contained purge water originated and the date in which the contents were generated. Storage of the drums or tanks shall be as specified in the project work documents or as directed by the Project Manager. In many cases there is specific wording required for the labels and this should be found in the sampling plan.

Captured and contained purge water shall be characterized for discharge, treatment and/or disposal. Characterization of the captured and contained purge water should be specified in the sampling plan or other project work documents or by the Project Manager, but could rely on site knowledge, the analytical results of groundwater samples associated with each drum or other vessel, or could involve direct sampling and analyses of the contained water.

The requirements and options available for discharge, treatment and/or disposal are dependent upon many variables such as client requirements, chemical consistency, local and state and other regulations and location of site. Discharge, treatment and/or disposal of captured and contained purge water must be in accordance with all applicable requirements such as, but not limited to, client specific procedures. Local, state and Federal regulations and shall be specified in the sampling plan or in other project work documents.

7.4.2. Decontamination Waste Solutions

Decontamination waste solutions that are generated during groundwater sampling include: spent detergent wash solutions; spent tap water rinses; any spent acid or alkali rinses, any spent organic (such as isopropyl alcohol) rinses; and spent final distilled/deionized water rinses. All decontamination waste solutions shall be captured and contained in appropriately sized vessels as required by the sampling plan or other project documentation. In any cases where this is not clear, the Project Manager shall be contacted so they can determine (with input from others as needed) whether spent decontamination solutions require capture and containment.

Captured and contained decontamination waste solutions shall be subject to requirements of the sampling plan or other project documentation. These are often generally the same guidelines as described for purge water. A noteworthy typical requirement is that all acid and alkali solutions shall be neutralized prior to discharge or disposal.

7.5. Documentation

Documentation for sampling groundwater includes labeling sample bottles; and other requirements as specified by the sampling plan or other project documentation. These further requirements often include project field notebooks, Sample Integrity Data Sheets, Field Report Forms, and Chain of Custody Records; additional documentation requirements may warrant securing individual samples or sample coolers with chain of custody seals.

7.5.1. Sample Labels

Samples shall be immediately labeled (see Exhibit A for an example label). Labels shall be water proof. Information shall be recorded on each label with indelible ink. All blanks shall be filled in (N/A if not applicable). Groundwater sample designations will be as specified in the project work documents or by the Project Manager. At a minimum the following information is required upon the label: Site name, sample ID, parameter(s) to be tested, sample date and time, sampler's initials, chemical preservative, if used.

7.5.2. Groundwater Sample Collection Forms

Groundwater Sample Collection Forms (Exhibit B) are used by the Sampling Technician to document the official raw field information for each sample that will be chemically analyzed. All blanks shall be filled in (N/A if not applicable). The original must be submitted as soon as possible to the Project Manager. Copies must be sent to the Task Leader (if appropriate).

7.5.3. Chain of Custody Records

Chain-of-Custody Records (Exhibit C) will be used to record the custody and transfer of samples in accordance with guideline TG-1.2-23, "Chain of Custody." These forms shall be filled in completely (N/A if not applicable). Tamper-proof Seals (Exhibit A) shall be placed on either sample bottles or shipping coolers. The seal number shall be recorded on the Chain of Custody Form. The original form must accompany the samples to the analytical laboratory to be completed and returned to Golder in the

analytical data report. A copy of the Chain of Custody Record documenting the transfer of samples from the field must be submitted to the Project Manager.

7.5.4. Field Report Forms

Field Report Forms (Exhibit D) or project field notebooks shall be used by the Sampling Technician to record daily activities. Data shall be recorded on the Field Report Form in chronological format. The time of each recorded event shall be included. The original Field Report Form must be submitted as soon as possible to the Project Manager. Copies must be given to the Task Leader.

7.5.5. Sample Integrity Data Sheet

Sample Interity Data Sheets (Exhibit E) shall be used by the Sampling Technician to record raw field information for each sample that will be chemically analyzed. This data sheet can be used as a supplement to but not in lieu of a groundwater sample collection form. The original must be submitted as soon as possible to the Project Manager. Copies must be given to the Task Leader.

7.6. Field Change Request

Variation from established guideline requirements may be necessary due to unique circumstances encountered on individual projects. All variations from established guidelines shall be documented on Field Change Request (Exhibit F) and reviewed by the Project Manager.

In lieu of requirements in the sampling plan or other project documentation, the Project Manager may authorize individual staff to initiate variations as necessary. If practical, the request for variation must be reviewed by the Project Manager or their designee prior to implementation. All completed Field Change Requests will be maintained in project records.

8.0 REFERENCED GUIDELINES

Golder Associates Inc. Quality Procedure QP-1, "Calibration and Maintenance of Measuring and Test Equipment."

Golder Associates Inc. Technical Guideline TG-1.2-23, "Chain of Custody."

Golder Associates Inc. Technical Guideline TG-1.4-6, "Water Level Measurement."

9.0 ADDITIONAL GUIDELINES AND PROCEDURES

Wood, W.W. (1976), "Guidelines for Collection and Field Analysis of Ground-Water Samples for Selected Unstable Constituents," Techniques of Water-Resources Investigations of the United States Geological Survey, Book 1, Collection of Water Data by Direct Measurement, Chapter D2.

U.S. EPA, 1986, Test Methods for Evaluating Solid Waste - (SW-846), 3rd Edition (Final Update III, December 1996), U.S. EPA/Office of Solid Waste, Washington, D.C.

40 CFR 136, U.S. EPA, Guidelines Establishing Test Procedures for the Analysis of Pollutants. Title 40 Part 136 of the Code of Federal Regulations.

U.S. EPA, 1986, RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, U.S. EPA/Office of Solid Waste, Washington D.C.

40 CFR 141, U.S. EPA, National Primary Drinking Water Regulations, Title 40, Part 141 of the Code of Federal Regulations.

Various EPA Region and State Standard Operating Procedures

Golder Associates Technical Guideline TG-2.3-3, “Headspace Analysis Using the Organic Vapor Analyzer”

TABLE 1

TABLE 1

SAMPLE CONTAINER CODES, TYPES, VOLUMES, PREPARATION,
SPECIAL HANDLING, PRESERVATION, HOLDING TIMES
Page 1 of 2

Analysis	Cont. Code	Containers, Water	Handling and Preservation	Holding Time
Volatile Organics	V	2, 40ml glass vial teflon lined septum	Store 4±2°C; handle upwind from euip. Fumes, no headspace permitted; Pres with HCl to pH <2 for volatile aromatics	7 days 14 days (HCl pres.)
Base/Neutral and Acid Extractable Organics	SV	2, 1 liter amber glass, teflon lined cap	Store 4±2°C; handle upwind from equip. fumes; no contact with plastics, gloves	7 days until extraction 40 days thereafter
Organiochlroine Pesticides and PCBs	P	2, 1 liter amber glass, teflon lined cap	Store 4±2°C; handle upwind from equip. fumes; no contact with plastics, gloves	7 days until extraction 40 days thereafter
Herbicides	H	2, 1 liter amber glass, teflon lined cap	Store 4±2°C; handle upwind from equip. fumes; no contact with plastic, gloves	7 days until extraction 40 days thereafter
Total Fuel Hydrocarbons (Fuel Fingerprint)	TH	1, 125 ml amber glass, teflon lined septum	Store 4±2°C; handle upwind from equip. fumes, no headspace permitted; pres with HCl to pH <2	14 days
Total Petroleum Hydrocarbons or Oil and Grease	OG	1, 1 liter glass, teflon lined cap	Store 4±2°C; handle upwind from equip. fumes, no contact with gloves or plastics; pres with HCl to pH <2	28 days
Cyanide (total)	CN	1,1 liter plastic	Store 4±2°C; pres with NaOH to pH >12	14 days
Suflide (total)	S	1, 1 liter plastic	Store 4±2°C; pres with ZnOAC/NaOH to pH >12	7 days
Chloride, Sulfate, pH Conductivity and Total Dissolved Solids	MA	1,1 liter plastic	Store 4±2°C.	28 days (Chloride, sulfate and conductivity) Analyze on-site (pH) 7 days (TDS)

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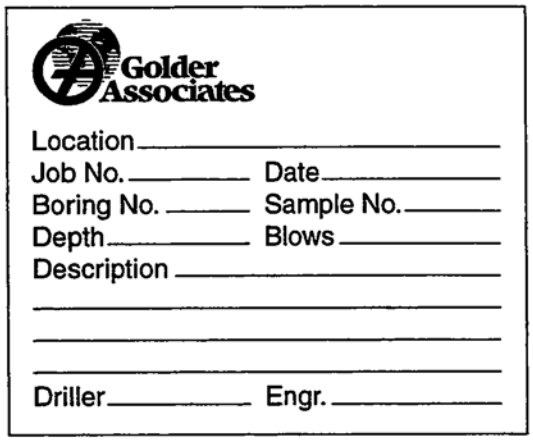
TABLE 1

SAMPLE CONTAINER CODES, TYPES, VOLUMES, PREPARATION,
SPECIAL HANDLING, PRESERVATION, HOLDING TIMES,

Analysis	Cont. Code	Containers, Water	Handling and Preservation	Holding Time
Major Cations and Metals (Except Mercury)	TM	1,1 liter plastic	0.45 um filter, pres with HNO_3 to pH <2	6 months
Mercury	HG	1, 500 ml plastic	0.45 um filter, pres with HNO_3 to pH <2	28 days
Gamma Emitting Radionuclides	GR	2, 1 liter plastic	0.45 um filter, pres with HNO_3 to pH <2	6 months (record exact date/time of sampling for calculation of half-life decay)
Alpha Emitting Radionuclides	AR	2, 1 liter plastic	0.45 um filter, pres with HNO_3 to pH <2	6 months (record exact date/time of sampling for calculation of half-life decay)
Beta Emitting Radionuclides	BR	2, 1 liter plastic	0.45 um filter, pres with HNO_3 to pH <2	6 months (record exact date/time of sampling for calculation of half-life decay)
Total Phosphorus, Ammonia-N, Nitrate/nitrite-N, COD and TOC	TP	1, 1 liter plastic	Store 4±2°C; pres with H_2SO_4 to pH <2, store in dark	28 days
Orthophosphate	OP	1, 1 liter plastic	0.45 um filter, store 4±2°C	48 hours

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EXHIBIT A



Sample Label



Tamper Proof Seal

SAMPLE LABELS

EXHIBIT B

WATER SAMPLE FIELD INFORMATION FORM

Site:

Location:

Project Number:

Sampling Team:

Sample Point ID: **(well)**

Purging Device: **Teflon Bailer & Nylon Rope**

Depth to water before purging (ft-bmp) Date: Time:

Sounded well depth (ft-bmp) PID reading (ppm)

As-built well depth (ft-bmp)

Casing Volume Calculation

Casing diameter (in)	2"	4"	6"	8"
Casing volume (gal)	0.163 gal/ft	0.653 gal/ft	1.47 gal/ft	2.61 gal/ft

Volume purged (gal) Time Start: Time Finish:

Depth to water after purging (ft-bmp) Purge Calc:

Remarks:

WELL INSPECTION (Circle Y or N)

Is well location correct on map?	Y or N	Is the well locked?	Y or N
Is well located in a dry area?	Y or N	Is the lock in good condition?	Y or N
Is well readily accessible?	Y or N	Is the well vented?	Y or N
Is well legibly labeled?	Y or N	Does casing have weep hole?	Y or N
Is well protected with posts?	Y or N	Does well have dedicated bailer?	Y or N
Is casing free of kinks/bends?	Y or N	Does well have dedicated pump?	Y or N
Is protective casing secure?	Y or N	Is equip. in good condition?	Y or N

Remarks:

FIELD MEASUREMENTS							Units	Calibration Notes
Time	1)	2)	3)	4)	5)			
Temp.	1)	2)	3)	4)	5)		**ºC**	**Calibration time:**
pH	1)	2)	3)	4)	5)		**std. units**	**Serial#:**
Sp. Cond	1)	2)	3)	4)	5)		**mS/cm**	
Turbidity	1)	2)	3)	4)	5)		**ntu**	
D.O.	1)	2)	3)	4)	5)		**mg/l**	
Redox	1)	2)	3)	4)	5)		**mV**	
DTW	1)	2)	3)	4)	5)		**ft-bmp**	
Volume	1)	2)	3)	4)	5)		**gallons**	

Sample Collection Notes:

Weather conditions at time of sampling:

Sample characteristics:

Sample date / time: Method of sample collection: **Teflon Bailer & Nylon Rope**

Analytical Parameters:

Signature: Company: **Golder Associates Inc.** Date:

NJ Certification #03027

LOW FLOW GROUNDWATER PURGE/SAMPLE FIELD INFORMATION FORM

Site _____

Location: _____

Project Number: _____ Meter/Type/Serial #: _____

MONITORING WELL ID: _____ Meter Calibrated @: _____

Depth to Water Prior to Purging [ft-bmp]: _____ Sampling Date/Time: _____

Well Casing Diameter [in]: _____ Sampler(s): _____

Start Time (purging): _____ Sampling Device: _____

Purging Device: _____ Sampling Purge Rate: _____

Pump intake setting: _____ Sample Characteristics: _____

Well Screen Interval: _____ PID Measurement of Well Headspace (ppm): _____

As-Built Construction Well Depth [ft-bmp]: _____ Analytical Parameters: _____

Sounded Well Depth [ft-bmp]: _____ _____

Weather Conditions:_____ Fe+2 result (field measurement):_____PPM

Time [hh:mm]	**Temperature** [°C]	**pH** [std]	**Specific Conductance** **Circle One** [S/m] or [mS/cm]	**Turbidity** [ntu]	**Dissolved Oxygen** [mg/l]	**Redox Potential** **Note - Indicate if (+) or (-)** [mV]	**Depth To Water** [ft-bmp]	**Volume Purged** [liters]	**Approximate Purge Rate** [ml/min]	**Observations** (PID readings, sample characteristics, equipment problems, etc.)

Comments:

Signature:

EXHIBIT C

CHAIN OF CUSTODY RECORD

PROJ. NO.	SITE / LOCATION
SAMPLERS: *(Signature)*	

STA. NO.	DATE	TIME	SAMPLE TYPE	MEDIA	SAMPLE IDENTIFICATION	NO. OF CONTAINERS	AMOUNT / PRESERVATIVE						SEAL NO.	SEAL INTACT? (Y or N)	REMARKS (with initials)

Relinquished by: *(Signature/Firm)*	Date / Time	Received by: *(Signature/Firm)*	Relinquished by: *(Signature/Firm)*	Date / Time	Received by: *(Signature/Firm)*
Relinquished by: *(Signature/Firm)*	Date / Time	Received by: *(Signature/Firm)*	Relinquished by: *(Signature/Firm)*	Date / Time	Received by: *(Signature/Firm)*
Relinquished by: *(Signature/Firm)*	Date / Time	Received by: *(Signature/Firm)*	Date / Time	Remarks (attachments if necessary)	

EXHIBIT D

GOLDER ASSOCIATES

DATE	JOB NO
PROJECT	
LOCATION	
CONTRACTOR	OWNER
WEATHER	TEMP °at AM °at PM
PRESENT AT SITE	

TO _____

_____

_____

THE FOLLOWING WAS NOTED.

COPIES TO _____

_____

FIELD REPORT

SIGNED _____

EXHIBIT E

SAMPLE INTEGRITY DATA SHEET

Plant/Site _____ Project No. _____

Site Location _____ Sample ID _____

Sampling Location _____

_____

Technical Procedure Reference(s) _____

Type of Sampler _____

Date _____ Time _____

Media _____ Station _____

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

_____

_____

_____

Sample Description _____

_____

_____

Field Measurements on Sample (pH, conductivity, etc.) _____

_____

_____

_____

Aliquot Amount	Container	Preservation/Amount

Sampler (signature) _____ Date _____

Supervisor (signature) _____ Date _____

Golder Associates Inc.

EXHIBIT F

FIELD CHANGE REQUEST

Golder Associates

Job/Task Number: _____

Procedure Reference: _____

Other Affected Documents: _____

Requested Change: _____

Reason for Change: _____

Change Requested by: _____ Date _____

Reviewed by: _____ Date _____
Project Manager

Comments: _____

Golder Associates

Technical Procedure

Number: TP-1.2-6
Title: FIELD IDENTIFICATION OF SOIL

Prepared by	Approved by	Approved by	Effective Date	Rev. Level
	7/8/96	7-16-96	7-19-96	-7-

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TP-1.2-6
Revision Level -7-
RECORD OF REVISIONS

Section	Description of Revisions
All	New format throughout
4.	Updated ASTM standard
5.	Changed "foundation" engineering to "geotechnical" engineering
7. & Table 1	Changed one-half-inch (12 mm) rebar to 1/4-inch steel hand probe
8.1	Added more detail to soil descriptions
Figure 2	Updated Record of Borehole log to reflect current form

1. PURPOSE

This technical procedure describes uniform procedures for identification of soils.

2. APPLICABILITY

This technical procedure is applicable to all persons engaged in soils identification.

3. DEFINITIONS

Definitions are contained within Section 8.

4. REFERENCES

ASTM Standards, Standard Recommended Practice for Description of Soils (Visual-Manual Procedure), D 2488-93, American Society for Testing and Materials, Philadelphia, Pennsylvania.

Rock-Color Chart, Geological Society of America, Boulder, Colorado.

5. DISCUSSION

Soil identification techniques are employed to characterize and describe soil for geologic and hydrologic interpretation, geotechnical engineering, well screen sizing, and a wide range of other purposes.

6. RESPONSIBILITY

Each individual designated responsibilities for soil identification shall utilize this procedure.

7. EQUIPMENT AND MATERIALS

Supplies required for Golder Associates field personnel generally include the following:

- Supply of water
- Pocket knife or small spatula
- Small test tube with stopper or glass jar with sealed lid
- Small hand lens
- Pocket penetrometer or shear gage
- 1/4" steel hand probe
- Notebook
- Exploration logs

8. PROCEDURE

8.1 General

The recommended Soils Classification System is based on the Unified Soil Classification System as summarized on Figure 1.

The soil description involves the following general format:

(1) Consistency or Density,
(2) Color,
(3) Structural Characteristics,
(4) Composition with Major Component in Capital Letters,
(5) Minor Characteristics,
(6) Uses Classification in Capital Letters,
(7) Geologic Description in Capital Letters.

Thus, for example, a typical description might include:

Stiff, Light Grey (N7), stratified, SILTY CLAY, trace Sand, slickensides, (CL) (LACUSTRINE)

The following sections discuss the different elements (1-7 above) of the soil description.

8.2 Determination of Consistency or Relative Density

8.2.1 N-Values

The standard penetration test (SPT), or number of blows required by a 140-pound hammer or weight dropped 30 inches to drive a two-inch O.D. (1 3/8-inch ID) drive-open sampler, will indicate the relative density of cohesionless soils and the consistency of cohesive soils. The standard tests penetrates 18 inches. N values are the blows required to drive the sampler the last 12 inches. The blows required to drive the sampler the first six inches are normally not taken into account unless one or both of the subsequent blow counts are affected by gravel of cobbles. Blows are recorded for each six-inch interval. The relative density or coarse-grained soils is shown in Table 1.

8.2.1.1 Relative Density of Granular Soils

The relative density modifiers given in Table 1 for coarse-grained soils should also be used for fine-grained non-plastic soils described predominately by SILT.

8.2.1.2 Consistency of Fine-Grained, Cohesive Soils

Shown in Table 2 are criteria for the quantitative and qualitative determination of the consistency of fine-grained, cohesive soils. The criterion based on N-Values is considered unreliable and should be used with caution. The criterion based on undrained shear strength may be used when values of undrained shear strength are available. The field identification test is simple and reliable and is the method which can be used in most instances.

8.3 Determination of Color

Color can be an important property in identifying materials of similar geologic origin and in identifying organic soils. Although qualitative color names are somewhat helpful, positive color identifications obtained by comparison with a standard color chart are even more useful. If the sample contains layers or patches of varying colors, this should be noted and all representative colors should be described for moist samples. If possible, color should be described for moist samples. The Geologic Society of America Rock-Color Chart should be used to identify color. Provide both the color name and chromal hue symbols in soil descriptions. Mottled soils show the presence of spots, streaks, or splotches of one or more colors in a

soil mass of another predominant color. In mottled soils, the colors are not mixed and blended, but each is more or less distinct in the general ground color.

8.4 Definitions of Structural Characteristics

8.4.1 Stratified

Composed of, or arranged in, layers. The layers are parallel to one another, and composed of soils visibly different from each other.

8.4.2 Parting

Paper-thin separation of one soil type within another. Usually applied to cohesive soils.

8.4.3 Rhythmic

Consisting of alternative thin layers of sand, silt or clay. Each layer generally less than one-half-inch in thickness. Lacustrine deposits with annual layers are termed varves or are said to be varned.

8.4.4 Lenses

A particular soil type significantly different from the surrounding soils which thins out laterally is said be a lens or be lens-shaped.

8.4.5 Pocket

A different soil type of limited thickness and lateral extent.

8.4.6 Homogenous

Of uniform structure.

8.4.7 Heterogeneous

Consisting of dissimilar constituents, mixed.

8.4.8 Slickensided/Polished/Scratched Surfaces

A polished and scratched surface that results from friction of one block of material moving relative to another block. Polished and/or scratched surfaces may be related to minor movement along discontinuities or may be related to faults and termed slickensides.

8.4.9 Fissured

This term applies to hard, over-consolidated silts and clays and refers to physical discontinuities such as fissures and cracks that formed during or after consolidation. The abundance and character of the fissuring can be described as follows:

"Highly Fissured" - Fractures are spaced one-half-inch or closer over most of the interval described.

"Moderately Fissured" - Sample contains two or more fractures or thin fracture zones per six-inch sample, but average spacing is wider than one-half inch.

"Locally Fissured" - Only one fracture or narrow (less than three inches) fracture zone is observed in a sample.

Fissuring characteristics that can be noted and/or described include attitude, length, width, aperture (closed, tight, open), staining/infilling, roughness, curvature, continuity, slickensides, polish, gouge, relation to other structures and other distinguishing features.

8.5 Determination of Soil Composition

8.5.1 General

For purposes of soil description, the material is considered to be composed of the coarse fraction or of particles larger than the No. 200 sieve (+.074 mm) and the fine fraction or those smaller than the No. 200 sieve. The coarse fraction is described based on its particle size while the fines are described on its plasticity.

The following terminology is used to denote the percentage by dry weight of each soil component:

Descriptive Term	Range of Proportion
Trace	0-5%
Little	5-12%
Some or Adjective*	12-30%
And	30-50%

*Adjective: silty, sandy, gravelly, etc.

For example: "SILT, some Sand, trace Gravel" describes a basic soil component of silt (30-50 percent), with minor components of sand (12-30 percent), and gravel (0-5%).

Soils are to be described according to the following criteria with the principal constituents written in capital letters. Other constituents are preceded by descriptive terminology that is used to denote the percentage by weight of each component. Soil descriptions are determined visually except where laboratory classification test data are available. The following abbreviations are acceptable:

c = coarse
m = medium
f = fine

8.5.2 Field Indication Tests - Fines

8.5.2.1 Fine-Grained Soil Descriptions

The description of fine-grained soil components (i.e., passing the No. 200 sieve or smaller than 0.074 mm) is based on plasticity and not grain size. Thus, terms like SILT, trace Clay or Silt, little Clay are not used. Rather, the terms, SILT, CLAYEY SILT, SILTY CLAY, and CLAY are applied to the fine-grained component as a whole. Their characteristics are described in Table 4.

8.5.2.2 Field Test for Plasticity

Plasticity refers to the ability of a material to be deformed rapidly without cracking or crumbling and then maintain that deformed shape after the deforming force has been released. A soil is said to be highly plastic if there is a wide range of moisture content over which it remains in the plastic state. High plasticity indicates a high clay content. Identification of cohesive soils in relation to their plasticity can be made on the following basis: The natural soil is worked until its moisture content is such that a 1.5-inch diameter ball formed from the soil shows a flattened contact surface of 7/8-inch diameter when dropped from a height of two feet (gravel sizes are not included in the ball). The smallest thread possible without crumbling is then rolled from the above soil sample. The approximate relationships below are then used for identification:

Thread Diameter	Descriptive Term
1/4-inch	SILT
1/8- to 1/16-inch	CLAYEY SILT
1/32-inch	SILTY CLAY
1/64-inch	CLAY

8.5.2.3 Dry Strength

A portion of the soil is allowed to dry out completely in air. An angular fragment (about one-half-inch) of the dried soil is pressed between the fingers. The dry strength of the fragment is expressed as very low, low, medium, high and very high. Fragments with very high strength cannot be injured at all, whereas, those of very low strength disintegrate completely on gentle pressure. The strength is called medium if the fragment can be reduced to powder only with great effort. Those materials with greater dry strengths are predominately clayey, and those with less dry strength are predominately silty.

8.5.2.4 Stickiness

A high degree of stickiness in the natural state is indicative of higher plasticity.

8.5.2.5 Shine Test

If a moist lump of soil is stroked with considerable pressure with the flat of a pen knife blade or fingernail, the type of surface imparted is an indication of the soil. If a shiny surface results, the presence of clay is indicated. Silt is indicated if a dull surface is produced.

8.5.2.6 Grittiness Test

THIS TEST SHOULD NOT BE PERFORMED WHEN HAZARDOUS WASTE CONTAMINATION IS SUSPECTED OR KNOWN TO BE PRESENT. In other cases, when a small amount of the uncontaminated soil is placed between the teeth, the presence of grit will indicate silt or sand, but if no grit is detected, a pure clay is present.

8.5.3 Field Identification Tests - Organic Soils

8.5.3.1 Organic Soil

Description of organic soils depends on the percentage and distribution or organics in the soil. If the soil matrix is inorganic with occasional pieces or organic matter, this can be described under Minor Characteristics.

If the soil is primarily inorganic, but contains a significant amount of organic, the modifier organic can be used. If the soil is primarily organic, then it should be called a Peat. Examples include:

- Silty SAND, occasional organic matter
- Organic SILT
- Sandy PEAT

Table 5 includes a system for classifying organic soils.

8.5.3.2 Organic Cohesive Soils

Organic cohesive soils display the following characteristics.

- A dark-brown, dark-gray, black color indicates the presence of organic matter.
- An odor of decaying vegetation is typical. If organic matter cannot be distinguished, it can sometimes be brought out by a small amount of heat.
- The presence of fibrous or root structures, twigs, leaves or shells is common.
- At least a three-quarter reduction in the liquid limit value after oven-drying is considered positive identification of organic soil.
- The plasticity of fine-grained organic soils is greatly reduced on oven-drying due to irreversible changes in organic colloids.
- Organic clays feel spongy in the plastic range as compared to inorganic clays.

8.5.3.3 Organic Soil - Peat

Peat is usually dark brown to black; contains fibrous particles of vegetation in varying states of decay; has characteristic organic odor; is usually spongy and compressible; commonly contains natural moisture contents of over 100 percent and can contain organic and inorganic silts and clays in varying amounts and concentrations.

8.5.4 Field Identification Tests - Cohesionless Soils

8.5.4.1 Visual Identification of Grain Size

The constituent parts of a soil sample are defined by grain size, as indicated in Table 3.

8.5.4.2 Grittiness Test

THIS TEST SHALL NOT BE PERFORMED WHEN HAZARDOUS WASTE CONTAMINATION OF THE SOIL IS SUSPECTED OR KNOWN TO BE PRESENT.

The soil is handled lightly between the thumb and forefinger to get an idea of the grittiness or softness of the soil. A pinch of uncontaminated soil is smeared with considerable pressure between the thumb and forefinger to determine the degree of harshness and grittiness. When a small amount of uncontaminated soil is placed between the teeth, the presence of grit will indicate silt or sand, but if no grit is detected, an almost pure clay is present.

- Coarse to medium sand exhibits a typically harsh and very gritty smear.
- Coarse to fine sand has a less harsh feel, but exhibits a very gritty smear.
- Medium to fine sand exhibits a less gritty feel and smear.
- Fine sand has a softer feel and much less gritty smear.

8.5.4.3 Test Tube Test

A small sample of the soil (lumps are first broken up) is shaken in a test tube or glass jar filled with water and is allowed to settle. All the fine sand will settle out (four-inch fall) in 30 seconds; the silt in 50 minutes. A rough idea of the grain sizes can be obtained by this test.

8.5.4.4 Dilatancy Test

When a wet pat of soil is shaken vigorously in the hand, the surface will become glassy and show free water. If the pat of soil is then squeezed in the fingers with free water disappearing and the surface becomes dull, the soil is NOT a clay soil, but a silt or fine sand. If the free water on the surface disappears immediately (as walking on the beach adjacent to the water), the soil is most likely a fine sand. If the free water tends to ooze away, the soil is most likely silt.

8.5.5 Determination of Soil Types

Based on the tests and observations described in the previous text, the soil description can be made by compiling the properties of the soil and comparing them to Table 2.

8.6 Minor and/or Usual Characteristics

8.6.1 General

Minor characteristics of the soil sample should be included in its description. These characteristics include occasional traces of organic debris, mention of other types of deleterious materials such as a trash or cinder fill, portions of cobbles or boulders received in the sampler, and pockets and/or lenses of material other than those already mentioned in the description. A minor constituent, such as gravel, which is part of the overall soil matrix, would be described using the modifiers presented in 8.5.1.2 (i.e., trace, little, etc.). In some cases, a minor constituent is scattered throughout the unit and is not part of the matrix. In this case, it would not be described as a minor characteristic. An example would be a lacustrine clay with ice rafted pebbles. Thus, the soil would be described as SILTY CLAY, scattered pebbles, and not SILTY CLAY, little gravel.

8.6.2 Determination of Moisture Content

Moisture descriptions should not generally be used and can be misleading. A general qualitative description can be applied if necessary. The following descriptions can be used:

- Dry: No discernible moisture present.
- Damp: Enough moisture present to darken the appearance, but no moisture on materials adheres to the hand.
- Moist: Will moisten the hand.
- Wet: Visible water present; plastic materials will leave sticky residue in hand when remolded.

As an example, hard clays often appear dry, but may be saturated even above the water table. However, in soft soils or granular soils, the moisture content can be relevant.

8.7 Unified Symbols

The Unified Soil Classification System symbols should be indicated on the final boring and test pit logs. These symbols are based on soil groupings as shown on Figure 1.

8.8 Definitions of General Geologic Descriptions

Generally, a geologic term, in capital letters, should be applied to major soil units, if appropriate. However, in many cases, there is inadequate information to determine a precise geologic description. In these cases, the term "possible" can be applied (i.e., possible TILL).

As appropriate, specific geologic names such as Lawton Clay can be used. However, when used, there should be sufficient specific geologic evidence of the name designation. If in doubt, do not use specific name or add "possible."

8.8.1 Fill

Material placed by humans.

8.8.2 Peat or Organic Matter

Natural deposit composed primarily of organic matter.

8.8.3 Lacustrine Deposits

Deposited in lakes.

8.8.4 Alluvial Soil

Any soil that has been deposited by a stream. Such soils usually contain some sand and rounded gravel or cobbles.

8.8.5 Till

A nonstratified random mixture of clay, silt, sand, gravel and boulders deposited by glaciers. Alternating layers of clayey till and till containing boulders are possible.

8.8.6 Outwash

A stratified alluvial soil transported and deposited by a glacial meltwater stream.

8.8.7 Loess

A uniform aeolian (wind) deposit of silty material having an open structure and relatively high cohesion due to a clay matrix or cementation by calcareous material at grain contacts. A characteristic of loess deposits is that they display nearly vertical slopes.

8.8.8 Pedogenic Soils

Soils that have formed in place due to decomposition of rock. Shales form residual clays. Limestones form lean brown and fat red clays. Granitic rocks form silty sand with angular sand grains.

8.8.9 Colluvial Soil

A nonstratified mixture of angular sand, gravel and boulder size material accumulated at the foot of a slope or on the slope itself chiefly under the influence of gravity.

8.9 Reaction To Dilute Hydrochloric Acid

Some soils show definite evidence of cementation in the intact state. Where this is noted, the degree of cementation may be described as weak or strong. Since calcium carbonate is the most common cementing agent, a report of its presence on the basis of the reaction with dilute hydrochloric acid is important. The intensity of the HCl reaction should be described as none (NR), weak (WR), or strong (SR).

8.10 Report Format

The boring logs used in the report should conform to the general format shown on the attached example boring log, Figure 2. In addition to the logs, all reports should include the Classification System as shown in Tables 1 through 6. Some specific comments on the final boring log include:

- ACTUAL BLOW COUNTS: The actual blow count raw data shall be shown on the logs; i.e., blows per six inches.
- UNIFIED SYMBOL: A column will be used to show the Unified Symbol for the soil.
- PENETRATION/RECOVERY: The amount of sample penetration and recovery will be shown on the log.
- COLUMN FOR LAB TESTS: The locations of all lab tests (except for water contents and Atterberg limits which are shown graphically) should be indicated in shorthand as shown on the Sample Log and on Figure 1.

- SOIL CONTACTS: Under "Description" on Figure 2, horizontal solid and dashed lines are used to represent soil contacts. Solid lines represent soil contacts between major units; dashed lines represent gradation contacts within the same major unit. Inclined lines in the "USCS Class" column represent uncertainty of the depth of actual soil contact.

- TYPED: Logs shall be typed and not hand-lettered unless requested by the client.

- PLOTTING OF BLOW COUNTS AND MOISTURE CONTENTS: All logs shall include a disclaimer relating to these plots due to the liability associated with interpretations that could be applied to these graphs.

TABLE 1

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Relative Density	N, Blows/Foot*	Field Identification
Very Loose	0-4	Easily penetrated with shovel handle.
Loose	4-10	Easily penetrated with 1/4-inch steel probe pushed by hand. Easily excavated with hand shovel.
Compact	10-30	Penetrated 6" or less with 1/4-inch steel probe pushed by hand. Difficult to excavate with hand shovel.
Dense	30-50	Penetrated 2" or less with 1/4-inch steel probe pushed by hand. Must be loosened with pick to excavate.
Very Dense	>50	Cannot be penetrated with 1/4-inch steel probe pushed by hand.
*Judgment required if soils contain gravel and cobbles since the "N" value may be unreliable in determining relative density.		

TABLE 2

CONSISTENCY OF COHESIVE SOILS

Consistency	N (blows/ft.) (unreliable)	Undrained Shear Strength* (psf)	Field Identification
Very soft	0-2	Less than 250	Extrudes from between fingers when squeezed in hand
Soft	2-4	250-500	Molded by light finger pressure
Firm	4-8	500-1,000	Molded by strong finger pressure
Stiff	8-15	1,000-2,000	Indented by thumb
Very Stiff	15-30	2,000-4,000	Indented by thumbnail
Hard	Greater than 30	Greater than 4,000	Difficult to indent with thumbnail
*Undrained shear strength equals one-half the unconfined compressive strength.			

TABLE 3

COMPONENT DEFINITIONS BY GRADATION

Component	Size Range
Boulders	Above 12 inches in diameter
Cobbles	3 to 12 inches
Gravel	3 inches to No. 4 (4.76 mm)
Coarse Gravel	3 inches to 3/4 inch
Fine Gravel	3/4 inches to No. 4 (4.76 mm)
Sand	No. 4 (4.76 mm) to No. 200 (0.074 mm)
Coarse Sand	No. 4 (4.76 mm) to No. 10 (2.0 mm)
Medium Sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine Sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Finer than No. 200 (0.074 mm)

COMPONENT PROPORTION

Descriptive Term	Range of Proportion
Trace	0-5%
Little	5-12%
Some or Adjective*	12-30%

*Adjective: silty, sandy, gravelly, etc.

For example: "SILT, some Sand, trace Gravel" describes a basic soil component of silt (30-50 percent), with minor components of sand (12-30 percent), and gravel (0-5%).

TABLE 4

FINE GRAIN DESCRIPTIONS

Descriptive Term	Plastic Index*	Characteristics
SILT	Less than 2	Rapid pronounced response to shaking test, very low cry strength; has almost a granular appearance and feel; thread cannot be rolled or can only be rolled with great difficulty.
CLAYEY SILT	2-15	Noticeable response to shaking and squeezing test, but appreciably less pronounced than for silt; low medium dry strength; slightly sticky, slightly slick and smooth smear; can roll a thread easily.
SILTY CLAY	15-40	No response to shaking and squeezing test; medium to high dry strength; rather sticky when moistened; moderately slick and smooth smear; can roll a thread when moderately dry.
CLAY	Greater than 40	No response to shaking test; high to very high dry strength; slick and waxy, can roll a thread when quite dry.

*Plastic Index: Liquid limit minus plastic limit.

DESCRIPTION BASED ON FIELD TEST FOR PLASTICITY

Thread Diameter	Descriptive Term
1/4-inch	SILT
1/8- to 1/16-inch	CLAYEY SILT
1/32-inch	SILTY CLAY
1/64-inch	CLAY

TABLE 5

SOIL CLASSIFICATION FOR ORGANIC SOILS

Category	Name	Organic Content (% by wt.)	Group Symbols (See Table 3)	Distinguishing Characteristics For Visual Identification	Range of Laboratory Test Values
ORGANIC MATTER	FIBROUS PEAT (woody, mats, etc.)	75 to 100% Organics either visible or inferred	Pt	Light weight, spongy and often elastic at w_n -- shrinks considerably on air drying. Much water squeezes from sample.	w_n -- 500 to 1200% γ -- 60 to 70 pcf G -- 1.2 to 1.8 $C_c/(1+e_o)$=.4+
	FINE GRAINED PEAT (amorphous)			Light weight, spongy but not often elastic at w_n -- shrinks considerably on air drying. Much water squeeze from sample.	w_n -- 400 to 800% LL -- 400 to 900% PI -- 200 to 500 γ - 60 to 70 pcf G -- 1.2 to 1.8 $C_c/(1+e_o)$=.35 to .44
HIGHLY ORGANIC SOILS	Silty Peat	30 to 75% Organics either visible or inferred	Pt	Relatively light weight, spongy. Thread usually weak and spongy near PL Shrinks on air drying; medium dry strength. Usually can squeeze water from sample readily --slow dilatency.	w_n -- 250 to 500% LL -- 250 to 600% PI -- 150 to 350 γ - 65 to 90 pcf G -- 1.8 to 2.3 $C_c/(1+e_o)$=.3 to .4
	Sandy Peat			Sand fraction visible. Thread weak and friable near PL; shrinks on air drying; low dry strength. Usually can squeeze water from sample readily--high dilatency--"gritty."	w_n -- 100 to 400% LL -- 150 to 300% (plot below A line) PI -- 50 to 150 γ -- 70 to 100 pcf G -- 1.8 to 2.4 $C_c/(1+e_o)$=.2 to .3
ORGANIC SOILS	Clayey ORGANIC SILT	5 to 30% Organics either visible or inferred	OH OL	Often has strong H_2S odor. Thread may be tough depending on clay fraction. Medium dry strength, slow dilatency.	w_n -- 65 to 200% LL -- 65 to 150% (usually plot at or near A line) PI -- 50 to 150 γ -- 70 to 100 pcf G -- 2.3 to 2.6 $C_c/(1+e_o)$=.20 to .35
	Organic SAND or SILT			Threads weak and friable near PL -- or may not roll at all. Low dry strength; medium to high dilatency.	w_n -- 30 to 125% LL -- 30 to 100% (usually plot well below A line) PI -- non-plastic to 40 γ -- 90 to 110 pcf G -- 2.4 to 2.6 $C_c/(1+e_o)$=.1 to .25
SLIGHTLY ORGANIC SOILS	SOIL FRACTION add slightly Organic	Less than 5% Organics combined visible and inferred	Depend upon inorganic fraction	Depend upon the characteristics of the inorganic fraction.	Depend upon inorganic fractions.

TABLE 6

DESCRIPTION OF SOIL BASED ON OBSERVATION AND TESTS

Typical Name	Description
BOULDERS	Larger than 12 inches in diameter
COBBLES	3 to 12 inches in diameter
GRAVEL	No. 4 sieve to 3 inches in diameter
Coarse to Fine SAND	No. 200 to No. 4 sieve sizes; all particles are visible to the naked eye

	Dilatency Test	Test Tube Test	Plasti-city	Dry Strength	Sticki-ness	Shine Test
fine SAND	rapid	30 sec	none	extremely	none	none
SILT	moderate	50 min	none	very low	none	none
SILT	slow	+50 min	slight	low	none	none
CLAYEY SILT	none	hours	medium	low to high	slight	smooth & dull
SILTY CLAY	none	hours	high	medium to high	moderate to high	moderately slick & smooth
CLAY	none	+24 hours	very high	high to very high	high to very high	slick & waxy
organic SILT	moderate	±50 min	slight to medium	low	none	dull & silky
organic CLAY	none	±24 hrs	medium to high	medium to high	moderate to high	dull, smooth & silky

Unified Soil Classification System

Criteria for Assigning Group Symbols and Names			Soil Classification Group	Generalized Group Descriptions
COARSE-GRAINED SOILS More than 50% retained on No. 200 sieve	GRAVELS More than 50% of coarse fraction retained on No. 4 Sieve	CLEAN GRAVELS Less than 5% fines	GW	Well-graded Gravels
			GP	Poorly-graded gravels
		GRAVELS WITH FINES More than 12% fines	GM	Gravel and Silt Mixtures
			GC	Gravel and Clay Mixtures
	SANDS 50% or more of coarse fraction passes No. 4 Sieve	CLEAN SANDS Less than 5% fines	SW	Well-graded Sands
			SP	Poorly-graded Sands
		SANDS WITH FINES More than 12% fines	SM	Sand and Silt Mixtures
			SC	Sand and Clay Mixtures
FINE-GRAINED SOILS 50% or more passes the No. 200 sieve	SILTS AND CLAYS Liquid limit less than 50	INORGANIC	CL	Low-plasticity Clays
			ML	Non-plastic and Low-Plasticity Silts
		ORGANIC	OL	Non-plastic and Low-Plasticity Organic Clays Non-plastic and Low-Plasticity Organic Silts
	SILTS AND CLAYS Liquid limit greater than 50	INORGANIC	CH	High-plasticity Clays
			MH	High-plasticity Silts
		ORGANIC	OH	High-plasticity Organic Clays High-plasticity Organic Silts
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor		PT	Peat

Component Definitions by Gradation

Component	Size Range
Boulders	Above 12 in.
Cobbles	3 in. to 12 in.
Gravel	3 in. to No. 4 (4.76mm)
Coarse gravel	3 in. to 3/4 in.
Fine gravel	3/4 in. to No. 4 (4.76mm)
Sand	No. 4 (4.76mm) to No. 200 (0.074mm)
Coarse sand	No. 4 (4.76mm) to No. 10 (2.0mm)
Medium sand	No. 10 (2.0mm) to No. 40 (0.42mm)
Fine sand	No. 40 (0.42mm) to No. 200 (0.074mm)
Silt and Clay	Smaller than No. 200 (0.074mm)

Samples

SS	SPT Sampler (2.0" OD)
HD	Heavy Duty Split Spoon
SH	Shelby Tube
P	Pitcher Sampler
B	Bulk
C	Cored

Unless otherwise noted, drive samples advanced with 140 lb. hammer with 30 in. drop.

Relative Density or Consistency Utilizing Standard Penetration Test Values

Cohesionless Soils [a]			Cohesive Soils [b]		
Density [c]	N, blows/ft. [c]	Relative Density (%)	Consistency	N, blows/ft. [c]	Undrained Shear Strength [d] (psf)
Very loose	0 to 4	0 - 15	Very soft	0 to 2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250-500
Compact	10 to 30	35 - 65	Firm	4 to 8	500-1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000-2000
Very Dense	over 50	>85	Very Stiff	15 to 30	2000-4000
			Hard	over 30	>4000

(a) Soils consisting of gravel, sand, and silt, either separately or in combination, possessing no characteristics of plasticity, and exhibiting drained behavior.

(b) Soils possessing the characteristics of plasticity, and exhibiting undrained behavior.

(c) Refer to text of ASTM D 1586-84 for a definition of N; in normally consolidated cohesionless soils Relative Density terms are based on N values corrected for overburden pressures.

(d) Undrained shear strength = 1/2 unconfined compression strength.

Laboratory Tests

Test	Designation
Moisture	(1)
Density	D
Grain Size	G
Hydrometer	H
Atterberg Limits	(1)
Consolidation	C
Unconfined	U
UU Triax	UU
CU Triax	CU
CD Triax	CD
Permeability	P

(1) Moisture and Atterberg Limits plotted on log.

Descriptive Terminology Denoting Component Proportions

Descriptive Terms	Range of Proportion
Trace	0-5%
Little	5-12%
Some or Adjective [a]	12-30%
And	30-50%

(a) Use Gravelly, Sandy or Silty as appropriate.

Silt and Clay Descriptions

Description	Typical Unified Designation
Silt	ML (non-plastic)
Clayey Silt	CL-ML (low plasticity)
Silty Clay	CL
Clay	CH
Plastic Silt	MH
Organic Soils	OL, OH, Pt

FIGURE 1

SOIL CLASSIFICATION

TP-1.2-6

PROJECT:

RECORD OF BOREHOLE BH-01

SHEET 1 OF 2

DATUM: MSL

PROJECT NUMBER:

BORING LOCATION:

BORING DATE:

DEPTH FEET	BORING METHOD	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH	NUMBER	TYPE	BLOWS / 6 IN. 140 lb. hammer 30 inch drop	N	REC/ATT	PENETRATION RESISTANCE BLOWS/FT (0 10 20 30 40 50) / WATER CONTENT, PERCENT (Wp — W — Wl)	PIEZOMETER GRAPHIC / WATER LEVEL
0	4-inch HSA	Loose, brownish black (5R 2/2), unstratified fine SAND and SILT, contains roots and other organics, (OL) (TOPSOIL)	OL		121.0 / 120.5 / 0.5							Cast Flush Monument; Concrete; Sand; Bentonite Chips
		Compact, dark yellowish brown (10YR 4/2), unstratified, fine to coarse SAND and SILT, little to trace fine to coarse Gravel, (SM)	SM									
					117.0 / 4.0	1	SS	10-15-11	26	0.5/1.5	■	1-inch PVC
5		Loose to very dense, dark yellowish brown (10YR 4/2), unstratified fine to coarse SAND, some to little fine to coarse Gravel, some to little Silt, (SM) (RECESSIONAL DRIFT - Qvr)										
						2	SS	4-3-4	7	0.9/1.5	■	
10			SM									50/50 Bentonite Chips w/ Natural Backfill
						3	SS	5-7-14	21	0.6/1.5	■	
15												Bentonite Chips
						4	SS	17-33-27	>50	1.2/1.5		
20		Very dense, dark yellowish brown (10YR/4/2), unstratified, fine to coarse SAND and fine to coarse GRAVEL, some to little Cobbles, some to little Silt, trace Boulders, (SM to GM) (RECESSIONAL DRIFT - Qvr)			101.0 / 20.0							
						5	SS	50/0.4	>50	0.4/0.4		Sand
25			SM to GM									1-inch Slotted PVC
						6	SS	12-31-35	>50	1.1/1.5		
30		Log continued on next page										

EXAMPLE

DRILL RIG:

DRILLING CONTRACTOR:

DRILLER:

LOGGED:

CHECKED:

DATE:

Golder Associates

FIGURE 2
RECORD OF BOREHOLE FORM
TP-1.2-6

Golder Associates

Technical Procedure

Number: TP-1.2-18
Title: SAMPLING SURFACE SOIL FOR CHEMICAL ANALYSIS

Prepared by	Approved by	Approved by	Effective Date	Rev. Level
9/4/96	9/4/96	9-4-96	9-12-96	-5-

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1. PURPOSE

This technical procedure establishes uniform methods for sampling surface soils for chemical analysis.

2. APPLICABILITY

This Technical Procedure shall be used by all Golder Associates Inc. (Golder) personnel sampling surface soils for chemical analysis.

3. DEFINITIONS

3.1 Surface Soil

Surface soil is defined as consolidated soil on the land surface or as exposed by an excavation or boring within twenty (20) feet of the land surface.

3.2 Sampling Interval

The sampling interval is defined as the stratigraphic depth represented by the soil sample.

3.3 In Situ Soils

The term in-situ soils refers to soils as they occur in place within the soil column.

4. REFERENCES

Golder Associates Technical Procedure TP-1.2-23, "Chain of Custody."

Golder Associates Technical Procedure TP-1.1-2, "Geodetic Surveys."

5. DISCUSSION

None

6. RESPONSIBILITIES

6.1 Sampling Technician

The Sampling Technician is responsible for completing the sampling assignment in accordance with this Technical Procedure and governing project plans or instructions.

6.2 Task Leader

The Task Leader is responsible, within the guidelines of governing plans or instructions, for determining which soils shall be sampled and for monitoring the sampling process to ensure that procedures and documentation are in accordance with this document.

6.3 Project Manager

The Project Manager or a qualified designee is responsible for determining the type of chemical analyses to be performed on soil samples, and for defining such requirements to project staff through appropriate plans or instructions.

7. EQUIPMENT AND MATERIALS

- Brunton compass, 0° to 360° divisions;
- site map and clipboard;
- bound field logbook or field report forms (Exhibit A);
- assorted standard field equipment (e.g., hammers, post-hole digger, shovel, hand auger) for exposing soils to be sampled;
- measuring tape;
- engineer's rule (six feet long, with 0.10 foot graduations);
- indelible ink pens;
- two-inch wood stakes and colored flagging material;
- if required, sampling equipment appropriate for soils to be analyzed for non-volatile constituents; all such equipment shall be metal (steel, stainless steel or aluminum) and may include hand augers, hand scoops, sampling thiefs, sampling dredges, core samplers, or sampling triers. If volatile constituents are to be analyzed in the soil samples, sampling equipment shall be designed to minimize exposure to the atmosphere. As an example, a metal drive tube appropriate for the size of the soil particles and slightly smaller in diameter than the wide-mouth glass sample bottles may be used, with appropriate sample extraction accessories;
- sample bottles, sized appropriately for the desired sample and soil particle size;
- Chain of Custody records, seals, and sample labels as required by procedure TP-1.2-23, "Chain of Custody";
- appropriate decontamination solutions such as organic free distilled/deionized water, non-phosphate detergent, tap water;
- decontamination equipment such as brushes and sprayers, and drums or applicable plan or containers for capturing decontamination waste solution; and

- thermometer controlled in accordance with Golder's quality procedure for calibration of measuring and test equipment.

8. PROCEDURE

8.1 Sample Location

Location mapping shall be to the level of detail required by the applicable plan or instructions, and sound engineering and geologic practice. If the base map for the sampling site is of sufficient accuracy, the sample location may be approximated within a 10' radius and physically identified by a wood stake marker. If the base map does not have the required accuracy, locations shall be described by either (1) tape measurement from three permanent features identifiable on the base map; (2) measured along a compass bearing from a permanent feature; or (3) triangulated with compass bearings from three permanent features identifiable on the base map. Compasses may be used only when the site does not contain magnetic or large metal objects. The locations so derived will be identified by a wood stake marker with test pit designation, and recorded as described in Section 8.2. When required by project directive, all location markers will be geodetically surveyed in accordance with TP-1.1-2, "Geodetic Surveys."

8.2 Documentation

Final sample location, sample types and numbers, and relevant sampling events (including on-site personnel and all visitors) shall be recorded on Field Report forms (Exhibit A) or bound field logbooks. Events shall be recorded chronologically, with the time of each event noted.

8.3 Decontamination

All sampling equipment shall be decontaminated prior to the start of sampling activities and between each use. Unless other decontamination procedures are specified in the project plans or instructions, the following steps will be followed. The sampling equipment shall be washed with non-phosphate detergent solution. Brushes shall be used to aid in removing all visible soil or grit. A tap water rinse shall be used to thoroughly remove all detergent solution. The final rinse shall be with organic free distilled/deionized water. All waste wash solutions shall be captured and disposed of in the manner defined by the applicable project plan or instruction, in compliance with applicable regulatory requirements.

8.4 Sampling

The soils to be sampled shall be exposed prior to sample acquisition. If the upper six inches of soils are to be sampled, then surface vegetation shall be removed. If samples are to represent discrete depth intervals below land surface, then overlying soils shall be removed by a shovel, post-hole digger, hand auger, or other appropriate method to the desired interval. For loose watery sediments from stream bottoms, a pond sampler, sampling dredge, pail, or ladle can be used. The sediment sample should be allowed to settle and the extra water decanted prior to transferring samples to containers. For cohesive wet or dry stream-bottom samples, a vertical-pipe, sampling dredge, or core sampler can be used and driven into the stream bed to the

selected depth. An in-situ soil sample shall be obtained from the desired sampling interval. If the required analyses do not include volatile constituents, an in-situ soil sample can be obtained using a hand scoop, hand auger, sampling thief, or sampling trier. The soils shall be visually inspected and immediately put into the appropriate sample bottle as required by the governing project plan or instruction. No preservatives shall be added to the sample.

If soils are to be analyzed for volatile constituents, the sample shall be obtained from the desired interval using a drive tube sampler. Contact between the atmosphere and the sample must be minimized; the drive tube sampler shall be driven into the materials with a hammer, and the sample extruded directly into the appropriate sample bottle. An air-tight cap shall be immediately placed on the sample bottle; no preservatives shall be added.

If a backhoe is used to expose sampling intervals for analysis of volatile constituents, a hand auger or drive tube may be used to sample the test pit walls or floor when the test pit is less than four (4) feet deep. If the test pit is greater than four (4) feet, a relatively undisturbed sample may be obtained from the backhoe bucket using a drive tube sampler.

8.5 Composite Samples

If soil sample composites are to be established, equal volumes of individual samples shall be added together for the composite sample. At least three small, equal sized samples from several points within a five foot radius shall be collected. Samples will be placed into a clean, decontaminated stainless steel container and each portion will be stirred together into one composite. The composite sample shall be given an individual sample number, and the sample number of each contributing sample recorded in the field logbook or Field Report form.

8.6 Sample Labeling, Handling, and Shipment

Samples shall be immediately labeled, sealed with a tamper-proof seal and relevant data recorded on individual Chain of Custody forms as required by TP-1.2-23, "Chain of Custody." Samples shall be placed in a chilled cooler at approximately 4° C, $\pm$ 2°C, as soon as possible. A thermometer shall be placed in the cooler for temperature monitoring purposes. The cooler shall remain in sight of the Sampling Technician at all times, or be kept in locked storage, as required by TP-1.2-23.

Samples shall be forwarded to the analytical laboratory accompanied by the Chain of Custody record, in compliance with TP-1.2-23 requirements. When samples are ready for shipment, the Task Leader shall release the sample to the carrier, who shall also sign the custody form. The Chain of Custody form is in triplicate. One copy of the form shall be retained by the Task Leader; the original form and the remaining copy shall be shipped with the sample. Upon receipt at the laboratory, the laboratory custodian shall verify the integrity and identification of the sample, sign the form, and return the original copy to the Task Leader or Project Manager. All originals shall be retained in the project records.

8.7 Site Restoration

Any excavation or hole made to obtain samples shall be backfilled with the excess material removed from the hole, unless other requirements are invoked by governing plans or instructions.

8.8 Field Change Request

Variation from established procedure requirements may be necessary due to unique circumstances encountered on individual projects. All variations from established procedures shall be documented on a Field Change Request form (Exhibit B) and reviewed by the Project Manager and the QA Manager.

The Project Manager may authorize individual Field Engineers to initiate variations as necessary. If practical, the request for variation shall be reviewed by the Project Manager and the QA Manager prior to implementation. If prior review is not possible, the variation may be implemented immediately at the direction of the Field Engineer, provided that the Project Manager is notified of the variation within 24 hours of implementation, and the Field Change Request is forwarded to the Project Manager and QA Manager for review within 2 working days of implementation. If the variation is unacceptable to either reviewer, the activity shall be reperformed or action shall be taken as indicated in the Comments section of the Field Change Request form.

All completed Field Change Request forms shall be maintained in the project records.

GOLDER ASSOCIATES
4104 148th Avenue NE
Redmond, Washington 98052

(206) 883-0777

DATE	JOB NO
PROJECT	
LOCATION	
CONTRACTOR	OWNER
WEATHER	TEMP °at AM °at PM
PRESENT AT SITE	

TO _____

_____

_____

THE FOLLOWING WAS NOTED:

COPIES TO _____

_____

FIELD REPORT

SIGNED _____

EXHIBIT **A**
FIELD REPORT
TP 1.2-18

PROJECT NO. IP3 1024 DRAWING NO. 48020 DATE 1/18/94 DRAWN BY TK

Golder Associates

FIELD CHANGE REQUEST

Golder Associates

Job/Task Number: _____

Other Affected Documents: _____

Requested Change: _____

Reason for Change: _____

Change Requested by: _____ Date _____

Reviewed by: _____ Date _____
GAI Project Manager

Comments: _____

Reviewed by: _____ Date _____
GAI QA Manager

Comments: _____

Golder Associates

Technical Procedure

Number: TP 1.2-26, Revision 0
Title: SURFACE WATER SAMPLING METHODS

Prepared by	Approved by	Approved by	Effective Date	Rev. Level
			5/1/98	0

1. PURPOSE

This document describes the sampling protocols used by Golder Associates to collect surface water samples. It contains sampling instructions and information concerning appropriate containers, preservation, and handling of water quality samples.

2. APPLICABILITY

This technical procedure is applicable to any persons involved in the collection of surface water samples. It is applicable to all geographic areas.

3. DEFINITIONS

3.1 Analytical Request Form

Standard form provided by analytical laboratories. This form is filled out by the person collecting samples and is used to indicate how each sample is to be analyzed. This form is often combined with the Chain-of-Custody Form in a single document.

3.2 Chain-of-Custody Form

Standard form used to track the movement of sample containers from the time they leave the field until they arrive at the specified laboratory. The Chain-of-Custody form provides a clear record of sample transport and handling, thereby reducing the risk of sample loss during transport. This form may be combined with the Analytical Request Form in a single document.

3.3 Chemical Analysis

Analytical procedure used to measure the *amount* of a certain compound, or group of compounds, present in a sample.

3.4 Preservatives

Preservatives are used to maintain sample integrity from the time a sample is collected until it is analyzed. Sample preservation may involve adding acid or other fixatives to collected waters or simply keeping them refrigerated. Sample-specific requirements are outlined in this document (Table 1); preservatives, when required, are provided by the analytical laboratory.

3.5 Sample Bottles

Sample bottles are containers specifically designed and prepared for storing liquid samples. Sample bottle type, material, size, and type of lid are specific for particular groups of analytes. Sample bottles must be properly cleaned and prepared by a laboratory or the manufacturer. Table 1 summarizes bottle type and preparation requirements.

3.6 Surface Water Sample

A surface water sample is defined as water acquired from a surface water body for chemical analyses that is representative of surface water within the cross-section of a lake, stream, or river being sampled.

3.7 Quality Assurance/Quality Control (QA/QC)

Quality Assurance refers to a detailed protocol used to produce high quality products, while Quality Control refers to the process by which this protocol is tested to ensure that final products are of the specified quality. With reference to water sampling, QA protocol includes the use trained personnel, proper sampling methods, clean containers and equipment, proper sample preservation and transportation and detailed documentation of the entire process; field, travel and other assorted test blanks are used for Quality Control testing.

3.8 Sample Types

3.8.1 Grab Samples

Sample containing water collected during a single sampling event (i.e., water taken from a given place at a given time).

3.8.2 Composite Samples

Sample containing a mixture of water collected from multiple locations or from different times at the same location.

3.8.3 Equipment Blanks

Equipment blanks are used to detect contamination from sampling equipment. They are prepared by rinsing precleaned equipment with deionized water and collecting the rinsate into an appropriate container.

3.8.4 Field Blanks

Field blanks are used to detect contamination during sample collection and transport. They are prepared during a sampling event by filling the appropriate container with deionized water. Field blanks are usually used in situations where there is reason to suspect that contamination will occur during sample collection and transport.

3.8.5 Travel Blanks

Travel blanks detect sample contamination during transport. Travel blanks consist of pre-filled bottles provided by the analytical lab. They accompany empty sample bottles to the field site,

where they are left intact and unopened inside the shipping cooler. The unopened travel blanks are then returned to the analytical lab to be analyzed along with collected samples.

3.8.6 Field Spikes

Field spikes are used to measure the performance of the complete analytical system, including sample handling, preservation and storage, as well as interference from the sample matrix. To generate a field spike, field personnel fill the usual sampling container with sample, leaving a small amount of space at the top. They then add a specified amount of the chemical or compound of interest to the bottle and submit it with the rest of the samples. In general, field spikes are not recommended due to the logistical difficulties of transporting concentrated solutions in the field. If there is reason to doubt the performance of the sampling system, then a separate study involving field spikes should be carried out.

3.8.7 Standard Reference Samples

Standard reference samples, or blind QA samples, are samples of known concentration that are submitted to the analytical lab as a normal sample. The lab is not informed about the identity of the sample until after all analyses are complete.

3.8.8 Replicate Samples

Replicate samples are used to evaluate within-site variation. Replicate samples are collected by filling multiple containers at a single site. They are labeled and preserved individually and are submitted separately to the analytical laboratory. Check the field sampling plan (FSP) for the number of replicate samples required per sampling site.

3.8.9 Split Samples

Split samples are used to check analytical variation. A single sample (e.g. grab) is collected and is split into two sample containers. These are labeled and preserved individually and are submitted separately to the analytical laboratory.

4. REFERENCES AND SUGGESTED READING

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U.S. Geological Survey, 1982, Measurement and Computation of Streamflow: Volume 1 and 2. Washington, D.C.

U.S. EPA, 1986, *Test Methods for Evaluating Solid Waste - (SW-846)*, 3rd Edition (Final Update III, December 1996), U.S. EPA/Office of Solid Waste, Washington, D.C.

40 CFR 136, U.S. EPA, *Guidelines Establishing Test Procedures for the Analysis of Pollutants.* Title 40 Part 136 of the Code of Federal Regulations.

5. DISCUSSION

5.1 Sampling Procedures

Samples are collected as representative pieces of a larger puzzle. Ideally, they should describe all of the characteristics of the larger body from which they originate, which, by its very definition, is too large to analyze directly. As a result, it is very important to follow a well-organized sampling plan and to preserve sample integrity throughout the collection and transportation process.

5.1.1 General Practices

Usually, analytical laboratories will provide pre-cleaned sample containers, shipping containers, required forms for sample submission and specific sample shipping instructions. It is important to check with the lab that these arrangements have been made. Similarly, field crews should familiarize themselves with the FSP before initiating a sampling program. By reviewing the instructions, personnel can ensure that they have all of the equipment they require to fulfill the objectives of the sampling program. Field crews will also then be aware of the types of samples they are being asked to collect, be they grab samples, composite samples or QA/QC test blanks. Finally, sample crews should organize themselves such that samples will be collected and shipped during the early part of the work week to avoid delays caused by weekend shipping or make specific arrangements with laboratories to receive samples on the weekend.

Sampling Locations. General sampling locations are described in FSP. However, field crews will have a certain degree of freedom in choosing the exact locations from which to take the samples. When selecting these sites, personnel should consider the layout of the local

environment, project objectives and personal safety. They should then choose areas that are both easily accessible and representative of the target waterbody or waterbodies.

Once sampling sites have been identified, they must be described relative to permanent landmarks, such as groundwater wells, outfalls or distinctive landscape features; measuring the distance from permanent landmarks to each site with an appropriate compass heading is recommended. Ideally, one should try to use the Global Positioning System (GPS), but locations can also be recorded as the perpendicular distance from the shoreline and the distance upstream or downstream of a permanent landmark.

Sample Collection. Where possible, start sampling at the least contaminated site (i.e., the reference site) and move from there to the more contaminated areas.

If sampling equipment must be used, then it must be cleaned before and after use. This may involve rinsing with ambient water, cleaning with soap and water, acid washing, rinsing with organic solvents or pure water, or a combination of these. Refer to the FSP for details.

Each sample bottle must be labeled at the time of collection with either waterproof, permanent marker or using pre-printed waterproof labels. See section 5.3.2 for details of label format.

When sampling, it is important to rinse sample containers 3 times before taking a sample. Rinse each bottle by partially filling it with ambient water, loosely attaching the cap and shaking the bottle; drain the water and repeat the process. As a general rule, rinse plastic bottles unless instructed otherwise by the analytical laboratory. Bottles that already contain the appropriate preservatives and containers for the following analyses should *not* be rinsed prior to taking the sample:

- volatile organic compounds (VOCs), including total volatile hydrocarbons (TVH),
- total extractable hydrocarbons (TEH),
- BTEX (benzene, toluene, ethylbenzene and xylene)
- total petroleum hydrocarbons (TPH; includes TVH, TEH and BTEX); and
- bacteriological testing (e.g., fecal coliforms).

Carefully fill sample containers, without splashing, leaving only enough space for preservatives (if required - see Table 1). Be sure to keep hands and fingers downstream of bottle opening and sample upstream of bridges, boats and yourself to prevent sample contamination. The samples will be collected in flowing water, unless otherwise specified in the FSP, from areas where the flow is well mixed. If no preservatives need to be added, completely fill the bottles and cap tightly. There should be as little air in the containers as possible, as it can affect sample integrity.

Whenever possible, fill sample containers directly from the source, without using an intermediate container to transfer the sample. This avoids potential sample contamination due to carry-over from one sample to the next. Also, take care to avoid contaminating sample

waters through contact with rubber, oil, gasoline and other machinery fluids, metal-based paints, cigarette ash, paper tissues and other such material.

Sample bottles should then be stored appropriately (Table 1). In most cases, this will involve keeping the sample cool (4°C) and dark. Samples should never be allowed to freeze and should be shipped as soon as possible to the appropriate analytical lab, in coolers with reusable ice packs. Avoid using bags of ice purchased from convenience stores; the water that leaks out of these bags as the ice melts may ruin sample labels.

Chain-of-Custody and Analytical Request forms must accompany all samples (one set of forms per sample shipment). Prior to shipping, the person submitting the sample should inform the analytical lab by telephone, e-mail, or fax that the samples will be arriving. As well, he or she should check back later to confirm arrival of the samples and to explain analysis requests if needed.

5.1.2 Sampling for Metals

When collecting samples for a metals analysis, it is important that sample waters do not come into contact with any metal products. Samples for metals analysis also have other stringent collection and preservation requirements (Table 1). For example, waters collected for dissolved metal analysis have to be field-filtered using a 0.45 μm polycarbonate or cellulose acetate filter and then preserved with acid. Field-filtering should be conducted as soon as possible after sampling. If field-filtering is not possible, then acid preservatives should not be added and the laboratory should be notified to filter the sample as soon as possible after sample receipt.

Field crews need to be aware of these restrictions to ensure that samples are taken correctly and that they maintain their integrity until they can be analyzed. Special sampling and preservation instructions should be included in the FSP.

5.1.3 Sampling for Organic Chemicals

In addition to the general principles outlined above, there are specific protocols associated with sampling for organic measurements. As described above, sample bottles should *not* be rinsed prior to taking samples for certain organics analyses. It is also very important to completely fill each bottle, as certain organics will volatilize into the overlying air space and will be lost after opening the bottle. Finally, proper containers must be used when sampling for organics, since some bottles will release or absorb organic compounds when filled with water. Generally, glass containers are used, but certain tests may require other materials; be sure to obtain the appropriate sample bottles from the analytical laboratory and refer to the FSP.

5.2 Sample Documentation

Proper sample documentation is important because lack of careful documentation can lead to misunderstandings and questionable test results. Components of proper documentation of field activities are described below.

5.2.1 Field Notebooks

Field notebooks must be kept, describing all field activities. Format of field notes and information to be recorded should follow Golder Associates' specific guidelines. During the field survey, field notes must be maintained in a permanent, safe location at the field site where samples are collected. If possible, new entries in the field note book should be photocopied at the end of each field day and copies should be stored in a safe place.

5.2.2 Sample Labels

Sample labels must contain the following information:

- Sample identifier (name of site or sample code);
- Date (written as day/month/year; month abbreviated as three letters) and time (24 hour clock) of collection;
- Initials of collector; and
- Analysis requested (this is usually done by the analytical laboratory in the form of a code on the sample bottle).

Fill out labels at the time of collection using waterproof ink and affix a label to each sample container. Plastic bottles may be labeled by writing directly on the bottle using a waterproof marker; however, this approach is not recommended if samples are transported over long distances (friction may rub label off) or if bags of ice are used to keep the samples cool (water may damage label information).

5.2.3 Custody Seals

Numbered seals should be used (when required by the FSP) to detect tampering with samples in transit. Attach the seal in a way that it is necessary to break it to open the cooler containing the samples. The number on the custody seal should be recorded in the field note book and on the Chain-of-Custody and Analytical Request forms

5.2.4 Chain-of-Custody Forms and Analytical Request Forms

Chain-of-Custody and Analytical Request forms must accompany all samples submitted for analysis in accordance with procedure TP1.2-23, "Chain of Custody". These forms are usually combined as a single document. An example of Golder Associates' combined Chain-of-Custody and Analytical Request Form is provided in Exhibit 1.

The combined form must be filled out completely and the white and yellow copies should be sent along with the samples being submitted. Field personnel should retain the pink copy after it is signed by the shipper. Depending on the shipping container, these forms can either be enclosed inside the sealed container or attached firmly to the outside of the container. In either

case, it is advisable to enclose the forms within a waterproof plastic bag to guard against damage. It is important that each person having custody or control of the samples identify themselves on this form. This means the person collecting the sample; intermediate persons involved in packaging, storing or transporting the sample; and the person accepting the sample on behalf of the analytical lab must all be identified.

5.3 Sample QA/QC

The main goal of sample QA/QC is to monitor for various sources of contamination during sample collection, transport and analysis. This process will involve the use of field, travel and other test blanks. QA/QC programs are designed on a project-specific basis. Details of individual QA/QC programs are described in the FSP.

6. EQUIPMENT AND MATERIALS

6.1 Sampling

The following is a list of sampling equipment generally recommended for surface water sampling:

- Pre-cleaned sample bottles and required preservatives (usually supplied by the analytical laboratory)
- Coolers and reusable ice packs
- Waterproof labels and permanent markers
- Sampling equipment (e.g. Kemmerer or Van Dorn bottles)

6.2 Site Location and Sample Documentation

For proper sample site identification and sample documentation, field crews may need:

- Bound, water-proof field logbooks
- Maps
- Air photos
- Indelible ink pens and pencils
- Long tape measure
- Survey flagging tape
- Compass
- GPS unit
- Combined Analytical Request and Chain-of-Custody forms

6.3 Health and Safety

The following health and safety equipment is recommended for surface water sampling:

- Waders and waterproof gloves
- Heavy socks, warm pants, rain gear and other articles of clothing suitable for prolonged water work
- Extra set of clothes
- First aid kit
- Approved personal floatation device for deep water or boat work

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TABLE 1

SAMPLE CONTAINER CODES, TYPES, VOLUMES, PREPARATION,
SPECIAL HANDLING, PRESERVATION, HOLDING TIMES

Analysis	Cont. Code	Containers, Water	Handling and Preservation	Holding Time
Volatile Organics	V	2, 40ml glass vial teflon lined septum	Store 4±2°C; handle upwind from equip. Fumes, no headspace permitted; Pres with HCl to pH <2 for volatile aromatics	7 days 14 days (HCl pres.)
Base/Neutral and Acid Extractable Organics	SV	2, 1 liter amber glass, teflon lined cap	Store 4±2°C; handle upwind from equip. fumes; no contact with plastics, gloves	7 days until extraction 40 days thereafter
Organochlorine Pesticides and PCBs	P	2, 1 liter amber glass, teflon lined cap	Store 4±2°C; handle upwind from equip. fumes; no contact with plastics, gloves	7 days until extraction 40 days thereafter
Herbicides	H	2, 1 liter amber glass, teflon lined cap	Store 4±2°C; handle upwind from equip. fumes; no contact with plastic, gloves	7 days until extraction 40 days thereafter
Total Fuel Hydrocarbons (Fuel Fingerprint)	TH	1, 125 ml amber glass, teflon lined septum	Store 4±2°C; handle upwind from equip. fumes, no headspace permitted; pres with HCl to pH <2	14 days
Total Petroleum Hydrocarbons or Oil and Grease	OG	1, 1 liter glass, teflon lined cap	Store 4±2°C; handle upwind from equip. fumes, no contact with gloves or plastics; pres with HCl to pH <2	28 days
Cyanide (total)	CN	1,1 liter plastic	Store 4±2°C; pres with NaOH to pH >12	14 days
Sulfide (total)	S	1, 1 liter plastic	Store 4±2°C; pres with ZnOAC/NaOH to pH >12	7 days
Chloride, Sulfate, pH Conductivity and Total Dissolved Solids	MA	1,1 liter plastic	Store 4±2°C.	28 days (Chloride, sulfate and conductivity) Analyze on-site (pH) 7 days (TDS)

TABLE 1

SAMPLE CONTAINER CODES, TYPES, VOLUMES, PREPARATION,
SPECIAL HANDLING, PRESERVATION, HOLDING TIMES,

Analysis	Cont. Code	Containers, Water	Handling and Preservation	Holding Time
Major Cations and Metals	TM	1,1 liter plastic	0.45 um filter, pres with HNO_3 to pH <2	6 months (28 days for mercury)
Gamma Emitting Radionuclides	GR	2, 1 liter plastic	0.45 um filter, pres with HNO_3 to pH <2	6 months (record exact date/time of sampling for calculation of half-life decay)
Alpha Emitting Radionuclides	AR	2, 1 liter plastic	0.45 um filter, pres with HNO_3 to pH <2	6 months (record exact date/time of sampling for calculation of half-life decay)
Beta Emitting Radionuclides	BR	2, 1 liter plastic	0.45 um filter, pres with HNO_3 to pH <2	6 months (record exact date/time of sampling for calculation of half-life decay)
Total Phosphorus, Ammonia-N, Nitrate/nitrite-N, COD and TOC	TP	1, 1 liter plastic	Store 4±2°C; pres with H_2SO_4 to pH <2, store in dark	28 days
Orthophosphate	OP	1, 1 liter plastic	0.45 um filter, store 4±2°C	48 hours

CHAIN OF CUSTODY RECORD

PROJ. NO.	SITE/LOCATION					NO. OF CON-TAINERS	AMOUNT/ PRESERVATIVE							SEAL NO.	SEAL INTACT ? (Y or N)	REMARKS (with initials)
SAMPLERS: *(Signature)*																
STA. NO.	DATE	TIME	SAMPLE TYPE	MEDIA	SAMPLE IDENTIFICATION											

Relinquished by: *(Signature/Firm)*	Date/Time	Received by: *(Signature/Firm)*	Relinquished by: *(Signature/Firm)*	Date/Time	Received by: *(Signature/Firm)*
Relinquished by: *(Signature/Firm)*	Date/Time	Received by: *(Signature/Firm)*	Relinquished by: *(Signature/Firm)*	Date/Time	Received by: *(Signature/Firm)*
Relinquished by: *(Signature/Firm)*	Date/Time	Received by: *(Signature/Firm)*	Date/Time	Remarks (attachments if necessary)	

EXHIBIT **1**

CHAIN OF CUSTODY FORM

DEPUE/SURFACE WATER/L

PROJECT NO. 953 8222.3.3 DRAWING NO. 77288 DATE 3/23/98 DRAWN BY EA

Golder Associates

Golder Associates

Technical Procedure

Number: TP-1.2-24
Title: SEDIMENT SAMPLING

Prepared by	Approved by	Approved by	Effective Date	Rev. Level
			11-16-93	0
	3-21-96	4/4/96	4-12-96	-1-

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TP-1.2-24
Rev. 1

Record of Revision

Section	Description
8.7 & Exhibit A	New section to include Field Change Request requirements

1. PURPOSE

This document establishes procedures for sampling sediment. It also outlines operational and planning procedures for these activities, and provides guidance for subsequent chemical, biological, and physical characteristic testing of sediment samples.

2. APPLICABILITY

This technical procedure is applicable to all Golder Associates Inc. (GAI) personnel involved with sediment sample planning and sampling activities.

3. DEFINITIONS

3.1 Sediment Samples

Sediment samples consist of samples taken from material underlying streams/rivers, lagoons, ponds/lakes, estuaries, bays, harbors, channels and beach areas.

4. REFERENCES

4.1 Golder Associates Inc. Technical Procedures

TP-1.2-23, "Chain of Custody"
TP-1.2-18, "Sampling Surface Soil for Chemical Analysis"

4.2 Guidance Documents

EPA, 1986, Recommended Protocols for Measuring Selected Environmental Variables in Puget Sound, TC-3991-04, Final Report. U.S. Environmental Protection Agency, Puget Sound Estuary Program, Tetra Tech, Inc., Bellevue, Washington.

DER, 1992, Standard Operating Procedures for Laboratory Operations and Sample Collection Activities, DER - QA-001/92, State of Florida, Department of Environmental Regulation, Quality Assurance Section, Tallahassee, Florida.

NOAA, 1992, Standard Operating Procedures for the Analysis of Petroleum Hydrocarbons in Seawater, Marine Sediments, and Marine Faunal Tissue at the Auke Bay Laboratory, National Oceanographic and Atmospheric Administration, National Marine Fisheries Service, Alaska Science Center, Auke Bay Laboratory, Juneau, Alaska.

5. DISCUSSION

Sediment samples shall be collected in quantities and types as directed by the Project Manager, or Task Manager, and governing project documents prepared for sampling activities. All non-dedicated equipment used for field sampling shall be decontaminated before and after each use as specified in Section 8.2. Samples shall be collected in properly prepared containers, appropriately labeled, and sealed in accordance with Golder technical procedure TP-1.2-23, "Chain-of-Custody". Samples for chemical and biological analysis shall be stored and transported in insulated shuttles under the appropriate conditions (see Tables 1 and 2).

There are a variety of techniques that are discussed in this procedure. Additional information and discussion on sediment sampling and analysis can be found in the following guidance documents: Puget Sound Protocols (EPA, 1986), Laboratory Operations and Sample Collection Activities (DER, 1992) and Standard Operating Procedures for the Analysis of Petroleum Hydrocarbons in Seawater, Marine Sediments, and Marine Faunal Tissues at the Auke Bay Laboratory (NOAA, 1992).

6. RESPONSIBILITIES

6.1 Project Manger

The Project Manager shall be responsible for:

- Determining or confirming the location and the proper depth of the sediment sample;
- Selection and contracting the services of laboratory testing subcontractors;
- Project scheduling;
- Providing guidelines or specific work instructions for technical requirements, especially those beyond the scope of the applicable technical procedures; and
- The planning and completion of sediment sampling and analysis to the satisfaction of governing project documents and the client's requirements.

6.2 Task Leader

Task Leaders are responsible for:

- Direct supervision of personnel collecting sediment samples;
- Ensuring that equipment and materials are clean and available to permit accomplishment of the task;

- Review and approval of daily work reports; and
- The planning and completion of sediment sampling operations to the satisfaction of governing project documents and the client's requirements.

On smaller projects, the Task Leader's responsibilities may be assumed by the Project Manger.

7. EQUIPMENT

7.1 Sampling Equipment

- Sample containers, labels and packing materials (see Tables 1 and 2).
- Scoops, corers, dredges, as appropriate;
- Extendable pole;
- Van Veen Sampler with hydrowire and swivel;
- Decontamination wash and rinse solutions;
- Bound field notebook; and
- EMDI - electrical measuring and distance instrument.

7.2 Health and Safety Equipment

- Hard hat;
- Steel toed rubber boots;
- Suitable clothing for wet and/or windy conditions
- Tyvek or other protective clothing, respiratory protection devices as required by applicable site health and safety plans;
- Protective eyeware;
- OVA, OVM, HNU or other monitoring equipment as required by applicable health and safety plans; and
- Hearing protection.

8. PROCEDURES

8.1 Methods

Sediment sampling techniques fall into three categories: scoops, corers, and dredges. Beach sampling with no or a minimal amount of overlying water will be collected using scoops in a manner similar to surface soil sampling described in Golder technical procedure, TP 1.2-18, "Sampling Surface Soil for Chemical Analysis". The following procedure describes sampling sediment with either less than four feet (shallow) or greater than four feet (deep) of overlying water.

- Sediment sampling with shallow overlying water can be accomplished by attaching the scoop to an extendable pole. In this manner, samples will be collected if they are several feet from shore or if sampled with the aid of a boat. The sampler may also wade into the water body to obtain a scoop sample providing the sampler's position is downstream from the direction of the flow and that the sampler's activity does not disturb the sample prior to sampling.

- When the sediment is greater than 4 feet below the surface of the over-lying water body, a modified van Veen dredge sampler will be employed. The sampling device will be attached to the hydrowire using a ball-bearing swivel.

8.2 Decontamination of Environmental Sampling Equipment

Environmental sediment sampling equipment must be decontaminated prior to obtaining each sample. Unless specified otherwise in project plans, tools and equipment shall be decontaminated by steam cleaning and/or by washing with a non-phosphate detergent and rinsing with distilled water. For inorganic analyses, a weak hydrochloric acid (HCl) solution shall be used for the second wash. For organic analyses, reagent grade methanol shall be used for the second wash. A final rinse with organic-free deionized water shall complete the decontamination. Wash and rinse fluids shall be collected; responsibility for disposal shall be defined and performed in accordance with the governing project plans. The task leader shall be responsible for inspecting all decontaminated equipment to ensure that decontamination procedures are adequate.

8.3 Positioning

If sampling from a boat, samples shall be taken from the bow, away and upwind from any gasoline outboard engine. If sampling by wading, collect samples upstream or perpendicular to currents. Sampling at or near structures may not provide representative data because of unnatural flow patterns. Positioning of off shore sample locations will be determined on the day of sampling by surveying a fix-shore location and measuring the distances for each sampling location. Positioning from a boat to the fixed-shore location will be accomplished using short-range electrical measuring and distance instrument (EMDI). Specifically, sampling locations will be positioned by anchoring the boat along transects, using the shoreline to determine the approximate distance with verification being

performed using EMDI on-shore. Accurate sampling position determinations will provide the ability to reposition with a high degree of accuracy at a later date, if necessary.

8.4 Sampling Depth

The sampling design should consider that in order to obtain a sediment sample at the desired depth, excess depth may need to be sampled. If feasible, the sampling depth should be designed to consider sampling approximately two times the needed depth. Excess sampling depth will provide that a minimum penetration depth is obtained with each sampling and that a representative and comparable sample can be obtained for any given location. Sampling additional depth will also allow the sampler to characterize the vertical profile of the sediment to a greater degree. The sediment characteristics are logged in the field notebook, and the portion of the sample below the design depth can be discarded.

8.5 Sediment Sampling

The sampling device will be attached to a hydrowire if sampling depths are greater than four feet below overlying water. The hydrowire, attached to a swivel, will minimize the twisting forces on the sampler during deployment and ensure that the proper contact is made with the bottom. The sampler shall be lowered through the water column at a controlled speed of approximately 1 foot/second. After the sediment sample is taken, the sampler should be raised very slowly off the bottom and retrieved at approximately 1 foot/second. Before the sampler breaks the surface the vessel should head into any waves to minimize vessel rolling and swinging of the sampler and accidental contact with the vessel. After the sampler is secured on deck, the sediment sample shall be inspected carefully before being accepted. The following acceptability criteria shall be satisfied:

- The sampler is not overfilled with sample such that the sediment surface is pressed against the top of the sampler
- Overlying water is present indicating minimal leakage
- The overlying water is not excessively turbid indicating minimal sample disturbance
- The sediment surface appears to be relatively undisturbed, indicating a lack of channeling or sample washout
- The desired penetration depth is achieved.

If the sample does not meet the above criteria , it shall be rejected and a new sample shall be collected. Once the sample is judged to be acceptable, the overlying water must be removed. The recommended procedure for water removal is to siphon it off near one side of the sampler using disposal tubing and pump. Decanting or draining the water through the sampler will disturb the sediment sample and are unacceptable procedures for removing overlying water.

8.6 Field Logging

Sample identification, subsampling for chemical analyses, and decontamination procedures shall be in accordance with planning documents. Field data shall be carefully documented in a bound field notebook, referencing each sampling location to a known coordinate. The time, date, water depth (corrected for mean tide elevation), and sample location identification number shall also be noted. The following observations shall also be recorded in the field notebook:

- Penetration depth;
- Gross characteristics of the sediment and its profile:
    - Texture
    - Color
    - Biological structures
    - Presence of debris
    - Presence of oily sheen
    - Obvious Odor
    - Vertical changes in sediment characteristics

8.7 Field Change Request

Variation from established procedure requirements may be necessary due to unique circumstances encountered on individual projects. All variations from established procedures shall be documented on Field Change Request (Exhibit A) and reviewed by the Project Manager and the QA Manager.

The Project Manager may authorize Task Leader to initiate variations as necessary. If practical, the request for variation shall be reviewed by the Project Manager and the QA Manager prior to implementation. If prior review is not possible, the variation may be implemented immediately at the direction of the Task Leader, provided that the Project Manager is notified of the variation within 24 hours of implementation, and the Field Change Request is forwarded to the Project Manager and QA Manager for review within 2 workingdays of implementation. If the variation is unacceptable to either reviewer, the activity shall be reperformed or action shall be taken as indicated in the Comments section of the Field Change Request form.

All completed Field Change Request forms shall be maintained in project records.

FIELD CHANGE REQUEST

Golder Associates

Job/Task Number: _____

Other Affected Documents: _____

Requested Change: _____

Reason for Change: _____

Change Requested by: _____ Date _____

Reviewed by: _____ Date _____
GAI Project Manager

Comments: _____

Reviewed by: _____ Date _____
GAI QA Manager

Comments: _____

TABLE 1

Recommended Sample Sizes, containers, Preservation Techniques, and Holding Times for Conventional Analyses

Parameter	Minimum Sample Size (g)[a]	Container[b]	Preservation	Maximum Holding Time
Particle Size	100-150[c]	P,G	Cool, 4°C	6 mo[d]
Total Solids	50	P,G	Freeze	6 mo[d]
Total Volatile Solids	50	P,G	Freeze	6 mo[d]
Total Organic Carbon	25	P,G	Freeze	6 mo[d]
Oil & Grease	100	G only	Freeze	6 mo[d]
Total Sulfides	50	P,G	Cool, 4°C, 1N Zinc Acetate	7 days[d]
Total Nitrogen	25	P,G	Freeze	6 mo[d]
Biochemical Oxygen Demand	50	P,G	Cool, 4°C	7 days[e]
Chemical Oxygen Demand	50	P,G	Cool, 4°C	7 days[e]

[a] Recommended field sample size for one laboratory analysis. If additional field or laboratory quality control analyses are required, the sample size should be adjusted accordingly.

[b] P = polyethylene, G = glass.

[c] Sandier sediments require larger sample sizes than do muddier sediments.

[d] This is a suggested holding time. No EPA criteria exist for the preservation of this variable.

[e] This holding time is recommended.

TABLE 2

Recommended Sample Sizes, containers, Preservation Techniques, and Holding Times for Organics and Metal Analyses

Parameter	Sample Size[a]	Container[b]	Sample Preservation	Maximum Sample Holding Time	Maximum Extract Holding Time
Semivolatile	50-100 g	G	Freeze	1 year[c]	40 days
Volatiles	50 g	G[d]	Cool, 4°C[e]	14 days	--[f]
All Metals Except Hg	50 g	P, G	Freeze	2 years[c]	--[f]
Hg	1 g	P,G	Freeze	28 days[c]	--[f]

[a] Recommended field sample size for one laboratory analysis. If additional field or laboratory quality control analyses are required, the sample size should be adjusted accordingly.

[b] P = polyehtylene, G = glass.

[c] This is a suggested holding time, no EPA criteria exist for the preservation of this variable in a sediment matrix.

[d] No headspace or air pockets should remain.

[e] Freezing these samples will likely cause breakage of the sample container because no airspace for expansion is provided.

[f] Extracts are not provided in the analysis of volatiles or metals.

Appendix 16

Reference List

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