

2019 ANNUAL MONITORING REPORT

Groundwater Quality Monitoring Program
Oil and Gas Well Sites
Longmont, Colorado

August 23, 2019
Terracon Project No. 22197006



Prepared for:
City of Longmont
Longmont, Colorado

Prepared by:
Terracon Consultants, Inc.
Longmont, Colorado

terracon.com

Terracon

Environmental ■ Facilities ■ Geotechnical ■ Materials



August 23, 2019

City of Longmont
385 Kimbark Street
Longmont, Colorado 80501

Attn: Mr. Jason Elkins
P: (303) 651-8310
E: Jason.Elkins@longmontcolorado.gov


Re: 2019 Annual Monitoring Report
Groundwater Quality Monitoring Program
Oil and Gas Well Sites
Longmont, Colorado
Terracon Project No. 22197006

Dear Mr. Elkins:

Terracon Consultants, Inc. (Terracon) is pleased to submit our report of the 2019 Annual Groundwater Quality Monitoring Program activities performed at four active oil and gas (O&G) well sites, ten plugged and abandoned O&G well sites, and one associated tank battery site located in the City of Longmont, Colorado between County Road 1 and County Road 7. The report presents data from recent field activities that included the collection of groundwater samples for laboratory analysis. Terracon conducted the Investigation in general accordance with our proposal (P22197006), dated March 8, 2019.

Terracon appreciates this opportunity to provide environmental consulting services to The City of Longmont. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
Terracon Consultants, Inc.

for 

Michael J. Skridulis
Environmental Department Manager



John C. Graves, P.G.
Senior Principal/Regional Manager

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EXECUTIVE SUMMARY

In 2013, Terracon installed and/or sampled groundwater monitoring wells at the active oil and gas (O&G) wells located within the City of Longmont (the City). The results of these activities are described in the First and Third Quarter 2013 Monitoring Reports (May 31, 2013 and December 31, 2013, respectively). Terracon has continued to execute sampling activities for the City of Longmont Groundwater Quality Monitoring Program and the results of these activities are described in the subsequent 2014 through 2018 monitoring reports.

This groundwater quality sampling event was performed in accordance with the scope of services outlined in Terracon Proposal No. P22197006, dated March 9, 2019. A total of 43 monitoring wells were sampled on May 15-17 and June 3-7, 10, and 17 to evaluate potential impacts to groundwater from current or historical oil and gas (O&G) extraction and production (E&P) operations at the sites. Groundwater samples were analyzed in accordance with the procedures outlined in Section 3 of this report. Due to a laboratory error, six wells were resampled on June 17, 2019 including CL1-MW01, CL1-MW02, and CL1-MW03 from City of Longmont #1 wellsite and SH2-MW01, SH2-MW02, and SH2-MW03 from Sherwood #1 wellsite.

Since 2013, Terracon has also assisted the City with the investigation of additional active and PA well sites within Longmont City limits. Monitoring well galleries have been installed around each well site. For the purpose of this proposal, Terracon has added these additional well sites to the groundwater quality monitoring program.

Since the 2018 sampling event, the Rider #1 (Rider) and Serafini Gas Unit (SGU) sites have been split sampled on a quarterly basis due to ongoing remediation being performed by the site operator (TOP Operating). Based on the current sampling frequency, the Rider and SGU sites have been omitted from the 2019 annual sampling event. However, the data collected to date from recent sampling events will be included into the 2019 sampling event final report.

A summary of our findings, conclusions, and recommendations is provided below. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein.

Findings and Conclusions

Dissolved methane in groundwater may be an indication of a release at an O&G production well site. Neither the COGCC nor the CDPHE have developed standards for methane in groundwater. The COGCC has developed standards for source water (e.g., water wells) in the Greater Wattenberg Area (GWA). This project is located within the GWA. Water wells that are registered with Colorado Division of Water Resources (DWR), and include:

■ household,

2019 Annual Monitoring Report

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- n domestic,
- n livestock,
- n irrigation,
- n municipal/public,
- n commercial,
- n permitted or adjudicated springs, and
- n monitoring wells installed for the purpose of complying with groundwater baseline sampling and monitoring requirements.

Section 318A.f.(8) of the COGCC Rules and Regulations for baseline sampling of water wells in the GWA states that concentrations of methane greater than 1.0 mg/L require a gas compositional and stable isotope analysis of the methane to determine the source of the methane (e.g. thermogenic, biogenic or a mixture of the two). Methane was reported in multiple wells sampled at Powell #1, Domenico #1, Stamp 31-2C, and Mary #2 wellheads, but the reported concentrations do not indicate the requirement for additional investigation at this time.

Several inorganic parameters (nitrogen, sulfates, and chloride) were reported above Colorado Department of Public Health and Environment (CDPHE) and Colorado Oil and Gas Conservation Commission (COGCC) Groundwater Standards. However, laboratory analytical results have remained consistent with former sampling events and results may be indicative of background concentrations based on former analytical data and lack of production of produced water at currently active sites.

In general, increased chloride and sulfate concentrations correspond to increases in specific conductance and turbidity due to slow recharge of the monitoring well and the presence of clay in the formation. Clay is a smaller particle and passes through the monitoring well filter pack, and inorganics can attach to the clay particles.

Recommendations

The objective of the investigation was to evaluate the presence of constituents of concern in the groundwater above relevant laboratory detection limits and/or regulatory limits associated with historical O&G operations at the sites.

Terracon recommends the continued monitoring of all sites currently enrolled in the City of Longmont Annual Groundwater Quality Monitoring Event on an annual basis. The continued monitoring of the aforementioned sites will work to augment the existing data set. This information will be used to further assess the extent groundwater impacts present, track trends in the groundwater quality, and to evaluate if sites shall be added to or removed from the annual sampling list.

1.0 SITE DESCRIPTION

This project consists of sampling monitoring wells associated with four active oil and gas (O&G) well sites, ten plugged and abandoned O&G well sites, and one associated tank battery located within the City of Longmont, Colorado (the City) between County Road 1 and County Road 7 (Exhibit 1). The 2019 monitoring event analyzed potential impacts to groundwater, in accordance with Terracon Proposal No. P22197009, at the following sites:

- n Domenico #1: three monitoring wells;
- n Evans #6 Tank Battery: three monitoring wells;
- n Evans #6 Wellhead: three monitoring wells;
- n Stamp 31-2C: two monitoring wells;
- n City of Longmont #1: three monitoring wells;
- n Powell #1: three monitoring wells;
- n Sherwood #1: three monitoring wells;
- n Sherwood #2: three monitoring wells;
- n Tabor #1: two monitoring wells;
- n Tabor #7: three monitoring wells;
- n Longmont 8-10k: three monitoring wells;
- n Maruyama: three monitoring wells;
- n George Mayeda #1; three monitoring wells;
- n Mary #2: three monitoring wells; and
- n Wertman #1: three monitoring wells.

The 2019 monitoring event well site locations are shown on Exhibit 1.

2.0 SCOPE OF SERVICES

The 2019 annual groundwater quality monitoring services described below were performed on May 15-17 and June 3-6, 10th and 17th, as a modification to the sampling strategy outlined in the Sampling and Analysis Plan (SAP) prepared and issued by Terracon on February 1, 2013. Based on the initial groundwater sampling results reported in 2013, the sampling frequency and laboratory analyte list have been modified.

The monitoring wells at the following well sites were sampled during this annual event:

- n Domenico #1: DM1-MW01, DM1-MW02, and DM1-MW03;
- n Evans #6 Wellhead: E6W-MW01, E6W-MW02, and E6W-MW03;
- n Evans #6 Tank Battery: E6T-MW01, E6T-MW-02, and E6T-MW03;
- n Stamp 31-2C: S31-MW01, S31-MW03;
- n City of Longmont #1: CL1-MW01, CL1-MW02, and CL1-MW03;

- n Powell #1: PL1-MW01, PL1-MW02, and PL1-MW03;
- n Sherwood #1: SH1-MW01, SH1-MW02, and SH1-MW03;
- n Sherwood #2: SH2-MW01, SH2-MW02, and SH2-MW03;
- n Tabor #1: TB1-MW01, TB1-MW02;
- n Tabor #7: TB7-MW01, TB7-MW02, TB7-MW03;
- n Longmont 8-10k: LM8-MW01, LM8-MW02, and LM8-MW03;
- n Maruyama: MY-MW01, MY-MW02, MY-MW03;
- n George Mayeda #1; GM1-MW01, GM1-MW02, and GM1-MW03;
- n Mary #2: MR2-MW01, MR2-MW02, MRW-MW03; and
- n Wertman #1: WT1-MW01, WT1-MW02, WT1-MW03

At the site Tabor #1, well TB1-MW03 was not able to be located and may have been destroyed during construction activities in the area. At the site Stamp 31-2C, well S31-MW02 was filled with sediment and no water was present.

2.1 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, express or implied, regarding the findings, conclusions, or recommendations. Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These Investigation services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal and were not intended to be in strict conformance with ASTM E1903-11.

2.2 Additional Scope Limitations

Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable, or not present during these services. We cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this sampling event. Subsurface conditions may vary from those encountered at specific wells or during other surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

2.3 Reliance

This report has been prepared for the exclusive use of the City of Longmont, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the

site) is prohibited without the express written authorization of the City of Longmont and Terracon. Any unauthorized distribution or reuse is at the City of Longmont’s sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal, Investigation report, and Terracon’s Master Services Agreement (MSA) with the City of Longmont. The limitation of liability defined in the terms and conditions of the MSA is the aggregate limit of Terracon’s liability to the City of Longmont and all relying parties unless otherwise agreed in writing.

3.0 FIELD INVESTIGATION

3.1 Safety

Terracon is committed to the safety of all its employees. As such, and in accordance with our Incident and Injury Free® safety goals, Terracon conducted the fieldwork under a site-specific health and safety plan. The plan identified site-specific job hazards and proper pre-task planning procedures. Work was performed using Occupational Safety & Health Administration (OSHA) Level D work attire consisting of hard hats, high-visibility attire, safety glasses, protective gloves, and protective boots.

3.2 Sampling and Analytical Program Summary

Terracon sampled a total of 43 groundwater monitoring wells for the analytical suite listed in the table below.

Groundwater Sample Constituents

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations – Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

EPA = Environmental Protection Agency; SW-846 analytical methods

Additionally, temperature, pH, specific conductance, dissolved oxygen and oxygen reducing potential measurements were collected in the field during groundwater sampling. Specific conductance and pH measurements are summarized on Table 2 in Appendix A of this report.

3.3 Groundwater Sampling

Terracon used hand bailing sampling techniques with a disposable bailer to purge and obtain a representative groundwater sample from the monitoring wells. The monitoring wells were sampled in accordance with the February 1, 2013 SAP. After groundwater field parameters had stabilized, a groundwater sample was collected from each of the monitoring wells. The groundwater samples were placed in laboratory provided, pre-cleaned containers and stored in a cooler with ice during delivery to the laboratory. The samples were submitted under chain-of-custody protocol and analyzed for the parameters summarized in Section 3.2 on a standard turn-around time and according to the appropriate United States Environmental Protection Agency (USEPA) analytical methods.

The groundwater sample naming convention used is as follows:

- n [Site Abbreviation]-[Well Designation].
- n Example: SH2-MW01 is the groundwater sample collected from Sherwood #2 well site, monitoring well MW01.

The groundwater samples were submitted to Pace Analytical (Pace) in Mount Juliet, Tennessee, and the samples from the second event were sent to Summit Scientific in Golden, Colorado. Pace performed Quality Analysis/Quality Control (QA/QC) during the analysis process of the groundwater samples. The QA/QC process involved completing a method blank, laboratory control sample, matrix spike, matrix spike duplicate, and a sample duplicate to test the accuracy and calibration of the laboratory equipment and processes.

4.0 FIELD INVESTIGATION RESULTS

4.1 Hydrogeology

Depth to groundwater and groundwater elevation data, where available, were used to generate potentiometric surface maps and estimated groundwater flow direction. Exhibits 2 through 17 illustrate general groundwater flow directions based on the groundwater elevations as measured in May and June 2019. Depth to groundwater and groundwater elevation data are summarized in Table 1.

As depicted on the potentiometric surface maps, groundwater generally flows towards the St. Vrain Creek or other local water sources. The well site groundwater flow directions are as follows:

- n Sherwood #1: northeast towards the St. Vrain Creek;
- n Sherwood #2: northeast towards the St. Vrain Creek;
- n City of Longmont #1: northeast towards the St. Vrain Creek;
- n Serafini Gas Unit: northeast towards the St. Vrain Creek;

- n Powell #1: northeast towards the St. Vrain Creek;
- n Evans #6 Wellhead: east-southeast towards the St. Vrain Creek;
- n Evans #6 Tank Battery: east-southeast towards the St. Vrain and Boulder Creeks;
- n Domenico #1: north-northwest towards Boulder Creek
- n Stamp 31-2C: northeast towards Union Reservoir;
- n Rider #1: southeast towards Spring Gulch
- n Tabor #1: groundwater flow not shown on site diagram; TB1-MW03 was not able to be located and may have been destroyed during construction activities in the area
- n Tabor #7: southeast towards the St. Vrain Creek
- n Longmont 8-10k: north-northeast towards St. Vrain Creek
- n Maruyama: east-southeast, towards the St. Vrain Creek
- n George Mayeda: north, towards Spring Gultch
- n Mary #2: southwest, towards the St. Vrain Creek
- n Wertman #1: west-southwest, towards the St. Vrain Creek

5.0 ANALYTICAL RESULTS

The laboratory analytical reports and chain-of-custody records are included in Appendix B. The groundwater analytical results are summarized in Table 2. The following sections summarize the results of the analytical testing.

Laboratory analytical results for the groundwater samples were compared to the groundwater standard applicable to O&G well sites, COGCC Table 910-1 standards (May 1, 2018) and the Colorado Department of Public Health and Environment's (CDPHE) Regulation 41 Groundwater Quality Standards, December 30, 2016 (GWQS). A summary of constituent concentrations exceeding these standards in the groundwater samples is included in Table 2.

The groundwater analytical results for detected concentrations are discussed in the following sections. Groundwater analytical data and corresponding action levels are summarized in Table 2 (Appendix A).

5.1 Organic Compounds

Dissolved methane and ethane were detected above their respective laboratory reporting limits at the following sites. Concentrations shown below were rounded to the nearest 0.001 milligrams per liter (mg/L). Dissolved ethene was not detected above the laboratory reporting limit in the samples collected.

5.1.1 Powell #1 Wellhead (PL1)

- n Methane was reported in samples PL1-MW02 and PL1-MW03R at concentrations of 0.036 mg/L and 0.404 mg/L, respectively.

5.1.2 Domenico #1 Wellsite (DM1)

- n Methane was reported in samples DM1-MW01 and DM1-MW02 at concentrations of 0.053 mg/L and 0.173 mg/L, respectively.

5.1.3 Stamp 31-2C Wellsite (S31)

- n Methane was reported in samples S31-MW01 and S31-MW03 at concentrations of 0.266 mg/L and 0.360 mg/L, respectively.

5.1.4 Mary #2 Wellsite (MR2)

- n Methane was reported in samples MR2-MW02 and MR2-MW03 at concentrations of 0.056 mg/L and 0.029 mg/L, respectively.

Section 318A.f.(8) of the COGCC Rules and Regulations for baseline sampling of water wells in the GWA states that concentrations of methane greater than 1.0 mg/L require a gas compositional and stable isotope analysis of the methane to determine the source of the methane (e.g. thermogenic, biogenic or a mixture of the two). Currently, the reported methane concentrations do not require additional investigation of groundwater.

5.2 Inorganics in Groundwater

Inorganic cations and anions can be secondary indicators of well site releases associated with produced water. Neither CDPHE nor the COGCC have developed groundwater standards for the following indicator parameters: dissolved calcium, dissolved magnesium, dissolved potassium, dissolved sodium, strontium, alkalinity species, or bromide.

The COGCC has defined the groundwater standard exceedance concentrations for chloride and sulfate to be a regional background concentration with a multiplier of 1.25. Terracon utilized 2019 analytical data for chloride and sulfate from the sites sampled during the 2019 sampling event to calculate respective regional background concentrations.

Terracon used the USEPA's statistical software (ProUCL), Version 5.1, to determine if the dataset used to calculate the mean was statistically normal. The ProUCL software can be downloaded at <https://www.epa.gov/land-research/proucl-software>. After eliminating monitoring well analytical data that was not representative of normal conditions, the data was inputted into ProUCL. Analysis was conducted to evaluate if there are additional outlying data points and if the data set

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adhered to a normal distribution. Several sulfate analytical results were removed from the data set based on the results of the initial outlier test. The outlier test does state that there is a potential outlier. However, based on a 1% and 5% significance level, additional outliers were not identified; therefore no additional analytical results were removed from the data set. A normal Q-Q plot was then generated to evaluate if the data set for chloride and sulfate adhered to a normal distribution. The normal Q-Q plot illustrates that both data sets are normal. The mean and standard deviation were also calculated using ProUCL.

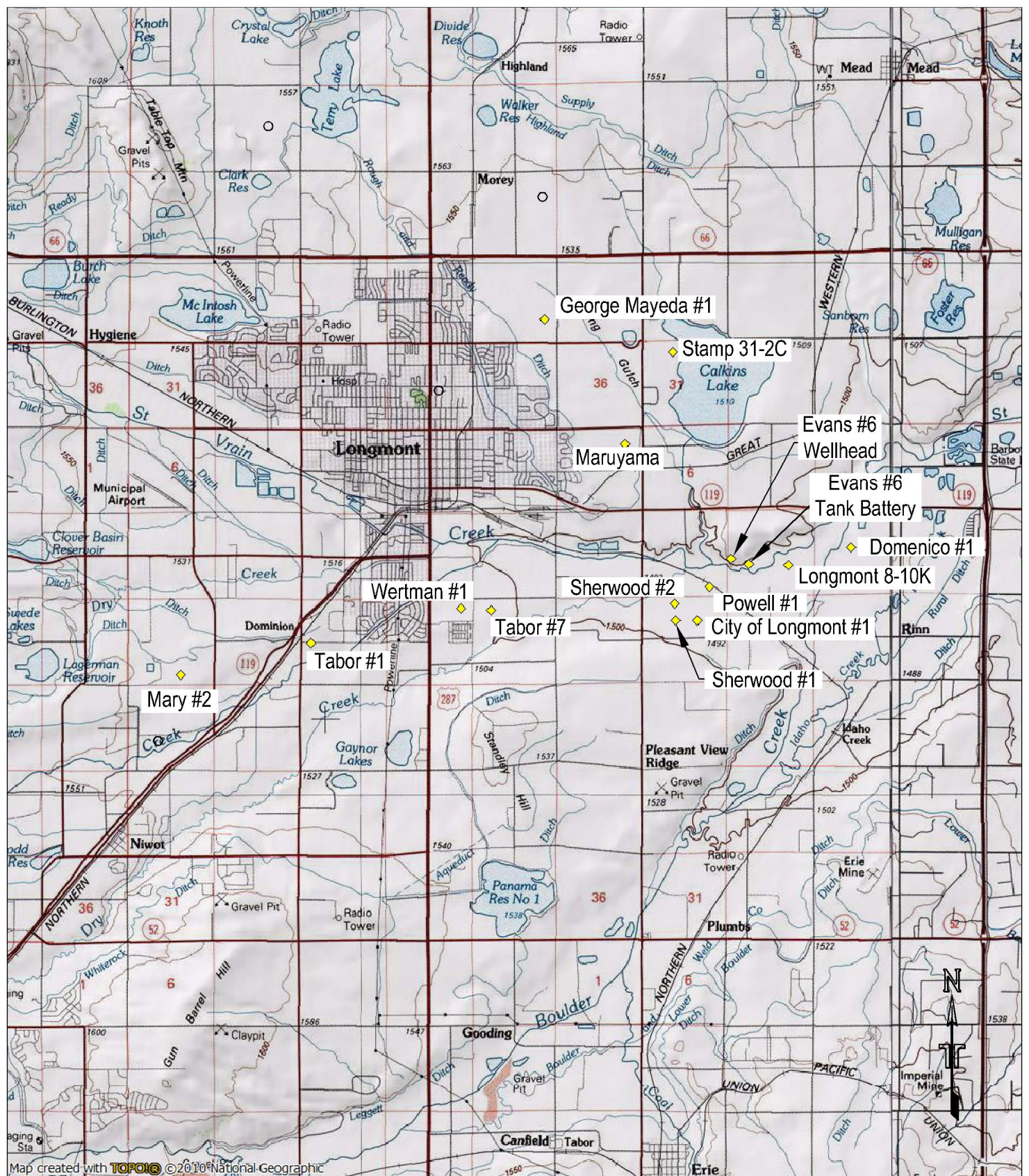
The COGCC cleanup goal was calculated by multiplying the mean (from background well data) by 1.25 per Table 910-1 from the COGCC rules. A summary of pertinent statistical results and the calculated COGCC cleanup levels for chloride and sulfate are listed below:

Statistical Analysis	Chloride (mg/L)	Sulfate (mg/L)
Mean (from background well data)	60.97	606.1
COGCC cleanup goal (1.25 x background)	76.21	757.63
Standard Deviation	22.52	243.3
Sample Size	26	14

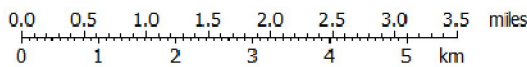
Elevated concentrations of nitrogen, sulfates, and chlorides above their respective laboratory analytical detection limits were reported in groundwater samples collected from monitoring wells at each site sampled during this monitoring event. Please refer to the groundwater analytical results in Table 2 included in this report for a detailed overview of regulatory exceedances. A brief summary of the analytical results are included below.

Nitrogen concentrations were reported in groundwater samples collected from monitoring wells at the Sherwood #1, City of Longmont #1, and Mary #2 sites above CDPHE levels. Sulfate concentrations were reported in groundwater samples collected from monitoring wells at the Sherwood #1, Sherwood #2, Powell #1, Evans #6 Tank Battery, Evans #6 Wellhead, Domenico #1, Stamp 31-2C, Longmont 8-10k, George Mayeda #1, Maruyama #1, Mary #2, and Rider #1 sites above calculated COGCC background levels. Chloride concentrations were reported in groundwater samples collected from monitoring wells at the Evans #6 Tank Battery, Longmont 8-10k, Domenico #1, Stamp 31-2C, Tabor #1, and Mary #2 sites above calculated COGCC background levels.

APPENDIX A EXHIBITS AND TABLES



Map created with TOPOIG © 2010 National Geographic

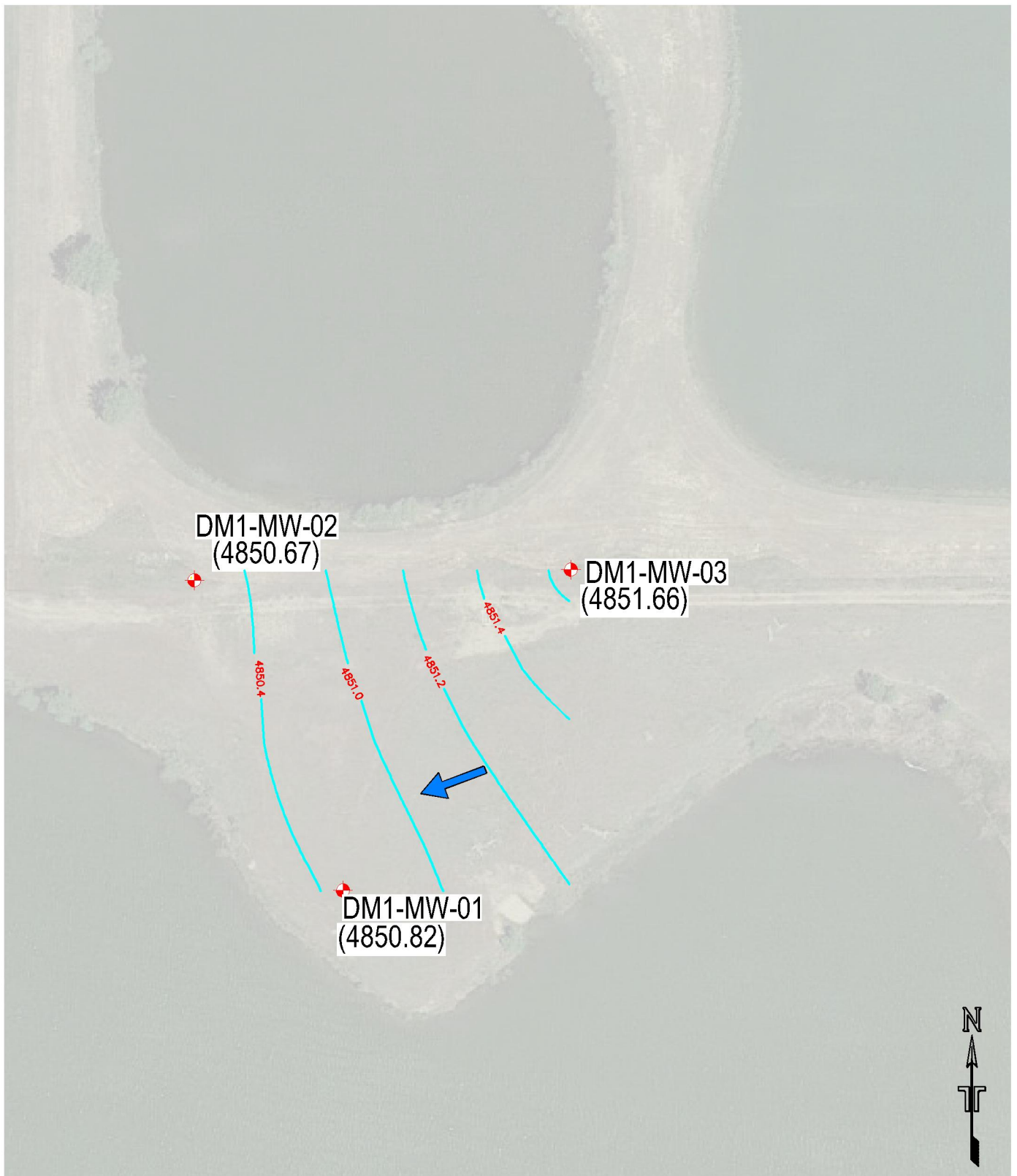


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Topographic and Site Location Map
City of Longmont Oil and Gas Well Sites
Longmont
Colorado

Exhibit 1	
DESIGNED BY:	JAS
DRAWN BY:	JAS
APPROVED BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	001
SHEET NO.:	1 OF 17



LEGEND



- Approximate Location of Groundwater Monitoring Wells



- Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, June 3, 2019



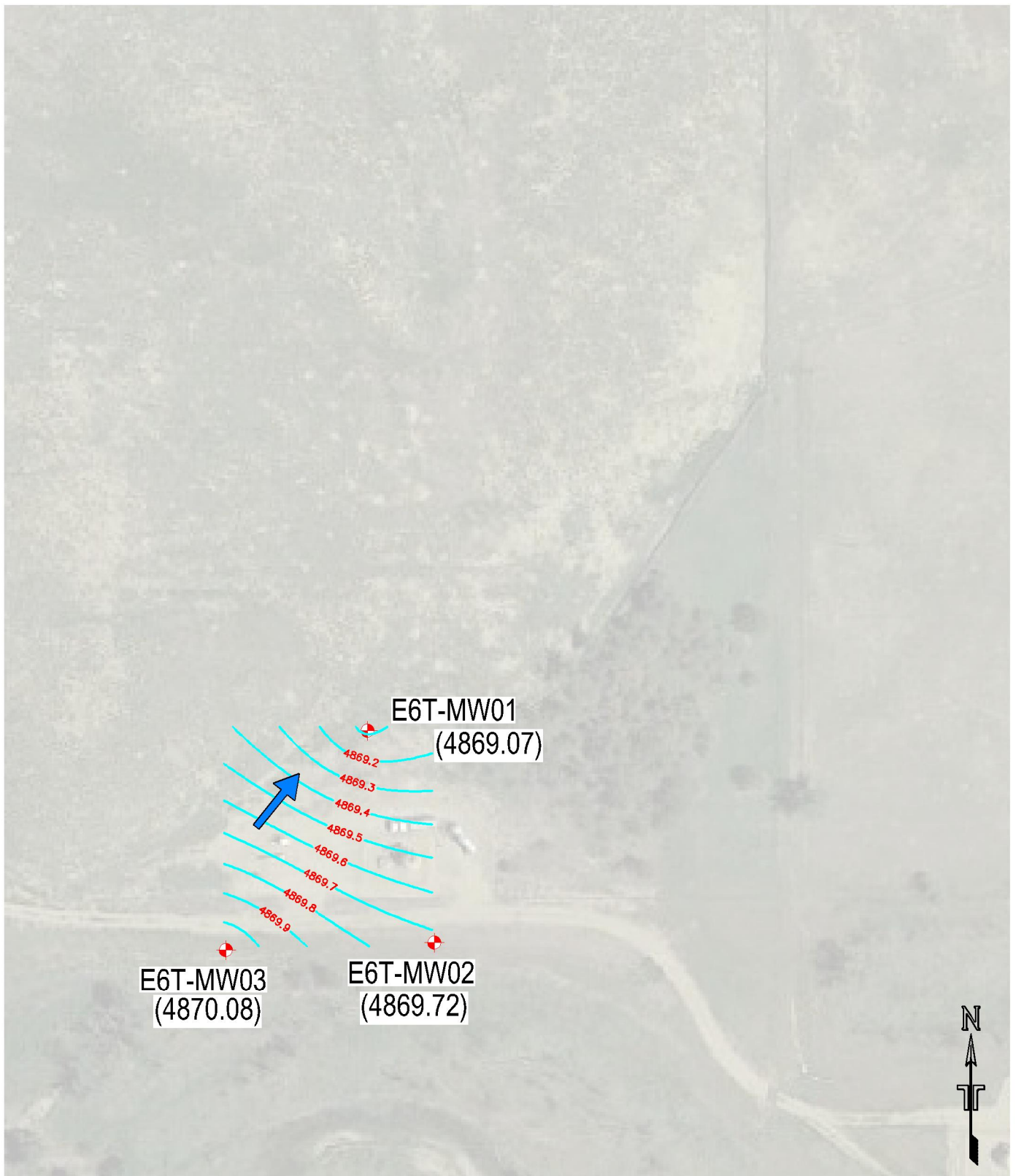
- Approximate Grounwater Flow Direction, June 3, 2019



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Site and Piezometric Surface Diagram - Domenico #1
City of Longmont Oil and Gas Well Sites
 Longmont
 Colorado

Exhibit 2	
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DRAWN BY:	JAS
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SHEET NO.:	2 OF 17



LEGEND



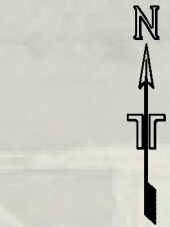
- Approximate Location of Groundwater Monitoring Wells



- Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, June 6, 2019



- Approximate Groundwater Flow Direction, June 6, 2019



0' 100'
Approximate Scale

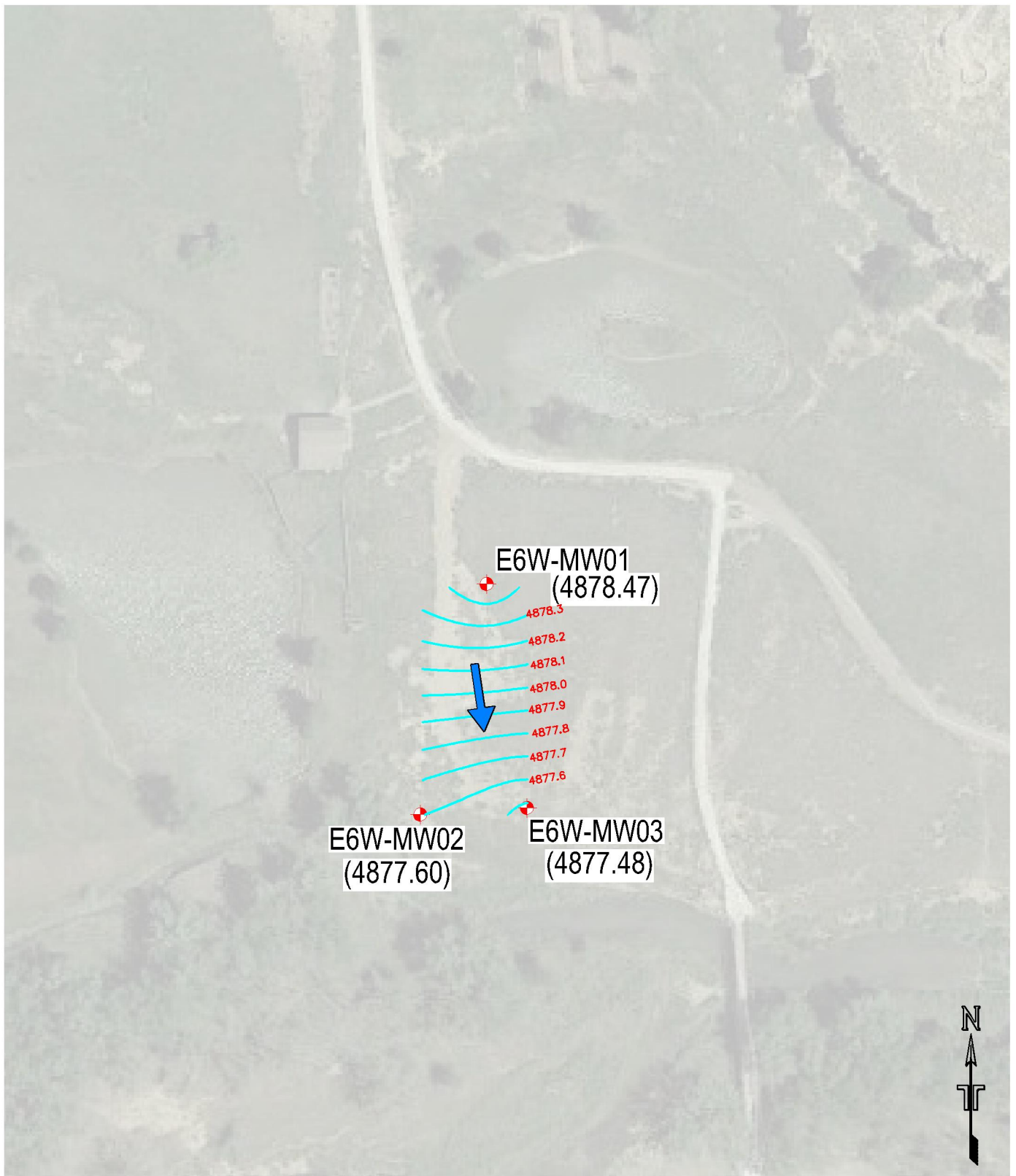
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Site and Piezometric Surface Diagram - Evans #6 Tank Battery
City of Longmont Oil and Gas Well Sites


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Colorado


Exhibit 3	
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SHEET NO.:	3 OF 17

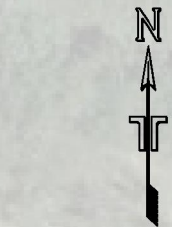



LEGEND

 - Approximate Location of Groundwater Monitoring Wells

 - Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, June 6, 2019

 - Approximate Grounwater Flow Direction, June 6, 2019



0'  100'
Approximate Scale


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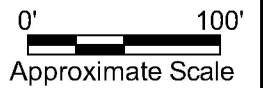
Site and Piezometric Surface Diagram - Evans #6 Wellhead
City of Longmont Oil and Gas Well Sites
Longmont
Colorado

Exhibit 4	
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DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	004
SHEET NO.:	4 OF 17



LEGEND

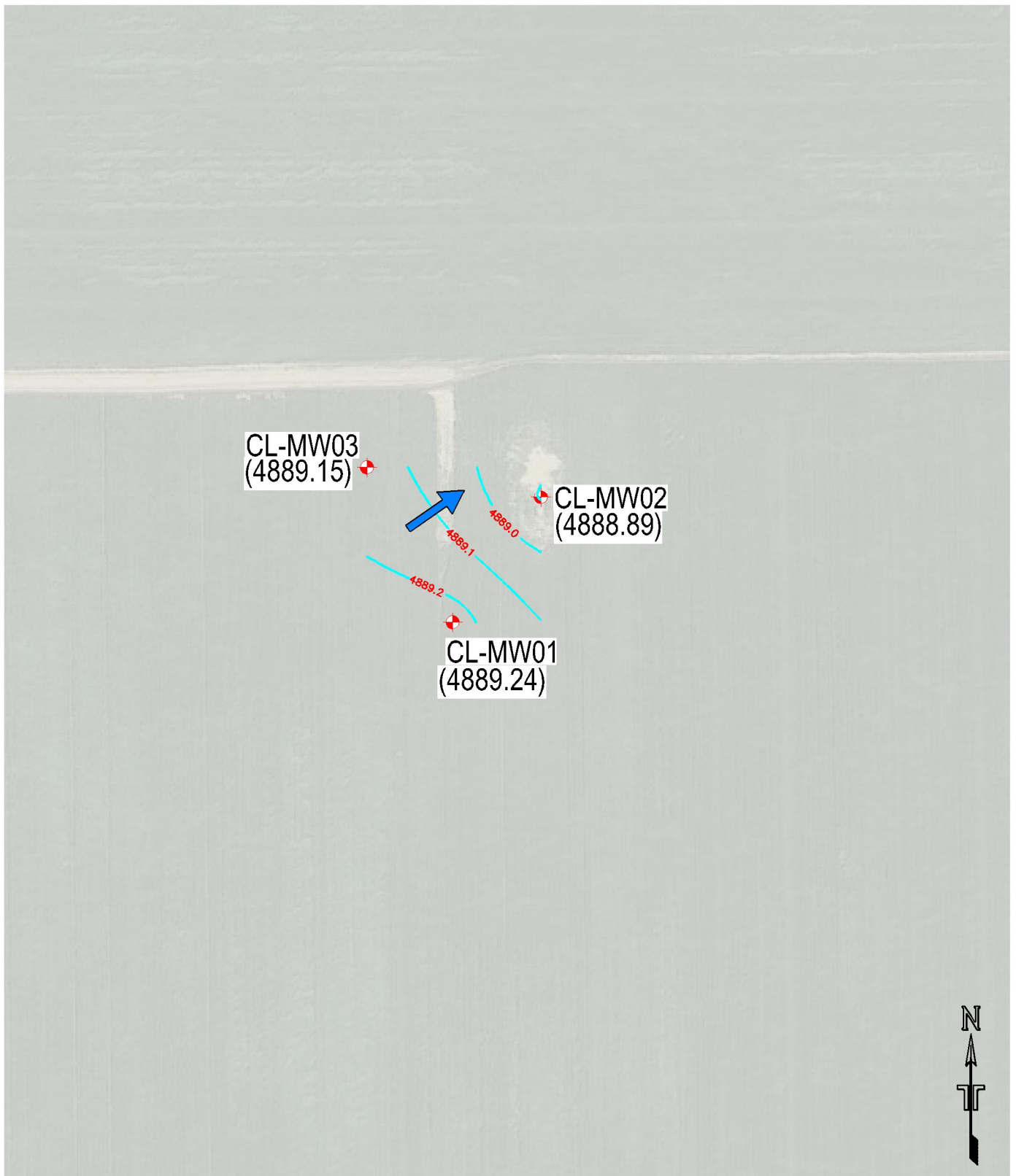
- 
 - Approximate Location of Groundwater Monitoring Wells




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Site Diagram - Stamp 31-1C
City of Longmont Oil and Gas Well Sites
 Longmont
 Colorado


Exhibit 5	
DESIGNED BY:	JAS
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APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	005
SHEET NO.:	5 OF 17




LEGEND

 - Approximate Location of Groundwater Monitoring Wells

 - Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, June 17, 2019

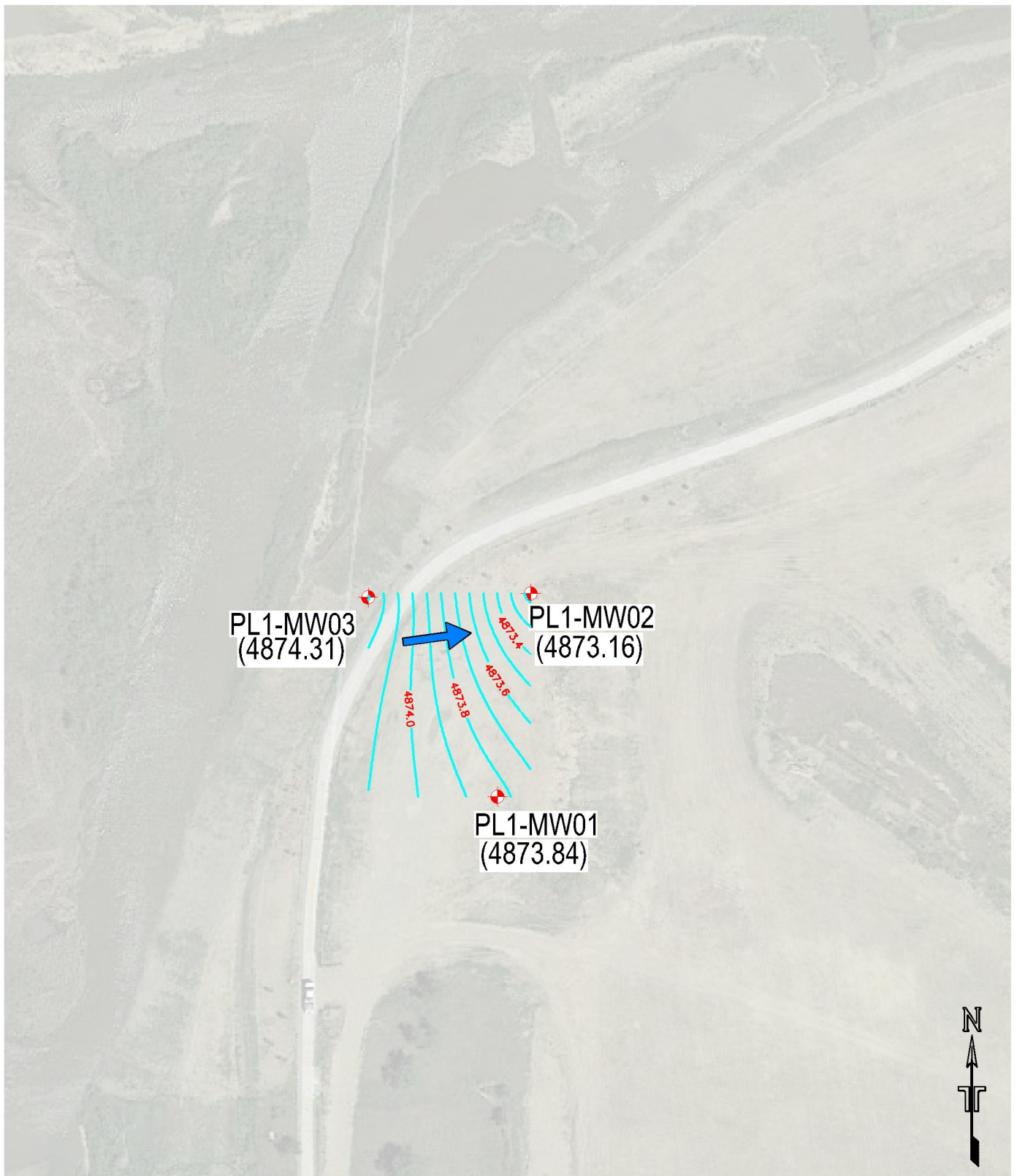
 - Approximate Groundwater Flow Direction, June 17, 2019

0'  100'
Approximate Scale


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Site and Piezometric Surface Diagram - City of Longmont #1
City of Longmont Oil and Gas Well Sites
Longmont
Colorado


Exhibit 6	
DESIGNED BY:	JAS
DRAWN BY:	JAS
APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	006
SHEET NO.:	6 OF 16




LEGEND

 - Approximate Location of Groundwater Monitoring Wells

 - Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, June 10, 2019

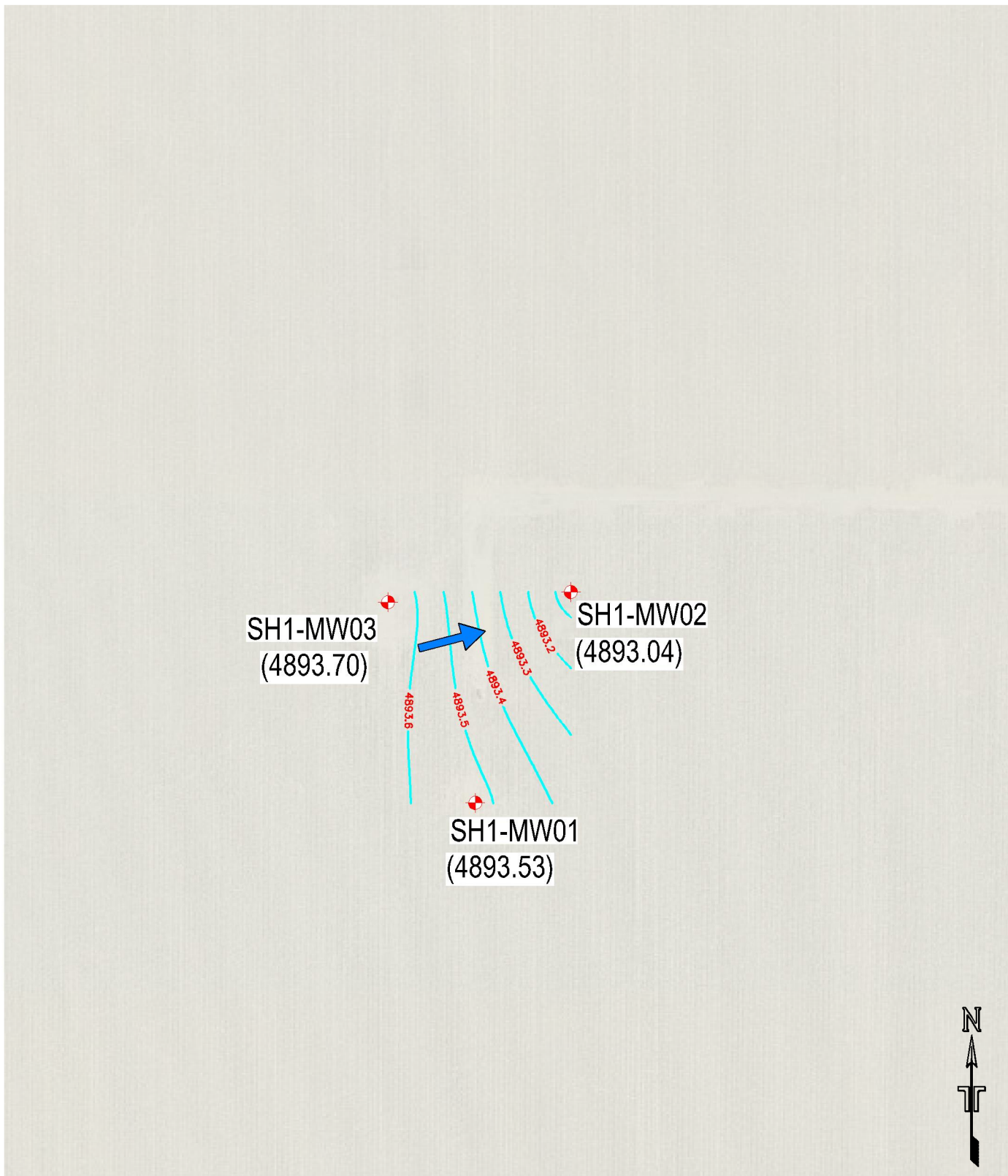
 - Approximate Grounwater Flow Direction, June 10, 2019


 0' 100'
 Approximate Scale


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Site and Piezometric Surface Diagram - Powell #1
 City of Longmont Oil and Gas Well Sites
 Longmont
 Colorado

Exhibit 7	
DESIGNED BY:	JAS
DRAWN BY:	JAS
APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	007
SHEET NO.:	7 OF 17



LEGEND



- Approximate Location of Groundwater Monitoring Wells



- Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, June 10, 2019



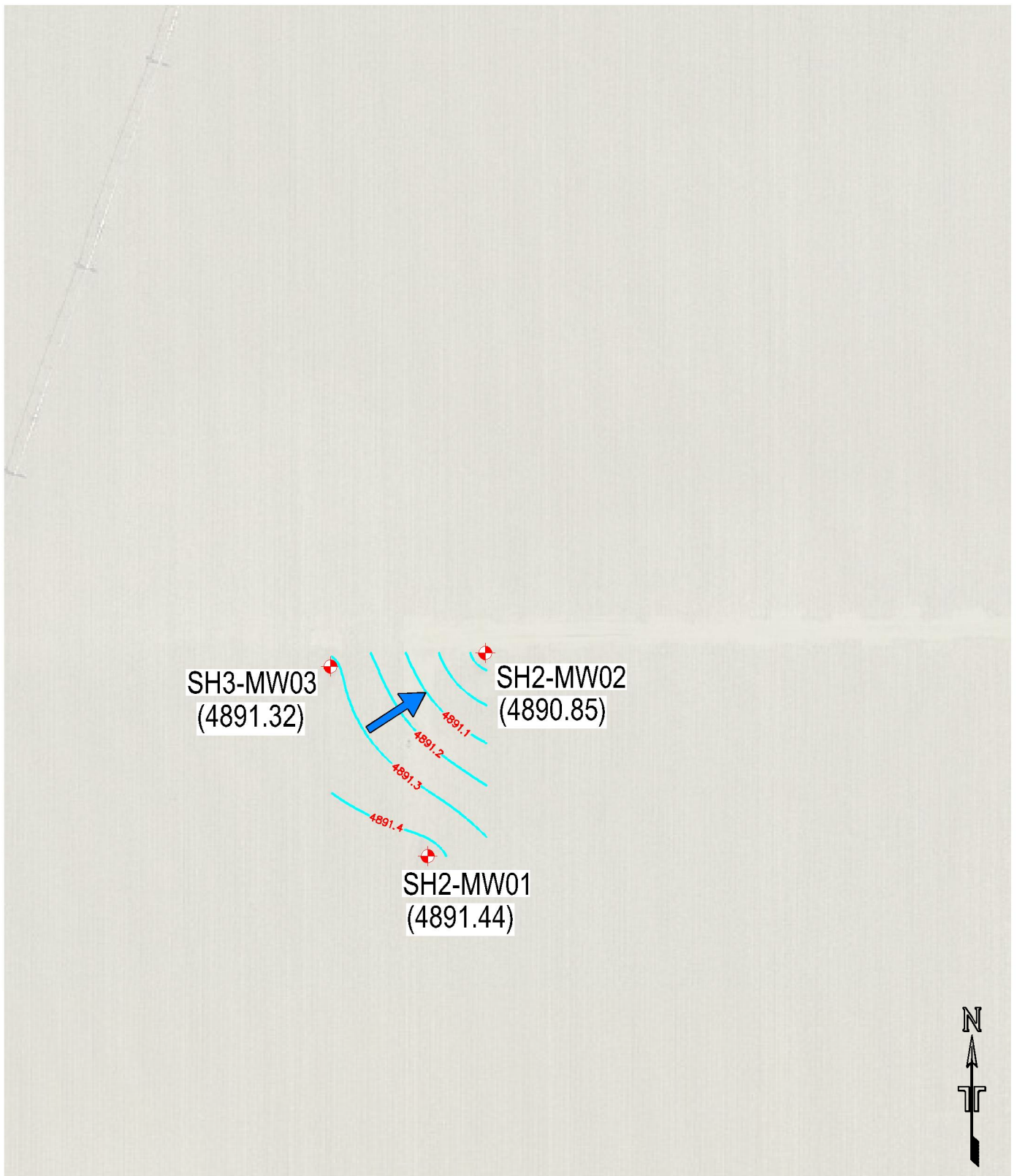
- Approximate Grounwater Flow Direction, June 10, 2019



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Site and Piezometric Surface Diagram - Sherwood #1
City of Longmont Oil and Gas Well Sites
 Longmont
 Colorado

Exhibit 8	
DESIGNED BY:	JAS
DRAWN BY:	JAS
APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	008
SHEET NO.:	8 OF 17



LEGEND



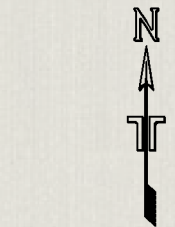
- Approximate Location of Groundwater Monitoring Wells



- Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, June 17, 2019



- Approximate Grounwater Flow Direction, June 17, 2019



0' 100'
Approximate Scale


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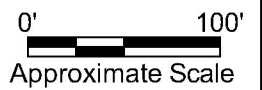
Site and Piezometric Surface Diagram - Sherwood #2
City of Longmont Oil and Gas Well Sites
Longmont
Colorado

Exhibit 9	
DESIGNED BY:	JAS
DRAWN BY:	JAS
APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	009
SHEET NO.:	9 OF 17



LEGEND

-  - Approximate Location of Groundwater Monitoring Wells




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Site Diagram - Tabor #1
City of Longmont Oil and Gas Well Sites
 Longmont
 Colorado


Exhibit 10	
DESIGNED BY:	JAS
DRAWN BY:	JAS
APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	010
SHEET NO.:	10 OF 17



LEGEND

 - Approximate Location of Groundwater Monitoring Wells

 - Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, May 16, 2019

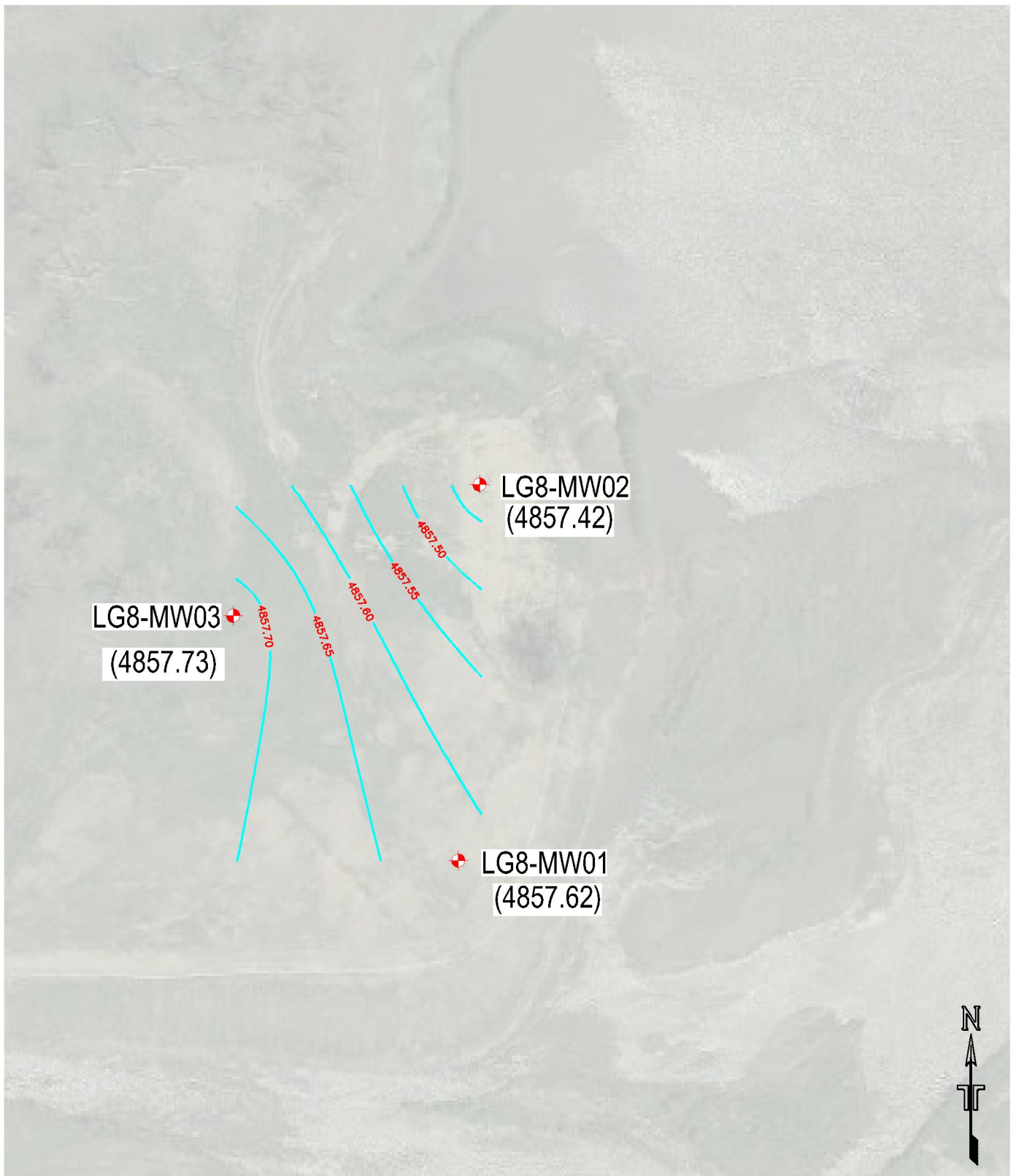
 - Approximate Grounwater Flow Direction, May 16, 2019

0'  100'
Approximate Scale

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Site and Piezometric Surface Diagram - Tabor #7
City of Longmont Oil and Gas Well Sites
Longmont
Colorado

Exhibit 11	
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APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	011
SHEET NO.:	11 OF 17



LEGEND



- Approximate Location of Groundwater Monitoring Wells



- Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, June 5, 2019



- Approximate Grounwater Flow Direction, June 5, 2019

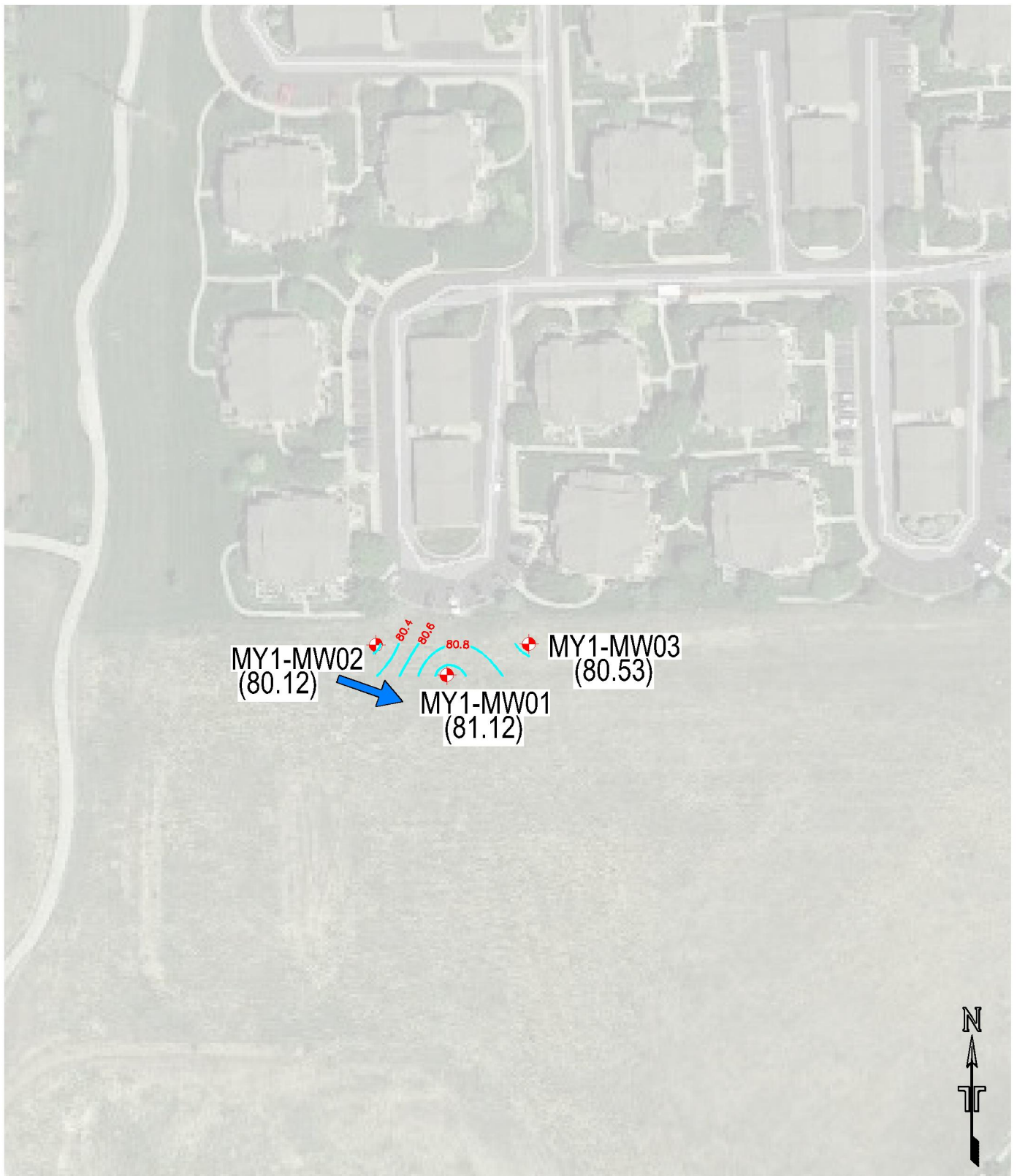


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Site Diagram - Longmont 8-10K
City of Longmont Oil and Gas Well Sites
Longmont
Colorado

Exhibit 12	
DESIGNED BY:	JAS
DRAWN BY:	JAS
APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	012
SHEET NO.:	12 OF 17



LEGEND



- Approximate Location of Groundwater Monitoring Wells



4851.2

- Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, May 16, 2019



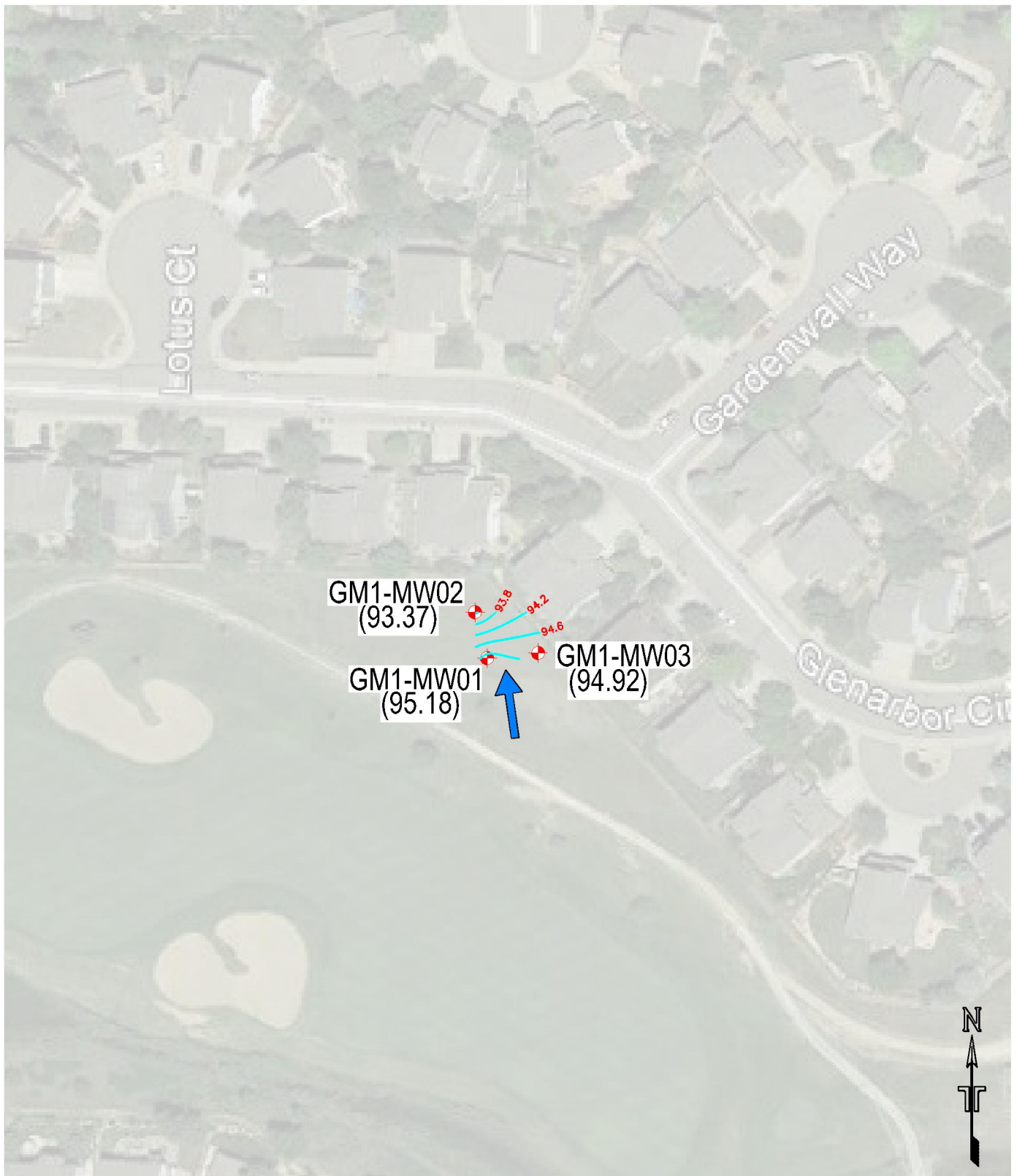
- Approximate Grounwater Flow Direction, May 16, 2019

0' 100'
Approximate Scale

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Site and Piezometric Surface Diagram - Maruyama
City of Longmont Oil and Gas Well Sites
Longmont
Colorado

Exhibit 13	
DESIGNED BY:	JAS
DRAWN BY:	JAS
APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	013
SHEET NO.:	13 OF 17



LEGEND



- Approximate Location of Groundwater Monitoring Wells



- Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, June 3, 2019



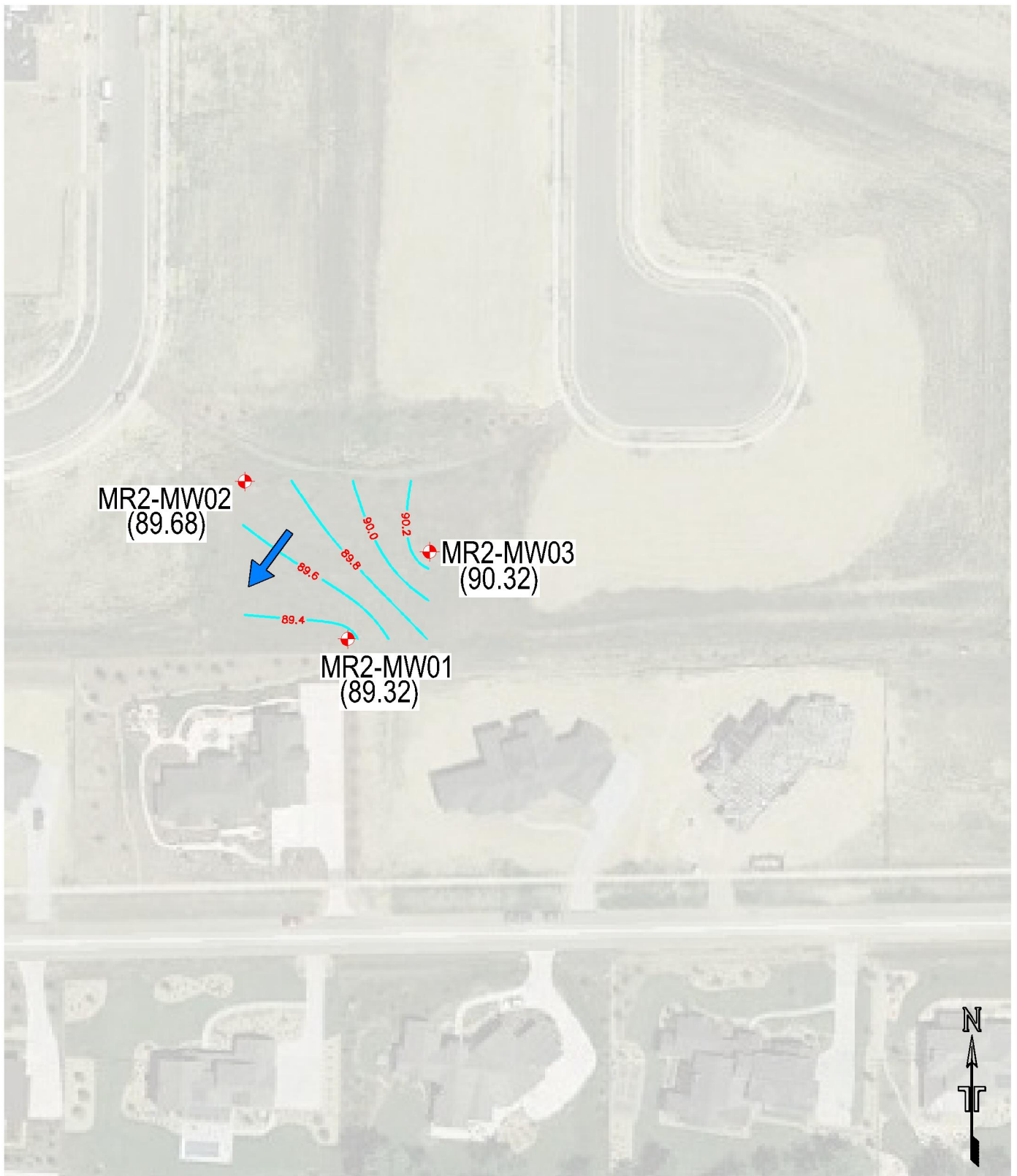
- Approximate Groundwater Flow Direction, June 3, 2019



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Site and Piezometric Surface Diagram - George Mayeda #1
 City of Longmont Oil and Gas Well Sites
 Longmont
 Colorado

Exhibit 14	
DESIGNED BY:	JAS
DRAWN BY:	JAS
APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	014
SHEET NO.:	14 OF 17



LEGEND



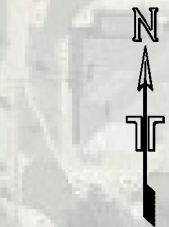
— Approximate Location of Groundwater Monitoring Wells



— Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, May 15, 2019



— Approximate Groundwater Flow Direction, May 15, 2019



0' 100'
Approximate Scale

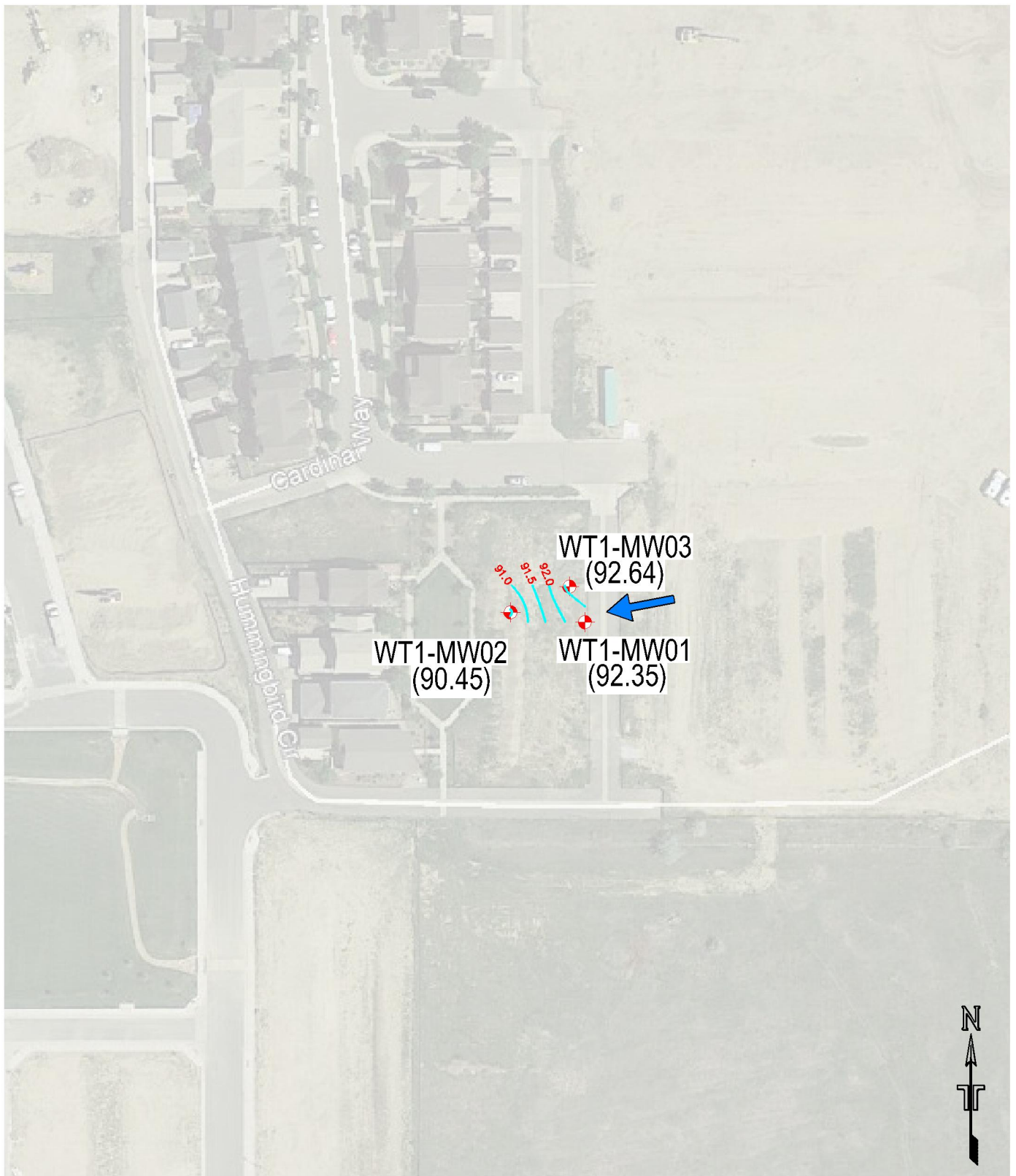
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Site and Piezometric Surface Diagram - Mary #2
City of Longmont Oil and Gas Well Sites

Longmont
Colorado

Exhibit 15	
DESIGNED BY:	JAS
DRAWN BY:	JAS
APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	015
SHEET NO.:	15 OF 17



LEGEND



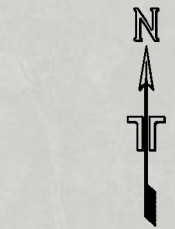
- Approximate Location of Groundwater Monitoring Wells



- Approximate Groundwater Elevation (feet above mean sea level) Contours Reported, May 16, 2019



- Approximate Groundwater Flow Direction, May 16, 2019

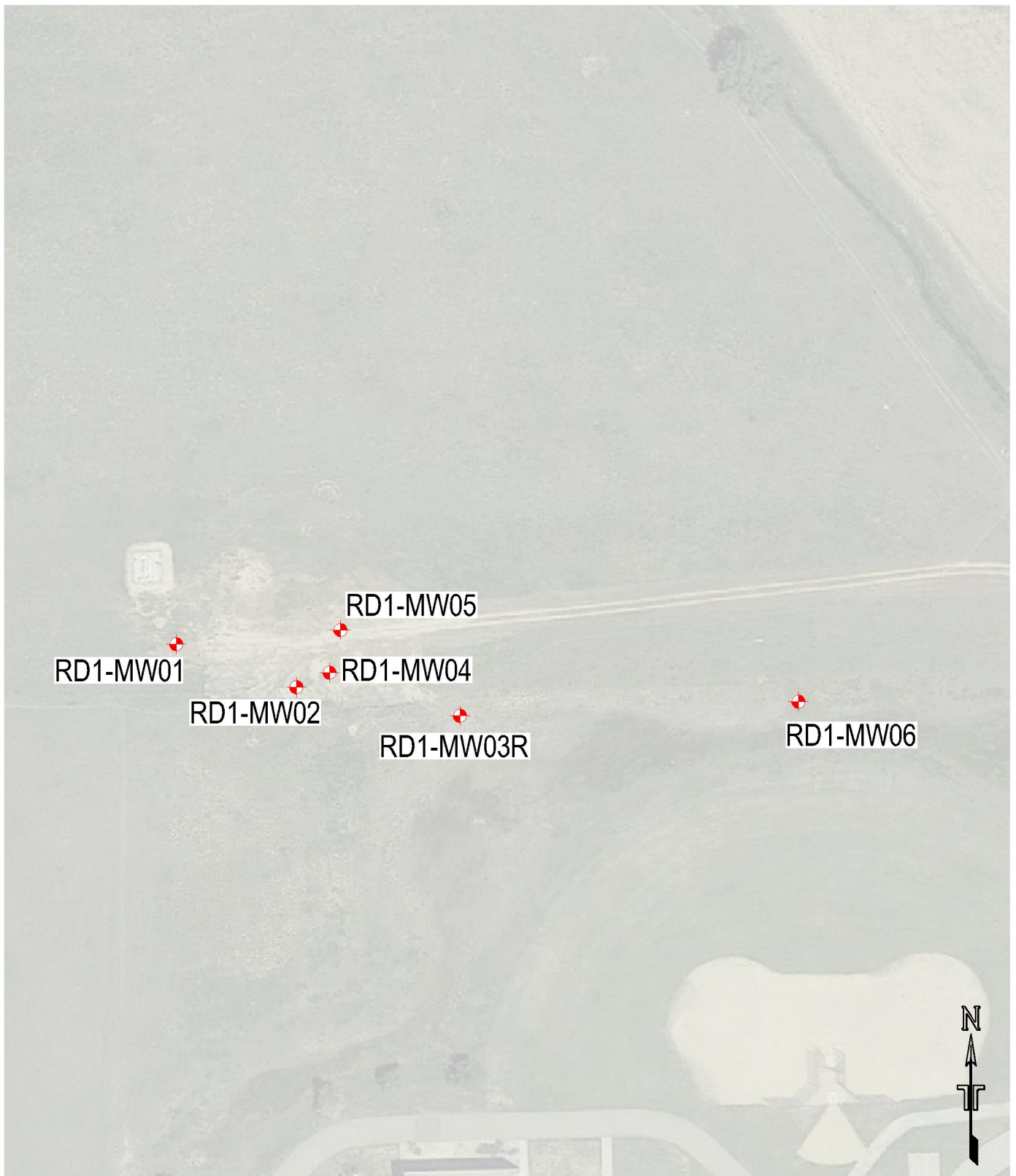


0' 100'
Approximate Scale


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Site and Piezometric Surface Diagram - Wertman #1
City of Longmont Oil and Gas Well Sites
Longmont
Colorado

Exhibit 16	
DESIGNED BY:	JAS
DRAWN BY:	JAS
APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	8/12/19
JOB NO.:	22197006
ACAD NO.:	016
SHEET NO.:	16 OF 17



LEGEND

-  - Approximate Location of Groundwater Monitoring Wells



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Site Diagram - Rider #1
 City of Longmont Oil and Gas Well Sites
 Longmont
 Colorado

Exhibit 17	
DESIGNED BY:	JAS
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APPVD. BY:	MJS
SCALE:	AS SHOWN
DATE:	08/23/19
JOB NO.:	22197006
ACAD NO.:	017
SHEET NO.:	17 OF 17

**Table 1 - Groundwater Elevation Data
City of Longmont - Groundwater Quality Monitoring
Project Number 22197006**

Well ID	Top of Casing Elevation ¹	Date Measured	Total Depth ²	Depth to Groundwater ²	Groundwater Elevation ³			
Sherwood #1 Wellhead								
SH1-MW01	4902.75	3/18/2013	13.96	8.49	4894.26			
		10/23/2013		6.70	4896.05			
		7/28/2014		NR				
		3/30/2015		8.11	4894.64			
		6/21/2016		NR				
		5/23/2017		NR				
		6/27/2018		7.42	4895.33			
		6/10/2019		9.22	4893.53			
SH1-MW02	4900.99	3/18/2013	14.35	7.41	4893.58			
		10/23/2013		6.30	4894.69			
		7/28/2014		NR				
		3/30/2015		7.23	4893.76			
		6/21/2016		6.87	4894.12			
		5/23/2017		6.88	4894.11			
		6/27/2018		6.80	4894.19			
		6/10/2019		7.95	4893.04			
SH1-MW03	4901.80	3/18/2013	14.06	7.64	4894.16			
		10/23/2013		6.33	4895.47			
		7/28/2014		NR				
		3/30/2015		7.35	4894.45			
		6/21/2016		NR				
		5/23/2017		NR				
		6/27/2018		7.00	4894.80			
		6/10/2019		8.10	4893.70			
Sherwood #2 Wellhead								
SH2-MW01	4896.76	3/18/2013	10.80	5.20	4891.56			
		7/28/2014		NR				
		3/30/2015		4.59	4892.17			
		6/21/2016		5.04	4891.72			
		5/23/2017		4.33	4892.43			
		6/27/2018		4.53	4892.23			
		6/17/2019		5.32	4891.44			
SH2-MW02	4896.15	3/18/2013	12.37	5.71	4890.44			
		7/28/2014		NR				
		3/30/2015		4.96	4891.19			
		6/21/2016		4.95	4891.20			
		5/23/2017		4.34	4891.81			
		6/27/2018		4.45	4891.70			
SH2-MW03	4896.32	3/18/2013	9.71	5.11	4891.21			
		7/28/2014		NR				
		3/30/2015		4.59	4891.73			
		6/21/2016		4.61	4891.71			
		5/23/2017		3.80	4892.52			
		6/27/2018		3.50	4892.82			
SH2-MW03	4896.32	6/17/2019	9.71	5.00	4891.32			
		City of Longmont #1 Wellhead						
		CL1-MW01		4896.99	3/20/2013	13.34	6.42	4890.57
					7/28/2014		NR	
					3/30/2015		6.41	4890.58
					6/21/2016		3.87	4893.12
5/23/2017	NR							
6/27/2018	4.60		4892.39					
CL1-MW02	4896.04	6/17/2019	12.86	7.75	4889.24			
		3/20/2013		5.75	4890.29			
		7/28/2014		NR				
		3/30/2015		5.79	4890.25			
		6/22/2016		1.80	4894.24			
		5/23/2017		5.35	4890.69			
CL1-MW03	4896.33	6/27/2018	13.10	3.49	4892.55			
		6/17/2018		7.15	4888.89			
		3/20/2013		5.86	4890.47			
		7/28/2014		NR				
		3/30/2015		5.86	4890.47			
		6/21/2016		3.22	4893.11			
CL1-MW03	4896.33	5/23/2017	13.10	5.34	4890.99			
		6/27/2018		4.06	4892.27			
		6/17/2019		7.18	4889.15			

Table 1 - Groundwater Elevation Data
City of Longmont - Groundwater Quality Monitoring
Project Number 22197006

Well ID	Top of Casing Elevation ¹	Date Measured	Total Depth ²	Depth to Groundwater ²	Groundwater Elevation ³
Serafini Gas Unit					
SGU-MW01	4892.37	3/20/2013	12.90	5.52	4886.85
		10/22/2013		3.49	4888.88
		3/30/2015		5.86	4886.51
		6/21/2016		3.68	4888.69
		5/23/2017		5.70	4886.67
		6/28/2018		3.65	4888.72
SGU-MW02	4891.42	3/21/2013	8.10	5.17	4886.25
		10/22/2013		3.45	4887.97
		3/30/2015		5.07	4886.35
		6/21/2016		4.24	4887.18
		5/23/2017		5.54	4885.88
		6/28/2018		3.65	4887.77
SGU-MW03	4891.72	3/21/2013	12.06	5.59	4886.13
		10/22/2013		3.59	4888.13
		3/30/2015		5.85	4885.87
		6/21/2016		3.52	4888.20
		5/23/2017		5.68	4886.04
6/28/2018	3.60	4888.12			
SGU-MW04	4889.76	6/28/2018	9.41	3.10	4886.66
SGU-MW05	4891.69	6/28/2018	10.50	3.55	4888.14
Powell #1 Wellhead					
PL1-MW01	4885.90	3/20/2013	17.79	11.91	4873.99
		7/28/2014		NR	
		3/31/2015		12.16	4873.74
		6/22/2016		10.64	4875.26
		5/23/2017		11.40	4874.50
		6/27/2018		11.68	4874.22
		6/10/2019		12.06	4873.84
PL1-MW02	4885.58	3/19/2013	19.65	12.00	4873.58
		7/28/2014		NR	
		3/31/2015		12.52	4873.06
		6/22/2016		11.64	4873.94
		5/23/2017		11.15	4874.43
		6/27/2018		12.36	4873.22
		6/10/2019		12.42	4873.16
PL1-MW03R	4887.26	3/19/2013	18.06	13.04	4874.22
		7/28/2014		NR	
		3/31/2015		Well Destroyed	
		6/22/2016		Well Destroyed	
		5/23/2017		Well Destroyed	
		6/27/2018		12.97	4874.29
		6/10/2019		12.95	4874.31
Evans #6 Wellhead					
E6W-MW01	4882.37	3/22/2013	9.33	4.50	4877.87
		10/23/2013		4.80	4877.57
		7/28/2014		4.85	4877.52
		3/31/2015		3.92	4878.45
		6/22/2016		4.24	4878.13
		5/25/2017		4.38	4877.99
		6/28/2018		3.83	4878.54
		6/6/2019		3.90	4878.47
E6W-MW02	4882.45	3/22/2013	12.46	5.19	4877.26
		10/23/2013		6.50	4875.95
		7/28/2014		5.80	4876.65
		3/31/2015		5.14	4877.31
		6/22/2016		5.55	4876.90
		5/25/2017		5.60	4876.85
		6/28/2018		5.45	4877.00
		6/6/2019		4.85	4877.60
E6W-MW03	4881.53	3/22/2013	10.89	4.41	4877.12
		10/23/2013		5.15	4876.38
		7/28/2014		4.95	4876.58
		3/31/2015		4.24	4877.29
		6/22/2016		4.74	4876.79
		5/25/2017		4.68	4876.85
6/6/2019	4.05	4877.48			

**Table 1 - Groundwater Elevation Data
City of Longmont - Groundwater Quality Monitoring
Project Number 22197006**

Well ID	Top of Casing Elevation ¹	Date Measured	Total Depth ²	Depth to Groundwater ²	Groundwater Elevation ³
Evans #6 Tank Battery					
E6T-MW01	4879.08	3/22/2013	16.95	8.01	4871.07
		10/23/2013		8.16	4870.92
		7/28/2014		8.93	4870.15
		3/31/2015		9.75	4869.33
		6/22/2016		9.43	4869.65
		5/25/2017		10.25	4868.83
		6/28/2018		14.67	4864.41
E6T-MW02	4877.68	6/6/2019	12.84	10.01	4869.07
		3/22/2013		6.40	4871.28
		10/23/2013		7.47	4870.21
		7/28/2014		8.54	4869.14
		3/31/2015		8.84	4868.84
		6/22/2016		8.55	4869.13
		5/25/2017		7.92	4869.76
E6T-MW03	4878.03	6/28/2018	12.30	12.87	4864.81
		6/6/2019		7.96	4869.72
		3/22/2013		6.61	4871.42
		10/23/2013		7.62	4870.41
		7/28/2014		8.44	4869.59
		3/31/2015		8.62	4869.41
		6/22/2016		8.75	4869.28
Longmont #8-10K Wellhead					
LM8-MW01	4868.80	3/22/2013	9.39	3.64	4865.16
		7/28/2014		NR	
		3/31/2015		Dry	
		6/22/2016		Dry	
		5/23/2017		NR	
		6/5/2019		11.18	4857.62
LM8-MW02	4869.03	3/22/2013	9.74	4.32	4864.71
		7/28/2014		NR	
		3/31/2015		Dry	
		6/22/2016		Dry	
		5/23/2017		NR	
		6/5/2019		11.30	4857.42
LM8-MW03	4869.11	3/22/2013	9.42	3.21	4865.90
		7/28/2014		NR	
		3/31/2015		Dry	
		6/22/2016		Dry	
		5/23/2017		NR	
		6/5/2019		11.38	4857.73
Domenico #1 Wellsite					
DM1-MW01	4857.64	3/19/2013	11.44	7.41	4850.23
		7/29/2014		6.11	4851.53
		3/31/2015		6.33	4851.31
		6/24/2016		5.48	4852.16
		5/23/2017		5.52	4852.12
		6/29/2018		6.41	4851.23
		6/3/2019		6.82	4850.82
DM1-MW02	4854.17	3/19/2013	12.70	3.97	4850.20
		7/29/2014		3.18	4850.99
		4/1/2015		3.45	4850.72
		6/24/2016		2.34	4851.83
		5/23/2017		2.35	4851.82
		6/29/2018		3.33	4850.84
		6/3/2019		3.50	4850.67
DM1-MW03	4855.27	3/19/2013	12.82	5.15	4850.12
		7/29/2014		9.05	4846.22
		4/1/2015		3.99	4851.28
		6/24/2016		3.34	4851.93
		5/23/2017		3.50	4851.77
		6/29/2018		4.06	4851.21
		6/3/2019		3.61	4851.66

**Table 1 - Groundwater Elevation Data
City of Longmont - Groundwater Quality Monitoring
Project Number 22197006**

Well ID	Top of Casing Elevation ¹	Date Measured	Total Depth ²	Depth to Groundwater ²	Groundwater Elevation ³
Stamp 31-2C Wellsite					
S31-MW01	4957.15	3/22/2013	14.13	6.00	4951.15
		10/24/2013		3.08	4954.07
		7/29/2014		2.92	4954.23
		4/1/2015		4.31	4952.84
		6/23/2016		2.78	4954.37
		5/22/2017		3.43	4953.72
		6/29/2018		2.94	4954.21
		6/10/2019		1.78	4955.37
S31-MW02	4958.62	3/22/2013	14.22	8.55	4950.07
		10/24/2013		3.92	4954.70
		7/29/2014		Sediment ⁶	
		4/1/2015			
		6/23/2016			
		5/22/2017			
6/10/2019					
S31-MW03	4958.27	10/24/2013	13.59	4.91	4953.36
		7/29/2014		5.24	4953.03
		4/1/2015		6.30	4951.97
		6/23/2016		4.92	4953.35
		5/22/2017		6.59	4951.68
		6/29/2018		4.45	4953.82
		6/10/2019		5.35	4952.92
S31-MW04	4957.11	3/22/2013	14.90	9.22	4947.89
		10/24/2013		4.11	4953.00
		7/29/2014		4.41	4952.70
		4/1/2015		5.28	4951.83
		6/23/2016		4.10	4953.01
		5/22/2017		5.71	4951.40
		6/29/2018		3.68	4953.43
					4957.11
S31-MW05	4956.89	10/24/2013	14.97	4.11	4952.78
		7/29/2014		4.61	4952.28
		4/1/2015		5.12	4951.77
		6/23/2016		4.50	4952.39
		5/22/2017		5.69	4951.20
		6/29/2018		3.09	4953.80
		4957.15			
S31-MW06	4957.57	10/24/2013	11.44	4.20	4953.37
		7/29/2014		4.62	4952.95
		4/1/2015		5.61	4951.96
		6/23/2016		4.37	4953.20
		5/22/2017		5.98	4951.59
		6/29/2018		3.14	4954.43
		4957.15			
Rider #1 Wellsite					
RD1-MW01R	No Survey Information Available	7/30/2014	12.59	7.62	No Survey Information Available
		4/1/2015		8.52	
		6/23/2016		7.89	
		5/22/2017		8	
		6/29/2018		11.8	
RD1-MW02R	No Survey Information Available	7/30/2014	12.73	7.72	No Survey Information Available
		4/1/2015		8.61	
		6/23/2016		8.05	
		5/22/2017		8.08	
		6/29/2018		11.17	
RD1-MW03R	No Survey Information Available	7/30/2014	14.38	7.22	No Survey Information Available
		4/1/2015		8.18	
		6/23/2016		7.65	
		5/22/2017		NR	
		6/29/2018		11.43	
RD1-MW04R	No Survey Information Available	7/30/2014	14.52	7.70	No Survey Information Available
		4/1/2015		8.58	
		6/23/2016		7.99	
		5/22/2017		8.1	
		6/29/2018		11.21	
RD1-MW05R	No Survey Information Available	7/30/2014	14.65	7.95	No Survey Information Available
		4/1/2015		8.71	
		6/23/2016		8.12	
		5/22/2017		8.2	
		6/29/2018		11.01	
RD1-MW06R	No Survey Information Available	7/30/2014	14.34	4.75	No Survey Information Available
		4/1/2015		5.91	
		6/23/2016		5.35	

**Table 1 - Groundwater Elevation Data
City of Longmont - Groundwater Quality Monitoring
Project Number 22197006**

Well ID	Top of Casing Elevation ¹	Date Measured	Total Depth ²	Depth to Groundwater ²	Groundwater Elevation ³
		5/22/2017		5.31	
	101.77	6/29/2018		10.36	91.41
Tabor #1 Wellsite					
TB1-MW01		5/16/2019	27.85	18.02	-18.02
TB1-MW02		5/16/2019	27.22	17.93	-17.93
TB1-MW03		5/16/2019	Not located / destroyed		
Tabor #7 Wellsite					
TB7-MW01	100.13	5/16/2019	17.90	17.00	88.00
TB7-MW02	99.40	5/16/2019	19.70	16.64	88.36
TB7-MW03	98.90	5/16/2019	19.40	16.00	89
Maruyama #1 Wellsite					
MY1-MW01	101.94	5/16/2019	24.85	20.82	81.12
MY1-MW02	101.32	5/16/2019	24.72	21.20	80.12
MY1-MW03	101.94	5/16/2019	24.55	21.41	80.53
Wertman #1 Wellsite					
WT1-MW01	99.56	5/16/2019	16.38	13.65	92.35
WT1-MW02	100.54	5/16/2019	17.18	14.37	90.45
WT1-MW03	99.38	5/16/2019	17.16	13.48	92.64
WT1-MW04	97.66	5/16/2019	Destroyed - not located		
George Mayeda #1 Wellsite					
GM1-MW01	99.63	6/3/2019	14.50	10.82	95.18
GM1-MW02	98.98	6/3/2019	13.55	11.45	93.37
GM1-MW03	99.05	6/3/2019	14.40	11.20	94.92
Mary #2 Wellsite					
MR2-MW01	99.54	5/15/2019	24.64	14.45	89.32
MR2-MW02	100.11	5/15/2019	24.39	16.75	89.68
MR2-MW03	100.01	5/15/2019	24.54	17.55	90.32
¹ All survey information is in Datum: NAD 83, Colorado North Zone NAVD 88					
² Depth to groundwater is measured in feet below top of casing					
³ Elevation in feet above mean sea level					
⁴ Wells were observed to be destroyed. Unable to measure depths to water.					
⁶ Filled with sediment. No water present.					
NR - No Reading. Wells were not part of sampling program.					

Table 2 - Groundwater Analytical Results
 City of Longmont - Groundwater Quality Monitoring
 Project Number 22197006

Parameter	Volatile Organic Compounds					Other Organic Compounds			Inorganic Parameters													General Parameters					
	Benzene	Ethylbenzene	Naphthalene	Toluene	Xylenes (Total)	Methane	Ethane	Ethene	Calcium, Dissolved	Iron, Dissolved	Magnesium, Dissolved	Potassium, Dissolved	Sodium, Dissolved	Strontium	Alkalinity, Carbonate (CaCO3)	Alkalinity, Bicarbonate (CaCO3)	Alkalinity, Total as CaCO3	Bromide	Chloride	Nitrogen as Nitrate	Nitrogen as Nitrite	Nitrogen as Nitrate and Nitrite	Sulfate	Sulfide, Total	Specific Conductance	pH	
CAS #	71-43-2	100-41-4	91-20-3	108-88-3	1330-20-7	74-82-8	74-84-0	74-85-1	7440-70-2	7439-89-6	7439-95-4	7440-09-7	7440-23-5	7440-24-6				24859-67-9	16887-00-6				14808-79-8	18496-25-8			
COGCC Table 910-1 ³	0.005	0.7		0.56	1.4														76.21				757.63				
CDPHE Basic Standards for Groundwater	0.005	0.7	0.14	0.56	1.4				0.3										250	10	1	10	250			6.5 - 8.5	
Detection Level	0.001	0.001	0.005	0.001	0.003	0.0066	0.0062	0.0062		0.05										0.1	0.5	0.1		0.05			
Wellsite	Sample ID	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	umhos/cm	Std. Units	
Sherwood #1 Wellhead	SH1-MW01 ¹	3/18/2013	ND	ND	--	ND	ND	ND	ND	92	ND	110	2.57	118	5.91	ND	345	345	ND	37.5	8.30	ND	8.40	486	ND	1590	7.60
		10/23/2013	ND	ND	--	ND	ND	ND	ND	83	ND	107	1.63	110	4.56	ND	388	388	1.20	35.7	8.60	ND	8.60	415	ND	1450	7.00
		3/30/2015	ND	ND	--	ND	ND	ND	ND	98	ND	137	1.43	152	2.92	ND	422	422	1.80	50.6	11.2	ND	11.2	621	--	1923	7.52
		6/27/2018	ND	ND	--	ND	ND	ND*	ND*	121	ND*	160	2.11	183	2.83	ND	450	450	1.13	63.9	15.4	ND	15.4	679	--	--	--
	6/10/2019	ND	ND	--	ND	ND	ND*	ND*	116	ND*	147	2.00	152	3.46	ND	408	408	ND	59.9	8.4	ND	15.4	6	--	1738	7.71	
	3/18/2013	ND	ND	--	ND	ND	0.0091	ND	ND	101	ND	99.7	3.06	117	3.47	ND	365	365	ND	37.5	7.90	ND	8.00	431	ND	1570	7.50
	10/23/2013	ND	ND	--	ND	ND	ND	ND	ND	91	ND	96.4	1.85	111	2.74	ND	388	388	1.20	45.2	10.6	ND*	10.6	428	ND	1500	7
	3/30/2015	ND	ND	--	ND	ND	ND	ND	ND	93	ND	122	1.37	139	2.38	ND	393	393	1.50	44.4	10.5	ND	10.5	545	--	1730	7.58
	6/21/2016	ND	ND	--	ND*	ND	ND*	ND*	125	ND*	126	2.16	143	3.43	ND	401	401	ND	55.3	9.76	ND*	9.76	592	--	1878	7.3	
	5/23/2017	ND	ND	--	ND*	ND	ND*	ND*	168	ND*	195	2.57	194	3.80	ND	418	418	ND	72.8	15.00	ND	15.00	930	--	2472	7.37	
	6/27/2018	ND	ND	--	ND	ND	ND*	ND*	133	ND*	145	2.17	169	2.79	ND	436	436	ND	67.1	16.60	ND	16.60	646	--	--	--	
	6/10/2019	ND	ND	--	ND	ND	ND*	ND*	136	ND*	151	2.10	158	2.75	ND	413	413	ND	62.5	11.70	ND	11.70	678	--	1791	7.40	
Sherwood #2 Wellhead	SH2-MW01	3/18/2013	ND	ND	--	ND	ND	ND	ND	189	ND	121	3.86	102	3.44	ND	345	345	ND	40.2	11.4	0.63	12.0	799	--	1940	7.50
		3/30/2015	ND	ND	--	ND	ND	ND	ND	169	ND	107	1.21	108	3.72	ND	386	386	ND	33.6	11.0	ND	11.0	712	--	1935	7.47
		6/21/2016	ND	ND	--	ND	ND	ND*	ND*	186	ND	107	1.91	108	3.26	ND	371	371	ND	41.5	16.3	ND*	16.3	613	--	1853	7.30
		5/23/2017	ND	ND	--	ND	ND	ND*	ND*	250	ND	135	2.56	116	3.65	ND	291	291	ND	52.7	11.3	ND*	11.3	836	--	2195	7.40
	6/27/2018	ND	ND	--	ND	ND	ND*	ND*	234	ND*	131	2.07	122	3.89	ND	349	349	ND	52.6	6.0	ND*	6.0	899	--	--	--	
	6/17/2019	ND	ND	--	ND	ND	ND*	ND*	240	0.10	140	2.04	110	4.42	ND	390	390	1.52	26.4	8.2	ND*	8.2	640	--	2170	7.49	
	3/18/2013	ND	ND	--	ND	ND	ND	ND	ND	225	ND	121	5.72	111	3.87	ND	315	315	ND	43.8	13.6	ND	13.8	824	ND	2060	7.40
	3/30/2015	ND	ND	--	ND	ND	ND	ND	ND	183	ND	105	3.61	110	4.18	ND	367	367	ND	37.8	11.8	ND	11.8	749	--	2029	7.43
	6/21/2016	ND	ND	--	ND	ND	ND*	ND*	208	ND*	108	4.36	107	3.71	ND	377	377	ND	41.8	15.5	ND*	15.5	654	--	1918	7.40	
	5/23/2017	ND	ND	--	ND	ND	ND*	ND*	233	ND*	129	3.87	115	3.64	ND	210	210	ND	47.1	8.13	ND*	8.13	824	--	2056	7.41	
	6/27/2018	ND	ND	--	ND	ND	ND*	ND*	236	ND*	129	3.76	121	4.02	ND	351	351	ND	51.8	5.98	ND*	5.98	904	--	--	--	
	6/17/2019	ND	ND	--	ND	ND	ND*	ND*	247	ND*	129	4.27	113	4.72	ND	410	410	1.48	26.4	8.84	ND*	5.98	682	--	2170	7.54	
SH2-MW02	3/18/2013	ND	ND	--4.72	ND	ND	ND	ND	220	ND	115	4.69	104	4.52	ND	324	324	ND	44.8	13	ND	13.1	847	ND	2080	7.40	
	3/30/2015	ND	ND	--	ND	ND	ND	ND	192	ND	93.9	5.74	109	4.46	ND	367	367	ND	37.6	11.4	ND	11.4	802	--	2007	7.36	
	6/21/2016	ND	ND	--	ND	ND	ND*	ND*	212	ND*	97.2	7.09	105	3.85	ND	371	371	ND	41.5	16.9	ND	16.9	624	--	1905	7.30	
	5/23/2017	ND	ND	--	ND	ND	ND*	ND*	282	ND*	116	11.7	119	4.3	ND	295	295	ND	56.3	11.5	ND	11.5	833	--	2198	7.23	
	6/27/2018	ND	ND	--	ND	ND	ND*	ND*	258	ND*	123	7.91	128	4.51	ND	349	349	ND	54.8	7.32	ND*	7.32	944	--	--	--	
	6/17/2019	ND	ND	--	ND	ND	ND*	ND*	246	0.022	115	7.1	115	4.91	ND	410	410	71.8	0.5	9.88	ND*	7.32	944	--	2165	7.45	
City of Longmont #1 Wellhead	CL1-MW01 ²	3/20/2013	ND	ND	--	ND	ND	ND	ND	81	ND	72.2	2.83	61.7	2.38	ND	377	377	ND	34.1	13.9	ND	13.9	182	ND	1160	7.90
		3/30/2015	ND	ND	--	ND	ND	ND	ND	92	ND	85.5	1.45	91.8	2.53	ND	427	427	1.4	43.5	16.7	ND*	16.7	254	--	1390	7.51
		6/21/2016	ND	ND	--	ND	ND	ND*	ND*	104	ND	83	1.94	91	2.77	ND	393	393	ND	42.7	12.2	ND	12.2	247	--	1410	7.60
		6/27/2018	ND	ND	--	ND	ND	ND*	ND*	83	ND	66	1.71	69.1	1.86	ND	355	355	ND	34.9	8.14	ND	8.14	140	--	--	--
	6/17/2019	ND	ND	--	ND	ND	ND*	ND*	83	ND	71.1	1.6	65.7	2.53	ND	450	450	1.52	16.2	10.5	ND	10.5	217	--	1147	7.61	
	3/20/2013	ND	ND	--	ND	ND	ND	ND	77	ND	67.4	2.1	60.4	4.26	ND	354	354	ND	32.7	2.6	ND	2.6	171	ND	1090	7.90	
	3/30/2015	ND	ND	--	ND	ND	ND	ND	77	ND	67.4	2.1	60.4	4.26	ND	354	354	ND	32.7	2.6	ND	2.6	171	ND	1090	7.90	
	6/22/2016	ND	ND	--	ND	ND	ND*	ND*	102	ND	85.5	1.98	93.3	3.22	ND	372	372	ND	46.7	13	ND	13	246	--	1402	7.30	
	5/23/2017	ND	ND	--	ND	ND	ND*	ND*	97	ND	77.2	1.91	89.5	2.24	ND	416	416	ND	44.7	9.75	ND	9.75	209	--	1261	7.19	
	6/27/2018	ND	ND	--	ND	ND	ND*	ND*	80	ND*	62.9	1.76	76.9	1.81	ND	352	352	ND	36.4	9.1	ND	9.1	144	--	--	--	
	6/17/2019	ND	ND	--	ND	ND	ND*	ND*	89	0.014	73	1.81	70.1	2.46	ND	450	450	1.51	14.4	10.5	ND	10.5	210	--	1125	7.65	
	Serafini Gas Unit	SGU-MW01	3/21/2013	ND	ND	--	ND	ND	ND	ND	81	ND	53.7	3.59	67.2	2.96	ND	328	328	ND	29.8	5.9	ND	5.9	191	ND	1060
10/22/2013			ND	ND	--	ND	ND	ND	ND	77	0.208	54.7	2.88	62.5	2.32	ND	345	345	ND	30.3	7.4	ND	7.4	292	ND	1190	7.30
3/30/2015			ND	ND	--	ND	ND	ND	ND	98	ND	63.8	2.46	76.8	2.77	ND	392	392	ND	32.8	8.4	ND	8.4	263	--	1322	7.51
6/21/2016			ND	ND	--	ND	ND	ND*	ND*	109	ND	61.9	2.67	69.9	2.02	ND	364	364	ND	37.8	7.37	ND	7.37	205	--	1170	7.50
5/23/2017		ND	ND	--	ND	ND	ND*	ND*	118	ND	65.2	3.03	72	1.86	ND	400	400	ND	39.3	7.39	ND	7.39	192	--	1201	7.33	
6/28/2018		ND	ND	--	ND	ND	ND*	ND*	108	ND	57.9	2.59															

Table 2 - Groundwater Analytical Results
 City of Longmont - Groundwater Quality Monitoring
 Project Number 22197006

Parameter	Volatile Organic Compounds					Other Organic Compounds			Inorganic Parameters													General Parameters					
	Benzene	Ethylbenzene	Naphthalene	Toluene	Xylenes (Total)	Methane	Ethane	Ethene	Calcium, Dissolved	Iron, Dissolved	Magnesium, Dissolved	Potassium, Dissolved	Sodium, Dissolved	Strontium	Alkalinity, Carbonate (CaCO3)	Alkalinity, Bicarbonate (CaCO3)	Alkalinity, Total as CaCO3	Bromide	Chloride	Nitrogen as Nitrate	Nitrogen as Nitrite	Nitrogen as Nitrate and Nitrite	Sulfate	Sulfide, Total	Specific Conductance	pH	
CAS #	71-43-2	100-41-4	91-20-3	108-88-3	1330-20-7	74-82-8	74-84-0	74-85-1	7440-70-2	7439-89-6	7439-95-4	7440-09-7	7440-23-5	7440-24-6	-	-	-	24859-67-9	16887-00-6	-	-	-	14808-79-8	18496-25-8	-	-	
COGCC Table 910-1 ³	0.005	0.7	-	0.56	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	76.21	-	-	-	757.63	-	-	-	
CDPHE Basic Standards for Groundwater	0.005	0.7	0.14	0.56	1.4	-	-	-	0.3	-	-	-	-	-	-	-	-	-	250	10	1	10	250	-	-	6.5 - 8.5	
Detection Level	0.001	0.001	0.005	0.001	0.003	0.0066	0.0062	0.0062	-	0.05	-	-	-	-	20	20	20	1	-	0.1	0.5	0.1	-	0.05	-	-	-
Wellsite	Sample ID	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	umhos/cm	Std. Units	
Evans #6 Wellhead	E6W-MW01	3/22/2013	ND	ND	--	ND	ND	ND	ND	183	ND	126	6.52	157	4.04	ND	307	307	ND	32.7	0.44	ND	0.44	987	ND	2070	7.60
		10/23/2013	ND	ND	--	ND	ND	ND	ND	281	ND	182	7.58	236	5.52	ND	381	381	ND	72.2	5.0	ND	5.0	1,710	ND	4960	6
		7/28/2014	ND	ND	--	ND	ND	ND	ND	206	ND	133	6.41	181	4.19	ND	326	326	ND	50.0	0.84	ND	0.84	1,130	--	2074	7.2
		03/31/2015	ND	ND	--	ND	ND	ND	ND	207	ND	136	4.36	172	4.29	ND	351	351	ND	42.9	0.83	ND	0.83	1,090	--	2397	7.27
		6/22/2016	ND	ND	--	ND*	ND	ND*	ND*	187	ND	115	4.59	164	4.06	ND	268	268	ND	42.6	0.351	ND	0.351	915	--	2090	7.2
		5/25/2017	ND	ND	--	ND*	ND	ND*	ND*	332	ND	187	5.64	222	5.25	ND	305	305	ND	39.9	3.55	ND	3.55	1,580	--	2944	6.74
	E6W-MW02	6/28/2018	ND	ND	--	ND	ND	ND*	ND*	188	ND	108	4.25	171	3.39	ND	269	269	ND	35.9	ND	ND	ND	875	--	--	--
		6/6/2019	ND	ND	--	ND	ND	ND*	ND*	207	ND	119	4.25	172	3.50	ND	312	312	ND	31.8	1.65	ND	1.65	955	--	2026	7.53
		3/22/2013	ND	ND	--	ND	ND	0.0278	ND	207	ND	175	10.6	212	5.94	ND	312	321	1.5	34.4	ND	ND	ND	1,380	ND	2200	7.80
		10/23/2013	ND	ND	--	ND	ND	ND	ND	329	ND	279	42.4	419	7.28	ND	426	426	1	110	14.5	ND*	14.5	2,630	ND	7000	6
		7/28/2014	ND	ND	--	ND	ND	ND	ND	187	ND	139	22.7	189	4.48	ND	309	309	ND	38.4	2.6	ND	2.6	1,350	--	2358	7.27
		3/31/2015	ND	ND	--	ND	ND	ND	ND	181	ND	150	15.3	188	4.02	ND	307	307	ND	35.4	0.58	ND	0.58	1,160	--	2472	7.47
	E6W-MW03	6/22/2016	ND	ND	--	ND*	ND	ND*	ND*	226	ND	182	19.8	235	7.6	ND	304	304	ND	50.3	2.94	ND	2.94	1,430	--	2821	7.3
		5/25/2017	ND	ND	--	ND*	ND	ND*	ND*	167	ND	130	7.94	179	4.03	ND	280	280	ND	38.7	0.685	ND	0.685	863	--	2076	7.27
		6/28/2018	ND	ND	--	ND	ND	ND*	ND*	188	ND	142	9.41	192	3.61	ND	294	294	ND	35.0	0.312	ND	0.312	996	--	--	--
		6/6/2019	ND	ND	--	ND	ND	ND*	ND*	194	ND	150	10.4	188	3.44	ND	277	277	ND	30.8	1.12	ND	1.12	1,120	--	2133	7.57
		3/22/2013	ND	ND	--	ND	ND	0.0141	ND	192	ND	150	9.22	184	5.73	ND	312	312	ND	31.1	0.11	ND	0.11	1,130	ND	2280	7.60
		10/23/2013	ND	ND	--	ND	ND	ND	ND	363	ND	255	31.1	333	7.09	ND	367	367	ND	96.2	6.2	ND	6.2	2,420	ND	6320	6
E6T-MW01	07/28/2014	ND	ND	--	ND	ND	ND	ND	264	ND	167	13.1	217	5.34	ND	315	315	ND	52.4	1.9	ND	1.9	1,550	--	2635	7.15	
	3/31/2015	ND	ND	--	ND	ND	ND	ND	200	ND	133	8.49	178	4.02	ND	327	327	ND	40.8	1.4	ND	1.4	1,180	--	2481	7.34	
	6/22/2016	ND	ND	--	ND*	ND	ND*	ND*	262	ND	156	9.13	196	6.61	ND	325	325	ND	49.0	3.38	ND	3.38	1,280	--	2678	7.2	
	5/25/2017	ND	ND	--	ND*	ND	ND*	ND*	273	ND	166	9.72	210	4.37	ND	299	299	ND	36.9	1.98	ND	1.98	1,430	--	2696	7.09	
	6/28/2018	ND	ND	--	ND	ND	ND*	ND*	302	ND	165	6.94	217	4.98	ND	319	319	ND	37.8	0.725	ND	0.725	1,390	--	--	--	
	6/6/2019	ND	ND	--	ND	ND	ND*	ND*	250	ND	146	7.26	192	3.89	ND	298	298	ND	30.1	1.16	ND	1.16	1,200	--	2331	7.61	
E6T-MW02	3/22/2013	ND	ND	--	ND	ND	ND	ND	326	ND	285	12.1	593	6.14	ND	334	334	1.2	112	0.93	ND	0.93	3,060	ND	5030	7.80	
	10/23/2013	ND	ND	--	ND	ND	ND	ND	306	ND	256	6.61	666	4.03	ND	401	401	ND	111	ND	ND	ND	3,190	ND	8280	7	
	7/28/2014	ND	ND	--	ND	ND	ND	ND	280	ND	215	5.8	446	4.54	ND	340	340	ND	104	ND	ND	ND	2,810	--	4100	7.47	
	3/31/2015	ND	ND	--	ND	ND	ND	ND	258	ND	205	4.81	608	4.05	ND	324	324	ND	96.5	ND	ND	ND	2,590	--	4706	7.42	
	6/22/2016	ND	ND	--	ND*	ND	0.0122	ND*	251	ND	168	5.15	587	4.85	ND	291	291	ND	86.1	ND	ND	ND	2,190	--	4225	7.46	
	5/25/2017	ND	ND	--	ND*	ND	ND*	ND*	217	ND	140	4.4	616	2.93	ND	277	277	ND	90.6	ND	ND	ND	1,930	--	3850	7.38	
E6T-MW03	6/28/2018	ND	ND	--	ND	ND	ND*	ND*	193	ND*	121	3.91	595	2.65	ND	257	257	ND	84.9	ND	ND	ND	1,970	--	--	--	
	6/6/2019	ND	ND	--	ND	ND	ND*	ND*	174	ND	110	3.64	560	2.38	ND	309	309	ND	76.3	ND	ND	ND	1,550	--	3140	7.21	
	3/22/2013	ND	ND	--	ND	ND	0.0076	ND	238	ND	181	7.41	247	4.52	ND	346	346	1.2	63.9	ND	ND	ND	1,560	ND	2960	7.60	
	10/23/2013	ND	ND	--	ND	ND	ND	ND	271	ND	210	6.58	334	4.45	ND	391	391	ND	68.6	16.6	ND*	17	1,770	ND	5640	6	
	7/28/2014	ND	ND	--	ND	ND	ND	ND	393	ND	297	7.56	356	7.04	ND	346	346	ND	113	ND	ND	ND	3,080	--	3968	7.44	
	3/31/2015	ND	ND	--	ND	ND	ND	ND	430	ND	392.00	7.24	563.00	8.27	ND	277.00	277.00	ND	129.0	ND	ND	ND	3,610	--	5745	7.28	
Evans #6 Tank Battery	6/22/2016	ND	ND	--	ND*	ND	ND*	ND*	551	ND	810	8.74	1,060	29.3	ND	141	141	ND	218	ND	ND	ND	7,560	--	9390	7.04	
	5/25/2017	ND	ND	--	ND*	ND	ND*	ND*	399	ND	331	7.58	462	7.78	ND	250	250	ND	83.9	0.575	ND	0.575	2,960	--	--	--	
	6/28/2018	ND	ND	--	ND	ND	ND*	ND*	400	ND*	318	7.4	436	5.86	ND	166	166	ND	88.2	ND	ND	ND	2,600	--	--	--	
	6/6/2019	ND	ND	--	ND	ND	ND*	ND*	462	ND	371	7.82	490	6.01	ND	184	184	ND	92.7	1.39	ND	1.39	3,170	--	4610	6.93	
	3/22/2013	ND	ND	--	ND	ND	0.0068	ND	354	ND	350	11	500	7.86	ND	524	524	1.3	103	ND	ND	ND	2,650	ND	4830	7.40	
	10/23/2013	ND	ND	--	ND	ND	ND	ND	516	0.212	644	8.43	992	10.1	ND	732	732	1.2	249	ND	ND	ND	5,200	ND	13200	6.00	
Longmont 8-10K Wellhead	7/28/2014	ND	ND	--	ND	ND	ND	ND	530	ND	680	7.48	1,010	2.51	ND	468	468	1.1	254	ND	ND	ND	6,240	--	7162	7.35	
	3/31/2015	ND	ND	--	ND	ND	ND	ND	432	9.73	543	6.25	840	9.29	ND	301	301	ND	165.0	ND	ND	ND	4,970	--	7557	7.16	
	6/22/2016	ND	ND	--	ND*	ND	ND*	ND*	392	ND	295	6.65	490	7.44	ND	245	245	ND	88.1	4.41	ND	4.41	2,930	--	4748	7.38	
	5/25/2017	ND	ND	--	ND*	ND	ND*	ND*	432	0.282	616	6.34	824	7.73	ND	ND	ND	ND	166.0	ND	ND	ND	5,610	--	7601	5.08	
	6/28/2018	ND	ND	--	ND	ND	0.013	ND*	436	ND*	646	7.02	894</														

Table 2 - Groundwater Analytical Results
 City of Longmont - Groundwater Quality Monitoring
 Project Number 22197006

Parameter	Volatile Organic Compounds					Other Organic Compounds			Inorganic Parameters														General Parameters					
	Benzene	Ethylbenzene	Naphthalene	Toluene	Xylenes (Total)	Methane	Ethane	Ethene	Calcium, Dissolved	Iron, Dissolved	Magnesium, Dissolved	Potassium, Dissolved	Sodium, Dissolved	Strontium	Alkalinity, Carbonate (CaCO3)	Alkalinity, Bicarbonate (CaCO3)	Alkalinity, Total as CaCO3	Bromide	Chloride	Nitrogen as Nitrate	Nitrogen as Nitrite	Nitrogen as Nitrate and Nitrite	Sulfate	Sulfide, Total	Specific Conductance	pH		
CAS #	71-43-2	100-41-4	91-20-3	108-88-3	1330-20-7	74-82-8	74-84-0	74-85-1	7440-70-2	7439-89-6	7439-95-4	7440-09-7	7440-23-5	7440-24-6	-	-	-	24859-67-9	16887-00-6	-	-	-	14808-79-8	18496-25-8	-	-		
COGCC Table 910-1 ³	0.005	0.7	-	0.56	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	76.21	-	-	-	757.63	-	-	-		
CDPHE Basic Standards for Groundwater	0.005	0.7	0.14	0.56	1.4	-	-	-	0.3	-	-	-	-	-	-	-	-	-	250	10	1	10	250	-	-	6.5 - 8.5		
Detection Level	0.001	0.001	0.005	0.001	0.003	0.0066	0.0062	0.0062	0.05	-	-	-	-	-	20	20	20	1	-	0.1	0.5	0.1	-	0.05	-	-	-	
Wellsite	Sample ID	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	umhos/cm	Std. Units		
Stamp 31-2C Wellsite	S31-MW01	3/22/2013	ND	ND	--	ND	ND	0.0137	ND	ND	365	ND	1,400	26.5	2,850	9.7	ND	606	606	1.8	381	2.8	0.32	3.1	13,200	ND	17200	7.50
		10/24/2013	ND	ND	--	0.0022	ND	0.101	ND	ND	340	0.196	814	14.5	2,060	8.01	ND	642	642	3.6	369	1.5	0.16	1.6	8,340	ND	5670	7.20
		7/29/2014	ND	0.011	--	ND	ND	0.142	ND	ND	356	0.192	986	16.2	2,680	8.99	ND	829	829	3.1	725	ND	ND	ND	8,930	--	11866	7.13
		4/1/2015	0.0014	0.186	--	ND	ND	0.372	0.0094	ND	318	ND	687	10.4	2,260	11.9	ND*	1,120	1,120	8	762	ND	ND	ND	7,340	--	12985	7.21
		6/23/2016	ND	ND	--	ND*	ND	0.262	0.0245	ND*	434	ND	1,270	13.8	2,900	16.4	ND	762	762	ND	699	ND	ND	ND	11,200	--	15456	7.04
		5/22/2017	ND	0.0065	--	ND*	ND	0.318	0.0145	ND*	416	ND	1,200	13.3	2,880	10	ND	753	753	ND	637	ND	ND	ND	9,930	--	15430	7.26
	S31-MW02 ¹	6/29/2018	ND	ND	--	ND	ND	0.134	ND*	ND*	407	ND	1,270	13.4	3,060	8.76	ND	648	648	ND	351	ND	ND	ND	11,300	--	--	--
		6/10/2019	ND	ND	--	ND	ND	0.266	ND	ND	415	ND	1,300	12.8	3,000	8.71	ND	724	724	ND	455	ND	ND	ND	11,800	--	13540	7.23
	S31-MW03	3/22/2013	0.0946	0.0232	--	ND	ND	0.0323	0.0119	ND	377	ND	872	18.4	1,940	7.99	ND	860	860	1.5	150	ND	ND	ND	9,110	ND	12500	7.20
		10/24/2013	0.0549	ND	--	0.0102	ND	0.0506	0.0169	ND	352	ND	655	12.3	1,600	6.28	ND	771	771	2.4	181	ND	ND	ND	6,330	ND	4060	7.00
		7/29/2014	0.0062	ND	--	0.0013	ND	0.0485	0.0076	ND	362	0.204	814	7.83	1,860	11.5	ND*	1,340	1,340	2.3	253	ND	ND	ND	7,050	ND	4760	7.10
		4/1/2015	ND	0.0012	--	ND	ND	0.111	0.0236	ND	383	ND	750	8.72	1,520	9.85	ND*	1,410	1,410	1.8	176	ND	ND	ND	6,480	--	8796	7.09
		6/23/2016	0.0012	ND	--	ND*	ND	0.104	0.0228	ND	405	ND	711	9.83	1,490	9.15	ND*	1,790	1,790	1.7	162	ND	ND	ND	5,860	--	10227	7.01
		5/22/2017	ND	ND	--	ND*	ND	0.171	0.016	ND*	466	ND	858	8.44	1,720	12.1	ND	1,360	1,360	ND	147	ND	ND	ND	6,870	--	10812	7.15
	S31-MW04	6/29/2018	0.0021	ND	--	ND	ND	0.319	0.19	ND*	438	ND	743	8.65	1,510	9.34	ND	1,280	1,280	ND	118	ND	ND	ND	5,770	--	9593	7.18
		6/10/2019	ND	ND	--	ND	ND	0.319	0.19	ND*	438	ND	743	8.65	1,510	9.34	ND	1,280	1,280	ND	118	ND	ND	ND	5,770	--	9593	7.18
		3/22/2013	ND	ND	--	ND	ND	0.360	ND	ND	463	ND	753	9.42	1,860	8.33	ND	1,090	1,090	ND	107	ND	ND	ND	6,520	--	8440	7.11
		10/24/2013	ND	ND	--	ND	ND	ND	ND	ND	383	ND	759	19.6	1,380	9.55	ND	480	480	4.4	85.2	1.9	0.21	2.1	7,180	ND	9980	7.50
		7/29/2014	ND	ND	--	ND	ND	ND	ND	ND	345	0.216	710	13.4	1,660	7.7	ND	497	497	1.5	75.1	0.46	ND	0.46	6,710	ND	4250	7.30
		7/31/2014	--	--	--	--	--	--	--	--	382	ND	796	10.6	1,560	8.43	--	--	--	--	--	--	--	--	--	--	10164	7.49
	S31-MW05	4/1/2015	ND	ND	--	ND	ND	ND	ND	ND	382	ND	776	12.2	1,530	9.03	ND	528	528	2.8	119.0	1.3	ND	1.3	7,100	--	10363	7.36
		6/23/2016	ND	ND	--	ND*	ND	ND*	ND*	ND*	437	ND	888	10.3	1,660	10.7	ND	485	485	ND	127	3.12	ND	3.12	8,050	--	10789	7.28
		5/22/2017	ND	ND	--	ND*	ND	ND*	ND*	ND*	410	ND	765	10.3	1,560	8.45	ND	554	554	ND	185	ND	ND	ND	6,870	--	10020	7.43
		6/29/2018	ND	ND	--	ND	ND	ND*	ND*	ND*	426	ND	841	11	1,630	9.12	ND	539	539	ND	107	ND	ND	ND	7,210	--	--	--
10/24/2013		ND	ND	--	ND	ND	ND	ND	ND	361	0.079	627	12	1,250	6.94	ND	464	464	1.1	60.4	0.17	ND	0.17	6,060	ND	3770	7.20	
7/30/2014		--	--	--	--	--	--	--	--	362	ND	554	9.36	1,030	7.14	--	--	--	--	--	--	--	--	--	--	NS	NS	
S31-MW06	4/1/2015	ND	ND	--	ND	ND	ND	ND	ND	381	ND	570	10.7	1,020	7.12	ND	468	468	1.4	64.8	0.43	ND	0.44	5,250	--	7915	7.29	
	6/23/2016	ND	ND	--	ND*	ND	ND*	ND*	ND*	422	ND	922	8.95	1,670	9.55	ND	535	535	ND	106	0.177	ND	0.177	9,090	--	11864	7.26	
	5/22/2017	ND	ND	--	ND*	ND	ND*	ND*	ND*	411	ND	548	9.09	996	6.93	ND	523	523	ND	76.5	ND	ND	ND	4,690	--	7564	7.37	
	6/29/2018	ND	ND	--	ND	ND	ND*	ND*	ND*	439	ND	548	9.32	971	7.03	ND	484	484	ND	71.1	ND	ND	ND	4,590	--	--	--	
	10/24/2013	ND	ND	--	ND	ND	ND	ND	ND	366	ND	497	11.1	1,120	6.74	ND	485	485	1	56.5	ND	ND	ND	5,380	ND	3440	7.20	
	7/29/2014	ND	ND	--	ND	ND	ND	ND	ND	386	ND	554	9.16	1,010	7.13	ND	465	465	1.5	66.7	ND	ND	ND	5,540	--	6147	7.33	
RD1-MW01	4/1/2015	ND	ND	--	ND	ND	ND	ND	ND	372	ND	605	11	1,110	8.28	ND	494	494	1.5	77.6	0.6	ND	0.6	5,690	--	8375	7.26	
	6/23/2016	ND	ND	--	ND*	ND	ND*	ND*	ND*	454	ND	870	9.61	1,430	11.8	ND	527	527	ND	131	0.621	ND	0.621	6,980	--	9450	7.08	
	5/22/2017	ND	ND	--	ND*	ND	ND*	ND*	ND*	421	ND	589	9.49	1,150	8.2	ND	531	531	ND	81.4	ND	ND	ND	5,400	--	8013	7.08	
	6/29/2018	ND	ND	--	ND	ND	ND*	ND*	ND*	442	ND	565	9.24	999	7.61	ND	514	514	ND	74.6	ND	ND	ND	4,850	--	--	--	
	7/30/2014	ND	ND	--	ND	ND	ND	ND	ND	87	ND	74.8	2.78	127	3.18	ND	407	407	ND	34.5	4.8	ND	4.8	323	--	1115	7.03	
	4/1/2015	ND	ND	--	ND	ND	ND	ND	ND	94	ND	80	1.9	120	3.07	ND	430	430	ND	32.0	4.9	ND	4.9	365	--	1438	7.41	
RD1-MW02	6/23/2016	ND	ND	--	ND*	ND	ND*	ND*	ND*	107	ND	82.6	2.57	129	4.81	ND	389	389	ND	36.2	--	--	--	366	--	1495	7.21	
	7/8/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	36.9	5.02	ND	5.02	359	--	1458	6.99
	5/22/2017	ND	ND	--	ND*	ND	ND*	ND*	ND*	102	ND	78.5	2.2	122	3.1	ND	436	436	ND	37.8	4.78	ND	4.78	326	--	1438	7.37	
	10/19/2017	--	0.738	0.14	--	5.46	0.474	ND*	ND*	99.2	ND	82.5	3.11	111	2.99	355	--	355	ND	41.3	3.88	ND	3.88	263	263	1250	7.40	
	6/29/2018	ND	0.005	--	ND	0.042	0.128	ND*	ND*	102	ND	84.5	2.26	117	3.16	ND	390	390	ND	37.4	2.99	ND	2.99	341	--	--	--	
	7/30/2014	ND	ND	--	ND	ND	0.0094	ND	ND	88	ND	80.8	1.89	104	3.06	ND	471	471	ND	31.8	3.8	ND	3.8	305	--	1099	7.21	
RD1-MW03R	4/1/2015	ND	ND	--	ND</																							

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 22197006

Parameter	Volatile Organic Compounds					Other Organic Compounds			Inorganic Parameters													General Parameters				
	Benzene	Ethylbenzene	Naphthalene	Toluene	Xylenes (Total)	Methane	Ethane	Ethene	Calcium, Dissolved	Iron, Dissolved	Magnesium, Dissolved	Potassium, Dissolved	Sodium, Dissolved	Strontium	Alkalinity, Carbonate (CaCO3)	Alkalinity, Bicarbonate (CaCO3)	Alkalinity, Total as CaCO3	Bromide	Chloride	Nitrogen as Nitrate	Nitrogen as Nitrite	Nitrogen as Nitrate and Nitrite	Sulfate	Sulfide, Total	Specific Conductance	pH
CAS #	71-43-2	100-41-4	91-20-3	108-88-3	1330-20-7	74-82-8	74-84-0	74-85-1	7440-70-2	7439-89-6	7439-95-4	7440-09-7	7440-23-5	7440-24-6				24959-67-9	16887-00-6				14808-79-8	18496-25-8		
COGCC Table 910-1 ³	0.005	0.7	--	0.56	1.4	--	--	--	--	--	--	--	--	--	--	--	--	76.21	--	--	--	757.63	--	--	--	--
CDPHE Basic Standards for Groundwater	0.005	0.7	0.14	0.56	1.4	--	--	--	0.3	--	--	--	--	--	--	--	--	250	10	1	10	250	--	--	6.5 - 8.5	
Detection Level	0.001	0.001	0.005	0.001	0.003	0.0066	0.0062	0.0062		0.05					20	20	20	1		0.1	0.5	0.1		0.05		
Wellsite	Sample ID	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	umhos/cm	Std. Units

¹ Wells were observed to be destroyed. Unable to measure depths to water.
² The aluminum collar around the well casing was bent and the concrete surface completion was found separated, the well was not sampled. The bentonite seal may be compromised; however, the analytical data does not indicate that the well is compromised.
³ The COGCC cleanup standard for chloride and sulfate is 1.25 x background. Background concentrations from unimpacted wells were used to average and calculate an appropriate background concentration for this area.
⁴ Filled with sediment. No water present.
 RD1 samples collected on 6/23/2016 had to be recollected for nitrite and nitrate analysis due to a shipping delay resulting in the original samples being past the hold time of 48 hours.
 COGCC - Colorado Oil and Gas Conservation Commission
 CDPHE - Colorado Department of Public Health and Environment
 mg/L - milligrams per liter
 ND - Parameter not detected above the laboratory detection limit (Detection Limit)
Bold indicates detected constituents
 Yellow shading indicates constituents above COGCC Table 910-1 standards.
 Green shading indicates constituents detected above CDPHE standards
 Green shading indicates the most recent analytical results.
 umhos/cm - microsiemens per centimeter
 M - Drinking water maximum contaminant level
 -- Not Sampled
 Bkg - Background
 --- indicates no regulatory standard

APPENDIX B
ANALYTICAL REPORTS AND CHAINS OF CUSTODY

Terracon Consultants, Inc - Longmont, CO

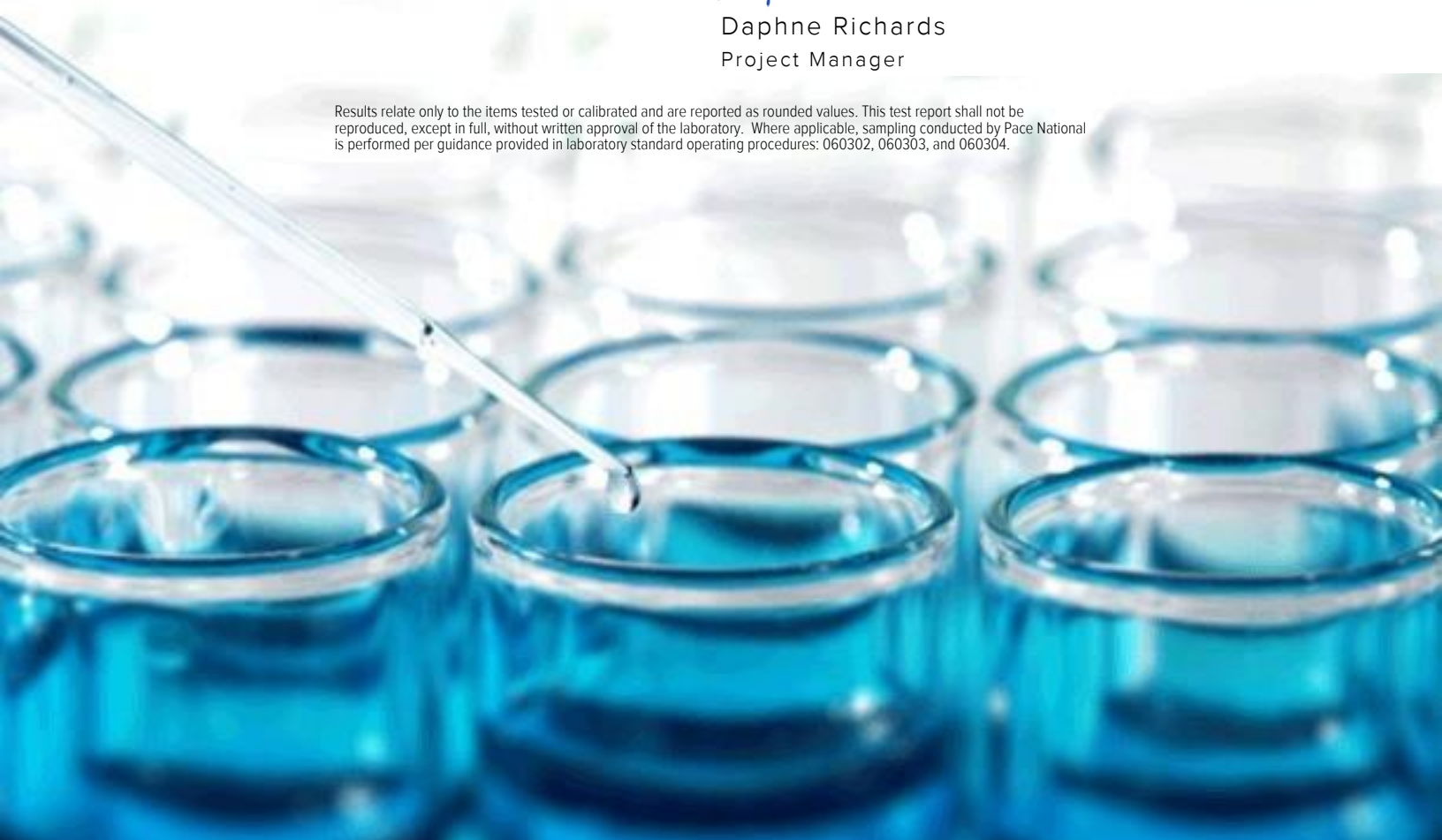
Sample Delivery Group: L1105867
Samples Received: 06/06/2019
Project Number: 22197006
Description: City of Longmont Groundwater Quality Monitoring
Site: LM8
Report To: Michael Skridulis
1831 Lefthand Cirlice, Suite C
Longmont, CO 80501

Entire Report Reviewed By:












Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





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SAMPLE SUMMARY



LM8-MW01 L1105867-01 GW

Collected by Charles A. Covington
 Collected date/time 06/05/19 11:00
 Received date/time 06/06/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1293368	1	06/11/19 20:08	06/11/19 20:08	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1291823	1	06/07/19 00:15	06/07/19 00:15	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1291823	100	06/07/19 02:37	06/07/19 02:37	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1294049	1	06/11/19 13:39	06/11/19 22:18	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1292560	5	06/10/19 21:34	06/11/19 18:20	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1292439	1	06/07/19 08:43	06/07/19 08:43	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1293333	1	06/09/19 06:28	06/09/19 06:28	ACG	Mt. Juliet, TN



LM8-MW02 L1105867-02 GW

Collected by Charles A. Covington
 Collected date/time 06/05/19 11:40
 Received date/time 06/06/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1293368	1	06/11/19 20:15	06/11/19 20:15	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1291823	1	06/07/19 00:43	06/07/19 00:43	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1291823	100	06/07/19 00:58	06/07/19 00:58	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1294049	1	06/11/19 13:39	06/11/19 22:29	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1292560	5	06/10/19 21:34	06/11/19 18:25	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1292439	1	06/07/19 08:47	06/07/19 08:47	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1293333	1	06/09/19 06:49	06/09/19 06:49	ACG	Mt. Juliet, TN

LM8-MW03 L1105867-03 GW

Collected by Charles A. Covington
 Collected date/time 06/05/19 10:20
 Received date/time 06/06/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1293368	1	06/11/19 20:21	06/11/19 20:21	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1291823	1	06/07/19 01:12	06/07/19 01:12	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1291823	100	06/07/19 01:27	06/07/19 01:27	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1294049	1	06/11/19 13:39	06/11/19 22:32	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1292560	2	06/10/19 21:34	06/11/19 18:30	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1292439	1	06/07/19 08:50	06/07/19 08:50	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1293333	1	06/09/19 07:11	06/09/19 07:11	ACG	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	129		20.0	1	06/11/2019 20:08	WG1293368

Sample Narrative:

L1105867-01 WG1293368: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	06/07/2019 02:37	WG1291823
Chloride	35.9		1.00	1	06/07/2019 00:15	WG1291823
Nitrate as (N)	ND		0.100	1	06/07/2019 00:15	WG1291823
Nitrite as (N)	ND		0.100	1	06/07/2019 00:15	WG1291823
Sulfate	2820		500	100	06/07/2019 02:37	WG1291823

Sample Narrative:

L1105867-01 WG1291823: Reporting Br @ dilution due to matrix: high sulfate content

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	492	V	1.00	1	06/11/2019 22:18	WG1294049
Iron,Dissolved	ND		0.100	1	06/11/2019 22:18	WG1294049
Magnesium,Dissolved	326	V	1.00	1	06/11/2019 22:18	WG1294049
Potassium,Dissolved	12.1		1.00	1	06/11/2019 22:18	WG1294049
Sodium,Dissolved	223	V	1.00	1	06/11/2019 22:18	WG1294049

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	6.26		0.0500	5	06/11/2019 18:20	WG1292560

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	06/07/2019 08:43	WG1292439
Ethane	ND		0.0130	1	06/07/2019 08:43	WG1292439
Ethene	ND		0.0130	1	06/07/2019 08:43	WG1292439
Acetylene	ND		0.0208	1	06/07/2019 08:43	WG1292439

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	06/09/2019 06:28	WG1293333
Acrolein	ND		0.0500	1	06/09/2019 06:28	WG1293333
Acrylonitrile	ND		0.0100	1	06/09/2019 06:28	WG1293333
Benzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
Bromobenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
Bromodichloromethane	ND		0.00100	1	06/09/2019 06:28	WG1293333
Bromoform	ND		0.00100	1	06/09/2019 06:28	WG1293333
Bromomethane	ND		0.00500	1	06/09/2019 06:28	WG1293333
n-Butylbenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
sec-Butylbenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
tert-Butylbenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Carbon tetrachloride	ND		0.00100	1	06/09/2019 06:28	WG1293333
Chlorobenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
Chlorodibromomethane	ND		0.00100	1	06/09/2019 06:28	WG1293333
Chloroethane	ND		0.00500	1	06/09/2019 06:28	WG1293333
Chloroform	ND		0.00500	1	06/09/2019 06:28	WG1293333
Chloromethane	ND		0.00250	1	06/09/2019 06:28	WG1293333
2-Chlorotoluene	ND		0.00100	1	06/09/2019 06:28	WG1293333
4-Chlorotoluene	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/09/2019 06:28	WG1293333
1,2-Dibromoethane	ND		0.00100	1	06/09/2019 06:28	WG1293333
Dibromomethane	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,2-Dichlorobenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,3-Dichlorobenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,4-Dichlorobenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
Dichlorodifluoromethane	ND		0.00500	1	06/09/2019 06:28	WG1293333
1,1-Dichloroethane	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,2-Dichloroethane	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,1-Dichloroethene	ND		0.00100	1	06/09/2019 06:28	WG1293333
cis-1,2-Dichloroethene	ND		0.00100	1	06/09/2019 06:28	WG1293333
trans-1,2-Dichloroethene	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,2-Dichloropropane	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,1-Dichloropropene	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,3-Dichloropropane	ND		0.00100	1	06/09/2019 06:28	WG1293333
cis-1,3-Dichloropropene	ND		0.00100	1	06/09/2019 06:28	WG1293333
trans-1,3-Dichloropropene	ND		0.00100	1	06/09/2019 06:28	WG1293333
2,2-Dichloropropane	ND		0.00100	1	06/09/2019 06:28	WG1293333
Di-isopropyl ether	ND		0.00100	1	06/09/2019 06:28	WG1293333
Ethylbenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
Hexachloro-1,3-butadiene	ND		0.00100	1	06/09/2019 06:28	WG1293333
Isopropylbenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
p-Isopropyltoluene	ND		0.00100	1	06/09/2019 06:28	WG1293333
2-Butanone (MEK)	ND		0.0100	1	06/09/2019 06:28	WG1293333
Methylene Chloride	ND		0.00500	1	06/09/2019 06:28	WG1293333
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/09/2019 06:28	WG1293333
Methyl tert-butyl ether	ND		0.00100	1	06/09/2019 06:28	WG1293333
Naphthalene	ND		0.00500	1	06/09/2019 06:28	WG1293333
n-Propylbenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
Styrene	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/09/2019 06:28	WG1293333
Tetrachloroethene	ND		0.00100	1	06/09/2019 06:28	WG1293333
Toluene	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,2,3-Trichlorobenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,2,4-Trichlorobenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,1,1-Trichloroethane	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,1,2-Trichloroethane	ND		0.00100	1	06/09/2019 06:28	WG1293333
Trichloroethene	ND		0.00100	1	06/09/2019 06:28	WG1293333
Trichlorofluoromethane	ND		0.00500	1	06/09/2019 06:28	WG1293333
1,2,3-Trichloropropane	ND		0.00250	1	06/09/2019 06:28	WG1293333
1,2,4-Trimethylbenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,2,3-Trimethylbenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
1,3,5-Trimethylbenzene	ND		0.00100	1	06/09/2019 06:28	WG1293333
Vinyl chloride	ND		0.00100	1	06/09/2019 06:28	WG1293333
Xylenes, Total	ND		0.00300	1	06/09/2019 06:28	WG1293333
(S) Toluene-d8	93.4		80.0-120		06/09/2019 06:28	WG1293333

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	93.6		77.0-126		06/09/2019 06:28	WG1293333
(S) 1,2-Dichloroethane-d4	126		70.0-130		06/09/2019 06:28	WG1293333

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	06/11/2019 20:15	WG1293368

Sample Narrative:

L1105867-02 WG1293368: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	06/07/2019 00:58	WG1291823
Chloride	45.5		1.00	1	06/07/2019 00:43	WG1291823
Nitrate as (N)	ND		0.100	1	06/07/2019 00:43	WG1291823
Nitrite as (N)	ND		0.100	1	06/07/2019 00:43	WG1291823
Sulfate	4600		500	100	06/07/2019 00:58	WG1291823

Sample Narrative:

L1105867-02 WG1291823: Reporting Br @ dilution due to matrix: high sulfate

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	522		1.00	1	06/11/2019 22:29	WG1294049
Iron,Dissolved	ND		0.100	1	06/11/2019 22:29	WG1294049
Magnesium,Dissolved	432		1.00	1	06/11/2019 22:29	WG1294049
Potassium,Dissolved	16.5		1.00	1	06/11/2019 22:29	WG1294049
Sodium,Dissolved	200		1.00	1	06/11/2019 22:29	WG1294049

Metals (ICPMS) by Method 6020

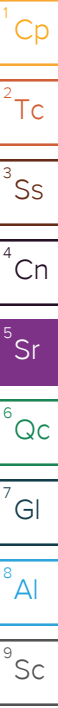
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	7.32		0.0500	5	06/11/2019 18:25	WG1292560

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	06/07/2019 08:47	WG1292439
Ethane	ND		0.0130	1	06/07/2019 08:47	WG1292439
Ethene	ND		0.0130	1	06/07/2019 08:47	WG1292439
Acetylene	ND		0.0208	1	06/07/2019 08:47	WG1292439

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	06/09/2019 06:49	WG1293333
Acrolein	ND		0.0500	1	06/09/2019 06:49	WG1293333
Acrylonitrile	ND		0.0100	1	06/09/2019 06:49	WG1293333
Benzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
Bromobenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
Bromodichloromethane	ND		0.00100	1	06/09/2019 06:49	WG1293333
Bromoform	ND		0.00100	1	06/09/2019 06:49	WG1293333
Bromomethane	ND		0.00500	1	06/09/2019 06:49	WG1293333
n-Butylbenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
sec-Butylbenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
tert-Butylbenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333





Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Carbon tetrachloride	ND		0.00100	1	06/09/2019 06:49	WG1293333
Chlorobenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
Chlorodibromomethane	ND		0.00100	1	06/09/2019 06:49	WG1293333
Chloroethane	ND		0.00500	1	06/09/2019 06:49	WG1293333
Chloroform	ND		0.00500	1	06/09/2019 06:49	WG1293333
Chloromethane	ND		0.00250	1	06/09/2019 06:49	WG1293333
2-Chlorotoluene	ND		0.00100	1	06/09/2019 06:49	WG1293333
4-Chlorotoluene	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/09/2019 06:49	WG1293333
1,2-Dibromoethane	ND		0.00100	1	06/09/2019 06:49	WG1293333
Dibromomethane	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,2-Dichlorobenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,3-Dichlorobenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,4-Dichlorobenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
Dichlorodifluoromethane	ND		0.00500	1	06/09/2019 06:49	WG1293333
1,1-Dichloroethane	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,2-Dichloroethane	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,1-Dichloroethene	ND		0.00100	1	06/09/2019 06:49	WG1293333
cis-1,2-Dichloroethene	ND		0.00100	1	06/09/2019 06:49	WG1293333
trans-1,2-Dichloroethene	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,2-Dichloropropane	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,1-Dichloropropene	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,3-Dichloropropane	ND		0.00100	1	06/09/2019 06:49	WG1293333
cis-1,3-Dichloropropene	ND		0.00100	1	06/09/2019 06:49	WG1293333
trans-1,3-Dichloropropene	ND		0.00100	1	06/09/2019 06:49	WG1293333
2,2-Dichloropropane	ND		0.00100	1	06/09/2019 06:49	WG1293333
Di-isopropyl ether	ND		0.00100	1	06/09/2019 06:49	WG1293333
Ethylbenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
Hexachloro-1,3-butadiene	ND		0.00100	1	06/09/2019 06:49	WG1293333
Isopropylbenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
p-Isopropyltoluene	ND		0.00100	1	06/09/2019 06:49	WG1293333
2-Butanone (MEK)	ND		0.0100	1	06/09/2019 06:49	WG1293333
Methylene Chloride	ND		0.00500	1	06/09/2019 06:49	WG1293333
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/09/2019 06:49	WG1293333
Methyl tert-butyl ether	ND		0.00100	1	06/09/2019 06:49	WG1293333
Naphthalene	ND		0.00500	1	06/09/2019 06:49	WG1293333
n-Propylbenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
Styrene	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/09/2019 06:49	WG1293333
Tetrachloroethene	ND		0.00100	1	06/09/2019 06:49	WG1293333
Toluene	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,2,3-Trichlorobenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,2,4-Trichlorobenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,1,1-Trichloroethane	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,1,2-Trichloroethane	ND		0.00100	1	06/09/2019 06:49	WG1293333
Trichloroethene	ND		0.00100	1	06/09/2019 06:49	WG1293333
Trichlorofluoromethane	ND		0.00500	1	06/09/2019 06:49	WG1293333
1,2,3-Trichloropropane	ND		0.00250	1	06/09/2019 06:49	WG1293333
1,2,4-Trimethylbenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,2,3-Trimethylbenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
1,3,5-Trimethylbenzene	ND		0.00100	1	06/09/2019 06:49	WG1293333
Vinyl chloride	ND		0.00100	1	06/09/2019 06:49	WG1293333
Xylenes, Total	ND		0.00300	1	06/09/2019 06:49	WG1293333
(S) Toluene-d8	93.7		80.0-120		06/09/2019 06:49	WG1293333

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	94.4		77.0-126		06/09/2019 06:49	WG1293333
(S) 1,2-Dichloroethane-d4	128		70.0-130		06/09/2019 06:49	WG1293333

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	ND		20.0	1	06/11/2019 20:21	WG1293368

Sample Narrative:

L1105867-03 WG1293368: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		100	100	06/07/2019 01:27	WG1291823
Chloride	35.1		1.00	1	06/07/2019 01:12	WG1291823
Nitrate as (N)	ND		0.100	1	06/07/2019 01:12	WG1291823
Nitrite as (N)	ND		0.100	1	06/07/2019 01:12	WG1291823
Sulfate	3570		500	100	06/07/2019 01:27	WG1291823

Sample Narrative:

L1105867-03 WG1291823: Reporting Br @ dilution due to matrix: high sulfate content

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	437		1.00	1	06/11/2019 22:32	WG1294049
Iron,Dissolved	ND		0.100	1	06/11/2019 22:32	WG1294049
Magnesium,Dissolved	326		1.00	1	06/11/2019 22:32	WG1294049
Potassium,Dissolved	13.4		1.00	1	06/11/2019 22:32	WG1294049
Sodium,Dissolved	177		1.00	1	06/11/2019 22:32	WG1294049

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	5.88		0.0200	2	06/11/2019 18:30	WG1292560

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	06/07/2019 08:50	WG1292439
Ethane	ND		0.0130	1	06/07/2019 08:50	WG1292439
Ethene	ND		0.0130	1	06/07/2019 08:50	WG1292439
Acetylene	ND		0.0208	1	06/07/2019 08:50	WG1292439

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	06/09/2019 07:11	WG1293333
Acrolein	ND		0.0500	1	06/09/2019 07:11	WG1293333
Acrylonitrile	ND		0.0100	1	06/09/2019 07:11	WG1293333
Benzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
Bromobenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
Bromodichloromethane	ND		0.00100	1	06/09/2019 07:11	WG1293333
Bromoform	ND		0.00100	1	06/09/2019 07:11	WG1293333
Bromomethane	ND		0.00500	1	06/09/2019 07:11	WG1293333
n-Butylbenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
sec-Butylbenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
tert-Butylbenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Carbon tetrachloride	ND		0.00100	1	06/09/2019 07:11	WG1293333
Chlorobenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
Chlorodibromomethane	ND		0.00100	1	06/09/2019 07:11	WG1293333
Chloroethane	ND		0.00500	1	06/09/2019 07:11	WG1293333
Chloroform	ND		0.00500	1	06/09/2019 07:11	WG1293333
Chloromethane	ND		0.00250	1	06/09/2019 07:11	WG1293333
2-Chlorotoluene	ND		0.00100	1	06/09/2019 07:11	WG1293333
4-Chlorotoluene	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/09/2019 07:11	WG1293333
1,2-Dibromoethane	ND		0.00100	1	06/09/2019 07:11	WG1293333
Dibromomethane	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,2-Dichlorobenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,3-Dichlorobenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,4-Dichlorobenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
Dichlorodifluoromethane	ND		0.00500	1	06/09/2019 07:11	WG1293333
1,1-Dichloroethane	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,2-Dichloroethane	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,1-Dichloroethene	ND		0.00100	1	06/09/2019 07:11	WG1293333
cis-1,2-Dichloroethene	ND		0.00100	1	06/09/2019 07:11	WG1293333
trans-1,2-Dichloroethene	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,2-Dichloropropane	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,1-Dichloropropene	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,3-Dichloropropane	ND		0.00100	1	06/09/2019 07:11	WG1293333
cis-1,3-Dichloropropene	ND		0.00100	1	06/09/2019 07:11	WG1293333
trans-1,3-Dichloropropene	ND		0.00100	1	06/09/2019 07:11	WG1293333
2,2-Dichloropropane	ND		0.00100	1	06/09/2019 07:11	WG1293333
Di-isopropyl ether	ND		0.00100	1	06/09/2019 07:11	WG1293333
Ethylbenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
Hexachloro-1,3-butadiene	ND		0.00100	1	06/09/2019 07:11	WG1293333
Isopropylbenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
p-Isopropyltoluene	ND		0.00100	1	06/09/2019 07:11	WG1293333
2-Butanone (MEK)	ND		0.0100	1	06/09/2019 07:11	WG1293333
Methylene Chloride	ND		0.00500	1	06/09/2019 07:11	WG1293333
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/09/2019 07:11	WG1293333
Methyl tert-butyl ether	ND		0.00100	1	06/09/2019 07:11	WG1293333
Naphthalene	ND		0.00500	1	06/09/2019 07:11	WG1293333
n-Propylbenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
Styrene	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/09/2019 07:11	WG1293333
Tetrachloroethene	ND		0.00100	1	06/09/2019 07:11	WG1293333
Toluene	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,2,3-Trichlorobenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,2,4-Trichlorobenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,1,1-Trichloroethane	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,1,2-Trichloroethane	ND		0.00100	1	06/09/2019 07:11	WG1293333
Trichloroethene	ND		0.00100	1	06/09/2019 07:11	WG1293333
Trichlorofluoromethane	ND		0.00500	1	06/09/2019 07:11	WG1293333
1,2,3-Trichloropropane	ND		0.00250	1	06/09/2019 07:11	WG1293333
1,2,4-Trimethylbenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,2,3-Trimethylbenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
1,3,5-Trimethylbenzene	ND		0.00100	1	06/09/2019 07:11	WG1293333
Vinyl chloride	ND		0.00100	1	06/09/2019 07:11	WG1293333
Xylenes, Total	ND		0.00300	1	06/09/2019 07:11	WG1293333
(S) Toluene-d8	94.4		80.0-120		06/09/2019 07:11	WG1293333

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	98.8		77.0-126		06/09/2019 07:11	WG1293333
(S) 1,2-Dichloroethane-d4	129		70.0-130		06/09/2019 07:11	WG1293333

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3420109-1 06/11/19 18:07

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	3.56	↓	2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1105688-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1105688-03 06/11/19 18:24 • (DUP) R3420109-2 06/11/19 18:33

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	366	365	1	0.352		20

Sample Narrative:

OS: Endpoint pH 4.5 HEADSPACE

DUP: Endpoint pH 4.5

L1105889-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1105889-01 06/11/19 20:33 • (DUP) R3420109-4 06/11/19 20:40

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	ND	0.000	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 HEADSPACE

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3420109-3 06/11/19 19:28

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	99.9	99.9	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3418617-1 06/06/19 09:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1105758-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1105758-01 06/06/19 15:29 • (DUP) R3418617-3 06/06/19 15:44

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	U	0.000	1	0.000		15
Chloride	7.07	7.05	1	0.228		15
Nitrate	0.353	0.359	1	1.66		15
Nitrite	U	0.000	1	0.000		15
Sulfate	4.46	4.33	1	2.91	U	15

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1105825-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1105825-01 06/06/19 20:09 • (DUP) R3418617-6 06/06/19 20:24

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	U	0.000	1	0.000		15
Chloride	161	162	1	0.306	E	15
Nitrate	0.245	0.256	1	4.71		15
Nitrite	U	0.000	1	0.000		15
Sulfate	56.4	56.4	1	0.0812		15

Laboratory Control Sample (LCS)

(LCS) R3418617-2 06/06/19 09:49

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	40.5	101	80.0-120	
Chloride	40.0	40.4	101	80.0-120	
Nitrate	8.00	8.36	105	80.0-120	
Nitrite	8.00	8.14	102	80.0-120	



Laboratory Control Sample (LCS)

(LCS) R3418617-2 06/06/19 09:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Sulfate	40.0	41.1	103	80.0-120	

L1105750-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1105750-01 06/06/19 16:05 • (MS) R3418617-4 06/06/19 16:19 • (MSD) R3418617-5 06/06/19 16:33

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	0.322	46.1	46.3	91.6	91.9	1	80.0-120			0.354	15
Chloride	50.0	36.6	85.3	85.5	97.4	97.8	1	80.0-120			0.244	15
Nitrate	5.00	5.25	10.1	10.1	96.4	97.1	1	80.0-120	<u>E</u>	<u>E</u>	0.312	15
Nitrite	5.00	U	5.10	5.12	102	102	1	80.0-120			0.356	15
Sulfate	50.0	138	180	180	83.2	83.7	1	80.0-120	<u>E</u>	<u>E</u>	0.121	15

L1105825-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1105825-01 06/06/19 20:09 • (MS) R3418617-7 06/06/19 20:38

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	U	49.0	98.0	1	80.0-120	
Chloride	50.0	161	204	84.7	1	80.0-120	<u>E</u>
Nitrate	5.00	0.245	5.31	101	1	80.0-120	
Nitrite	5.00	U	5.11	102	1	80.0-120	
Sulfate	50.0	56.4	103	94.0	1	80.0-120	<u>E</u>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3420136-6 06/11/19 23:24

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium,Dissolved	U		0.0463	1.00
Iron,Dissolved	U		0.0141	0.100
Magnesium,Dissolved	U		0.0111	1.00
Potassium,Dissolved	0.722	↓	0.102	1.00
Sodium,Dissolved	0.644	↓	0.0985	1.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420136-1 06/11/19 22:13 • (LCSD) R3420136-2 06/11/19 22:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	9.78	10.2	97.8	102	80.0-120			3.81	20
Iron,Dissolved	10.0	9.89	10.2	98.9	102	80.0-120			3.60	20
Magnesium,Dissolved	10.0	10.2	10.5	102	105	80.0-120			3.05	20
Potassium,Dissolved	10.0	11.6	11.9	116	119	80.0-120			2.48	20
Sodium,Dissolved	10.0	11.1	11.4	111	114	80.0-120			3.15	20

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1105867-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1105867-01 06/11/19 22:18 • (MS) R3420136-4 06/11/19 22:23 • (MSD) R3420136-5 06/11/19 22:26

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	492	493	495	6.66	28.0	1	75.0-125	√	√	0.432	20
Iron,Dissolved	10.0	ND	10.0	9.86	100	98.6	1	75.0-125			1.93	20
Magnesium,Dissolved	10.0	326	330	330	43.6	45.9	1	75.0-125	√	√	0.0693	20
Potassium,Dissolved	10.0	12.1	21.6	21.6	94.3	94.5	1	75.0-125			0.117	20
Sodium,Dissolved	10.0	223	229	230	66.0	68.7	1	75.0-125	√	√	0.119	20



Method Blank (MB)

(MB) R3420088-1 06/11/19 14:38

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Strontium	0.000396	↓	0.000160	0.0100

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420088-2 06/11/19 14:43 • (LCSD) R3420088-3 06/11/19 14:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0492	0.0499	98.3	99.9	80.0-120			1.56	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3418707-1 06/07/19 08:33

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130
Acetylene	U		0.00558	0.0208

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1105867-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1105867-01 06/07/19 08:43 • (DUP) R3418707-2 06/07/19 09:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	ND	0.000	1	0.000		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3418707-3 06/07/19 09:49 • (LCSD) R3418707-4 06/07/19 09:51

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0709	0.0774	105	114	85.0-115			8.80	20
Ethane	0.129	0.115	0.118	89.0	91.5	85.0-115			2.77	20
Ethene	0.127	0.113	0.116	89.2	91.4	85.0-115			2.50	20
Acetylene	0.208	0.178	0.182	85.6	87.6	85.0-115			2.32	20



Method Blank (MB)

(MB) R3420256-2 06/09/19 01:29

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	0.000658	U	0.000256	0.00100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3420256-2 06/09/19 01:29

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	U		0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
<i>(S) Toluene-d8</i>	93.9			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	92.3			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	119			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3420256-1 06/09/19 00:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.125	0.166	133	19.0-160	
Acrolein	0.125	0.188	151	10.0-160	
Acrylonitrile	0.125	0.147	118	55.0-149	
Benzene	0.0250	0.0236	94.3	70.0-123	



Laboratory Control Sample (LCS)

(LCS) R3420256-1 06/09/19 00:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromobenzene	0.0250	0.0251	100	73.0-121	
Bromodichloromethane	0.0250	0.0292	117	75.0-120	
Bromoform	0.0250	0.0283	113	68.0-132	
Bromomethane	0.0250	0.0265	106	10.0-160	
n-Butylbenzene	0.0250	0.0278	111	73.0-125	
sec-Butylbenzene	0.0250	0.0260	104	75.0-125	
tert-Butylbenzene	0.0250	0.0267	107	76.0-124	
Carbon tetrachloride	0.0250	0.0305	122	68.0-126	
Chlorobenzene	0.0250	0.0244	97.7	80.0-121	
Chlorodibromomethane	0.0250	0.0276	110	77.0-125	
Chloroethane	0.0250	0.0251	100	47.0-150	
Chloroform	0.0250	0.0269	108	73.0-120	
Chloromethane	0.0250	0.0256	102	41.0-142	
2-Chlorotoluene	0.0250	0.0260	104	76.0-123	
4-Chlorotoluene	0.0250	0.0257	103	75.0-122	
1,2-Dibromo-3-Chloropropane	0.0250	0.0264	105	58.0-134	
1,2-Dibromoethane	0.0250	0.0263	105	80.0-122	
Dibromomethane	0.0250	0.0285	114	80.0-120	
1,2-Dichlorobenzene	0.0250	0.0260	104	79.0-121	
1,3-Dichlorobenzene	0.0250	0.0256	103	79.0-120	
1,4-Dichlorobenzene	0.0250	0.0245	98.1	79.0-120	
Dichlorodifluoromethane	0.0250	0.0341	136	51.0-149	
1,1-Dichloroethane	0.0250	0.0251	100	70.0-126	
1,2-Dichloroethane	0.0250	0.0299	119	70.0-128	
1,1-Dichloroethene	0.0250	0.0245	98.1	71.0-124	
cis-1,2-Dichloroethene	0.0250	0.0245	98.1	73.0-120	
trans-1,2-Dichloroethene	0.0250	0.0240	96.1	73.0-120	
1,2-Dichloropropane	0.0250	0.0252	101	77.0-125	
1,1-Dichloropropene	0.0250	0.0267	107	74.0-126	
1,3-Dichloropropane	0.0250	0.0255	102	80.0-120	
cis-1,3-Dichloropropene	0.0250	0.0267	107	80.0-123	
trans-1,3-Dichloropropene	0.0250	0.0276	110	78.0-124	
2,2-Dichloropropane	0.0250	0.0265	106	58.0-130	
Di-isopropyl ether	0.0250	0.0254	102	58.0-138	
Ethylbenzene	0.0250	0.0244	97.4	79.0-123	
Hexachloro-1,3-butadiene	0.0250	0.0285	114	54.0-138	
Isopropylbenzene	0.0250	0.0258	103	76.0-127	
p-Isopropyltoluene	0.0250	0.0273	109	76.0-125	
2-Butanone (MEK)	0.125	0.150	120	44.0-160	
Methylene Chloride	0.0250	0.0227	90.7	67.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Laboratory Control Sample (LCS)

(LCS) R3420256-1 06/09/19 00:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
4-Methyl-2-pentanone (MIBK)	0.125	0.141	113	68.0-142	
Methyl tert-butyl ether	0.0250	0.0259	104	68.0-125	
Naphthalene	0.0250	0.0243	97.2	54.0-135	
n-Propylbenzene	0.0250	0.0252	101	77.0-124	
Styrene	0.0250	0.0253	101	73.0-130	
1,1,1,2-Tetrachloroethane	0.0250	0.0264	106	75.0-125	
1,1,2,2-Tetrachloroethane	0.0250	0.0249	99.7	65.0-130	
Tetrachloroethene	0.0250	0.0259	104	72.0-132	
Toluene	0.0250	0.0224	89.8	79.0-120	
1,1,2-Trichlorotrifluoroethane	0.0250	0.0270	108	69.0-132	
1,2,3-Trichlorobenzene	0.0250	0.0238	95.2	50.0-138	
1,2,4-Trichlorobenzene	0.0250	0.0263	105	57.0-137	
1,1,1-Trichloroethane	0.0250	0.0300	120	73.0-124	
1,1,2-Trichloroethane	0.0250	0.0250	99.8	80.0-120	
Trichloroethene	0.0250	0.0256	103	78.0-124	
Trichlorofluoromethane	0.0250	0.0320	128	59.0-147	
1,2,3-Trichloropropane	0.0250	0.0291	117	73.0-130	
1,2,3-Trimethylbenzene	0.0250	0.0270	108	77.0-120	
1,2,4-Trimethylbenzene	0.0250	0.0258	103	76.0-121	
1,3,5-Trimethylbenzene	0.0250	0.0264	106	76.0-122	
Vinyl chloride	0.0250	0.0264	106	67.0-131	
Xylenes, Total	0.0750	0.0722	96.3	79.0-123	
(S) Toluene-d8			94.2	80.0-120	
(S) 4-Bromofluorobenzene			99.1	77.0-126	
(S) 1,2-Dichloroethane-d4			121	70.0-130	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1105911-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1105911-03 06/09/19 08:15 • (MS) R3420256-3 06/09/19 08:58 • (MSD) R3420256-4 06/09/19 09:19

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acetone	0.125	U	0.178	0.170	142	136	1	10.0-160			4.39	35
Acrolein	0.125	U	0.238	0.238	191	190	1	10.0-160	<u>J5</u>	<u>J5</u>	0.142	39
Acrylonitrile	0.125	U	0.165	0.161	132	129	1	21.0-160			2.83	32
Benzene	0.0250	U	0.0260	0.0255	104	102	1	17.0-158			1.95	27
Bromobenzene	0.0250	U	0.0260	0.0254	104	102	1	30.0-149			2.04	28
Bromodichloromethane	0.0250	U	0.0333	0.0322	133	129	1	31.0-150			3.57	27
Bromoform	0.0250	U	0.0299	0.0294	120	118	1	29.0-150			1.71	29
Bromomethane	0.0250	U	0.0284	0.0277	114	111	1	10.0-160			2.54	38



L1105911-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1105911-03 06/09/19 08:15 • (MS) R3420256-3 06/09/19 08:58 • (MSD) R3420256-4 06/09/19 09:19

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
n-Butylbenzene	0.0250	U	0.0293	0.0287	117	115	1	31.0-150			2.02	30
sec-Butylbenzene	0.0250	U	0.0273	0.0270	109	108	1	33.0-155			1.20	29
tert-Butylbenzene	0.0250	U	0.0277	0.0271	111	108	1	34.0-153			2.49	28
Carbon tetrachloride	0.0250	U	0.0375	0.0376	150	150	1	23.0-159			0.251	28
Chlorobenzene	0.0250	U	0.0248	0.0244	99.4	97.6	1	33.0-152			1.79	27
Chlorodibromomethane	0.0250	U	0.0285	0.0286	114	114	1	37.0-149			0.146	27
Chloroethane	0.0250	U	0.0270	0.0271	108	108	1	10.0-160			0.381	30
Chloroform	0.0250	U	0.0310	0.0301	124	121	1	29.0-154			2.76	28
Chloromethane	0.0250	U	0.0277	0.0279	111	112	1	10.0-160			0.524	29
2-Chlorotoluene	0.0250	U	0.0272	0.0266	109	106	1	32.0-153			2.13	28
4-Chlorotoluene	0.0250	U	0.0270	0.0265	108	106	1	32.0-150			1.74	28
1,2-Dibromo-3-Chloropropane	0.0250	U	0.0290	0.0282	116	113	1	22.0-151			2.68	34
1,2-Dibromoethane	0.0250	U	0.0266	0.0267	107	107	1	34.0-147			0.190	27
Dibromomethane	0.0250	U	0.0312	0.0310	125	124	1	30.0-151			0.704	27
1,2-Dichlorobenzene	0.0250	U	0.0266	0.0258	106	103	1	34.0-149			2.83	28
1,3-Dichlorobenzene	0.0250	U	0.0265	0.0256	106	103	1	36.0-146			3.35	27
1,4-Dichlorobenzene	0.0250	U	0.0254	0.0248	102	99.3	1	35.0-142			2.38	27
Dichlorodifluoromethane	0.0250	U	0.0414	0.0358	165	143	1	10.0-160	J5		14.4	29
1,1-Dichloroethane	0.0250	U	0.0284	0.0279	114	112	1	25.0-158			1.67	27
1,2-Dichloroethane	0.0250	U	0.0347	0.0338	139	135	1	29.0-151			2.55	27
1,1-Dichloroethene	0.0250	U	0.0280	0.0275	112	110	1	11.0-160			1.64	29
cis-1,2-Dichloroethene	0.0250	U	0.0268	0.0265	107	106	1	10.0-160			1.19	27
trans-1,2-Dichloroethene	0.0250	U	0.0267	0.0266	107	106	1	17.0-153			0.243	27
1,2-Dichloropropane	0.0250	U	0.0271	0.0263	108	105	1	30.0-156			2.85	27
1,1-Dichloropropene	0.0250	U	0.0310	0.0301	124	120	1	25.0-158			2.88	27
1,3-Dichloropropane	0.0250	U	0.0260	0.0256	104	102	1	38.0-147			1.48	27
cis-1,3-Dichloropropene	0.0250	U	0.0284	0.0282	113	113	1	34.0-149			0.650	28
trans-1,3-Dichloropropene	0.0250	U	0.0284	0.0284	114	114	1	32.0-149			0.0161	28
2,2-Dichloropropane	0.0250	U	0.0298	0.0284	119	114	1	24.0-152			4.77	29
Di-isopropyl ether	0.0250	U	0.0277	0.0276	111	110	1	21.0-160			0.672	28
Ethylbenzene	0.0250	U	0.0264	0.0251	106	100	1	30.0-155			5.24	27
Hexachloro-1,3-butadiene	0.0250	U	0.0299	0.0306	119	123	1	20.0-154			2.54	34
Isopropylbenzene	0.0250	U	0.0269	0.0268	108	107	1	28.0-157			0.492	27
p-Isopropyltoluene	0.0250	U	0.0285	0.0282	114	113	1	30.0-154			1.10	29
2-Butanone (MEK)	0.125	U	0.168	0.163	134	131	1	10.0-160			2.56	32
Methylene Chloride	0.0250	U	0.0241	0.0237	96.3	94.9	1	23.0-144			1.39	28
4-Methyl-2-pentanone (MIBK)	0.125	U	0.156	0.154	125	123	1	29.0-160			0.973	29
Methyl tert-butyl ether	0.0250	U	0.0289	0.0281	115	112	1	28.0-150			2.82	29
Naphthalene	0.0250	U	0.0264	0.0263	106	105	1	12.0-156			0.527	35
n-Propylbenzene	0.0250	U	0.0271	0.0259	108	104	1	31.0-154			4.46	28

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



L1105911-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1105911-03 06/09/19 08:15 • (MS) R3420256-3 06/09/19 08:58 • (MSD) R3420256-4 06/09/19 09:19

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Styrene	0.0250	U	0.0253	0.0256	101	102	1	33.0-155			1.12	28
1,1,1,2-Tetrachloroethane	0.0250	U	0.0273	0.0279	109	112	1	36.0-151			2.28	29
1,1,2,2-Tetrachloroethane	0.0250	U	0.0267	0.0256	107	102	1	33.0-150			4.16	28
Tetrachloroethene	0.0250	0.000774	0.0272	0.0269	106	105	1	10.0-160			1.16	27
Toluene	0.0250	U	0.0277	0.0240	111	96.2	1	26.0-154			14.1	28
1,1,2-Trichlorotrifluoroethane	0.0250	U	0.0322	0.0300	129	120	1	23.0-160			7.34	30
1,2,3-Trichlorobenzene	0.0250	U	0.0256	0.0266	102	106	1	17.0-150			3.85	36
1,2,4-Trichlorobenzene	0.0250	U	0.0275	0.0269	110	108	1	24.0-150			1.98	33
1,1,1-Trichloroethane	0.0250	U	0.0358	0.0350	143	140	1	23.0-160			2.48	28
1,1,2-Trichloroethane	0.0250	U	0.0249	0.0251	99.5	101	1	35.0-147			1.04	27
Trichloroethene	0.0250	U	0.0271	0.0271	108	109	1	10.0-160			0.243	25
Trichlorofluoromethane	0.0250	U	0.0407	0.0385	163	154	1	17.0-160	J5		5.58	31
1,2,3-Trichloropropane	0.0250	U	0.0306	0.0301	122	121	1	34.0-151			1.46	29
1,2,3-Trimethylbenzene	0.0250	U	0.0288	0.0274	115	109	1	32.0-149			5.02	28
1,2,4-Trimethylbenzene	0.0250	U	0.0287	0.0270	115	108	1	26.0-154			5.88	27
1,3,5-Trimethylbenzene	0.0250	U	0.0282	0.0269	113	108	1	28.0-153			4.97	27
Vinyl chloride	0.0250	U	0.0296	0.0290	118	116	1	10.0-160			1.85	27
Xylenes, Total	0.0750	U	0.0799	0.0751	107	100	1	29.0-154			6.19	28
(S) Toluene-d8					91.2	90.0		80.0-120				
(S) 4-Bromofluorobenzene					100	99.0		77.0-126				
(S) 1,2-Dichloroethane-d4					136	129		70.0-130	J1			

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

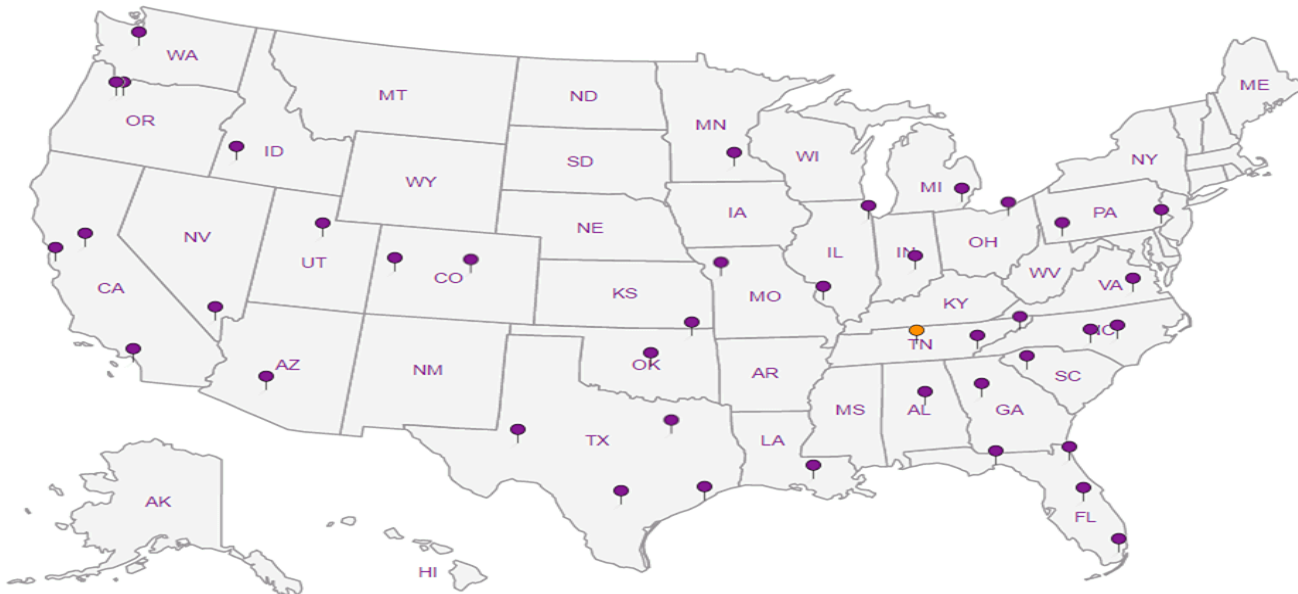
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Terracon Consultants, Inc - Longmont, CO

1831 Lefthand Circe, Suite C

Billing Information:
Mike Skridulis
 1831 Lefthand Circe, Suite C
 Longmont, CO 80501

Pres
 Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



Report to:
Michael Skridulis

Email To: mjskridulis@terracon.com

Project Description: **COL Annual GW**

City/State Collected: **Longmont, CO**

Phone: **303-454-5249**
 Fax:

Client Project #
22197006

Lab Project #
TERRALCO-22197006

Collected by (print):
Charles A. Covington

Site/Facility ID #
LM8

P.O. #

Collected by (signature):
Charles A. Covington

Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Quote #
 Date Results Needed
STANDARD

Immediately Packed on Ice N Y

No. of
 Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALK, Br, Cr, NO2, NO3, SO	125mlHDPE-NoPres	Metals, Dissolved	250mlHDPE-NoPres	RSK175 40mlAmb HCl	SRG 250mlHDPE-HNO3	V8260 40mlAmb-HCl	Remarks	Sample # (lab only)
LM8 - MW01	Grab	GW		6/5/19	1100	8	X	X	X	X	X				-01
LM8 - MW02	Grab	GW		6/5/19	1140	8	X	X	X	X	X				-02
LM8 - MW03	Grab	GW		6/5/19	1020	8	X	X	X	X	X				-03
		GW				8	X	X	X	X	X				

Invoice: Customer: ESCSLCUT Date: 15Jan19
 Phone: (615)758-5858 Weight: 10 LBS
 Sat Del: N COD: Shipping: 0.00
 DV: Special: 0.00
 0.00 Handling: 0.00
 Total: 0.00

Svs: STANDARD OVERNIGHT
 TRCK: 4794 8827 7835

pH _____ Temp _____
 Flow _____ Other _____

Sample Receipt Checklist
 COC Seal Present/Intact: NP Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 IF Applicable
 VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 DT - Other

Remarks:

Samples returned via:
 UPS FedEx Courier

Tracking # **4794 8827 7835**

Relinquished by: (Signature)

Charles A. Covington

Date: **6/5/19** Time: **1400**

Received by: (Signature)

[Signature]

Trip Blank Received: Yes/No
 Yes No
 HCL/MeOH
 TBR

Temp: **A38F °C**
24 ± 1 = 2.5
24

RAD SCREEN: <0.5 mR/hr
 If preservation required by Login: Date/Time

Relinquished by: (Signature)

[Signature]

Date: _____ Time: _____

Received for lab by: (Signature)

[Signature]

Date: **6-6-19** Time: **8:45**

Hold: _____ Condition: **NCF / OK**

Analysis

Groundwater Sample Constituents

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations – Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

May 24, 2019

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Terracon Consultants, Inc - Longmont, CO

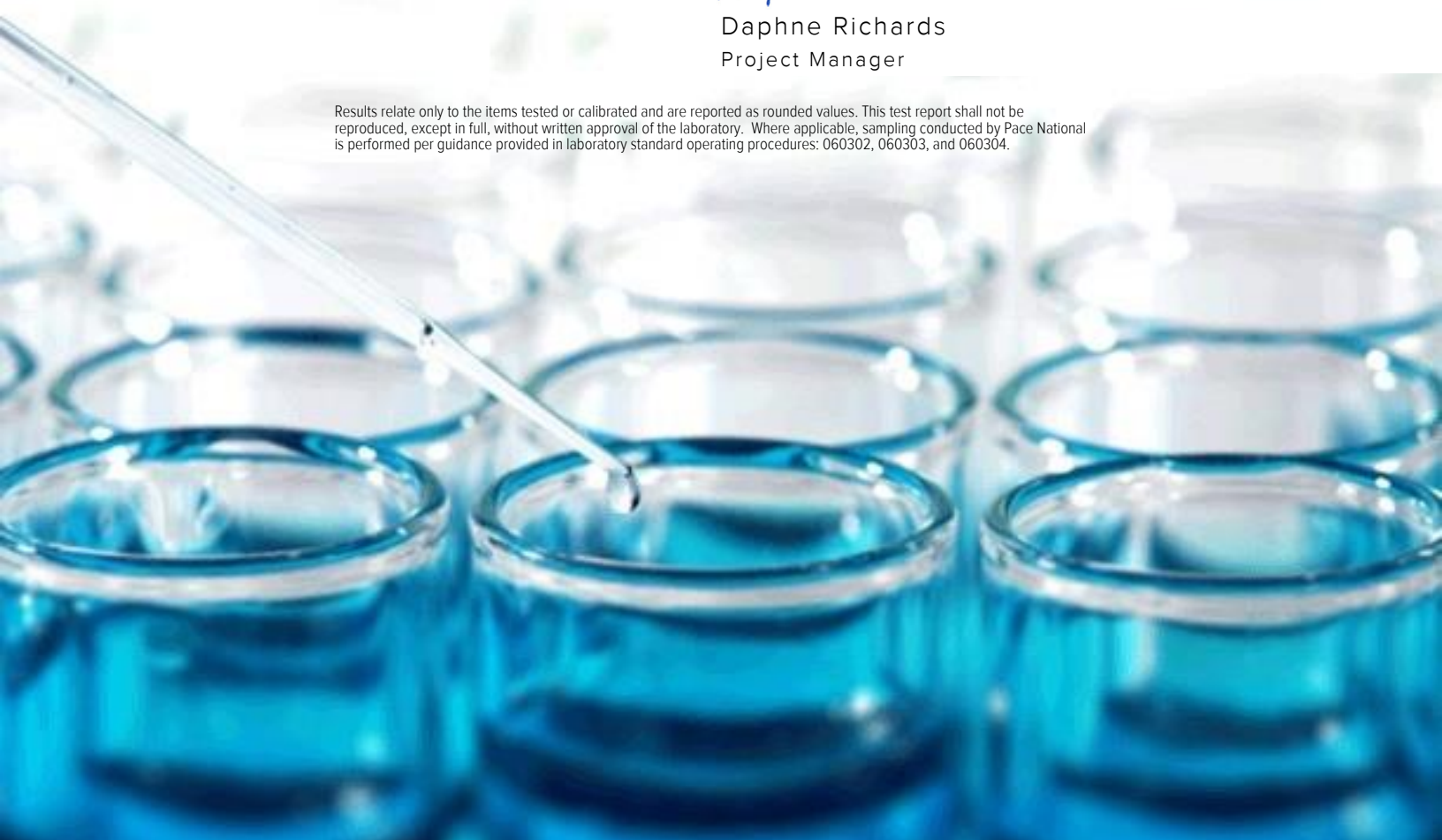
Sample Delivery Group: L1099862
Samples Received: 05/17/2019
Project Number: 22197006
Description: City of Longmont Groundwater Quality Monitoring
Site: MY1
Report To: Michael Skridulis
1831 Lefthand Cirlice, Suite C
Longmont, CO 80501

Entire Report Reviewed By:












Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





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SAMPLE SUMMARY



MY1-MW01 L1099862-01 GW

Collected by Charles A. Covington
 Collected date/time 05/16/19 13:40
 Received date/time 05/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1284522	1	05/22/19 20:58	05/22/19 20:58	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1282862	1	05/17/19 21:22	05/17/19 21:22	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1282862	5	05/18/19 08:37	05/18/19 08:37	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1283236	1	05/23/19 13:25	05/24/19 09:30	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1283229	5	05/23/19 08:14	05/24/19 08:55	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1284168	1	05/21/19 12:55	05/21/19 12:55	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1284066	1	05/20/19 21:01	05/20/19 21:01	TJJ	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

MY1-MW02 L1099862-02 GW

Collected by Charles A. Covington
 Collected date/time 05/16/19 13:00
 Received date/time 05/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1284522	1	05/22/19 21:05	05/22/19 21:05	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1282862	1	05/17/19 21:33	05/17/19 21:33	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1282862	5	05/18/19 08:48	05/18/19 08:48	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1283236	1	05/23/19 13:25	05/24/19 09:40	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1283229	5	05/23/19 08:14	05/24/19 09:00	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1284168	1	05/21/19 13:02	05/21/19 13:02	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1284066	1	05/20/19 21:21	05/20/19 21:21	TJJ	Mt. Juliet, TN

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

MY1-MW03 L1099862-03 GW

Collected by Charles A. Covington
 Collected date/time 05/16/19 13:15
 Received date/time 05/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1284522	1	05/22/19 21:12	05/22/19 21:12	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1282862	1	05/17/19 21:44	05/17/19 21:44	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1282862	5	05/18/19 08:59	05/18/19 08:59	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1283236	1	05/23/19 13:25	05/24/19 09:42	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1283229	5	05/23/19 08:14	05/24/19 09:06	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1284168	1	05/21/19 13:06	05/21/19 13:06	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1284066	1	05/20/19 21:40	05/20/19 21:40	TJJ	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	371		20.0	1	05/22/2019 20:58	WG1284522

Sample Narrative:

L1099862-01 WG1284522: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		5.00	5	05/18/2019 08:37	WG1282862
Chloride	31.1		1.00	1	05/17/2019 21:22	WG1282862
Nitrate as (N)	4.28		0.100	1	05/17/2019 21:22	WG1282862
Nitrite as (N)	ND		0.100	1	05/17/2019 21:22	WG1282862
Sulfate	344		25.0	5	05/18/2019 08:37	WG1282862

Sample Narrative:

L1099862-01 WG1282862: diluted due to matrix : sulfate present

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	119	V	1.00	1	05/24/2019 09:30	WG1283236
Iron,Dissolved	ND		0.100	1	05/24/2019 09:30	WG1283236
Magnesium,Dissolved	80.1	O1 V	1.00	1	05/24/2019 09:30	WG1283236
Potassium,Dissolved	3.33		1.00	1	05/24/2019 09:30	WG1283236
Sodium,Dissolved	98.4	O1 V	1.00	1	05/24/2019 09:30	WG1283236

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	4.80		0.0500	5	05/24/2019 08:55	WG1283229

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	05/21/2019 12:55	WG1284168
Ethane	ND		0.0130	1	05/21/2019 12:55	WG1284168
Ethene	ND		0.0130	1	05/21/2019 12:55	WG1284168
Acetylene	ND		0.0208	1	05/21/2019 12:55	WG1284168

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	05/20/2019 21:01	WG1284066
Acrolein	ND		0.0500	1	05/20/2019 21:01	WG1284066
Acrylonitrile	ND		0.0100	1	05/20/2019 21:01	WG1284066
Benzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
Bromobenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
Bromodichloromethane	ND		0.00100	1	05/20/2019 21:01	WG1284066
Bromoform	ND		0.00100	1	05/20/2019 21:01	WG1284066
Bromomethane	ND		0.00500	1	05/20/2019 21:01	WG1284066
n-Butylbenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
sec-Butylbenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
tert-Butylbenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Carbon tetrachloride	ND		0.00100	1	05/20/2019 21:01	WG1284066
Chlorobenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
Chlorodibromomethane	ND		0.00100	1	05/20/2019 21:01	WG1284066
Chloroethane	ND		0.00500	1	05/20/2019 21:01	WG1284066
Chloroform	ND		0.00500	1	05/20/2019 21:01	WG1284066
Chloromethane	ND		0.00250	1	05/20/2019 21:01	WG1284066
2-Chlorotoluene	ND		0.00100	1	05/20/2019 21:01	WG1284066
4-Chlorotoluene	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/20/2019 21:01	WG1284066
1,2-Dibromoethane	ND		0.00100	1	05/20/2019 21:01	WG1284066
Dibromomethane	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,2-Dichlorobenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,3-Dichlorobenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,4-Dichlorobenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
Dichlorodifluoromethane	ND		0.00500	1	05/20/2019 21:01	WG1284066
1,1-Dichloroethane	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,2-Dichloroethane	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,1-Dichloroethene	ND		0.00100	1	05/20/2019 21:01	WG1284066
cis-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 21:01	WG1284066
trans-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,2-Dichloropropane	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,1-Dichloropropene	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,3-Dichloropropane	ND		0.00100	1	05/20/2019 21:01	WG1284066
cis-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 21:01	WG1284066
trans-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 21:01	WG1284066
2,2-Dichloropropane	ND		0.00100	1	05/20/2019 21:01	WG1284066
Di-isopropyl ether	ND		0.00100	1	05/20/2019 21:01	WG1284066
Ethylbenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
Hexachloro-1,3-butadiene	ND	J4	0.00100	1	05/20/2019 21:01	WG1284066
Isopropylbenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
p-Isopropyltoluene	ND		0.00100	1	05/20/2019 21:01	WG1284066
2-Butanone (MEK)	ND		0.0100	1	05/20/2019 21:01	WG1284066
Methylene Chloride	ND		0.00500	1	05/20/2019 21:01	WG1284066
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/20/2019 21:01	WG1284066
Methyl tert-butyl ether	ND		0.00100	1	05/20/2019 21:01	WG1284066
Naphthalene	ND		0.00500	1	05/20/2019 21:01	WG1284066
n-Propylbenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
Styrene	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/20/2019 21:01	WG1284066
Tetrachloroethene	ND		0.00100	1	05/20/2019 21:01	WG1284066
Toluene	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,2,3-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 21:01	WG1284066
1,2,4-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 21:01	WG1284066
1,1,1-Trichloroethane	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,1,2-Trichloroethane	ND		0.00100	1	05/20/2019 21:01	WG1284066
Trichloroethene	ND		0.00100	1	05/20/2019 21:01	WG1284066
Trichlorofluoromethane	ND		0.00500	1	05/20/2019 21:01	WG1284066
1,2,3-Trichloropropane	ND		0.00250	1	05/20/2019 21:01	WG1284066
1,2,4-Trimethylbenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,2,3-Trimethylbenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
1,3,5-Trimethylbenzene	ND		0.00100	1	05/20/2019 21:01	WG1284066
Vinyl chloride	ND		0.00100	1	05/20/2019 21:01	WG1284066
Xylenes, Total	ND		0.00300	1	05/20/2019 21:01	WG1284066
(S) Toluene-d8	94.7		80.0-120		05/20/2019 21:01	WG1284066

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	99.2		77.0-126		05/20/2019 21:01	WG1284066
(S) 1,2-Dichloroethane-d4	98.1		70.0-130		05/20/2019 21:01	WG1284066

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	371		20.0	1	05/22/2019 21:05	WG1284522

Sample Narrative:

L1099862-02 WG1284522: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		5.00	5	05/18/2019 08:48	WG1282862
Chloride	31.2		1.00	1	05/17/2019 21:33	WG1282862
Nitrate as (N)	4.30		0.100	1	05/17/2019 21:33	WG1282862
Nitrite as (N)	ND		0.100	1	05/17/2019 21:33	WG1282862
Sulfate	350		25.0	5	05/18/2019 08:48	WG1282862

Sample Narrative:

L1099862-02 WG1282862: diluted due to matrix : sulfate present

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	115		1.00	1	05/24/2019 09:40	WG1283236
Iron,Dissolved	ND		0.100	1	05/24/2019 09:40	WG1283236
Magnesium,Dissolved	77.7		1.00	1	05/24/2019 09:40	WG1283236
Potassium,Dissolved	3.28		1.00	1	05/24/2019 09:40	WG1283236
Sodium,Dissolved	95.1		1.00	1	05/24/2019 09:40	WG1283236

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	4.74		0.0500	5	05/24/2019 09:00	WG1283229

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	05/21/2019 13:02	WG1284168
Ethane	ND		0.0130	1	05/21/2019 13:02	WG1284168
Ethene	ND		0.0130	1	05/21/2019 13:02	WG1284168
Acetylene	ND		0.0208	1	05/21/2019 13:02	WG1284168

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	05/20/2019 21:21	WG1284066
Acrolein	ND		0.0500	1	05/20/2019 21:21	WG1284066
Acrylonitrile	ND		0.0100	1	05/20/2019 21:21	WG1284066
Benzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
Bromobenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
Bromodichloromethane	ND		0.00100	1	05/20/2019 21:21	WG1284066
Bromoform	ND		0.00100	1	05/20/2019 21:21	WG1284066
Bromomethane	ND		0.00500	1	05/20/2019 21:21	WG1284066
n-Butylbenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
sec-Butylbenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
tert-Butylbenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Carbon tetrachloride	ND		0.00100	1	05/20/2019 21:21	WG1284066
Chlorobenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
Chlorodibromomethane	ND		0.00100	1	05/20/2019 21:21	WG1284066
Chloroethane	ND		0.00500	1	05/20/2019 21:21	WG1284066
Chloroform	ND		0.00500	1	05/20/2019 21:21	WG1284066
Chloromethane	ND		0.00250	1	05/20/2019 21:21	WG1284066
2-Chlorotoluene	ND		0.00100	1	05/20/2019 21:21	WG1284066
4-Chlorotoluene	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/20/2019 21:21	WG1284066
1,2-Dibromoethane	ND		0.00100	1	05/20/2019 21:21	WG1284066
Dibromomethane	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,2-Dichlorobenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,3-Dichlorobenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,4-Dichlorobenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
Dichlorodifluoromethane	ND		0.00500	1	05/20/2019 21:21	WG1284066
1,1-Dichloroethane	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,2-Dichloroethane	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,1-Dichloroethene	ND		0.00100	1	05/20/2019 21:21	WG1284066
cis-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 21:21	WG1284066
trans-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,2-Dichloropropane	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,1-Dichloropropene	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,3-Dichloropropane	ND		0.00100	1	05/20/2019 21:21	WG1284066
cis-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 21:21	WG1284066
trans-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 21:21	WG1284066
2,2-Dichloropropane	ND		0.00100	1	05/20/2019 21:21	WG1284066
Di-isopropyl ether	ND		0.00100	1	05/20/2019 21:21	WG1284066
Ethylbenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
Hexachloro-1,3-butadiene	ND	J4	0.00100	1	05/20/2019 21:21	WG1284066
Isopropylbenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
p-Isopropyltoluene	ND		0.00100	1	05/20/2019 21:21	WG1284066
2-Butanone (MEK)	ND		0.0100	1	05/20/2019 21:21	WG1284066
Methylene Chloride	ND		0.00500	1	05/20/2019 21:21	WG1284066
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/20/2019 21:21	WG1284066
Methyl tert-butyl ether	ND		0.00100	1	05/20/2019 21:21	WG1284066
Naphthalene	ND		0.00500	1	05/20/2019 21:21	WG1284066
n-Propylbenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
Styrene	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/20/2019 21:21	WG1284066
Tetrachloroethene	ND		0.00100	1	05/20/2019 21:21	WG1284066
Toluene	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,2,3-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 21:21	WG1284066
1,2,4-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 21:21	WG1284066
1,1,1-Trichloroethane	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,1,2-Trichloroethane	ND		0.00100	1	05/20/2019 21:21	WG1284066
Trichloroethene	ND		0.00100	1	05/20/2019 21:21	WG1284066
Trichlorofluoromethane	ND		0.00500	1	05/20/2019 21:21	WG1284066
1,2,3-Trichloropropane	ND		0.00250	1	05/20/2019 21:21	WG1284066
1,2,4-Trimethylbenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,2,3-Trimethylbenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
1,3,5-Trimethylbenzene	ND		0.00100	1	05/20/2019 21:21	WG1284066
Vinyl chloride	ND		0.00100	1	05/20/2019 21:21	WG1284066
Xylenes, Total	ND		0.00300	1	05/20/2019 21:21	WG1284066
(S) Toluene-d8	95.5		80.0-120		05/20/2019 21:21	WG1284066

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	100		77.0-126		05/20/2019 21:21	WG1284066
(S) 1,2-Dichloroethane-d4	104		70.0-130		05/20/2019 21:21	WG1284066

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	389		20.0	1	05/22/2019 21:12	WG1284522

Sample Narrative:

L1099862-03 WG1284522: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		5.00	5	05/18/2019 08:59	WG1282862
Chloride	31.0		1.00	1	05/17/2019 21:44	WG1282862
Nitrate as (N)	4.53		0.100	1	05/17/2019 21:44	WG1282862
Nitrite as (N)	ND		0.100	1	05/17/2019 21:44	WG1282862
Sulfate	355		25.0	5	05/18/2019 08:59	WG1282862

Sample Narrative:

L1099862-03 WG1282862: diluted due to matrix : sulfate present

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	115		1.00	1	05/24/2019 09:42	WG1283236
Iron,Dissolved	ND		0.100	1	05/24/2019 09:42	WG1283236
Magnesium,Dissolved	76.9		1.00	1	05/24/2019 09:42	WG1283236
Potassium,Dissolved	3.21		1.00	1	05/24/2019 09:42	WG1283236
Sodium,Dissolved	97.2		1.00	1	05/24/2019 09:42	WG1283236

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	5.57		0.0500	5	05/24/2019 09:06	WG1283229

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	05/21/2019 13:06	WG1284168
Ethane	ND		0.0130	1	05/21/2019 13:06	WG1284168
Ethene	ND		0.0130	1	05/21/2019 13:06	WG1284168
Acetylene	ND		0.0208	1	05/21/2019 13:06	WG1284168

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	05/20/2019 21:40	WG1284066
Acrolein	ND		0.0500	1	05/20/2019 21:40	WG1284066
Acrylonitrile	ND		0.0100	1	05/20/2019 21:40	WG1284066
Benzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
Bromobenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
Bromodichloromethane	ND		0.00100	1	05/20/2019 21:40	WG1284066
Bromoform	ND		0.00100	1	05/20/2019 21:40	WG1284066
Bromomethane	ND		0.00500	1	05/20/2019 21:40	WG1284066
n-Butylbenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
sec-Butylbenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
tert-Butylbenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Carbon tetrachloride	ND		0.00100	1	05/20/2019 21:40	WG1284066
Chlorobenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
Chlorodibromomethane	ND		0.00100	1	05/20/2019 21:40	WG1284066
Chloroethane	ND		0.00500	1	05/20/2019 21:40	WG1284066
Chloroform	ND		0.00500	1	05/20/2019 21:40	WG1284066
Chloromethane	ND		0.00250	1	05/20/2019 21:40	WG1284066
2-Chlorotoluene	ND		0.00100	1	05/20/2019 21:40	WG1284066
4-Chlorotoluene	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/20/2019 21:40	WG1284066
1,2-Dibromoethane	ND		0.00100	1	05/20/2019 21:40	WG1284066
Dibromomethane	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,2-Dichlorobenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,3-Dichlorobenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,4-Dichlorobenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
Dichlorodifluoromethane	ND		0.00500	1	05/20/2019 21:40	WG1284066
1,1-Dichloroethane	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,2-Dichloroethane	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,1-Dichloroethene	ND		0.00100	1	05/20/2019 21:40	WG1284066
cis-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 21:40	WG1284066
trans-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,2-Dichloropropane	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,1-Dichloropropene	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,3-Dichloropropane	ND		0.00100	1	05/20/2019 21:40	WG1284066
cis-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 21:40	WG1284066
trans-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 21:40	WG1284066
2,2-Dichloropropane	ND		0.00100	1	05/20/2019 21:40	WG1284066
Di-isopropyl ether	ND		0.00100	1	05/20/2019 21:40	WG1284066
Ethylbenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
Hexachloro-1,3-butadiene	ND	J4	0.00100	1	05/20/2019 21:40	WG1284066
Isopropylbenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
p-Isopropyltoluene	ND		0.00100	1	05/20/2019 21:40	WG1284066
2-Butanone (MEK)	ND		0.0100	1	05/20/2019 21:40	WG1284066
Methylene Chloride	ND		0.00500	1	05/20/2019 21:40	WG1284066
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/20/2019 21:40	WG1284066
Methyl tert-butyl ether	ND		0.00100	1	05/20/2019 21:40	WG1284066
Naphthalene	ND		0.00500	1	05/20/2019 21:40	WG1284066
n-Propylbenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
Styrene	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/20/2019 21:40	WG1284066
Tetrachloroethene	ND		0.00100	1	05/20/2019 21:40	WG1284066
Toluene	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,2,3-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 21:40	WG1284066
1,2,4-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 21:40	WG1284066
1,1,1-Trichloroethane	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,1,2-Trichloroethane	ND		0.00100	1	05/20/2019 21:40	WG1284066
Trichloroethene	ND		0.00100	1	05/20/2019 21:40	WG1284066
Trichlorofluoromethane	ND		0.00500	1	05/20/2019 21:40	WG1284066
1,2,3-Trichloropropane	ND		0.00250	1	05/20/2019 21:40	WG1284066
1,2,4-Trimethylbenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,2,3-Trimethylbenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
1,3,5-Trimethylbenzene	ND		0.00100	1	05/20/2019 21:40	WG1284066
Vinyl chloride	ND		0.00100	1	05/20/2019 21:40	WG1284066
Xylenes, Total	ND		0.00300	1	05/20/2019 21:40	WG1284066
(S) Toluene-d8	93.9		80.0-120		05/20/2019 21:40	WG1284066

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	103		77.0-126		05/20/2019 21:40	WG1284066
(S) 1,2-Dichloroethane-d4	98.6		70.0-130		05/20/2019 21:40	WG1284066

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Method Blank (MB)

(MB) R3413927-1 05/22/19 19:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	4.19	↓	2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1099717-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099717-01 05/22/19 19:43 • (DUP) R3413927-3 05/22/19 19:51

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	17.2	15.0	1	13.5	↓	20

Sample Narrative:

OS: Endpoint pH 4.5 headspace
DUP: Endpoint pH 4.5

L1099715-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1099715-02 05/22/19 22:24 • (DUP) R3413927-5 05/22/19 22:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	1410	1410	1	0.362		20

Sample Narrative:

OS: Endpoint pH 4.5
DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3413927-4 05/22/19 20:50

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	104	104	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3412516-1 05/17/19 11:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1099849-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1099849-02 05/17/19 17:56 • (DUP) R3412516-3 05/17/19 18:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.000	1	0.000		15
Chloride	3.82	3.87	1	1.37		15
Nitrate	0.562	0.573	1	1.89		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	ND	1.86	1	1.48	↓	15

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1099849-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1099849-09 05/17/19 20:06 • (DUP) R3412516-6 05/17/19 20:17

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.000	1	0.000		15
Chloride	13.3	13.3	1	0.196		15
Nitrate	3.31	3.32	1	0.549		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	10.2	10.2	1	0.199		15

Laboratory Control Sample (LCS)

(LCS) R3412516-2 05/17/19 11:45

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	41.1	103	80.0-120	
Chloride	40.0	40.4	101	80.0-120	
Nitrate	8.00	8.02	100	80.0-120	
Nitrite	8.00	8.26	103	80.0-120	



Laboratory Control Sample (LCS)

(LCS) R3412516-2 05/17/19 11:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Sulfate	40.0	40.2	101	80.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1099849-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1099849-03 05/17/19 18:39 • (MS) R3412516-4 05/17/19 18:50 • (MSD) R3412516-5 05/17/19 19:01

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	47.9	47.8	95.9	95.6	1	80.0-120			0.305	15
Chloride	50.0	1.06	51.4	51.3	101	101	1	80.0-120			0.188	15
Nitrate	5.00	0.104	4.86	4.84	95.1	94.8	1	80.0-120			0.303	15
Nitrite	5.00	ND	5.11	5.10	102	102	1	80.0-120			0.169	15
Sulfate	50.0	8.27	57.7	57.6	98.8	98.6	1	80.0-120			0.190	15

L1099849-09 Original Sample (OS) • Matrix Spike (MS)

(OS) L1099849-09 05/17/19 20:06 • (MS) R3412516-7 05/17/19 20:49

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	ND	48.5	96.9	1	80.0-120	
Chloride	50.0	13.3	63.4	100	1	80.0-120	
Nitrate	5.00	3.31	8.31	100	1	80.0-120	
Nitrite	5.00	ND	5.12	102	1	80.0-120	
Sulfate	50.0	10.2	59.9	99.5	1	80.0-120	



Method Blank (MB)

(MB) R3414707-7 05/24/19 12:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium,Dissolved	U		0.0463	1.00
Iron,Dissolved	0.0381	↓	0.0141	0.100
Magnesium,Dissolved	0.0458	↓	0.0111	1.00
Potassium,Dissolved	0.286	↓	0.102	1.00
Sodium,Dissolved	U		0.0985	1.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414707-2 05/24/19 09:25 • (LCSD) R3414707-3 05/24/19 09:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	9.92	9.82	99.2	98.2	80.0-120			1.08	20
Iron,Dissolved	10.0	10.3	10.2	103	102	80.0-120			1.70	20
Magnesium,Dissolved	10.0	10.4	10.3	104	103	80.0-120			0.546	20
Potassium,Dissolved	10.0	10.2	9.96	102	99.6	80.0-120			2.06	20
Sodium,Dissolved	10.0	9.91	9.81	99.1	98.1	80.0-120			0.929	20

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1099862-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1099862-01 05/24/19 09:30 • (MS) R3414707-5 05/24/19 09:35 • (MSD) R3414707-6 05/24/19 09:37

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	119	126	125	65.6	64.2	1	75.0-125	√	√	0.113	20
Iron,Dissolved	10.0	ND	10.1	10.0	101	100	1	75.0-125			1.27	20
Magnesium,Dissolved	10.0	80.1	87.0	87.0	69.3	69.2	1	75.0-125	√	√	0.0138	20
Potassium,Dissolved	10.0	3.33	13.2	13.2	99.1	99.0	1	75.0-125			0.109	20
Sodium,Dissolved	10.0	98.4	105	105	62.8	66.6	1	75.0-125	√	√	0.363	20



Method Blank (MB)

(MB) R3414466-1 05/23/19 22:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Strontium	0.000207	↓	0.000160	0.0100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414466-2 05/23/19 22:25 • (LCSD) R3414466-3 05/23/19 22:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0514	0.0525	103	105	80.0-120			2.10	20



Method Blank (MB)

(MB) R3413251-1 05/21/19 11:45

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130
Acetylene	U		0.00558	0.0208

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1099853-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099853-01 05/21/19 11:48 • (DUP) R3413251-2 05/21/19 12:57

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	0.344	0.345	1	0.115		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

L1099867-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099867-01 05/21/19 11:53 • (DUP) R3413251-3 05/21/19 13:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	0.0539	0.0542	1	0.526		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

L1099918-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099918-01 05/21/19 13:38 • (DUP) R3413251-4 05/21/19 13:46

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	ND	0.000	1	0.000		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3413251-5 05/21/19 13:48 • (LCSD) R3413251-6 05/21/19 13:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Methane	0.0678	0.0741	0.0736	109	109	85.0-115			0.620	20
Ethane	0.129	0.119	0.119	92.0	92.3	85.0-115			0.311	20
Ethene	0.127	0.118	0.118	92.8	93.1	85.0-115			0.314	20
Acetylene	0.208	0.187	0.188	89.9	90.3	85.0-115			0.500	20

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3414407-3 05/20/19 18:12

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	0.000600	U	0.000256	0.00100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3414407-3 05/20/19 18:12

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	0.000408	U	0.000230	0.00100
1,2,4-Trichlorobenzene	0.000357	U	0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	97.7			80.0-120
(S) 4-Bromofluorobenzene	101			77.0-126
(S) 1,2-Dichloroethane-d4	104			70.0-130

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414407-1 05/20/19 17:14 • (LCSD) R3414407-2 05/20/19 17:33

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Acetone	0.125	0.0883	0.0875	70.7	70.0	19.0-160			0.988	27
Acrolein	0.125	0.191	0.172	153	138	10.0-160			10.4	26
Acrylonitrile	0.125	0.109	0.107	87.3	85.4	55.0-149			2.16	20
Benzene	0.0250	0.0256	0.0248	103	99.1	70.0-123			3.37	20



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414407-1 05/20/19 17:14 • (LCSD) R3414407-2 05/20/19 17:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Bromobenzene	0.0250	0.0254	0.0244	102	97.7	73.0-121			4.02	20
Bromodichloromethane	0.0250	0.0236	0.0234	94.3	93.6	75.0-120			0.743	20
Bromoform	0.0250	0.0196	0.0196	78.4	78.5	68.0-132			0.0575	20
Bromomethane	0.0250	0.0202	0.0196	80.7	78.5	10.0-160			2.86	25
n-Butylbenzene	0.0250	0.0221	0.0219	88.3	87.6	73.0-125			0.805	20
sec-Butylbenzene	0.0250	0.0231	0.0226	92.6	90.2	75.0-125			2.56	20
tert-Butylbenzene	0.0250	0.0243	0.0246	97.1	98.5	76.0-124			1.47	20
Carbon tetrachloride	0.0250	0.0252	0.0245	101	98.0	68.0-126			2.90	20
Chlorobenzene	0.0250	0.0224	0.0231	89.6	92.2	80.0-121			2.88	20
Chlorodibromomethane	0.0250	0.0216	0.0228	86.4	91.3	77.0-125			5.48	20
Chloroethane	0.0250	0.0224	0.0214	89.5	85.7	47.0-150			4.26	20
Chloroform	0.0250	0.0243	0.0233	97.4	93.2	73.0-120			4.40	20
Chloromethane	0.0250	0.0158	0.0155	63.2	61.8	41.0-142			2.28	20
2-Chlorotoluene	0.0250	0.0233	0.0231	93.3	92.4	76.0-123			0.901	20
4-Chlorotoluene	0.0250	0.0230	0.0224	91.9	89.5	75.0-122			2.63	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0184	0.0190	73.5	76.0	58.0-134			3.26	20
1,2-Dibromoethane	0.0250	0.0241	0.0244	96.4	97.6	80.0-122			1.20	20
Dibromomethane	0.0250	0.0251	0.0248	101	99.3	80.0-120			1.32	20
1,2-Dichlorobenzene	0.0250	0.0239	0.0234	95.5	93.5	79.0-121			2.12	20
1,3-Dichlorobenzene	0.0250	0.0244	0.0239	97.5	95.8	79.0-120			1.83	20
1,4-Dichlorobenzene	0.0250	0.0234	0.0228	93.5	91.2	79.0-120			2.43	20
Dichlorodifluoromethane	0.0250	0.0288	0.0278	115	111	51.0-149			3.23	20
1,1-Dichloroethane	0.0250	0.0235	0.0221	94.1	88.2	70.0-126			6.46	20
1,2-Dichloroethane	0.0250	0.0252	0.0249	101	99.6	70.0-128			1.15	20
1,1-Dichloroethene	0.0250	0.0256	0.0234	102	93.8	71.0-124			8.79	20
cis-1,2-Dichloroethene	0.0250	0.0250	0.0240	100	95.8	73.0-120			4.23	20
trans-1,2-Dichloroethene	0.0250	0.0253	0.0244	101	97.4	73.0-120			3.79	20
1,2-Dichloropropane	0.0250	0.0236	0.0230	94.5	91.9	77.0-125			2.73	20
1,1-Dichloropropene	0.0250	0.0240	0.0238	95.9	95.4	74.0-126			0.557	20
1,3-Dichloropropane	0.0250	0.0214	0.0214	85.4	85.8	80.0-120			0.404	20
cis-1,3-Dichloropropene	0.0250	0.0248	0.0239	99.4	95.5	80.0-123			4.00	20
trans-1,3-Dichloropropene	0.0250	0.0238	0.0232	95.1	92.9	78.0-124			2.39	20
2,2-Dichloropropane	0.0250	0.0231	0.0224	92.3	89.4	58.0-130			3.14	20
Di-isopropyl ether	0.0250	0.0206	0.0203	82.5	81.4	58.0-138			1.31	20
Ethylbenzene	0.0250	0.0227	0.0228	90.6	91.1	79.0-123			0.550	20
Hexachloro-1,3-butadiene	0.0250	0.0104	0.0112	41.5	44.9	54.0-138	J4	J4	7.93	20
Isopropylbenzene	0.0250	0.0227	0.0227	90.7	90.7	76.0-127			0.0868	20
p-Isopropyltoluene	0.0250	0.0237	0.0236	94.8	94.5	76.0-125			0.333	20
2-Butanone (MEK)	0.125	0.101	0.0993	81.0	79.4	44.0-160			1.93	20
Methylene Chloride	0.0250	0.0228	0.0220	91.1	88.0	67.0-120			3.51	20

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414407-1 05/20/19 17:14 • (LCSD) R3414407-2 05/20/19 17:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	0.125	0.0988	0.101	79.0	81.1	68.0-142			2.57	20
Methyl tert-butyl ether	0.0250	0.0262	0.0258	105	103	68.0-125			1.68	20
Naphthalene	0.0250	0.0140	0.0152	55.9	61.0	54.0-135			8.62	20
n-Propylbenzene	0.0250	0.0226	0.0223	90.3	89.4	77.0-124			1.06	20
Styrene	0.0250	0.0207	0.0221	83.0	88.3	73.0-130			6.20	20
1,1,1,2-Tetrachloroethane	0.0250	0.0226	0.0243	90.5	97.3	75.0-125			7.19	20
1,1,2,2-Tetrachloroethane	0.0250	0.0258	0.0253	103	101	65.0-130			1.97	20
Tetrachloroethene	0.0250	0.0221	0.0229	88.6	91.6	72.0-132			3.31	20
Toluene	0.0250	0.0205	0.0212	82.0	84.8	79.0-120			3.33	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0260	0.0237	104	94.7	69.0-132			9.40	20
1,2,3-Trichlorobenzene	0.0250	0.0107	0.0113	42.8	45.1	50.0-138	J4	J4	5.08	20
1,2,4-Trichlorobenzene	0.0250	0.0136	0.0136	54.3	54.5	57.0-137	J4	J4	0.460	20
1,1,1-Trichloroethane	0.0250	0.0232	0.0212	92.7	84.9	73.0-124			8.81	20
1,1,2-Trichloroethane	0.0250	0.0228	0.0229	91.3	91.7	80.0-120			0.437	20
Trichloroethene	0.0250	0.0255	0.0240	102	96.0	78.0-124			5.94	20
Trichlorofluoromethane	0.0250	0.0222	0.0210	88.7	84.0	59.0-147			5.46	20
1,2,3-Trichloropropane	0.0250	0.0262	0.0259	105	104	73.0-130			1.16	20
1,2,3-Trimethylbenzene	0.0250	0.0224	0.0221	89.8	88.4	77.0-120			1.55	20
1,2,4-Trimethylbenzene	0.0250	0.0237	0.0237	94.8	94.7	76.0-121			0.199	20
1,3,5-Trimethylbenzene	0.0250	0.0248	0.0246	99.3	98.4	76.0-122			0.931	20
Vinyl chloride	0.0250	0.0226	0.0213	90.2	85.4	67.0-131			5.50	20
Xylenes, Total	0.0750	0.0649	0.0660	86.5	88.0	79.0-123			1.68	20
(S) Toluene-d8				91.1	95.9	80.0-120				
(S) 4-Bromofluorobenzene				96.9	102	77.0-126				
(S) 1,2-Dichloroethane-d4				105	113	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

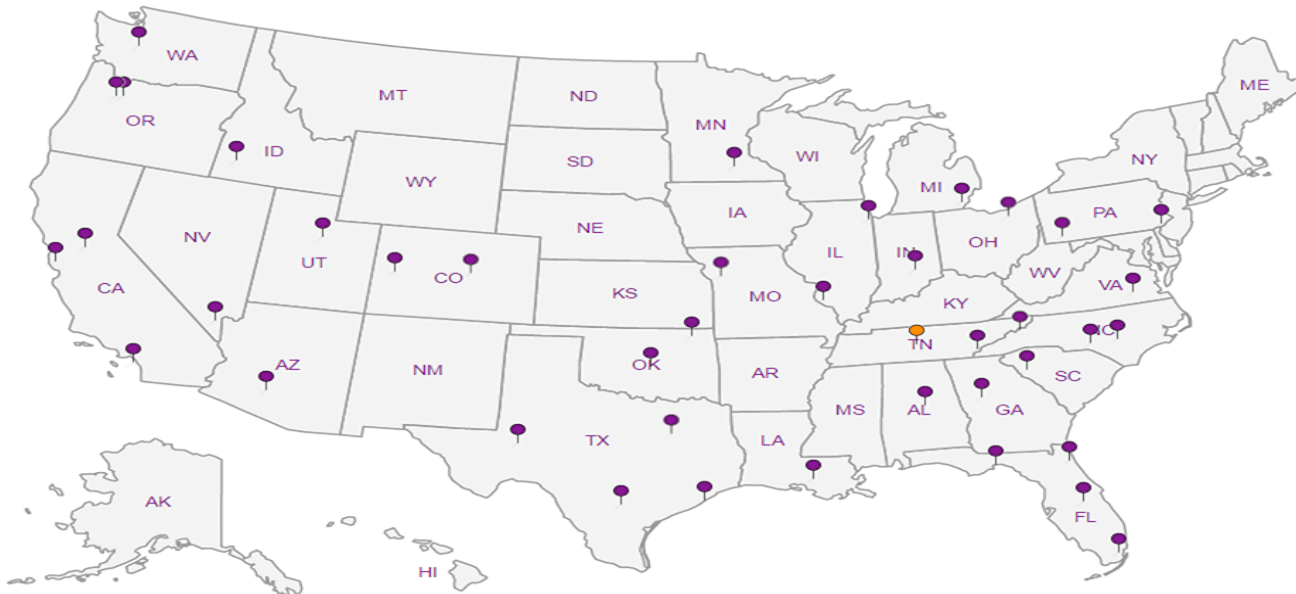
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L# 1099862

C031

Acctnum: TERRALCO
Template: T149945
Prelogin: P708272
TSR: 288 - Daphne Richards
PB:

Shipped Via: **FedEX Ground**

**Terracon Consultants, Inc -
Longmont, CO**

Billing Information:
Mike Skridulis
1831 Lefthand Cir, Suite C
Longmont, CO 80501

Pres
Chk

1831 Lefthand Cir, Suite C

Email To: mjskridulis@terracon.com

Report to:
Michael Skridulis

Project Description: **COL Annual GW**

City/State Collected: **Longmont, CO**

Phone: **303-454-5249**
Fax:

Client Project #
22197006

Lab Project #
TERRALCO-22197006

Collected by (print):
Charles A. Covington

Site/Facility ID #
MY1

P.O. #

Collected by (signature):
Charles A. Covington

Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Quote #
Date Results Needed
STANDARD

Immediately Packed on Ice N Y

No. of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALK, Br, Cr, NO2, NO3, SO	125mIHDPE-NoPres	Metals, Dissolved 250mIHDPE-NoPres	RSK175 40mIAmb HCl	SRG 250mIHDPE-HNO3	V8260 40mIAmb-HCl
MY1 - MW01	Grab	GW	21.10	5/16/19	1340	8	X	X	X	X	X	X
MY1 - MW02	Grab	GW	20.82	5/16/19	1300	8	X	X	X	X	X	X
MY1 - MW03	Grab	GW	21.41	5/16/19	1315	8	X	X	X	X	X	X
		GW				8	X	X	X	X	X	X

Remarks	Sample # (lab only)
	01
	02
	03

Invoice: Date: 15Jan19 Shipping: 0.00
 Customer: ESCSLCUT Weight: 10 LBS Special: 0.00
 Phone: (615)758-5858 COD: 0.00 Handling: 0.00
 Sat Del: N DV: 0.00 Total: 0.00

Svcs: STANDARD OVERNIGHT
TRCK: 4794 8827 7802

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:

Samples returned via:
 UPS FedEx Courier

Tracking #

FedEx 4794 8827 7802

pH _____ Temp _____
 Flow _____ Other _____

Sample Receipt Checklist
 COC Seal Present/Intact: NP N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 IF Applicable
 VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N

RAD SCREEN: 0.5 mR/hr

Relinquished by: (Signature) *Charles A. Covington* Date: 5/16/19 Time: 1600
 Relinquished by: (Signature) _____ Date: _____ Time: _____
 Relinquished by: (Signature) _____ Date: _____ Time: _____

Received by: (Signature) _____ Trip Blank Received: Yes (No) HCL/MeOH TBR
 Received by: (Signature) _____ Temp: **13.8** °C Bottles Received: **24**
 Received for lab by: (Signature) *Went* Date: 5/17/19 Time: 8:45

If preservation required by Login: Date/Time
 Hold: _____ Condition: **NCF 10**

1099862

Analysis

Groundwater Sample Constituents

Parameters	Analytical Method
Volatlie Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations – Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

Terracon Consultants, Inc - Longmont, CO

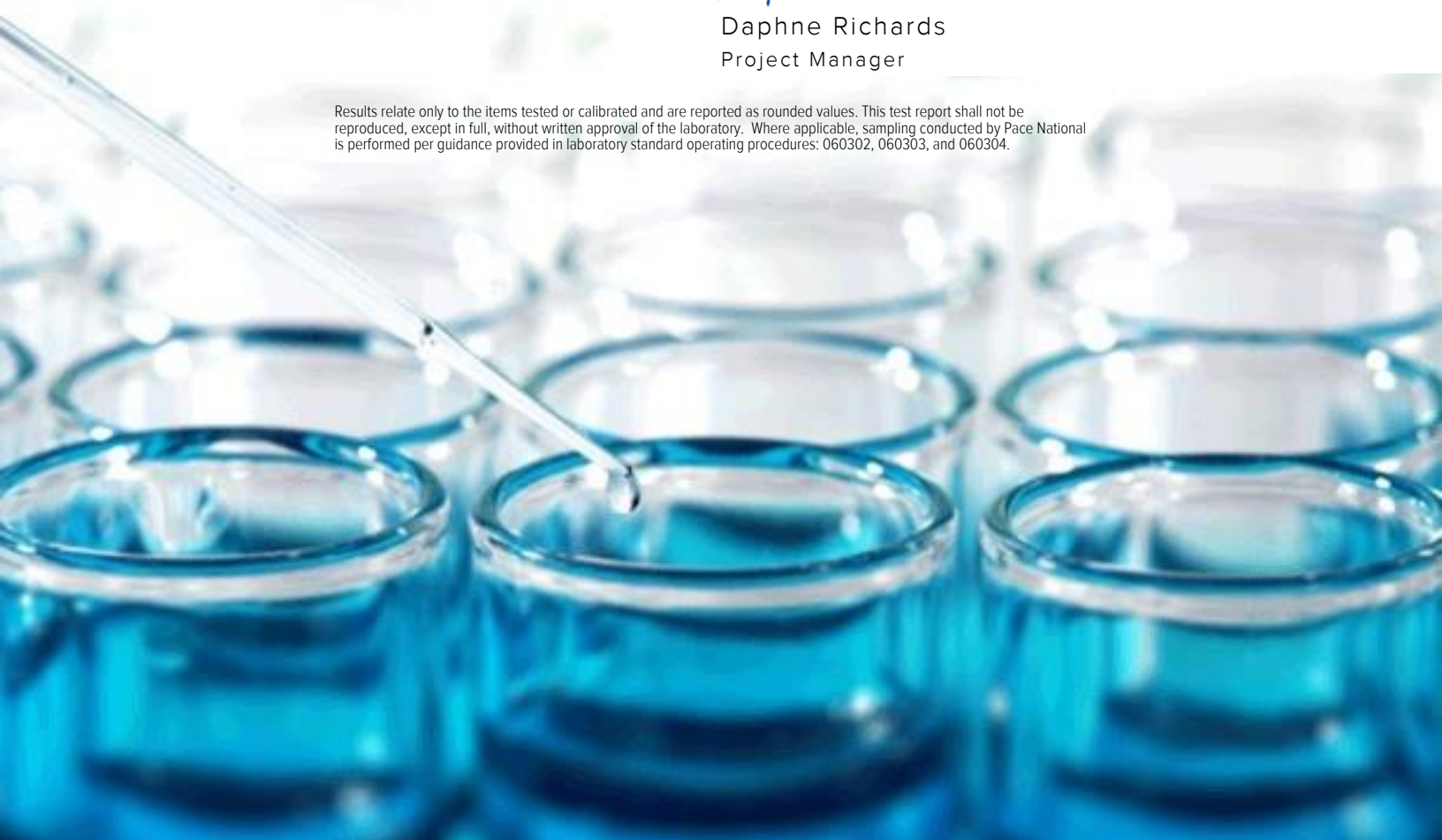
Sample Delivery Group: L1099880
Samples Received: 05/17/2019
Project Number: 22197006
Description: City of Longmont Groundwater Quality Monitoring
Site: MR2
Report To: Michael Skridulis
1831 Lefthand Cirlice, Suite C
Longmont, CO 80501

Entire Report Reviewed By:



Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





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SAMPLE SUMMARY



MR2-MW01 L1099880-01 GW

Collected by Charles A. Covington
 Collected date/time 05/15/19 09:55
 Received date/time 05/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1284522	1	05/22/19 21:33	05/22/19 21:33	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1283017	1	05/17/19 21:16	05/17/19 21:16	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1283017	20	05/17/19 21:31	05/17/19 21:31	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1283232	1	05/21/19 15:07	05/23/19 19:00	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1283229	5	05/23/19 08:14	05/24/19 09:11	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1284168	1	05/21/19 13:15	05/21/19 13:15	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1284066	1	05/20/19 23:18	05/20/19 23:18	TJJ	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

MR2-MW02 L1099880-02 GW

Collected by Charles A. Covington
 Collected date/time 05/15/19 10:30
 Received date/time 05/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1284522	1	05/22/19 21:40	05/22/19 21:40	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1283017	1	05/17/19 21:46	05/17/19 21:46	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1283232	1	05/21/19 15:07	05/23/19 19:03	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1283229	5	05/23/19 08:14	05/24/19 09:16	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1284168	1	05/21/19 13:20	05/21/19 13:20	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1284066	1	05/20/19 23:38	05/20/19 23:38	TJJ	Mt. Juliet, TN

6 Qc

7 Gl

8 Al

9 Sc

MR2-MW03 L1099880-03 GW

Collected by Charles A. Covington
 Collected date/time 05/15/19 09:20
 Received date/time 05/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1284522	1	05/22/19 21:47	05/22/19 21:47	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1283017	1	05/17/19 22:00	05/17/19 22:00	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1283017	10	05/18/19 08:41	05/18/19 08:41	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1283017	5	05/17/19 22:15	05/17/19 22:15	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1283232	1	05/21/19 15:07	05/23/19 19:05	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1283229	5	05/23/19 08:14	05/24/19 09:21	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1284168	1	05/21/19 13:22	05/21/19 13:22	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1284066	1	05/20/19 23:58	05/20/19 23:58	TJJ	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Collected date/time: 05/15/19 09:55

L1099880

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	481		20.0	1	05/22/2019 21:33	WG1284522

Sample Narrative:

L1099880-01 WG1284522: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		20.0	20	05/17/2019 21:31	WG1283017
Chloride	130		20.0	20	05/17/2019 21:31	WG1283017
Nitrate as (N)	65.0	T8	2.00	20	05/17/2019 21:31	WG1283017
Nitrite as (N)	ND	T8	0.100	1	05/17/2019 21:16	WG1283017
Sulfate	1950		100	20	05/17/2019 21:31	WG1283017

Sample Narrative:

L1099880-01 WG1283017: Br diluted due matrix interference: high sulfate content

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	362		1.00	1	05/23/2019 19:00	WG1283232
Iron,Dissolved	ND		0.100	1	05/23/2019 19:00	WG1283232
Magnesium,Dissolved	273		1.00	1	05/23/2019 19:00	WG1283232
Potassium,Dissolved	8.35		1.00	1	05/23/2019 19:00	WG1283232
Sodium,Dissolved	500		1.00	1	05/23/2019 19:00	WG1283232

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	8.06		0.0500	5	05/24/2019 09:11	WG1283229

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	05/21/2019 13:15	WG1284168
Ethane	ND		0.0130	1	05/21/2019 13:15	WG1284168
Ethene	ND		0.0130	1	05/21/2019 13:15	WG1284168
Acetylene	ND		0.0208	1	05/21/2019 13:15	WG1284168

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	05/20/2019 23:18	WG1284066
Acrolein	ND		0.0500	1	05/20/2019 23:18	WG1284066
Acrylonitrile	ND		0.0100	1	05/20/2019 23:18	WG1284066
Benzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
Bromobenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
Bromodichloromethane	ND		0.00100	1	05/20/2019 23:18	WG1284066
Bromoform	ND		0.00100	1	05/20/2019 23:18	WG1284066
Bromomethane	ND		0.00500	1	05/20/2019 23:18	WG1284066
n-Butylbenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
sec-Butylbenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
tert-Butylbenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066





Collected date/time: 05/15/19 09:55

L1099880

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Carbon tetrachloride	ND		0.00100	1	05/20/2019 23:18	WG1284066
Chlorobenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
Chlorodibromomethane	ND		0.00100	1	05/20/2019 23:18	WG1284066
Chloroethane	ND		0.00500	1	05/20/2019 23:18	WG1284066
Chloroform	ND		0.00500	1	05/20/2019 23:18	WG1284066
Chloromethane	ND		0.00250	1	05/20/2019 23:18	WG1284066
2-Chlorotoluene	ND		0.00100	1	05/20/2019 23:18	WG1284066
4-Chlorotoluene	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/20/2019 23:18	WG1284066
1,2-Dibromoethane	ND		0.00100	1	05/20/2019 23:18	WG1284066
Dibromomethane	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,2-Dichlorobenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,3-Dichlorobenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,4-Dichlorobenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
Dichlorodifluoromethane	ND		0.00500	1	05/20/2019 23:18	WG1284066
1,1-Dichloroethane	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,2-Dichloroethane	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,1-Dichloroethene	ND		0.00100	1	05/20/2019 23:18	WG1284066
cis-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 23:18	WG1284066
trans-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,2-Dichloropropane	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,1-Dichloropropene	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,3-Dichloropropane	ND		0.00100	1	05/20/2019 23:18	WG1284066
cis-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 23:18	WG1284066
trans-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 23:18	WG1284066
2,2-Dichloropropane	ND		0.00100	1	05/20/2019 23:18	WG1284066
Di-isopropyl ether	ND		0.00100	1	05/20/2019 23:18	WG1284066
Ethylbenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
Hexachloro-1,3-butadiene	ND	J4	0.00100	1	05/20/2019 23:18	WG1284066
Isopropylbenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
p-Isopropyltoluene	ND		0.00100	1	05/20/2019 23:18	WG1284066
2-Butanone (MEK)	ND		0.0100	1	05/20/2019 23:18	WG1284066
Methylene Chloride	ND		0.00500	1	05/20/2019 23:18	WG1284066
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/20/2019 23:18	WG1284066
Methyl tert-butyl ether	ND		0.00100	1	05/20/2019 23:18	WG1284066
Naphthalene	ND		0.00500	1	05/20/2019 23:18	WG1284066
n-Propylbenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
Styrene	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/20/2019 23:18	WG1284066
Tetrachloroethene	ND		0.00100	1	05/20/2019 23:18	WG1284066
Toluene	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,2,3-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 23:18	WG1284066
1,2,4-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 23:18	WG1284066
1,1,1-Trichloroethane	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,1,2-Trichloroethane	ND		0.00100	1	05/20/2019 23:18	WG1284066
Trichloroethene	ND		0.00100	1	05/20/2019 23:18	WG1284066
Trichlorofluoromethane	ND		0.00500	1	05/20/2019 23:18	WG1284066
1,2,3-Trichloropropane	ND		0.00250	1	05/20/2019 23:18	WG1284066
1,2,4-Trimethylbenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,2,3-Trimethylbenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
1,3,5-Trimethylbenzene	ND		0.00100	1	05/20/2019 23:18	WG1284066
Vinyl chloride	ND		0.00100	1	05/20/2019 23:18	WG1284066
Xylenes, Total	ND		0.00300	1	05/20/2019 23:18	WG1284066
(S) Toluene-d8	96.4		80.0-120		05/20/2019 23:18	WG1284066

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 05/15/19 09:55

L1099880

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	102		77.0-126		05/20/2019 23:18	WG1284066
(S) 1,2-Dichloroethane-d4	100		70.0-130		05/20/2019 23:18	WG1284066

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	419		20.0	1	05/22/2019 21:40	WG1284522

Sample Narrative:

L1099880-02 WG1284522: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	05/17/2019 21:46	WG1283017
Chloride	5.78		1.00	1	05/17/2019 21:46	WG1283017
Nitrate as (N)	1.11	T8	0.100	1	05/17/2019 21:46	WG1283017
Nitrite as (N)	ND	T8	0.100	1	05/17/2019 21:46	WG1283017
Sulfate	90.7		5.00	1	05/17/2019 21:46	WG1283017

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	35.1		1.00	1	05/23/2019 19:03	WG1283232
Iron,Dissolved	ND		0.100	1	05/23/2019 19:03	WG1283232
Magnesium,Dissolved	26.1		1.00	1	05/23/2019 19:03	WG1283232
Potassium,Dissolved	4.73		1.00	1	05/23/2019 19:03	WG1283232
Sodium,Dissolved	162		1.00	1	05/23/2019 19:03	WG1283232

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	2.67		0.0500	5	05/24/2019 09:16	WG1283229

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	0.0559		0.0100	1	05/21/2019 13:20	WG1284168
Ethane	ND		0.0130	1	05/21/2019 13:20	WG1284168
Ethene	ND		0.0130	1	05/21/2019 13:20	WG1284168
Acetylene	ND		0.0208	1	05/21/2019 13:20	WG1284168

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	05/20/2019 23:38	WG1284066
Acrolein	ND		0.0500	1	05/20/2019 23:38	WG1284066
Acrylonitrile	ND		0.0100	1	05/20/2019 23:38	WG1284066
Benzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
Bromobenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
Bromodichloromethane	ND		0.00100	1	05/20/2019 23:38	WG1284066
Bromoform	ND		0.00100	1	05/20/2019 23:38	WG1284066
Bromomethane	ND		0.00500	1	05/20/2019 23:38	WG1284066
n-Butylbenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
sec-Butylbenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
tert-Butylbenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
Carbon tetrachloride	ND		0.00100	1	05/20/2019 23:38	WG1284066
Chlorobenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
Chlorodibromomethane	ND		0.00100	1	05/20/2019 23:38	WG1284066

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 05/15/19 10:30

L1099880

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloroethane	ND		0.00500	1	05/20/2019 23:38	WG1284066
Chloroform	ND		0.00500	1	05/20/2019 23:38	WG1284066
Chloromethane	ND		0.00250	1	05/20/2019 23:38	WG1284066
2-Chlorotoluene	ND		0.00100	1	05/20/2019 23:38	WG1284066
4-Chlorotoluene	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/20/2019 23:38	WG1284066
1,2-Dibromoethane	ND		0.00100	1	05/20/2019 23:38	WG1284066
Dibromomethane	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,2-Dichlorobenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,3-Dichlorobenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,4-Dichlorobenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
Dichlorodifluoromethane	ND		0.00500	1	05/20/2019 23:38	WG1284066
1,1-Dichloroethane	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,2-Dichloroethane	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,1-Dichloroethene	ND		0.00100	1	05/20/2019 23:38	WG1284066
cis-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 23:38	WG1284066
trans-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,2-Dichloropropane	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,1-Dichloropropene	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,3-Dichloropropane	ND		0.00100	1	05/20/2019 23:38	WG1284066
cis-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 23:38	WG1284066
trans-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 23:38	WG1284066
2,2-Dichloropropane	ND		0.00100	1	05/20/2019 23:38	WG1284066
Di-isopropyl ether	ND		0.00100	1	05/20/2019 23:38	WG1284066
Ethylbenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
Hexachloro-1,3-butadiene	ND	J4	0.00100	1	05/20/2019 23:38	WG1284066
Isopropylbenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
p-Isopropyltoluene	ND		0.00100	1	05/20/2019 23:38	WG1284066
2-Butanone (MEK)	ND		0.0100	1	05/20/2019 23:38	WG1284066
Methylene Chloride	ND		0.00500	1	05/20/2019 23:38	WG1284066
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/20/2019 23:38	WG1284066
Methyl tert-butyl ether	ND		0.00100	1	05/20/2019 23:38	WG1284066
Naphthalene	ND		0.00500	1	05/20/2019 23:38	WG1284066
n-Propylbenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
Styrene	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/20/2019 23:38	WG1284066
Tetrachloroethene	ND		0.00100	1	05/20/2019 23:38	WG1284066
Toluene	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,2,3-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 23:38	WG1284066
1,2,4-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 23:38	WG1284066
1,1,1-Trichloroethane	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,1,2-Trichloroethane	ND		0.00100	1	05/20/2019 23:38	WG1284066
Trichloroethene	ND		0.00100	1	05/20/2019 23:38	WG1284066
Trichlorofluoromethane	ND		0.00500	1	05/20/2019 23:38	WG1284066
1,2,3-Trichloropropane	ND		0.00250	1	05/20/2019 23:38	WG1284066
1,2,4-Trimethylbenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,2,3-Trimethylbenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
1,3,5-Trimethylbenzene	ND		0.00100	1	05/20/2019 23:38	WG1284066
Vinyl chloride	ND		0.00100	1	05/20/2019 23:38	WG1284066
Xylenes, Total	ND		0.00300	1	05/20/2019 23:38	WG1284066
(S) Toluene-d8	93.3		80.0-120		05/20/2019 23:38	WG1284066
(S) 4-Bromofluorobenzene	100		77.0-126		05/20/2019 23:38	WG1284066
(S) 1,2-Dichloroethane-d4	98.5		70.0-130		05/20/2019 23:38	WG1284066

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	468		20.0	1	05/22/2019 21:47	WG1284522

Sample Narrative:

L1099880-03 WG1284522: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		5.00	5	05/17/2019 22:15	WG1283017
Chloride	33.1		1.00	1	05/17/2019 22:00	WG1283017
Nitrate as (N)	4.00	T8	0.100	1	05/17/2019 22:00	WG1283017
Nitrite as (N)	ND	T8	0.100	1	05/17/2019 22:00	WG1283017
Sulfate	522		50.0	10	05/18/2019 08:41	WG1283017

Sample Narrative:

L1099880-03 WG1283017: Br diluted due matrix interference: high sulfate content

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	107		1.00	1	05/23/2019 19:05	WG1283232
Iron,Dissolved	ND		0.100	1	05/23/2019 19:05	WG1283232
Magnesium,Dissolved	82.3		1.00	1	05/23/2019 19:05	WG1283232
Potassium,Dissolved	10.1		1.00	1	05/23/2019 19:05	WG1283232
Sodium,Dissolved	243		1.00	1	05/23/2019 19:05	WG1283232

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	4.48		0.0500	5	05/24/2019 09:21	WG1283229

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	0.0292		0.0100	1	05/21/2019 13:22	WG1284168
Ethane	ND		0.0130	1	05/21/2019 13:22	WG1284168
Ethene	ND		0.0130	1	05/21/2019 13:22	WG1284168
Acetylene	ND		0.0208	1	05/21/2019 13:22	WG1284168

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	05/20/2019 23:58	WG1284066
Acrolein	ND		0.0500	1	05/20/2019 23:58	WG1284066
Acrylonitrile	ND		0.0100	1	05/20/2019 23:58	WG1284066
Benzene	ND		0.00100	1	05/20/2019 23:58	WG1284066
Bromobenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066
Bromodichloromethane	ND		0.00100	1	05/20/2019 23:58	WG1284066
Bromoform	ND		0.00100	1	05/20/2019 23:58	WG1284066
Bromomethane	ND		0.00500	1	05/20/2019 23:58	WG1284066
n-Butylbenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066
sec-Butylbenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066
tert-Butylbenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 05/15/19 09:20

L1099880

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch	
Carbon tetrachloride	ND		0.00100	1	05/20/2019 23:58	WG1284066	1 Cp
Chlorobenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066	2 Tc
Chlorodibromomethane	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Chloroethane	ND		0.00500	1	05/20/2019 23:58	WG1284066	3 Ss
Chloroform	ND		0.00500	1	05/20/2019 23:58	WG1284066	
Chloromethane	ND		0.00250	1	05/20/2019 23:58	WG1284066	4 Cn
2-Chlorotoluene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
4-Chlorotoluene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/20/2019 23:58	WG1284066	5 Sr
1,2-Dibromoethane	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Dibromomethane	ND		0.00100	1	05/20/2019 23:58	WG1284066	6 Qc
1,2-Dichlorobenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
1,3-Dichlorobenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066	7 Gl
1,4-Dichlorobenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Dichlorodifluoromethane	ND		0.00500	1	05/20/2019 23:58	WG1284066	
1,1-Dichloroethane	ND		0.00100	1	05/20/2019 23:58	WG1284066	
1,2-Dichloroethane	ND		0.00100	1	05/20/2019 23:58	WG1284066	8 Al
1,1-Dichloroethene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
cis-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
trans-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 23:58	WG1284066	9 Sc
1,2-Dichloropropane	ND		0.00100	1	05/20/2019 23:58	WG1284066	
1,1-Dichloropropene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
1,3-Dichloropropane	ND		0.00100	1	05/20/2019 23:58	WG1284066	
cis-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
trans-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
2,2-Dichloropropane	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Di-isopropyl ether	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Ethylbenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Hexachloro-1,3-butadiene	ND	J4	0.00100	1	05/20/2019 23:58	WG1284066	
Isopropylbenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
p-Isopropyltoluene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
2-Butanone (MEK)	ND		0.0100	1	05/20/2019 23:58	WG1284066	
Methylene Chloride	ND		0.00500	1	05/20/2019 23:58	WG1284066	
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/20/2019 23:58	WG1284066	
Methyl tert-butyl ether	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Naphthalene	ND		0.00500	1	05/20/2019 23:58	WG1284066	
n-Propylbenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Styrene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 23:58	WG1284066	
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 23:58	WG1284066	
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Tetrachloroethene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Toluene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
1,2,3-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 23:58	WG1284066	
1,2,4-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 23:58	WG1284066	
1,1,1-Trichloroethane	ND		0.00100	1	05/20/2019 23:58	WG1284066	
1,1,2-Trichloroethane	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Trichloroethene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Trichlorofluoromethane	ND		0.00500	1	05/20/2019 23:58	WG1284066	
1,2,3-Trichloropropane	ND		0.00250	1	05/20/2019 23:58	WG1284066	
1,2,4-Trimethylbenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
1,2,3-Trimethylbenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
1,3,5-Trimethylbenzene	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Vinyl chloride	ND		0.00100	1	05/20/2019 23:58	WG1284066	
Xylenes, Total	ND		0.00300	1	05/20/2019 23:58	WG1284066	
(S) Toluene-d8	95.0		80.0-120		05/20/2019 23:58	WG1284066	



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	103		77.0-126		05/20/2019 23:58	WG1284066
(S) 1,2-Dichloroethane-d4	101		70.0-130		05/20/2019 23:58	WG1284066

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3413927-1 05/22/19 19:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	4.19	↓	2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1099717-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099717-01 05/22/19 19:43 • (DUP) R3413927-3 05/22/19 19:51

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	17.2	15.0	1	13.5	↓	20

Sample Narrative:

OS: Endpoint pH 4.5 headspace

DUP: Endpoint pH 4.5

L1099715-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1099715-02 05/22/19 22:24 • (DUP) R3413927-5 05/22/19 22:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	1410	1410	1	0.362		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3413927-4 05/22/19 20:50

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	104	104	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3412513-1 05/17/19 14:36

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

L1099970-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1099970-12 05/17/19 17:33 • (DUP) R3412513-3 05/17/19 17:47

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.000	1	0.000		15
Chloride	16.8	16.9	1	0.443		15
Nitrate	ND	0.000	1	0.000		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	5.60	5.58	1	0.335		15

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1099970-18 Original Sample (OS) • Duplicate (DUP)

(OS) L1099970-18 05/17/19 20:16 • (DUP) R3412513-6 05/17/19 20:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.247	1	0.526	U	15
Chloride	15.1	15.2	1	0.374		15
Nitrate	ND	0.000	1	0.000		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	26.5	26.6	1	0.368		15

Laboratory Control Sample (LCS)

(LCS) R3412513-2 05/17/19 14:50

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	40.9	102	80.0-120	
Chloride	40.0	40.3	101	80.0-120	
Nitrate	8.00	8.28	104	80.0-120	
Nitrite	8.00	8.14	102	80.0-120	



Laboratory Control Sample (LCS)

(LCS) R3412513-2 05/17/19 14:50

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Sulfate	40.0	40.8	102	80.0-120	

L1099970-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1099970-12 05/17/19 17:33 • (MS) R3412513-4 05/17/19 18:02 • (MSD) R3412513-5 05/17/19 18:17

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	47.9	48.1	95.8	96.2	1	80.0-120			0.364	15
Chloride	50.0	16.8	65.7	65.9	97.8	98.1	1	80.0-120			0.284	15
Nitrate	5.00	ND	4.86	4.88	97.2	97.5	1	80.0-120			0.364	15
Nitrite	5.00	ND	5.06	5.08	101	102	1	80.0-120			0.393	15
Sulfate	50.0	5.60	55.2	55.4	99.1	99.5	1	80.0-120			0.350	15

L1099970-18 Original Sample (OS) • Matrix Spike (MS)

(OS) L1099970-18 05/17/19 20:16 • (MS) R3412513-7 05/17/19 20:46

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	ND	47.9	95.3	1	80.0-120	
Chloride	50.0	15.1	64.7	99.1	1	80.0-120	
Nitrate	5.00	ND	4.86	97.1	1	80.0-120	
Nitrite	5.00	ND	5.12	102	1	80.0-120	
Sulfate	50.0	26.5	75.7	98.3	1	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3414439-1 05/23/19 17:58

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium,Dissolved	0.479	↓	0.0463	1.00
Iron,Dissolved	0.0360	↓	0.0141	0.100
Magnesium,Dissolved	U		0.0111	1.00
Potassium,Dissolved	0.234	↓	0.102	1.00
Sodium,Dissolved	1.63		0.0985	1.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414439-2 05/23/19 18:00 • (LCSD) R3414439-3 05/23/19 18:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	10.1	10.3	101	103	80.0-120			1.57	20
Iron,Dissolved	10.0	10.0	10.1	100	101	80.0-120			1.08	20
Magnesium,Dissolved	10.0	10.4	10.5	104	105	80.0-120			1.46	20
Potassium,Dissolved	10.0	10.1	10.2	101	102	80.0-120			1.22	20
Sodium,Dissolved	10.0	10.4	10.5	104	105	80.0-120			0.919	20

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1099875-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1099875-01 05/23/19 18:06 • (MS) R3414439-5 05/23/19 18:11 • (MSD) R3414439-6 05/23/19 18:14

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	477	481	480	44.1	31.3	1	75.0-125	↓	↓	0.266	20
Iron,Dissolved	10.0	ND	9.99	10.1	99.9	101	1	75.0-125			1.09	20
Magnesium,Dissolved	10.0	482	486	486	47.3	39.3	1	75.0-125	↓	↓	0.166	20
Potassium,Dissolved	10.0	15.3	25.3	25.4	100	101	1	75.0-125			0.299	20
Sodium,Dissolved	10.0	734	736	735	19.7	2.67	1	75.0-125	↓	↓	0.231	20



Method Blank (MB)

(MB) R3414466-1 05/23/19 22:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Strontium	0.000207	↓	0.000160	0.0100

¹ Cp

² Tc

³ Ss

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414466-2 05/23/19 22:25 • (LCSD) R3414466-3 05/23/19 22:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0514	0.0525	103	105	80.0-120			2.10	20

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3413251-1 05/21/19 11:45

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130
Acetylene	U		0.00558	0.0208

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1099853-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099853-01 05/21/19 11:48 • (DUP) R3413251-2 05/21/19 12:57

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	0.344	0.345	1	0.115		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

L1099867-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099867-01 05/21/19 11:53 • (DUP) R3413251-3 05/21/19 13:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	0.0539	0.0542	1	0.526		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

L1099918-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099918-01 05/21/19 13:38 • (DUP) R3413251-4 05/21/19 13:46

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	ND	0.000	1	0.000		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3413251-5 05/21/19 13:48 • (LCSD) R3413251-6 05/21/19 13:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Methane	0.0678	0.0741	0.0736	109	109	85.0-115			0.620	20
Ethane	0.129	0.119	0.119	92.0	92.3	85.0-115			0.311	20
Ethene	0.127	0.118	0.118	92.8	93.1	85.0-115			0.314	20
Acetylene	0.208	0.187	0.188	89.9	90.3	85.0-115			0.500	20

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3414407-3 05/20/19 18:12

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	0.000600	U	0.000256	0.00100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3414407-3 05/20/19 18:12

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	0.000408	U	0.000230	0.00100
1,2,4-Trichlorobenzene	0.000357	U	0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	97.7			80.0-120
(S) 4-Bromofluorobenzene	101			77.0-126
(S) 1,2-Dichloroethane-d4	104			70.0-130

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414407-1 05/20/19 17:14 • (LCSD) R3414407-2 05/20/19 17:33

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Acetone	0.125	0.0883	0.0875	70.7	70.0	19.0-160			0.988	27
Acrolein	0.125	0.191	0.172	153	138	10.0-160			10.4	26
Acrylonitrile	0.125	0.109	0.107	87.3	85.4	55.0-149			2.16	20
Benzene	0.0250	0.0256	0.0248	103	99.1	70.0-123			3.37	20



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414407-1 05/20/19 17:14 • (LCSD) R3414407-2 05/20/19 17:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Bromobenzene	0.0250	0.0254	0.0244	102	97.7	73.0-121			4.02	20
Bromodichloromethane	0.0250	0.0236	0.0234	94.3	93.6	75.0-120			0.743	20
Bromoform	0.0250	0.0196	0.0196	78.4	78.5	68.0-132			0.0575	20
Bromomethane	0.0250	0.0202	0.0196	80.7	78.5	10.0-160			2.86	25
n-Butylbenzene	0.0250	0.0221	0.0219	88.3	87.6	73.0-125			0.805	20
sec-Butylbenzene	0.0250	0.0231	0.0226	92.6	90.2	75.0-125			2.56	20
tert-Butylbenzene	0.0250	0.0243	0.0246	97.1	98.5	76.0-124			1.47	20
Carbon tetrachloride	0.0250	0.0252	0.0245	101	98.0	68.0-126			2.90	20
Chlorobenzene	0.0250	0.0224	0.0231	89.6	92.2	80.0-121			2.88	20
Chlorodibromomethane	0.0250	0.0216	0.0228	86.4	91.3	77.0-125			5.48	20
Chloroethane	0.0250	0.0224	0.0214	89.5	85.7	47.0-150			4.26	20
Chloroform	0.0250	0.0243	0.0233	97.4	93.2	73.0-120			4.40	20
Chloromethane	0.0250	0.0158	0.0155	63.2	61.8	41.0-142			2.28	20
2-Chlorotoluene	0.0250	0.0233	0.0231	93.3	92.4	76.0-123			0.901	20
4-Chlorotoluene	0.0250	0.0230	0.0224	91.9	89.5	75.0-122			2.63	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0184	0.0190	73.5	76.0	58.0-134			3.26	20
1,2-Dibromoethane	0.0250	0.0241	0.0244	96.4	97.6	80.0-122			1.20	20
Dibromomethane	0.0250	0.0251	0.0248	101	99.3	80.0-120			1.32	20
1,2-Dichlorobenzene	0.0250	0.0239	0.0234	95.5	93.5	79.0-121			2.12	20
1,3-Dichlorobenzene	0.0250	0.0244	0.0239	97.5	95.8	79.0-120			1.83	20
1,4-Dichlorobenzene	0.0250	0.0234	0.0228	93.5	91.2	79.0-120			2.43	20
Dichlorodifluoromethane	0.0250	0.0288	0.0278	115	111	51.0-149			3.23	20
1,1-Dichloroethane	0.0250	0.0235	0.0221	94.1	88.2	70.0-126			6.46	20
1,2-Dichloroethane	0.0250	0.0252	0.0249	101	99.6	70.0-128			1.15	20
1,1-Dichloroethene	0.0250	0.0256	0.0234	102	93.8	71.0-124			8.79	20
cis-1,2-Dichloroethene	0.0250	0.0250	0.0240	100	95.8	73.0-120			4.23	20
trans-1,2-Dichloroethene	0.0250	0.0253	0.0244	101	97.4	73.0-120			3.79	20
1,2-Dichloropropane	0.0250	0.0236	0.0230	94.5	91.9	77.0-125			2.73	20
1,1-Dichloropropene	0.0250	0.0240	0.0238	95.9	95.4	74.0-126			0.557	20
1,3-Dichloropropane	0.0250	0.0214	0.0214	85.4	85.8	80.0-120			0.404	20
cis-1,3-Dichloropropene	0.0250	0.0248	0.0239	99.4	95.5	80.0-123			4.00	20
trans-1,3-Dichloropropene	0.0250	0.0238	0.0232	95.1	92.9	78.0-124			2.39	20
2,2-Dichloropropane	0.0250	0.0231	0.0224	92.3	89.4	58.0-130			3.14	20
Di-isopropyl ether	0.0250	0.0206	0.0203	82.5	81.4	58.0-138			1.31	20
Ethylbenzene	0.0250	0.0227	0.0228	90.6	91.1	79.0-123			0.550	20
Hexachloro-1,3-butadiene	0.0250	0.0104	0.0112	41.5	44.9	54.0-138	J4	J4	7.93	20
Isopropylbenzene	0.0250	0.0227	0.0227	90.7	90.7	76.0-127			0.0868	20
p-Isopropyltoluene	0.0250	0.0237	0.0236	94.8	94.5	76.0-125			0.333	20
2-Butanone (MEK)	0.125	0.101	0.0993	81.0	79.4	44.0-160			1.93	20
Methylene Chloride	0.0250	0.0228	0.0220	91.1	88.0	67.0-120			3.51	20

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414407-1 05/20/19 17:14 • (LCSD) R3414407-2 05/20/19 17:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	0.125	0.0988	0.101	79.0	81.1	68.0-142			2.57	20
Methyl tert-butyl ether	0.0250	0.0262	0.0258	105	103	68.0-125			1.68	20
Naphthalene	0.0250	0.0140	0.0152	55.9	61.0	54.0-135			8.62	20
n-Propylbenzene	0.0250	0.0226	0.0223	90.3	89.4	77.0-124			1.06	20
Styrene	0.0250	0.0207	0.0221	83.0	88.3	73.0-130			6.20	20
1,1,1,2-Tetrachloroethane	0.0250	0.0226	0.0243	90.5	97.3	75.0-125			7.19	20
1,1,2,2-Tetrachloroethane	0.0250	0.0258	0.0253	103	101	65.0-130			1.97	20
Tetrachloroethene	0.0250	0.0221	0.0229	88.6	91.6	72.0-132			3.31	20
Toluene	0.0250	0.0205	0.0212	82.0	84.8	79.0-120			3.33	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0260	0.0237	104	94.7	69.0-132			9.40	20
1,2,3-Trichlorobenzene	0.0250	0.0107	0.0113	42.8	45.1	50.0-138	J4	J4	5.08	20
1,2,4-Trichlorobenzene	0.0250	0.0136	0.0136	54.3	54.5	57.0-137	J4	J4	0.460	20
1,1,1-Trichloroethane	0.0250	0.0232	0.0212	92.7	84.9	73.0-124			8.81	20
1,1,2-Trichloroethane	0.0250	0.0228	0.0229	91.3	91.7	80.0-120			0.437	20
Trichloroethene	0.0250	0.0255	0.0240	102	96.0	78.0-124			5.94	20
Trichlorofluoromethane	0.0250	0.0222	0.0210	88.7	84.0	59.0-147			5.46	20
1,2,3-Trichloropropane	0.0250	0.0262	0.0259	105	104	73.0-130			1.16	20
1,2,3-Trimethylbenzene	0.0250	0.0224	0.0221	89.8	88.4	77.0-120			1.55	20
1,2,4-Trimethylbenzene	0.0250	0.0237	0.0237	94.8	94.7	76.0-121			0.199	20
1,3,5-Trimethylbenzene	0.0250	0.0248	0.0246	99.3	98.4	76.0-122			0.931	20
Vinyl chloride	0.0250	0.0226	0.0213	90.2	85.4	67.0-131			5.50	20
Xylenes, Total	0.0750	0.0649	0.0660	86.5	88.0	79.0-123			1.68	20
(S) Toluene-d8				91.1	95.9	80.0-120				
(S) 4-Bromofluorobenzene				96.9	102	77.0-126				
(S) 1,2-Dichloroethane-d4				105	113	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

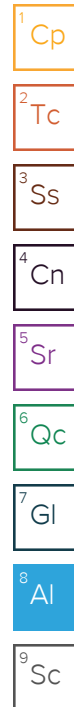
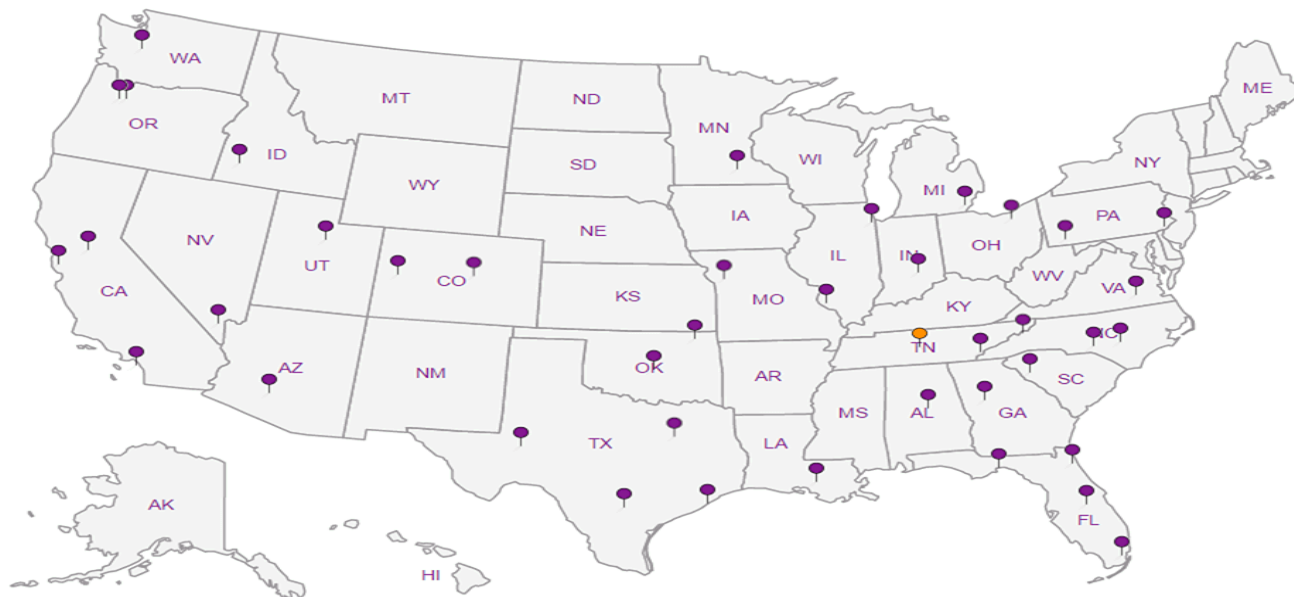
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations


Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Terracon Consultants, Inc - Longmont, CO
 1831 Lefthand Circe, Suite C

Billing Information:
Mike Skridulis
 1831 Lefthand Circe, Suite C
 Longmont, CO 80501

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

 12065 Lebanon Rd
 Mount Juliet, TN 37122
 Phone: 615-758-5858
 Phone: 800-767-5859
 Fax: 615-758-5859

Report to:
Michael Skridulis

Email To: mjskridulis@terracon.com

Project Description:
COL Annual GW

City/State Collected:
Longmont, CO

Phone: **303-454-5249**
 Fax:

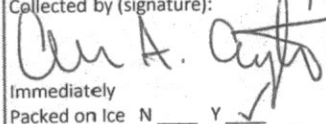
Client Project #
22197006

Lab Project #
TERRALCO-22197006

Collected by (print):
Charles A. Covington

Site/Facility ID #
MR2

P.O. #

Collected by (signature):


Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Quote #
STANDARD

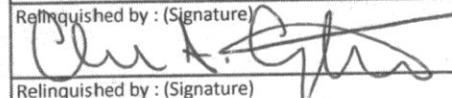
Immediately Packed on Ice N Y

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALK, Br, Cr, NO2, NO3, SO	Metals, Dissolved	RSK175 40ml/Amb HCl	SRG 250mlHDPE-HNO3	V8226 40ml/Amb-HCl (3)	Remarks	Sample # (lab only)
MRA-MW01	Grab	GW	14.45	5/15/19	0955	8	X	X	X	X	X		-9
MRA-MW02	Grab	GW	16.75	5/15/19	1030	8	X	X	X	X	X		2
MRA-MW03	Grab	GW	17.55	5/15/19	0920	8	X	X	X	X	X		03
		GW				8	X	X	X	X	X		04

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:
 Date: 5/16/19 Time: 1600
 Received by (Signature):
 Trip Blank Received: Yes/No
 HCL/MeOH TBR
 Temp: ASDFC
 1.3±0=1.3
 Bottles Received: 24
 Tracking # **FedEx 4704 8827 7776**

Sample Receipt Checklist
 COC Seal Present/Intact: NP Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 If Applicable
 VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N

Relinquished by: (Signature)

 Date: 5/16/19 Time: 1600

Relinquished by: (Signature)
 Date: Time:

Relinquished by: (Signature)
 Date: 5/17/19 Time: 8:45

Received by (Signature):
 Date: 5/17/19 Time: 8:45

Condition: NCF / OK
RAD SCREEN: <0.5 mR/hr
 If preservation required by Login: Date/Time

Analysis

Groundwater Sample Constituents

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations – Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

Terracon Consultants, Inc - Longmont, CO

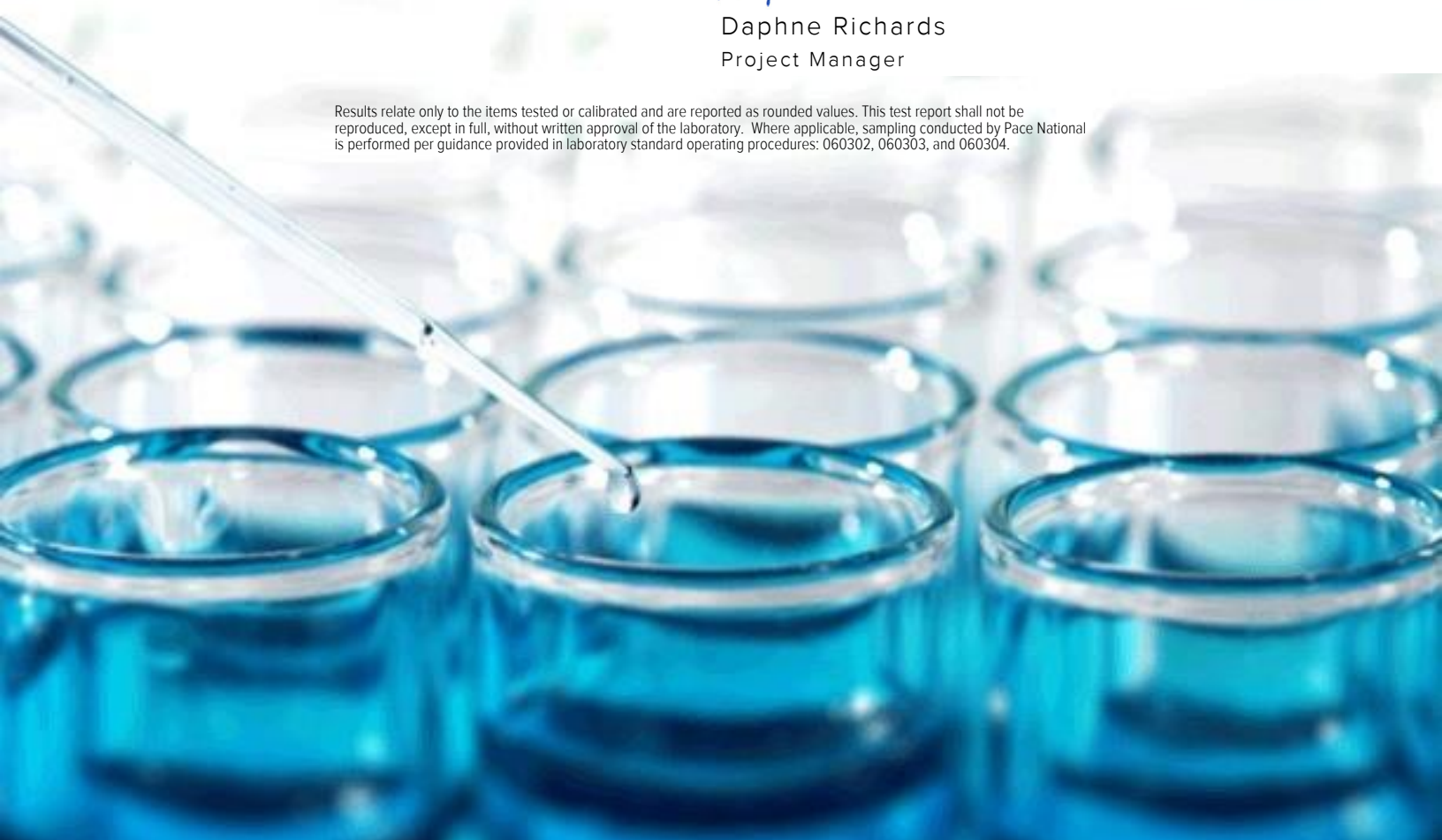
Sample Delivery Group: L1107342
Samples Received: 06/11/2019
Project Number: 22197006
Description: City of Longmont Groundwater Quality Monitoring
Site: E6W
Report To: Michael Skridulis
1831 Lefthand Cirlice, Suite C
Longmont, CO 80501

Entire Report Reviewed By:












Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





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SAMPLE SUMMARY



PLI-MW01 L1107342-01 GW

Collected by Charles Covington
Collected date/time 06/10/19 11:00
Received date/time 06/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1297086	1	06/17/19 14:03	06/17/19 14:03	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	1	06/11/19 17:05	06/11/19 17:05	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	5	06/12/19 03:46	06/12/19 03:46	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1294663	1	06/13/19 07:23	06/13/19 11:15	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1295908	1	06/13/19 17:03	06/14/19 17:21	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1294631	1	06/12/19 14:21	06/12/19 14:21	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1295189	1	06/13/19 01:08	06/13/19 01:08	BMB	Mt. Juliet, TN

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Al

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PLI-MW02 L1107342-02 GW

Collected by Charles Covington
Collected date/time 06/10/19 11:30
Received date/time 06/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1297086	1	06/17/19 14:10	06/17/19 14:10	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	1	06/11/19 17:35	06/11/19 17:35	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	10	06/12/19 04:16	06/12/19 04:16	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1294663	1	06/13/19 07:23	06/13/19 11:18	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1295908	1	06/13/19 17:03	06/14/19 17:26	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1294631	1	06/12/19 14:23	06/12/19 14:23	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1295189	1	06/13/19 01:26	06/13/19 01:26	BMB	Mt. Juliet, TN

PLI-MW03 L1107342-03 GW

Collected by Charles Covington
Collected date/time 06/10/19 11:50
Received date/time 06/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1297086	1	06/17/19 14:17	06/17/19 14:17	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	1	06/11/19 18:19	06/11/19 18:19	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	5	06/12/19 04:31	06/12/19 04:31	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1294663	1	06/13/19 07:23	06/13/19 11:26	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1295908	1	06/13/19 17:03	06/14/19 17:44	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1294631	1	06/12/19 14:33	06/12/19 14:33	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1295189	1	06/13/19 01:45	06/13/19 01:45	BMB	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	273		20.0	1	06/17/2019 14:03	WG1297086

Sample Narrative:

L1107342-01 WG1297086: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	06/11/2019 17:05	WG1294139
Chloride	34.4		1.00	1	06/11/2019 17:05	WG1294139
Nitrate as (N)	5.88		0.100	1	06/11/2019 17:05	WG1294139
Nitrite as (N)	ND		0.100	1	06/11/2019 17:05	WG1294139
Sulfate	337		25.0	5	06/12/2019 03:46	WG1294139

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	107		1.00	1	06/13/2019 11:15	WG1294663
Iron,Dissolved	ND		0.100	1	06/13/2019 11:15	WG1294663
Magnesium,Dissolved	75.6		1.00	1	06/13/2019 11:15	WG1294663
Potassium,Dissolved	1.53		1.00	1	06/13/2019 11:15	WG1294663
Sodium,Dissolved	68.6		1.00	1	06/13/2019 11:15	WG1294663

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	1.79		0.0100	1	06/14/2019 17:21	WG1295908

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	06/12/2019 14:21	WG1294631
Ethane	ND		0.0130	1	06/12/2019 14:21	WG1294631
Ethene	ND		0.0130	1	06/12/2019 14:21	WG1294631
Acetylene	ND		0.0208	1	06/12/2019 14:21	WG1294631

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND	J4	0.0500	1	06/13/2019 01:08	WG1295189
Acrolein	ND		0.0500	1	06/13/2019 01:08	WG1295189
Acrylonitrile	ND	J4	0.0100	1	06/13/2019 01:08	WG1295189
Benzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
Bromobenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
Bromodichloromethane	ND		0.00100	1	06/13/2019 01:08	WG1295189
Bromoform	ND		0.00100	1	06/13/2019 01:08	WG1295189
Bromomethane	ND		0.00500	1	06/13/2019 01:08	WG1295189
n-Butylbenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
sec-Butylbenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
tert-Butylbenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
Carbon tetrachloride	ND		0.00100	1	06/13/2019 01:08	WG1295189
Chlorobenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
Chlorodibromomethane	ND		0.00100	1	06/13/2019 01:08	WG1295189

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 06/10/19 11:00

L1107342

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloroethane	ND		0.00500	1	06/13/2019 01:08	WG1295189
Chloroform	ND		0.00500	1	06/13/2019 01:08	WG1295189
Chloromethane	ND		0.00250	1	06/13/2019 01:08	WG1295189
2-Chlorotoluene	ND		0.00100	1	06/13/2019 01:08	WG1295189
4-Chlorotoluene	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/13/2019 01:08	WG1295189
1,2-Dibromoethane	ND		0.00100	1	06/13/2019 01:08	WG1295189
Dibromomethane	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,2-Dichlorobenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,3-Dichlorobenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,4-Dichlorobenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
Dichlorodifluoromethane	ND		0.00500	1	06/13/2019 01:08	WG1295189
1,1-Dichloroethane	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,2-Dichloroethane	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,1-Dichloroethene	ND		0.00100	1	06/13/2019 01:08	WG1295189
cis-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 01:08	WG1295189
trans-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,2-Dichloropropane	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,1-Dichloropropene	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,3-Dichloropropane	ND		0.00100	1	06/13/2019 01:08	WG1295189
cis-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 01:08	WG1295189
trans-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 01:08	WG1295189
2,2-Dichloropropane	ND		0.00100	1	06/13/2019 01:08	WG1295189
Di-isopropyl ether	ND		0.00100	1	06/13/2019 01:08	WG1295189
Ethylbenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
Hexachloro-1,3-butadiene	ND		0.00100	1	06/13/2019 01:08	WG1295189
Isopropylbenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
p-Isopropyltoluene	ND		0.00100	1	06/13/2019 01:08	WG1295189
2-Butanone (MEK)	ND	J4	0.0100	1	06/13/2019 01:08	WG1295189
Methylene Chloride	ND		0.00500	1	06/13/2019 01:08	WG1295189
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/13/2019 01:08	WG1295189
Methyl tert-butyl ether	ND		0.00100	1	06/13/2019 01:08	WG1295189
Naphthalene	ND		0.00500	1	06/13/2019 01:08	WG1295189
n-Propylbenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
Styrene	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/13/2019 01:08	WG1295189
Tetrachloroethene	ND		0.00100	1	06/13/2019 01:08	WG1295189
Toluene	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,2,3-Trichlorobenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,2,4-Trichlorobenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,1,1-Trichloroethane	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,1,2-Trichloroethane	ND		0.00100	1	06/13/2019 01:08	WG1295189
Trichloroethene	ND		0.00100	1	06/13/2019 01:08	WG1295189
Trichlorofluoromethane	ND		0.00500	1	06/13/2019 01:08	WG1295189
1,2,3-Trichloropropane	ND		0.00250	1	06/13/2019 01:08	WG1295189
1,2,4-Trimethylbenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,2,3-Trimethylbenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
1,3,5-Trimethylbenzene	ND		0.00100	1	06/13/2019 01:08	WG1295189
Vinyl chloride	ND		0.00100	1	06/13/2019 01:08	WG1295189
Xylenes, Total	ND		0.00300	1	06/13/2019 01:08	WG1295189
(S) Toluene-d8	101		80.0-120		06/13/2019 01:08	WG1295189
(S) 4-Bromofluorobenzene	102		77.0-126		06/13/2019 01:08	WG1295189
(S) 1,2-Dichloroethane-d4	114		70.0-130		06/13/2019 01:08	WG1295189

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	302		20.0	1	06/17/2019 14:10	WG1297086

Sample Narrative:

L1107342-02 WG1297086: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND	<u>J6</u>	1.00	1	06/11/2019 17:35	WG1294139
Chloride	36.1		1.00	1	06/11/2019 17:35	WG1294139
Nitrate as (N)	ND		0.100	1	06/11/2019 17:35	WG1294139
Nitrite as (N)	ND		0.100	1	06/11/2019 17:35	WG1294139
Sulfate	555		50.0	10	06/12/2019 04:16	WG1294139

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	119		1.00	1	06/13/2019 11:18	WG1294663
Iron,Dissolved	ND		0.100	1	06/13/2019 11:18	WG1294663
Magnesium,Dissolved	82.1		1.00	1	06/13/2019 11:18	WG1294663
Potassium,Dissolved	2.23		1.00	1	06/13/2019 11:18	WG1294663
Sodium,Dissolved	149		1.00	1	06/13/2019 11:18	WG1294663

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	1.80		0.0100	1	06/14/2019 17:26	WG1295908

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	06/12/2019 14:23	WG1294631
Ethane	ND		0.0130	1	06/12/2019 14:23	WG1294631
Ethene	ND		0.0130	1	06/12/2019 14:23	WG1294631
Acetylene	ND		0.0208	1	06/12/2019 14:23	WG1294631

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND	<u>J4</u>	0.0500	1	06/13/2019 01:26	WG1295189
Acrolein	ND		0.0500	1	06/13/2019 01:26	WG1295189
Acrylonitrile	ND	<u>J4</u>	0.0100	1	06/13/2019 01:26	WG1295189
Benzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
Bromobenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
Bromodichloromethane	ND		0.00100	1	06/13/2019 01:26	WG1295189
Bromoform	ND		0.00100	1	06/13/2019 01:26	WG1295189
Bromomethane	ND		0.00500	1	06/13/2019 01:26	WG1295189
n-Butylbenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
sec-Butylbenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
tert-Butylbenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
Carbon tetrachloride	ND		0.00100	1	06/13/2019 01:26	WG1295189
Chlorobenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
Chlorodibromomethane	ND		0.00100	1	06/13/2019 01:26	WG1295189

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 06/10/19 11:30

L1107342

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloroethane	ND		0.00500	1	06/13/2019 01:26	WG1295189
Chloroform	ND		0.00500	1	06/13/2019 01:26	WG1295189
Chloromethane	ND		0.00250	1	06/13/2019 01:26	WG1295189
2-Chlorotoluene	ND		0.00100	1	06/13/2019 01:26	WG1295189
4-Chlorotoluene	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/13/2019 01:26	WG1295189
1,2-Dibromoethane	ND		0.00100	1	06/13/2019 01:26	WG1295189
Dibromomethane	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,2-Dichlorobenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,3-Dichlorobenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,4-Dichlorobenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
Dichlorodifluoromethane	ND		0.00500	1	06/13/2019 01:26	WG1295189
1,1-Dichloroethane	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,2-Dichloroethane	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,1-Dichloroethene	ND		0.00100	1	06/13/2019 01:26	WG1295189
cis-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 01:26	WG1295189
trans-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,2-Dichloropropane	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,1-Dichloropropene	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,3-Dichloropropane	ND		0.00100	1	06/13/2019 01:26	WG1295189
cis-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 01:26	WG1295189
trans-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 01:26	WG1295189
2,2-Dichloropropane	ND		0.00100	1	06/13/2019 01:26	WG1295189
Di-isopropyl ether	ND		0.00100	1	06/13/2019 01:26	WG1295189
Ethylbenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
Hexachloro-1,3-butadiene	ND		0.00100	1	06/13/2019 01:26	WG1295189
Isopropylbenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
p-Isopropyltoluene	ND		0.00100	1	06/13/2019 01:26	WG1295189
2-Butanone (MEK)	ND	J4	0.0100	1	06/13/2019 01:26	WG1295189
Methylene Chloride	ND		0.00500	1	06/13/2019 01:26	WG1295189
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/13/2019 01:26	WG1295189
Methyl tert-butyl ether	ND		0.00100	1	06/13/2019 01:26	WG1295189
Naphthalene	ND		0.00500	1	06/13/2019 01:26	WG1295189
n-Propylbenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
Styrene	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/13/2019 01:26	WG1295189
Tetrachloroethene	ND		0.00100	1	06/13/2019 01:26	WG1295189
Toluene	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,2,3-Trichlorobenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,2,4-Trichlorobenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,1,1-Trichloroethane	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,1,2-Trichloroethane	ND		0.00100	1	06/13/2019 01:26	WG1295189
Trichloroethene	ND		0.00100	1	06/13/2019 01:26	WG1295189
Trichlorofluoromethane	ND		0.00500	1	06/13/2019 01:26	WG1295189
1,2,3-Trichloropropane	ND		0.00250	1	06/13/2019 01:26	WG1295189
1,2,4-Trimethylbenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,2,3-Trimethylbenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
1,3,5-Trimethylbenzene	ND		0.00100	1	06/13/2019 01:26	WG1295189
Vinyl chloride	ND		0.00100	1	06/13/2019 01:26	WG1295189
Xylenes, Total	ND		0.00300	1	06/13/2019 01:26	WG1295189
(S) Toluene-d8	102		80.0-120		06/13/2019 01:26	WG1295189
(S) 4-Bromofluorobenzene	101		77.0-126		06/13/2019 01:26	WG1295189
(S) 1,2-Dichloroethane-d4	110		70.0-130		06/13/2019 01:26	WG1295189

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	250		20.0	1	06/17/2019 14:17	WG1297086

Sample Narrative:

L1107342-03 WG1297086: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	06/11/2019 18:19	WG1294139
Chloride	39.6		1.00	1	06/11/2019 18:19	WG1294139
Nitrate as (N)	ND		0.100	1	06/11/2019 18:19	WG1294139
Nitrite as (N)	ND		0.100	1	06/11/2019 18:19	WG1294139
Sulfate	295		25.0	5	06/12/2019 04:31	WG1294139

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	92.5		1.00	1	06/13/2019 11:26	WG1294663
Iron,Dissolved	ND		0.100	1	06/13/2019 11:26	WG1294663
Magnesium,Dissolved	60.4		1.00	1	06/13/2019 11:26	WG1294663
Potassium,Dissolved	2.63		1.00	1	06/13/2019 11:26	WG1294663
Sodium,Dissolved	71.9		1.00	1	06/13/2019 11:26	WG1294663

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	1.56		0.0100	1	06/14/2019 17:44	WG1295908

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	0.404		0.0100	1	06/12/2019 14:33	WG1294631
Ethane	ND		0.0130	1	06/12/2019 14:33	WG1294631
Ethene	ND		0.0130	1	06/12/2019 14:33	WG1294631
Acetylene	ND		0.0208	1	06/12/2019 14:33	WG1294631

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND	J4	0.0500	1	06/13/2019 01:45	WG1295189
Acrolein	ND		0.0500	1	06/13/2019 01:45	WG1295189
Acrylonitrile	ND	J4	0.0100	1	06/13/2019 01:45	WG1295189
Benzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
Bromobenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
Bromodichloromethane	ND		0.00100	1	06/13/2019 01:45	WG1295189
Bromoform	ND		0.00100	1	06/13/2019 01:45	WG1295189
Bromomethane	ND		0.00500	1	06/13/2019 01:45	WG1295189
n-Butylbenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
sec-Butylbenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
tert-Butylbenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
Carbon tetrachloride	ND		0.00100	1	06/13/2019 01:45	WG1295189
Chlorobenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
Chlorodibromomethane	ND		0.00100	1	06/13/2019 01:45	WG1295189

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 06/10/19 11:50

L1107342

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloroethane	ND		0.00500	1	06/13/2019 01:45	WG1295189
Chloroform	ND		0.00500	1	06/13/2019 01:45	WG1295189
Chloromethane	ND		0.00250	1	06/13/2019 01:45	WG1295189
2-Chlorotoluene	ND		0.00100	1	06/13/2019 01:45	WG1295189
4-Chlorotoluene	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/13/2019 01:45	WG1295189
1,2-Dibromoethane	ND		0.00100	1	06/13/2019 01:45	WG1295189
Dibromomethane	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,2-Dichlorobenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,3-Dichlorobenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,4-Dichlorobenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
Dichlorodifluoromethane	ND		0.00500	1	06/13/2019 01:45	WG1295189
1,1-Dichloroethane	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,2-Dichloroethane	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,1-Dichloroethene	ND		0.00100	1	06/13/2019 01:45	WG1295189
cis-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 01:45	WG1295189
trans-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,2-Dichloropropane	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,1-Dichloropropene	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,3-Dichloropropane	ND		0.00100	1	06/13/2019 01:45	WG1295189
cis-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 01:45	WG1295189
trans-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 01:45	WG1295189
2,2-Dichloropropane	ND		0.00100	1	06/13/2019 01:45	WG1295189
Di-isopropyl ether	ND		0.00100	1	06/13/2019 01:45	WG1295189
Ethylbenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
Hexachloro-1,3-butadiene	ND		0.00100	1	06/13/2019 01:45	WG1295189
Isopropylbenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
p-Isopropyltoluene	ND		0.00100	1	06/13/2019 01:45	WG1295189
2-Butanone (MEK)	ND	J4	0.0100	1	06/13/2019 01:45	WG1295189
Methylene Chloride	ND		0.00500	1	06/13/2019 01:45	WG1295189
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/13/2019 01:45	WG1295189
Methyl tert-butyl ether	ND		0.00100	1	06/13/2019 01:45	WG1295189
Naphthalene	ND		0.00500	1	06/13/2019 01:45	WG1295189
n-Propylbenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
Styrene	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/13/2019 01:45	WG1295189
Tetrachloroethene	ND		0.00100	1	06/13/2019 01:45	WG1295189
Toluene	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,2,3-Trichlorobenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,2,4-Trichlorobenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,1,1-Trichloroethane	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,1,2-Trichloroethane	ND		0.00100	1	06/13/2019 01:45	WG1295189
Trichloroethene	ND		0.00100	1	06/13/2019 01:45	WG1295189
Trichlorofluoromethane	ND		0.00500	1	06/13/2019 01:45	WG1295189
1,2,3-Trichloropropane	ND		0.00250	1	06/13/2019 01:45	WG1295189
1,2,4-Trimethylbenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,2,3-Trimethylbenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
1,3,5-Trimethylbenzene	ND		0.00100	1	06/13/2019 01:45	WG1295189
Vinyl chloride	ND		0.00100	1	06/13/2019 01:45	WG1295189
Xylenes, Total	ND		0.00300	1	06/13/2019 01:45	WG1295189
(S) Toluene-d8	99.6		80.0-120		06/13/2019 01:45	WG1295189
(S) 4-Bromofluorobenzene	99.0		77.0-126		06/13/2019 01:45	WG1295189
(S) 1,2-Dichloroethane-d4	109		70.0-130		06/13/2019 01:45	WG1295189

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3421823-1 06/17/19 13:23

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	4.48	↓	2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1106320-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1106320-01 06/17/19 13:39 • (DUP) R3421823-2 06/17/19 13:47

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	207	207	1	0.131		20

Sample Narrative:

OS: Endpoint pH 4.5
DUP: Endpoint pH 4.5

L1109391-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1109391-01 06/17/19 16:18 • (DUP) R3421823-4 06/17/19 16:26

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	173	173	1	0.279		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace
DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3421823-3 06/17/19 14:39

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	97.6	97.6	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3420192-1 06/11/19 15:56

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1107342-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107342-01 06/11/19 17:05 • (DUP) R3420192-3 06/11/19 17:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.298	1	0.000		15
Chloride	34.4	34.6	1	0.588		15
Nitrate	5.88	5.94	1	0.915		15
Nitrite	ND	0.000	1	0.000		15

⁶ Qc

⁷ Gl

⁸ Al

L1107419-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1107419-03 06/11/19 21:48 • (DUP) R3420192-6 06/11/19 22:33

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	U	0.000	1	0.000		15
Chloride	2.49	2.47	1	0.819		15
Nitrate	U	0.000	1	0.000		15
Nitrite	U	0.000	1	0.000		15
Sulfate	4.05	3.72	1	8.30	↓	15

⁹ Sc

L1107342-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107342-01 06/12/19 03:46 • (DUP) R3420192-8 06/12/19 04:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Sulfate	337	337	5	0.115		15



Laboratory Control Sample (LCS)

(LCS) R3420192-2 06/11/19 16:11

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromide	40.0	40.6	101	80.0-120	
Chloride	40.0	39.9	99.6	80.0-120	
Nitrate	8.00	8.20	103	80.0-120	
Nitrite	8.00	7.99	99.8	80.0-120	
Sulfate	40.0	40.6	101	80.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1107342-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1107342-02 06/11/19 17:35 • (MS) R3420192-4 06/11/19 17:49 • (MSD) R3420192-5 06/11/19 18:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	31.9	30.2	63.3	59.9	1	80.0-120	<u>J6</u>	<u>J6</u>	5.52	15
Chloride	50.0	36.1	84.3	84.3	96.5	96.4	1	80.0-120			0.0261	15
Nitrate	5.00	ND	4.95	4.97	97.2	97.6	1	80.0-120			0.411	15
Nitrite	5.00	ND	5.01	5.00	100	99.9	1	80.0-120			0.160	15
Sulfate	50.0	521	516	516	0.000	0.000	1	80.0-120	<u>EV</u>	<u>EV</u>	0.0996	15

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1107419-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1107419-03 06/11/19 21:48 • (MS) R3420192-7 06/11/19 22:48

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	U	49.7	99.5	1	80.0-120	
Chloride	50.0	2.49	52.6	100	1	80.0-120	
Nitrate	5.00	U	4.98	99.6	1	80.0-120	
Nitrite	5.00	U	5.05	101	1	80.0-120	
Sulfate	50.0	4.05	53.7	99.2	1	80.0-120	



Method Blank (MB)

(MB) R3420724-1 06/13/19 10:19

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Calcium,Dissolved	U		0.0463	1.00
Iron,Dissolved	U		0.0141	0.100
Magnesium,Dissolved	U		0.0111	1.00
Potassium,Dissolved	U		0.102	1.00
Sodium,Dissolved	0.128	⌵	0.0985	1.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420724-2 06/13/19 10:21 • (LCSD) R3420724-3 06/13/19 10:24

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Calcium,Dissolved	10.0	9.80	9.69	98.0	96.9	80.0-120			1.15	20
Iron,Dissolved	10.0	9.75	9.67	97.5	96.7	80.0-120			0.843	20
Magnesium,Dissolved	10.0	9.86	9.70	98.6	97.0	80.0-120			1.58	20
Potassium,Dissolved	10.0	9.46	9.41	94.6	94.1	80.0-120			0.562	20
Sodium,Dissolved	10.0	9.93	9.86	99.3	98.6	80.0-120			0.711	20

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1106619-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106619-01 06/13/19 10:27 • (MS) R3420724-5 06/13/19 10:33 • (MSD) R3420724-6 06/13/19 10:35

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Calcium,Dissolved	10.0	202	206	208	47.2	66.3	1	75.0-125	⌵	⌵	0.920	20
Iron,Dissolved	10.0	U	9.49	9.41	94.9	94.1	1	75.0-125			0.809	20
Magnesium,Dissolved	10.0	43.3	51.8	52.5	84.8	91.9	1	75.0-125			1.36	20
Potassium,Dissolved	10.0	4.40	13.9	13.9	95.2	95.1	1	75.0-125			0.0727	20
Sodium,Dissolved	10.0	459	457	460	0.000	19.2	1	75.0-125	⌵	⌵	0.726	20



Method Blank (MB)

(MB) R3421290-1 06/14/19 16:44

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Strontium	0.000245	<u>↓</u>	0.000160	0.0100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3421290-2 06/14/19 16:49 • (LCSD) R3421290-3 06/14/19 16:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0504	0.0549	101	110	80.0-120			8.48	20

⁷Gl

⁸Al

L1107416-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1107416-08 06/14/19 17:00 • (MS) R3421290-5 06/14/19 17:10 • (MSD) R3421290-6 06/14/19 17:16

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.642	0.694	0.705	105	127	1	75.0-125		<u>↓</u>	1.58	20

⁹Sc



Method Blank (MB)

(MB) R3420420-1 06/12/19 14:05

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130
Acetylene	U		0.00558	0.0208

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1107415-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107415-01 06/12/19 14:57 • (DUP) R3420420-2 06/12/19 14:59

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	0.266	0.260	1	2.34		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

⁶ Qc

⁷ Gl

⁸ Al

L1107363-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107363-01 06/12/19 15:52 • (DUP) R3420420-3 06/12/19 15:55

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	ND	0.000	1	0.000		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420420-4 06/12/19 16:01 • (LCSD) R3420420-5 06/12/19 16:05

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0768	0.0775	113	114	85.0-115			0.947	20
Ethane	0.129	0.118	0.119	91.2	92.0	85.0-115			0.890	20
Ethene	0.127	0.116	0.117	91.2	92.1	85.0-115			1.06	20
Acetylene	0.208	0.179	0.180	86.1	86.6	85.0-115			0.544	20



Method Blank (MB)

(MB) R3420919-2 06/12/19 19:17

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	U		0.000256	0.00100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3420919-2 06/12/19 19:17

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	U		0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	102			80.0-120
(S) 4-Bromofluorobenzene	103			77.0-126
(S) 1,2-Dichloroethane-d4	114			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3420919-1 06/12/19 18:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.125	0.254	203	19.0-160	<u>J4</u>
Acrolein	0.125	0.0408	32.6	10.0-160	
Acrylonitrile	0.125	0.204	163	55.0-149	<u>J4</u>
Benzene	0.0250	0.0239	95.7	70.0-123	



Laboratory Control Sample (LCS)

(LCS) R3420919-1 06/12/19 18:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromobenzene	0.0250	0.0221	88.3	73.0-121	
Bromodichloromethane	0.0250	0.0254	102	75.0-120	
Bromoform	0.0250	0.0281	112	68.0-132	
Bromomethane	0.0250	0.0264	106	10.0-160	
n-Butylbenzene	0.0250	0.0200	79.8	73.0-125	
sec-Butylbenzene	0.0250	0.0216	86.3	75.0-125	
tert-Butylbenzene	0.0250	0.0217	86.7	76.0-124	
Carbon tetrachloride	0.0250	0.0281	112	68.0-126	
Chlorobenzene	0.0250	0.0250	100	80.0-121	
Chlorodibromomethane	0.0250	0.0268	107	77.0-125	
Chloroethane	0.0250	0.0265	106	47.0-150	
Chloroform	0.0250	0.0263	105	73.0-120	
Chloromethane	0.0250	0.0252	101	41.0-142	
2-Chlorotoluene	0.0250	0.0220	88.2	76.0-123	
4-Chlorotoluene	0.0250	0.0211	84.3	75.0-122	
1,2-Dibromo-3-Chloropropane	0.0250	0.0230	91.9	58.0-134	
1,2-Dibromoethane	0.0250	0.0289	116	80.0-122	
Dibromomethane	0.0250	0.0292	117	80.0-120	
1,2-Dichlorobenzene	0.0250	0.0228	91.0	79.0-121	
1,3-Dichlorobenzene	0.0250	0.0235	93.9	79.0-120	
1,4-Dichlorobenzene	0.0250	0.0229	91.8	79.0-120	
Dichlorodifluoromethane	0.0250	0.0254	102	51.0-149	
1,1-Dichloroethane	0.0250	0.0247	98.9	70.0-126	
1,2-Dichloroethane	0.0250	0.0283	113	70.0-128	
1,1-Dichloroethene	0.0250	0.0257	103	71.0-124	
cis-1,2-Dichloroethene	0.0250	0.0257	103	73.0-120	
trans-1,2-Dichloroethene	0.0250	0.0248	99.2	73.0-120	
1,2-Dichloropropane	0.0250	0.0259	104	77.0-125	
1,1-Dichloropropene	0.0250	0.0240	96.0	74.0-126	
1,3-Dichloropropane	0.0250	0.0272	109	80.0-120	
cis-1,3-Dichloropropene	0.0250	0.0256	102	80.0-123	
trans-1,3-Dichloropropene	0.0250	0.0271	108	78.0-124	
2,2-Dichloropropane	0.0250	0.0225	90.2	58.0-130	
Di-isopropyl ether	0.0250	0.0266	106	58.0-138	
Ethylbenzene	0.0250	0.0242	96.8	79.0-123	
Hexachloro-1,3-butadiene	0.0250	0.0170	68.1	54.0-138	
Isopropylbenzene	0.0250	0.0242	96.9	76.0-127	
p-Isopropyltoluene	0.0250	0.0228	91.1	76.0-125	
2-Butanone (MEK)	0.125	0.207	165	44.0-160	J4
Methylene Chloride	0.0250	0.0264	105	67.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Laboratory Control Sample (LCS)

(LCS) R3420919-1 06/12/19 18:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
4-Methyl-2-pentanone (MIBK)	0.125	0.163	130	68.0-142	
Methyl tert-butyl ether	0.0250	0.0254	102	68.0-125	
Naphthalene	0.0250	0.0185	74.2	54.0-135	
n-Propylbenzene	0.0250	0.0204	81.4	77.0-124	
Styrene	0.0250	0.0263	105	73.0-130	
1,1,1,2-Tetrachloroethane	0.0250	0.0257	103	75.0-125	
1,1,2,2-Tetrachloroethane	0.0250	0.0229	91.5	65.0-130	
Tetrachloroethene	0.0250	0.0239	95.7	72.0-132	
Toluene	0.0250	0.0230	92.0	79.0-120	
1,1,2-Trichlorotrifluoroethane	0.0250	0.0257	103	69.0-132	
1,2,3-Trichlorobenzene	0.0250	0.0170	68.0	50.0-138	
1,2,4-Trichlorobenzene	0.0250	0.0172	68.8	57.0-137	
1,1,1-Trichloroethane	0.0250	0.0259	103	73.0-124	
1,1,2-Trichloroethane	0.0250	0.0268	107	80.0-120	
Trichloroethene	0.0250	0.0256	102	78.0-124	
Trichlorofluoromethane	0.0250	0.0251	100	59.0-147	
1,2,3-Trichloropropane	0.0250	0.0253	101	73.0-130	
1,2,3-Trimethylbenzene	0.0250	0.0209	83.4	77.0-120	
1,2,4-Trimethylbenzene	0.0250	0.0217	86.7	76.0-121	
1,3,5-Trimethylbenzene	0.0250	0.0206	82.6	76.0-122	
Vinyl chloride	0.0250	0.0245	98.0	67.0-131	
Xylenes, Total	0.0750	0.0723	96.4	79.0-123	
<i>(S) Toluene-d8</i>			99.7	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			102	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			118	70.0-130	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

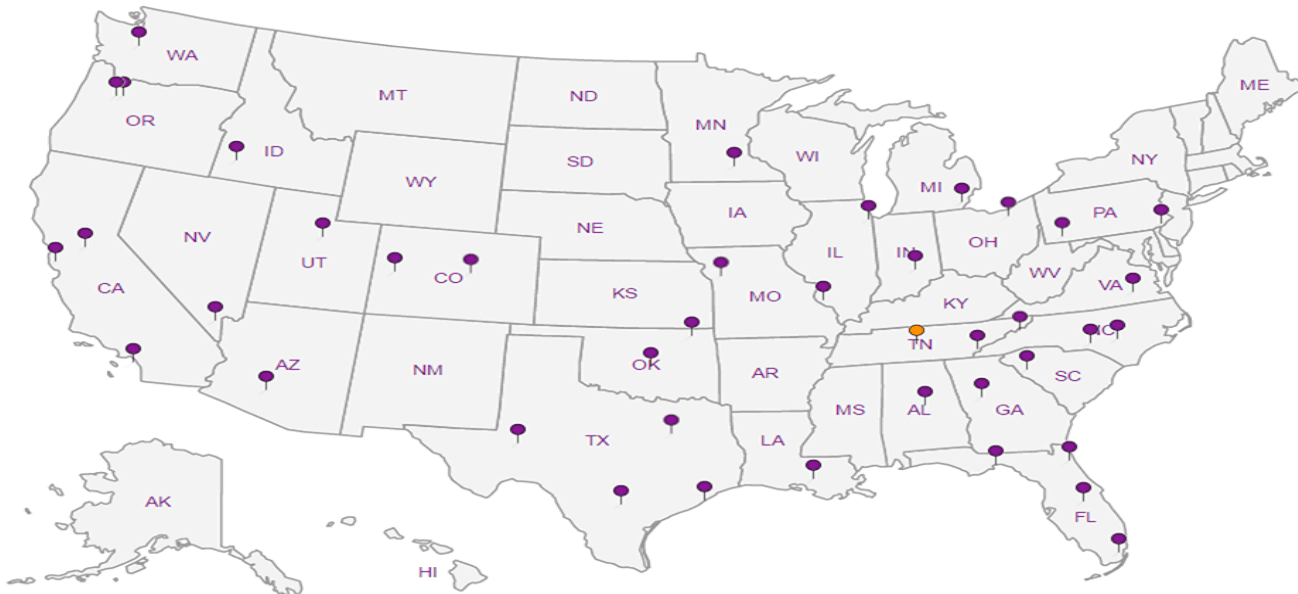
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Terracon Consultants, Inc - Longmont, CO

1831 Lefthand Circe, Suite C

Billing Information:
Mike Skridulis
 1831 Lefthand Circe, Suite C
 Longmont, CO 80501

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



12065 Lebanon Rd
 Mount Juliet, TN 37122
 Phone: 615-758-5858
 Phone: 800-767-5859
 Fax: 615-758-5859



Report to:
Michael Skridulis

Email To: mjskridulis@terracon.com

Project Description: **COL Annual GW**

City/State Collected: **Longmont, Co**

Phone: **303-454-5249**
 Fax:

Client Project #
22197006

Lab Project #
TERRALCO-22197006

Collected by (print):
Charles Covington

Site/Facility ID #
PL1

P.O. #

Collected by (signature):
Charles Covington

Rush? (Lab MUST Be Notified)

Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Quote #

Date Results Needed

STANDARD

No. of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALK, Br, Cr, NO2, NO3, SO	125mlHDPE-NoPres	Metals, Dissolved	250mlHDPE-NoPres	RSK175 40mlAmb HCl	SRG 250mlHDPE-HNO3	V8260 40mlAmb-HCl (3)
PL1 - MW01	Grab	GW	-	6/10/19	1100	8	X	X	X	X	X	X	X
PL1 - MW02	Grab	GW	-	6/10/19	1130	8	X	X	X	X	X	X	X
PL1 - MW03	Grab	GW	-	6/10/19	1150	8	X	X	X	X	X	X	X
		GW				8	X	X	X	X	X	X	X

L # **1107342**
D239

Acctnum: **TERRALCO**
 Template: **T149937**
 Prelogin: **P708281**
 TSR: **288 - Daphne Richards**
 PB:

Shipped Via: **FedEx Ground**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALK, Br, Cr, NO2, NO3, SO	125mlHDPE-NoPres	Metals, Dissolved	250mlHDPE-NoPres	RSK175 40mlAmb HCl	SRG 250mlHDPE-HNO3	V8260 40mlAmb-HCl (3)
PL1 - MW01	Grab	GW	-	6/10/19	1100	8	X	X	X	X	X	X	X
PL1 - MW02	Grab	GW	-	6/10/19	1130	8	X	X	X	X	X	X	X
PL1 - MW03	Grab	GW	-	6/10/19	1150	8	X	X	X	X	X	X	X
		GW				8	X	X	X	X	X	X	X

Remarks	Sample # (lab only)
	-01
	-02
	-03

Invoice:
 Customer : ESCDEN Date : 18Feb19
 Phone : (615)758-5858 Weight : 10 LBS
 Sat Del : N COD :
 DV :
 Shipping : 0.00
 Special : 0.00
 Handling : 0.00
 Total : 0.00

Svcs: STANDARD OVERNIGHT
 TRACK: 4794 8830 2108

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:

UPS FedEx Courier

Tracking # **4794 8830 2108**

Sample Receipt Checklist
 COC Seal Present/Intact: NP Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N

If Applicable
 VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N

RAD SCREEN: <0.5 mR/hr

Relinquished by: (Signature) *Charles Covington*
 Date: **6/10/19**
 Time: **1630**

Received by: (Signature)
 Date:
 Time:

Received by: (Signature)
 Date:
 Time:

Trip Blank Received: Yes/No No
 HCL/ MeOH TBR
 Temp: **A38F °C**
1.9 ± 0.1
 Bottles Received: **24**

If preservation required by Login: Date/Time
 Hold:
 Condition: **NCF / OK**

Analysis

Groundwater Sample Constituents

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations – Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

Terracon Consultants, Inc - Longmont, CO

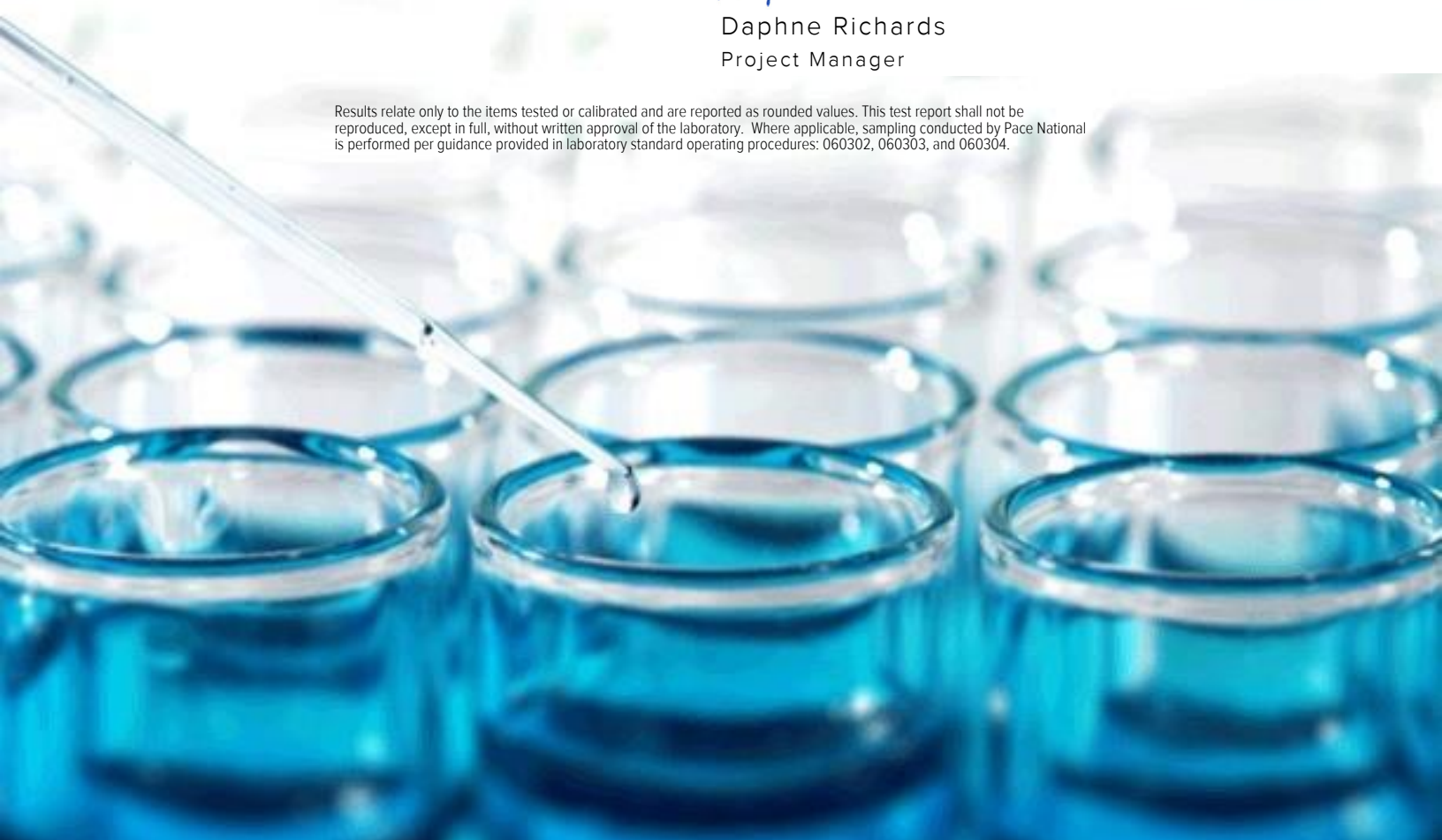
Sample Delivery Group: L1107314
Samples Received: 06/11/2019
Project Number: 22197006
Description: City of Longmont Groundwater Quality Monitoring
Site: SH1
Report To: Michael Skridulis
1831 Lefthand Cirlice, Suite C
Longmont, CO 80501

Entire Report Reviewed By:



Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





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SAMPLE SUMMARY



SHI-MW-01 L1107314-01 GW

Collected by Charles Covington
Collected date/time 06/10/19 09:25
Received date/time 06/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1295637	1	06/17/19 12:39	06/17/19 12:39	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	1	06/11/19 18:34	06/11/19 18:34	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	10	06/11/19 18:49	06/11/19 18:49	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1293085	1	06/12/19 06:36	06/12/19 11:34	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1294334	1	06/11/19 19:39	06/12/19 22:11	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1294631	1	06/12/19 14:07	06/12/19 14:07	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1295186	1	06/13/19 02:05	06/13/19 02:05	ADM	Mt. Juliet, TN

1
Cp

2
Tc

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Ss

4
Cn

5
Sr

SHI-MW-02 L1107314-02 GW

Collected by Charles Covington
Collected date/time 06/10/19 09:25
Received date/time 06/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1295637	1	06/17/19 12:46	06/17/19 12:46	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	1	06/11/19 19:34	06/11/19 19:34	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	10	06/11/19 19:49	06/11/19 19:49	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1293085	1	06/12/19 06:36	06/12/19 11:37	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1294334	1	06/11/19 19:39	06/12/19 22:55	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1294631	1	06/12/19 14:12	06/12/19 14:12	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1295186	1	06/13/19 02:27	06/13/19 02:27	ADM	Mt. Juliet, TN

6
Qc

7
Gl

8
Al

9
Sc

SHI-MW-03 L1107314-03 GW

Collected by Charles Covington
Collected date/time 06/10/19 09:25
Received date/time 06/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1295637	1	06/17/19 12:53	06/17/19 12:53	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	1	06/11/19 20:04	06/11/19 20:04	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	10	06/11/19 20:19	06/11/19 20:19	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1293085	1	06/12/19 06:36	06/12/19 11:40	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1294334	1	06/11/19 19:39	06/12/19 23:00	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1294631	1	06/12/19 14:19	06/12/19 14:19	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1295186	1	06/13/19 02:49	06/13/19 02:49	ADM	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	408		20.0	1	06/17/2019 12:39	WG1295637

Sample Narrative:

L1107314-01 WG1295637: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	06/11/2019 18:34	WG1294139
Chloride	59.9		1.00	1	06/11/2019 18:34	WG1294139
Nitrate as (N)	8.37		0.100	1	06/11/2019 18:34	WG1294139
Nitrite as (N)	ND		0.100	1	06/11/2019 18:34	WG1294139
Sulfate	625		50.0	10	06/11/2019 18:49	WG1294139

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	116		1.00	1	06/12/2019 11:34	WG1293085
Iron,Dissolved	ND		0.100	1	06/12/2019 11:34	WG1293085
Magnesium,Dissolved	147		1.00	1	06/12/2019 11:34	WG1293085
Potassium,Dissolved	2.00		1.00	1	06/12/2019 11:34	WG1293085
Sodium,Dissolved	152		1.00	1	06/12/2019 11:34	WG1293085

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	3.46		0.0100	1	06/12/2019 22:11	WG1294334

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	06/12/2019 14:07	WG1294631
Ethane	ND		0.0130	1	06/12/2019 14:07	WG1294631
Ethene	ND		0.0130	1	06/12/2019 14:07	WG1294631
Acetylene	ND		0.0208	1	06/12/2019 14:07	WG1294631

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	06/13/2019 02:05	WG1295186
Acrolein	ND	J4	0.0500	1	06/13/2019 02:05	WG1295186
Acrylonitrile	ND		0.0100	1	06/13/2019 02:05	WG1295186
Benzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
Bromobenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
Bromodichloromethane	ND		0.00100	1	06/13/2019 02:05	WG1295186
Bromoform	ND		0.00100	1	06/13/2019 02:05	WG1295186
Bromomethane	ND		0.00500	1	06/13/2019 02:05	WG1295186
n-Butylbenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
sec-Butylbenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
tert-Butylbenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
Carbon tetrachloride	ND	J4	0.00100	1	06/13/2019 02:05	WG1295186
Chlorobenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
Chlorodibromomethane	ND		0.00100	1	06/13/2019 02:05	WG1295186

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloroethane	ND		0.00500	1	06/13/2019 02:05	WG1295186
Chloroform	ND		0.00500	1	06/13/2019 02:05	WG1295186
Chloromethane	ND		0.00250	1	06/13/2019 02:05	WG1295186
2-Chlorotoluene	ND		0.00100	1	06/13/2019 02:05	WG1295186
4-Chlorotoluene	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/13/2019 02:05	WG1295186
1,2-Dibromoethane	ND		0.00100	1	06/13/2019 02:05	WG1295186
Dibromomethane	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,2-Dichlorobenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,3-Dichlorobenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,4-Dichlorobenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
Dichlorodifluoromethane	ND		0.00500	1	06/13/2019 02:05	WG1295186
1,1-Dichloroethane	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,2-Dichloroethane	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,1-Dichloroethene	ND		0.00100	1	06/13/2019 02:05	WG1295186
cis-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 02:05	WG1295186
trans-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,2-Dichloropropane	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,1-Dichloropropene	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,3-Dichloropropane	ND		0.00100	1	06/13/2019 02:05	WG1295186
cis-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 02:05	WG1295186
trans-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 02:05	WG1295186
2,2-Dichloropropane	ND		0.00100	1	06/13/2019 02:05	WG1295186
Di-isopropyl ether	ND		0.00100	1	06/13/2019 02:05	WG1295186
Ethylbenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
Hexachloro-1,3-butadiene	ND		0.00100	1	06/13/2019 02:05	WG1295186
Isopropylbenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
p-Isopropyltoluene	ND		0.00100	1	06/13/2019 02:05	WG1295186
2-Butanone (MEK)	ND		0.0100	1	06/13/2019 02:05	WG1295186
Methylene Chloride	ND		0.00500	1	06/13/2019 02:05	WG1295186
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/13/2019 02:05	WG1295186
Methyl tert-butyl ether	ND		0.00100	1	06/13/2019 02:05	WG1295186
Naphthalene	ND	J3 J4	0.00500	1	06/13/2019 02:05	WG1295186
n-Propylbenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
Styrene	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/13/2019 02:05	WG1295186
Tetrachloroethene	ND		0.00100	1	06/13/2019 02:05	WG1295186
Toluene	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,2,3-Trichlorobenzene	ND	J3	0.00100	1	06/13/2019 02:05	WG1295186
1,2,4-Trichlorobenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,1,1-Trichloroethane	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,1,2-Trichloroethane	ND		0.00100	1	06/13/2019 02:05	WG1295186
Trichloroethene	ND		0.00100	1	06/13/2019 02:05	WG1295186
Trichlorofluoromethane	ND		0.00500	1	06/13/2019 02:05	WG1295186
1,2,3-Trichloropropane	ND		0.00250	1	06/13/2019 02:05	WG1295186
1,2,4-Trimethylbenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,2,3-Trimethylbenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
1,3,5-Trimethylbenzene	ND		0.00100	1	06/13/2019 02:05	WG1295186
Vinyl chloride	ND		0.00100	1	06/13/2019 02:05	WG1295186
Xylenes, Total	ND		0.00300	1	06/13/2019 02:05	WG1295186
(S) Toluene-d8	103		80.0-120		06/13/2019 02:05	WG1295186
(S) 4-Bromofluorobenzene	85.0		77.0-126		06/13/2019 02:05	WG1295186
(S) 1,2-Dichloroethane-d4	106		70.0-130		06/13/2019 02:05	WG1295186

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	413		20.0	1	06/17/2019 12:46	WG1295637

Sample Narrative:

L1107314-02 WG1295637: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	06/11/2019 19:34	WG1294139
Chloride	62.5		1.00	1	06/11/2019 19:34	WG1294139
Nitrate as (N)	11.7		1.00	10	06/11/2019 19:49	WG1294139
Nitrite as (N)	ND		0.100	1	06/11/2019 19:34	WG1294139
Sulfate	678		50.0	10	06/11/2019 19:49	WG1294139

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	136		1.00	1	06/12/2019 11:37	WG1293085
Iron,Dissolved	ND		0.100	1	06/12/2019 11:37	WG1293085
Magnesium,Dissolved	151		1.00	1	06/12/2019 11:37	WG1293085
Potassium,Dissolved	2.10		1.00	1	06/12/2019 11:37	WG1293085
Sodium,Dissolved	158		1.00	1	06/12/2019 11:37	WG1293085

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	2.75		0.0100	1	06/12/2019 22:55	WG1294334

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	06/12/2019 14:12	WG1294631
Ethane	ND		0.0130	1	06/12/2019 14:12	WG1294631
Ethene	ND		0.0130	1	06/12/2019 14:12	WG1294631
Acetylene	ND		0.0208	1	06/12/2019 14:12	WG1294631

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	06/13/2019 02:27	WG1295186
Acrolein	ND	J4	0.0500	1	06/13/2019 02:27	WG1295186
Acrylonitrile	ND		0.0100	1	06/13/2019 02:27	WG1295186
Benzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
Bromobenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
Bromodichloromethane	ND		0.00100	1	06/13/2019 02:27	WG1295186
Bromoform	ND		0.00100	1	06/13/2019 02:27	WG1295186
Bromomethane	ND		0.00500	1	06/13/2019 02:27	WG1295186
n-Butylbenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
sec-Butylbenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
tert-Butylbenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
Carbon tetrachloride	ND	J4	0.00100	1	06/13/2019 02:27	WG1295186
Chlorobenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
Chlorodibromomethane	ND		0.00100	1	06/13/2019 02:27	WG1295186

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloroethane	ND		0.00500	1	06/13/2019 02:27	WG1295186
Chloroform	ND		0.00500	1	06/13/2019 02:27	WG1295186
Chloromethane	ND		0.00250	1	06/13/2019 02:27	WG1295186
2-Chlorotoluene	ND		0.00100	1	06/13/2019 02:27	WG1295186
4-Chlorotoluene	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/13/2019 02:27	WG1295186
1,2-Dibromoethane	ND		0.00100	1	06/13/2019 02:27	WG1295186
Dibromomethane	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,2-Dichlorobenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,3-Dichlorobenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,4-Dichlorobenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
Dichlorodifluoromethane	ND		0.00500	1	06/13/2019 02:27	WG1295186
1,1-Dichloroethane	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,2-Dichloroethane	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,1-Dichloroethene	ND		0.00100	1	06/13/2019 02:27	WG1295186
cis-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 02:27	WG1295186
trans-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,2-Dichloropropane	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,1-Dichloropropene	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,3-Dichloropropane	ND		0.00100	1	06/13/2019 02:27	WG1295186
cis-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 02:27	WG1295186
trans-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 02:27	WG1295186
2,2-Dichloropropane	ND		0.00100	1	06/13/2019 02:27	WG1295186
Di-isopropyl ether	ND		0.00100	1	06/13/2019 02:27	WG1295186
Ethylbenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
Hexachloro-1,3-butadiene	ND		0.00100	1	06/13/2019 02:27	WG1295186
Isopropylbenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
p-Isopropyltoluene	ND		0.00100	1	06/13/2019 02:27	WG1295186
2-Butanone (MEK)	ND		0.0100	1	06/13/2019 02:27	WG1295186
Methylene Chloride	ND		0.00500	1	06/13/2019 02:27	WG1295186
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/13/2019 02:27	WG1295186
Methyl tert-butyl ether	ND		0.00100	1	06/13/2019 02:27	WG1295186
Naphthalene	ND	J3 J4	0.00500	1	06/13/2019 02:27	WG1295186
n-Propylbenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
Styrene	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/13/2019 02:27	WG1295186
Tetrachloroethene	ND		0.00100	1	06/13/2019 02:27	WG1295186
Toluene	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,2,3-Trichlorobenzene	ND	J3	0.00100	1	06/13/2019 02:27	WG1295186
1,2,4-Trichlorobenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,1,1-Trichloroethane	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,1,2-Trichloroethane	ND		0.00100	1	06/13/2019 02:27	WG1295186
Trichloroethene	ND		0.00100	1	06/13/2019 02:27	WG1295186
Trichlorofluoromethane	ND		0.00500	1	06/13/2019 02:27	WG1295186
1,2,3-Trichloropropane	ND		0.00250	1	06/13/2019 02:27	WG1295186
1,2,4-Trimethylbenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,2,3-Trimethylbenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
1,3,5-Trimethylbenzene	ND		0.00100	1	06/13/2019 02:27	WG1295186
Vinyl chloride	ND		0.00100	1	06/13/2019 02:27	WG1295186
Xylenes, Total	ND		0.00300	1	06/13/2019 02:27	WG1295186
(S) Toluene-d8	101		80.0-120		06/13/2019 02:27	WG1295186
(S) 4-Bromofluorobenzene	88.0		77.0-126		06/13/2019 02:27	WG1295186
(S) 1,2-Dichloroethane-d4	113		70.0-130		06/13/2019 02:27	WG1295186

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	383		20.0	1	06/17/2019 12:53	WG1295637

Sample Narrative:

L1107314-03 WG1295637: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	06/11/2019 20:04	WG1294139
Chloride	62.3		1.00	1	06/11/2019 20:04	WG1294139
Nitrate as (N)	6.32		0.100	1	06/11/2019 20:04	WG1294139
Nitrite as (N)	ND		0.100	1	06/11/2019 20:04	WG1294139
Sulfate	712		50.0	10	06/11/2019 20:19	WG1294139

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	128		1.00	1	06/12/2019 11:40	WG1293085
Iron,Dissolved	ND		0.100	1	06/12/2019 11:40	WG1293085
Magnesium,Dissolved	162		1.00	1	06/12/2019 11:40	WG1293085
Potassium,Dissolved	2.02		1.00	1	06/12/2019 11:40	WG1293085
Sodium,Dissolved	154		1.00	1	06/12/2019 11:40	WG1293085

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	2.88		0.0100	1	06/12/2019 23:00	WG1294334

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	06/12/2019 14:19	WG1294631
Ethane	ND		0.0130	1	06/12/2019 14:19	WG1294631
Ethene	ND		0.0130	1	06/12/2019 14:19	WG1294631
Acetylene	ND		0.0208	1	06/12/2019 14:19	WG1294631

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	06/13/2019 02:49	WG1295186
Acrolein	ND	J4	0.0500	1	06/13/2019 02:49	WG1295186
Acrylonitrile	ND		0.0100	1	06/13/2019 02:49	WG1295186
Benzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
Bromobenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
Bromodichloromethane	ND		0.00100	1	06/13/2019 02:49	WG1295186
Bromoform	ND		0.00100	1	06/13/2019 02:49	WG1295186
Bromomethane	ND		0.00500	1	06/13/2019 02:49	WG1295186
n-Butylbenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
sec-Butylbenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
tert-Butylbenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
Carbon tetrachloride	ND	J4	0.00100	1	06/13/2019 02:49	WG1295186
Chlorobenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
Chlorodibromomethane	ND		0.00100	1	06/13/2019 02:49	WG1295186

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloroethane	ND		0.00500	1	06/13/2019 02:49	WG1295186
Chloroform	ND		0.00500	1	06/13/2019 02:49	WG1295186
Chloromethane	ND		0.00250	1	06/13/2019 02:49	WG1295186
2-Chlorotoluene	ND		0.00100	1	06/13/2019 02:49	WG1295186
4-Chlorotoluene	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/13/2019 02:49	WG1295186
1,2-Dibromoethane	ND		0.00100	1	06/13/2019 02:49	WG1295186
Dibromomethane	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,2-Dichlorobenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,3-Dichlorobenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,4-Dichlorobenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
Dichlorodifluoromethane	ND		0.00500	1	06/13/2019 02:49	WG1295186
1,1-Dichloroethane	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,2-Dichloroethane	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,1-Dichloroethene	ND		0.00100	1	06/13/2019 02:49	WG1295186
cis-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 02:49	WG1295186
trans-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,2-Dichloropropane	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,1-Dichloropropene	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,3-Dichloropropane	ND		0.00100	1	06/13/2019 02:49	WG1295186
cis-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 02:49	WG1295186
trans-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 02:49	WG1295186
2,2-Dichloropropane	ND		0.00100	1	06/13/2019 02:49	WG1295186
Di-isopropyl ether	ND		0.00100	1	06/13/2019 02:49	WG1295186
Ethylbenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
Hexachloro-1,3-butadiene	ND		0.00100	1	06/13/2019 02:49	WG1295186
Isopropylbenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
p-Isopropyltoluene	ND		0.00100	1	06/13/2019 02:49	WG1295186
2-Butanone (MEK)	ND		0.0100	1	06/13/2019 02:49	WG1295186
Methylene Chloride	ND		0.00500	1	06/13/2019 02:49	WG1295186
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/13/2019 02:49	WG1295186
Methyl tert-butyl ether	ND		0.00100	1	06/13/2019 02:49	WG1295186
Naphthalene	ND	J3 J4	0.00500	1	06/13/2019 02:49	WG1295186
n-Propylbenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
Styrene	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/13/2019 02:49	WG1295186
Tetrachloroethene	ND		0.00100	1	06/13/2019 02:49	WG1295186
Toluene	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,2,3-Trichlorobenzene	ND	J3	0.00100	1	06/13/2019 02:49	WG1295186
1,2,4-Trichlorobenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,1,1-Trichloroethane	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,1,2-Trichloroethane	ND		0.00100	1	06/13/2019 02:49	WG1295186
Trichloroethene	ND		0.00100	1	06/13/2019 02:49	WG1295186
Trichlorofluoromethane	ND		0.00500	1	06/13/2019 02:49	WG1295186
1,2,3-Trichloropropane	ND		0.00250	1	06/13/2019 02:49	WG1295186
1,2,4-Trimethylbenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,2,3-Trimethylbenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
1,3,5-Trimethylbenzene	ND		0.00100	1	06/13/2019 02:49	WG1295186
Vinyl chloride	ND		0.00100	1	06/13/2019 02:49	WG1295186
Xylenes, Total	ND		0.00300	1	06/13/2019 02:49	WG1295186
(S) Toluene-d8	105		80.0-120		06/13/2019 02:49	WG1295186
(S) 4-Bromofluorobenzene	90.1		77.0-126		06/13/2019 02:49	WG1295186
(S) 1,2-Dichloroethane-d4	110		70.0-130		06/13/2019 02:49	WG1295186

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3421677-1 06/17/19 09:52

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	2.90	↓	2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1108894-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1108894-01 06/17/19 10:00 • (DUP) R3421677-2 06/17/19 10:08

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	170	170	1	0.182		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3421677-3 06/17/19 11:05

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	96.9	96.9	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3420192-1 06/11/19 15:56

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1107342-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107342-01 06/11/19 17:05 • (DUP) R3420192-3 06/11/19 17:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.298	1	0.000		15
Chloride	34.4	34.6	1	0.588		15
Nitrate	5.88	5.94	1	0.915		15
Nitrite	ND	0.000	1	0.000		15

⁶ Qc

⁷ Gl

⁸ Al

L1107419-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1107419-03 06/11/19 21:48 • (DUP) R3420192-6 06/11/19 22:33

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	U	0.000	1	0.000		15
Chloride	2.49	2.47	1	0.819		15
Nitrate	U	0.000	1	0.000		15
Nitrite	U	0.000	1	0.000		15
Sulfate	4.05	3.72	1	8.30	↓	15

⁹ Sc

L1107342-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107342-01 06/12/19 03:46 • (DUP) R3420192-8 06/12/19 04:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Sulfate	337	337	5	0.115		15



Laboratory Control Sample (LCS)

(LCS) R3420192-2 06/11/19 16:11

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromide	40.0	40.6	101	80.0-120	
Chloride	40.0	39.9	99.6	80.0-120	
Nitrate	8.00	8.20	103	80.0-120	
Nitrite	8.00	7.99	99.8	80.0-120	
Sulfate	40.0	40.6	101	80.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1107342-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1107342-02 06/11/19 17:35 • (MS) R3420192-4 06/11/19 17:49 • (MSD) R3420192-5 06/11/19 18:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	31.9	30.2	63.3	59.9	1	80.0-120	<u>J6</u>	<u>J6</u>	5.52	15
Chloride	50.0	36.1	84.3	84.3	96.5	96.4	1	80.0-120			0.0261	15
Nitrate	5.00	ND	4.95	4.97	97.2	97.6	1	80.0-120			0.411	15
Nitrite	5.00	ND	5.01	5.00	100	99.9	1	80.0-120			0.160	15
Sulfate	50.0	521	516	516	0.000	0.000	1	80.0-120	<u>EV</u>	<u>EV</u>	0.0996	15

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1107419-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1107419-03 06/11/19 21:48 • (MS) R3420192-7 06/11/19 22:48

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	U	49.7	99.5	1	80.0-120	
Chloride	50.0	2.49	52.6	100	1	80.0-120	
Nitrate	5.00	U	4.98	99.6	1	80.0-120	
Nitrite	5.00	U	5.05	101	1	80.0-120	
Sulfate	50.0	4.05	53.7	99.2	1	80.0-120	



Method Blank (MB)

(MB) R3420382-1 06/12/19 10:19

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium,Dissolved	U		0.0463	1.00
Iron,Dissolved	U		0.0141	0.100
Magnesium,Dissolved	0.0271	↓	0.0111	1.00
Potassium,Dissolved	0.175	↓	0.102	1.00
Sodium,Dissolved	0.413	↓	0.0985	1.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420382-2 06/12/19 10:22 • (LCSD) R3420382-3 06/12/19 10:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	9.80	9.85	98.0	98.5	80.0-120			0.587	20
Iron,Dissolved	10.0	9.77	9.81	97.7	98.1	80.0-120			0.405	20
Magnesium,Dissolved	10.0	9.73	9.84	97.3	98.4	80.0-120			1.07	20
Potassium,Dissolved	10.0	9.58	9.58	95.8	95.8	80.0-120			0.0493	20
Sodium,Dissolved	10.0	10.1	10.2	101	102	80.0-120			0.294	20

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1107067-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1107067-01 06/12/19 10:28 • (MS) R3420382-5 06/12/19 10:34 • (MSD) R3420382-6 06/12/19 10:37

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	278	282	285	37.6	71.5	1	75.0-125	↓	↓	1.19	20
Iron,Dissolved	10.0	194	200	203	55.2	82.5	1	75.0-125	↓		1.36	20
Magnesium,Dissolved	10.0	114	121	123	66.7	85.1	1	75.0-125	↓		1.52	20
Potassium,Dissolved	10.0	1.83	11.3	11.4	94.7	95.6	1	75.0-125			0.782	20
Sodium,Dissolved	10.0	45.3	54.2	54.7	89.5	94.2	1	75.0-125			0.849	20



Method Blank (MB)

(MB) R3420502-1 06/12/19 19:01

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Strontium	U		0.000160	0.0100

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420502-2 06/12/19 19:06 • (LCSD) R3420502-3 06/12/19 19:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0459	0.0455	91.8	91.0	80.0-120			0.857	20

L1106226-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106226-06 06/12/19 19:17 • (MS) R3420502-5 06/12/19 19:28 • (MSD) R3420502-6 06/12/19 19:33

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.00640	0.0546	0.0534	96.3	94.1	1	75.0-125			2.09	20

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3420420-1 06/12/19 14:05

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130
Acetylene	U		0.00558	0.0208

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1107415-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107415-01 06/12/19 14:57 • (DUP) R3420420-2 06/12/19 14:59

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	0.266	0.260	1	2.34		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

L1107363-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107363-01 06/12/19 15:52 • (DUP) R3420420-3 06/12/19 15:55

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	ND	0.000	1	0.000		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420420-4 06/12/19 16:01 • (LCSD) R3420420-5 06/12/19 16:05

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0768	0.0775	113	114	85.0-115			0.947	20
Ethane	0.129	0.118	0.119	91.2	92.0	85.0-115			0.890	20
Ethene	0.127	0.116	0.117	91.2	92.1	85.0-115			1.06	20
Acetylene	0.208	0.179	0.180	86.1	86.6	85.0-115			0.544	20



Method Blank (MB)

(MB) R3420912-3 06/12/19 19:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	0.000403	U	0.000256	0.00100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3420912-3 06/12/19 19:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	0.00117		0.000230	0.00100
1,2,4-Trichlorobenzene	0.000453	J	0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	101			80.0-120
(S) 4-Bromofluorobenzene	89.4			77.0-126
(S) 1,2-Dichloroethane-d4	103			70.0-130

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420912-1 06/12/19 18:30 • (LCSD) R3420912-2 06/12/19 18:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.125	0.107	0.109	85.8	87.1	19.0-160			1.60	27
Acrolein	0.125	0.218	0.209	175	167	10.0-160	J4	J4	4.56	26
Acrylonitrile	0.125	0.117	0.117	93.8	93.3	55.0-149			0.459	20
Benzene	0.0250	0.0286	0.0280	114	112	70.0-123			2.16	20



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420912-1 06/12/19 18:30 • (LCSD) R3420912-2 06/12/19 18:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Bromobenzene	0.0250	0.0249	0.0257	99.6	103	73.0-121			3.17	20
Bromodichloromethane	0.0250	0.0292	0.0293	117	117	75.0-120			0.324	20
Bromoform	0.0250	0.0189	0.0193	75.6	77.3	68.0-132			2.22	20
Bromomethane	0.0250	0.0340	0.0293	136	117	10.0-160			14.9	25
n-Butylbenzene	0.0250	0.0219	0.0225	87.7	90.0	73.0-125			2.53	20
sec-Butylbenzene	0.0250	0.0259	0.0266	104	106	75.0-125			2.49	20
tert-Butylbenzene	0.0250	0.0261	0.0270	104	108	76.0-124			3.61	20
Carbon tetrachloride	0.0250	0.0317	0.0297	127	119	68.0-126	J4		6.72	20
Chlorobenzene	0.0250	0.0239	0.0241	95.7	96.2	80.0-121			0.520	20
Chlorodibromomethane	0.0250	0.0210	0.0209	84.0	83.8	77.0-125			0.313	20
Chloroethane	0.0250	0.0241	0.0237	96.5	94.8	47.0-150			1.79	20
Chloroform	0.0250	0.0290	0.0295	116	118	73.0-120			1.81	20
Chloromethane	0.0250	0.0195	0.0217	78.0	86.8	41.0-142			10.7	20
2-Chlorotoluene	0.0250	0.0264	0.0280	106	112	76.0-123			5.66	20
4-Chlorotoluene	0.0250	0.0274	0.0277	110	111	75.0-122			1.19	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0176	0.0195	70.4	78.2	58.0-134			10.5	20
1,2-Dibromoethane	0.0250	0.0233	0.0236	93.4	94.3	80.0-122			0.984	20
Dibromomethane	0.0250	0.0266	0.0264	106	106	80.0-120			0.652	20
1,2-Dichlorobenzene	0.0250	0.0235	0.0238	93.8	95.1	79.0-121			1.40	20
1,3-Dichlorobenzene	0.0250	0.0253	0.0256	101	103	79.0-120			1.26	20
1,4-Dichlorobenzene	0.0250	0.0234	0.0241	93.8	96.4	79.0-120			2.73	20
Dichlorodifluoromethane	0.0250	0.0285	0.0281	114	112	51.0-149			1.40	20
1,1-Dichloroethane	0.0250	0.0257	0.0259	103	104	70.0-126			0.641	20
1,2-Dichloroethane	0.0250	0.0248	0.0246	99.1	98.3	70.0-128			0.779	20
1,1-Dichloroethene	0.0250	0.0291	0.0287	117	115	71.0-124			1.54	20
cis-1,2-Dichloroethene	0.0250	0.0296	0.0292	118	117	73.0-120			1.44	20
trans-1,2-Dichloroethene	0.0250	0.0289	0.0287	115	115	73.0-120			0.438	20
1,2-Dichloropropane	0.0250	0.0249	0.0250	99.6	100	77.0-125			0.436	20
1,1-Dichloropropene	0.0250	0.0300	0.0299	120	120	74.0-126			0.263	20
1,3-Dichloropropane	0.0250	0.0234	0.0235	93.4	93.9	80.0-120			0.532	20
cis-1,3-Dichloropropene	0.0250	0.0301	0.0297	120	119	80.0-123			1.34	20
trans-1,3-Dichloropropene	0.0250	0.0251	0.0255	100	102	78.0-124			1.70	20
2,2-Dichloropropane	0.0250	0.0273	0.0271	109	109	58.0-130			0.534	20
Di-isopropyl ether	0.0250	0.0229	0.0228	91.8	91.3	58.0-138			0.470	20
Ethylbenzene	0.0250	0.0261	0.0257	105	103	79.0-123			1.77	20
Hexachloro-1,3-butadiene	0.0250	0.0199	0.0218	79.4	87.3	54.0-138			9.38	20
Isopropylbenzene	0.0250	0.0264	0.0260	105	104	76.0-127			1.55	20
p-Isopropyltoluene	0.0250	0.0266	0.0271	106	108	76.0-125			1.73	20
2-Butanone (MEK)	0.125	0.104	0.104	82.9	83.4	44.0-160			0.633	20
Methylene Chloride	0.0250	0.0280	0.0281	112	112	67.0-120			0.258	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420912-1 06/12/19 18:30 • (LCSD) R3420912-2 06/12/19 18:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	0.125	0.108	0.109	86.3	87.6	68.0-142			1.49	20
Methyl tert-butyl ether	0.0250	0.0275	0.0279	110	111	68.0-125			1.46	20
Naphthalene	0.0250	0.0122	0.0164	49.0	65.7	54.0-135	J4	J3	29.2	20
n-Propylbenzene	0.0250	0.0286	0.0292	115	117	77.0-124			2.09	20
Styrene	0.0250	0.0213	0.0210	85.0	83.8	73.0-130			1.40	20
1,1,1,2-Tetrachloroethane	0.0250	0.0227	0.0223	90.8	89.1	75.0-125			1.88	20
1,1,2,2-Tetrachloroethane	0.0250	0.0219	0.0229	87.6	91.6	65.0-130			4.51	20
Tetrachloroethene	0.0250	0.0251	0.0246	100	98.3	72.0-132			2.05	20
Toluene	0.0250	0.0238	0.0235	95.0	94.2	79.0-120			0.896	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0294	0.0281	117	112	69.0-132			4.53	20
1,2,3-Trichlorobenzene	0.0250	0.0130	0.0176	51.9	70.6	50.0-138		J3	30.5	20
1,2,4-Trichlorobenzene	0.0250	0.0177	0.0212	70.9	84.6	57.0-137			17.7	20
1,1,1-Trichloroethane	0.0250	0.0306	0.0297	122	119	73.0-124			2.74	20
1,1,2-Trichloroethane	0.0250	0.0228	0.0224	91.2	89.7	80.0-120			1.66	20
Trichloroethene	0.0250	0.0268	0.0262	107	105	78.0-124			2.04	20
Trichlorofluoromethane	0.0250	0.0298	0.0285	119	114	59.0-147			4.52	20
1,2,3-Trichloropropane	0.0250	0.0240	0.0247	96.1	98.8	73.0-130			2.74	20
1,2,3-Trimethylbenzene	0.0250	0.0268	0.0277	107	111	77.0-120			3.05	20
1,2,4-Trimethylbenzene	0.0250	0.0283	0.0292	113	117	76.0-121			3.06	20
1,3,5-Trimethylbenzene	0.0250	0.0265	0.0271	106	109	76.0-122			2.32	20
Vinyl chloride	0.0250	0.0263	0.0272	105	109	67.0-131			3.16	20
Xylenes, Total	0.0750	0.0779	0.0757	104	101	79.0-123			2.86	20
(S) Toluene-d8				91.6	89.8	80.0-120				
(S) 4-Bromofluorobenzene				88.2	84.3	77.0-126				
(S) 1,2-Dichloroethane-d4				114	112	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

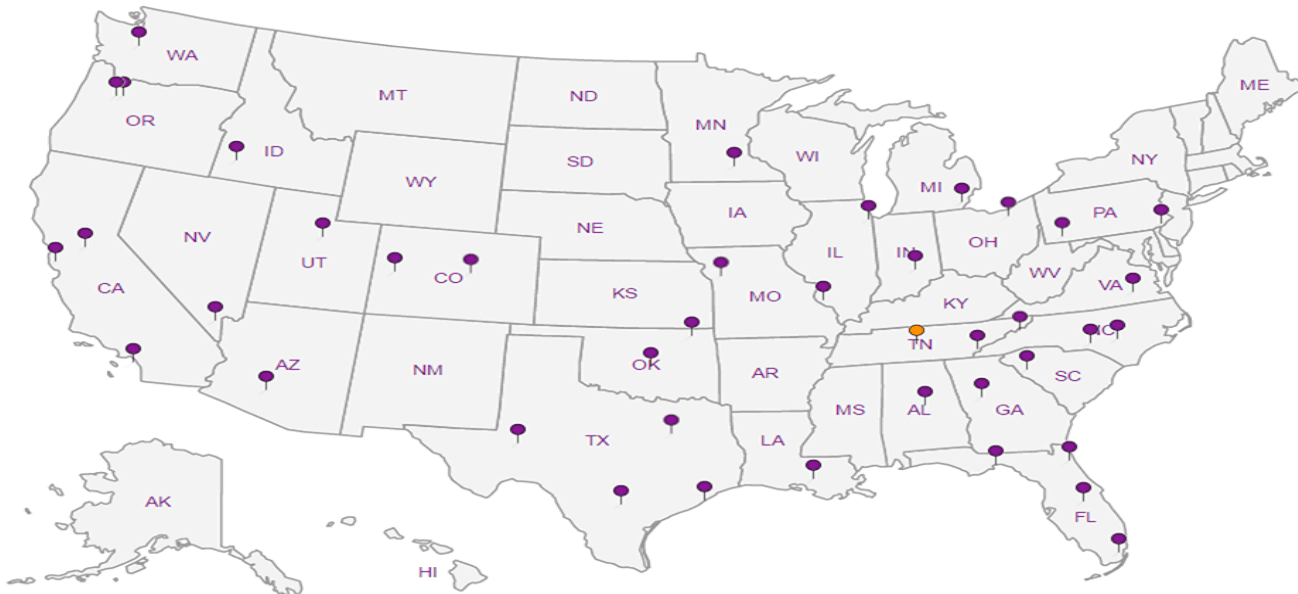
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Terracon Consultants, Inc - Longmont, CO

1831 Lefthand Circe, Suite C

Billing Information:
Mike Skridulis
 1831 Lefthand Circe, Suite C
 Longmont, CO 80501

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



12065 Lebanon Rd
 Mount Juliet, TN 37122
 Phone: 615-758-5858
 Phone: 800-767-5859
 Fax: 615-758-5859



Report to:
Michael Skridulis

Email To: mjskridulis@terracon.com

Project Description: **COL Annual GW**

City/State Collected: **Longmont, CO**

Phone: **303-454-5249**
 Fax:

Client Project #
22197006

Lab Project #
TERRALCO-22197006

Collected by (print):
Charles Covington

Site/Facility ID #
SH1

P.O. #

Collected by (signature):
[Signature]

Rush? (Lab MUST Be Notified)
 ___ Same Day ___ Five Day
 ___ Next Day ___ 5 Day (Rad Only)
 ___ Two Day ___ 10 Day (Rad Only)
 ___ Three Day

Quote #

Date Results Needed
STANDARD

Immediately Packed on Ice N ___ Y **X**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALK, Br, Cr, NO2, NO3, SO	125mIHDP-NOPres	Metals, Dissolved	250mIHDP-NOPres	RSK175 40mlAmb HCl	SRG 250mIHDP-HNO3	V8260 40mlAmb-HCl
SH1-MW01	Grab	GW	-	6/10/19	0925	8	X	X	X	X	X	X	X
SH1-MW02	Grab	GW	-	6/10/19	0900	8	X	X	X	X	X	X	X
SH1-MW03	Grab	GW	-	6/10/19	1000	8	X	X	X	X	X	X	X
		GW				8	X	X	X	X	X	X	X

L# **1107314**
D236
 Accnum: **TERRALCO**
 Template: **T149940**
 Prelogin: **P708277**
 TSR: **288 - Daphne Richards**
 PB:
 Shipped Via: **FedEX Ground**
 Remarks Sample # (lab only)

Invoice: Customer : ESCSLCUT Date : 15Jan19
 Phone : (615)758-5858 Weight : 10 LBS
 Sat Del : N COD : DV : Shipping : 0.00
 Special : 0.00
 Handling : 0.00
 Total : 0.00

Svs: STANDARD OVERNIGHT
 TRCK: 4794 8827 7824

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:
 pH _____ Temp _____
 Flow _____ Other _____
 Samples returned via:
 UPS FedEx _____ Courier _____

Sample Receipt Checklist
 COC Seal Present/Intact: NP Y N
 COC Signed/Accurate: N
 Bottles arrive intact: N
 Correct bottles used: N
 Sufficient volume sent: N
 If Applicable
 VOA Zero Headspace: N
 Preservation Correct/Checked: N
RAD SCREEN: <0.5 mR/hr

Relinquished by (Signature): *[Signature]* Date: **6/10/19** Time: **1630**
 Received by (Signature): _____ Trip Blank Received: Yes (No) HCL/MeOH TBR
 Temp: **A3BF °C** Bottles Received: **24**
2.0 ± 0 = 2.0
 Relinquished by (Signature): _____ Date: _____ Time: _____
 Received for lab by (Signature): *[Signature]* Date: **6/11/19** Time: **8:45**
 Hold: _____ Condition: **NCF / OK**

Tracking # **4794 8827 7824**

Analysis

Groundwater Sample Constituents

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations – Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 25, 2019

Mike Skridulis

Terracon - Longmont

1831 Lefthand Circle

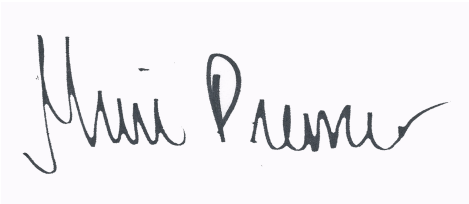
Longmont, CO 80501

RE: COL Annual GW Survey

Work Order # 1906219

Enclosed are the results of analyses for samples received by Summit Scientific on 06/17/19 14:35. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Ben Shrewsbury

Laboratory Manager



Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SH2-MW01	1906219-01	Water	06/17/19 11:40	06/17/19 14:35
SH2-MW02	1906219-02	Water	06/17/19 11:15	06/17/19 14:35
SH2-MW03	1906219-03	Water	06/17/19 12:00	06/17/19 14:35

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

1906219

Summit Scientific

S₂

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310 ♦ 303-374-5933 (f)

Page 1 of 1

Client: Terracon Consultants Inc. Project Manager: Mike Skridulis
 Address: 1831 Left hand Circle, Suite C. E-Mail: mjskridulis@terracon.com
 City/State/Zip: Longmont, CO, 80501 (303) 454-5249
 Phone: (303) 776-3921 Project Name: COL Annual GW Survey
 Sampler Name: Charles Covington Project Number: 22197006

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested						Special Instructions		
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	V8260	RSK175	Metals (Dissolved)	SRG	PK, Br, Cr		NO3, NO2, SO	
1	SHA-MW01	6/17/19	1140	8	X	X	X		X				X	X	X		X	X		See attached list of analysis
2	SHA-MW02	6/17/19	1115	8	X	X	X		X				X	X	X		X	X		
3	SHA-MW03	6/17/19	1200	8	X	X	X		X				X	X	X		X	X		
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished by: <u>[Signature]</u> Date/Time: <u>6/17/19</u>	Received by: <u>[Signature]</u> Date/Time: <u>06/17/19 14:35</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/>	Notes: <u>Call PM w/ any questions</u>
Relinquished by: <u>[Signature]</u> Date/Time: <u>1400 6/17/19</u>	Received by: <u>[Signature]</u> Date/Time: <u>14:35</u>	Sample Integrity: Temperature Upon Receipt: <u>4.5</u>	
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____	Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

Sample Receipt Checklist

S2 Work Order 1906219

Client: TERRACON CONSULTANTS INC Client Project ID: COL Annual G/W Survey

Shipped Via: (H.D./P.U./FedEx/UPS/USPS/Other) Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____ (Describe)

Temp (°C)	<u>4.5</u>
-----------	------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl & HNO ₃
Note the type of preservative in the Comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH ∅
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

RS
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

06/17/19
Date/Time
1435



Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

SH2-MW01
1906219-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/17/19 11:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1906223	06/18/19	06/19/19	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	2.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chlorodibromomethane	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	3.0	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	1.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	10	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
m,p-Xylene	ND	2.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
Methylene Chloride	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	1.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	20	"	"	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

SH2-MW01
1906219-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
tert-Butylbenzene	ND	1.0	ug/l	1	1906223	06/18/19	06/19/19	EPA 8260B	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	"
Toluene	ND	1.0	"	"	"	"	"	"	"
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	"
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	"
Trichloroethene	ND	1.0	"	"	"	"	"	"	"
Trichlorofluoromethane	ND	1.0	"	"	"	"	"	"	"
Vinyl chloride	ND	1.0	"	"	"	"	"	"	"
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	"
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	"
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	"
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	"
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	"
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	"
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	"
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	"
1,2,3-Trichloropropane	ND	1.0	"	"	"	"	"	"	"
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	"
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	"
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	"
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	"
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"	"
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	"
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	"
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	"
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	"
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	"
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	"
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	"
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	"

Date Sampled: **06/17/19 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		92.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.0 %	20-170		"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

SH2-MW01
1906219-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Surrogate: 4-Bromofluorobenzene 95.2 % 21-167 1906223 06/18/19 06/19/19 EPA 8260B

Dissolved Gases by RSK-175

Date Sampled: **06/17/19 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methane	ND	0.010	mg/L	1	1906244	06/18/19	06/24/19	RSK-175 mod	
Ethene	ND	0.010	"	"	"	"	"	"	
Ethane	ND	0.010	"	"	"	"	"	"	

Total Metals by EPA Method 200.8

Date Sampled: **06/17/19 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Strontium	4.42	0.00100	mg/L	1	1906355	06/24/19	06/24/19	EPA 200.8	

Dissolved Metals by EPA Method 200.8

Date Sampled: **06/17/19 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	240	0.0500	mg/L	1	1906239	06/18/19	06/18/19	EPA 200.8	
Iron	0.103	0.0100	"	"	"	"	"	"	
Magnesium	140	0.0500	"	"	"	"	"	"	
Potassium	2.04	0.0500	"	"	"	"	"	"	
Sodium	110	0.0500	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **06/17/19 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Nitrite as N	ND	0.0600	mg/L	1	1906230	06/18/19	06/18/19	EPA 300.0	
Sulfate	640	15.0	"	50	"	"	"	"	
Nitrate as N	8.20	0.0500	"	1	"	"	"	"	

Summit Scientific

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Terracon - Longmont
 1831 Lefthand Circle
 Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
 Project Manager: Mike Skridulis

Reported:
 06/25/19 11:38

SH2-MW01
1906219-01 (Water)

Summit Scientific

Anions by EPA Method 300.0

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Chloride	26.4	3.00	mg/L	50	1906230	06/18/19	06/18/19	EPA 300.0
Bromide	1.52	0.200	"	1	"	"	"	"

Alkalinity by SM2320

Date Sampled: **06/17/19 11:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Alkalinity	390	10.0	mg/L as CaCO3	1	1906279	06/20/19	06/20/19	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
Bicarbonate	390	10.0	"	"	"	"	"	"	
Hydroxide Alkalinity	ND	10.0	"	"	"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

SH2-MW02
1906219-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/17/19 11:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1906223	06/18/19	06/19/19	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	2.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chlorodibromomethane	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	3.0	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	1.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	10	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
m,p-Xylene	ND	2.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
Methylene Chloride	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Butylbenzene	2.9	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	7.0	1.0	"	"	"	"	"	"	
sec-Butylbenzene	8.7	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	1.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	20	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.0	"	"	"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

SH2-MW02
1906219-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Tetrachloroethene	ND	1.0	ug/l	1	1906223	06/18/19	06/19/19	EPA 8260B
Toluene	ND	1.0	"	"	"	"	"	"
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"
Trichloroethene	ND	1.0	"	"	"	"	"	"
Trichlorofluoromethane	ND	1.0	"	"	"	"	"	"
Vinyl chloride	ND	1.0	"	"	"	"	"	"
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"
1,2,3-Trichloropropane	ND	1.0	"	"	"	"	"	"
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"

Date Sampled: **06/17/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		71.7 %	20-170		"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

SH2-MW02
1906219-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Surrogate: 4-Bromofluorobenzene 41.0 % 21-167 1906223 06/18/19 06/19/19 EPA 8260B

Dissolved Gases by RSK-175

Date Sampled: **06/17/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methane	ND	0.010	mg/L	1	1906244	06/18/19	06/24/19	RSK-175 mod	
Ethene	ND	0.010	"	"	"	"	"	"	
Ethane	ND	0.010	"	"	"	"	"	"	

Total Metals by EPA Method 200.8

Date Sampled: **06/17/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Strontium	4.72	0.00100	mg/L	1	1906355	06/24/19	06/24/19	EPA 200.8	

Dissolved Metals by EPA Method 200.8

Date Sampled: **06/17/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	247	0.0500	mg/L	1	1906239	06/18/19	06/18/19	EPA 200.8	
Iron	ND	0.0100	"	"	"	"	"	"	
Magnesium	129	0.0500	"	"	"	"	"	"	
Potassium	4.27	0.0500	"	"	"	"	"	"	
Sodium	113	0.0500	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **06/17/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Nitrite as N	ND	0.0600	mg/L	1	1906230	06/18/19	06/18/19	EPA 300.0	
Bromide	1.48	0.200	"	"	"	"	"	"	
Chloride	26.4	3.00	"	50	"	"	"	"	

Summit Scientific

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Terracon - Longmont
 1831 Lefthand Circle
 Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
 Project Manager: Mike Skridulis

Reported:
 06/25/19 11:38

SH2-MW02
1906219-02 (Water)

Summit Scientific

Anions by EPA Method 300.0

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Sulfate	682	15.0	mg/L	50	1906230	06/18/19	06/18/19	EPA 300.0
Nitrate as N	8.84	0.0500	"	1	"	"	"	"

Alkalinity by SM2320

Date Sampled: **06/17/19 11:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Alkalinity	410	10.0	mg/L as CaCO3	1	1906279	06/20/19	06/20/19	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
Bicarbonate	410	10.0	"	"	"	"	"	"	
Hydroxide Alkalinity	ND	10.0	"	"	"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

SH2-MW03
1906219-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/17/19 12:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1906223	06/18/19	06/19/19	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	2.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chlorodibromomethane	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	3.0	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	1.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	10	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
m,p-Xylene	ND	2.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Methylene Chloride	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	1.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	20	"	"	"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

SH2-MW03
1906219-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
tert-Butylbenzene	ND	1.0	ug/l	1	1906223	06/18/19	06/19/19	EPA 8260B
Tetrachloroethene	ND	1.0	"	"	"	"	"	"
Toluene	ND	1.0	"	"	"	"	"	"
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"
Trichloroethene	ND	1.0	"	"	"	"	"	"
Trichlorofluoromethane	ND	1.0	"	"	"	"	"	"
Vinyl chloride	ND	1.0	"	"	"	"	"	"
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"
1,2,3-Trichloropropane	ND	1.0	"	"	"	"	"	"
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"

Date Sampled: **06/17/19 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.9 %	20-170		"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

SH2-MW03
1906219-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Surrogate: 4-Bromofluorobenzene 96.3 % 21-167 1906223 06/18/19 06/19/19 EPA 8260B

Dissolved Gases by RSK-175

Date Sampled: **06/17/19 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methane	ND	0.010	mg/L	1	1906244	06/18/19	06/24/19	RSK-175 mod	
Ethene	ND	0.010	"	"	"	"	"	"	
Ethane	ND	0.010	"	"	"	"	"	"	

Total Metals by EPA Method 200.8

Date Sampled: **06/17/19 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Strontium	4.91	0.00100	mg/L	1	1906355	06/24/19	06/24/19	EPA 200.8	

Dissolved Metals by EPA Method 200.8

Date Sampled: **06/17/19 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	246	0.0500	mg/L	1	1906239	06/18/19	06/18/19	EPA 200.8	
Iron	0.0222	0.0100	"	"	"	"	"	"	
Magnesium	115	0.0500	"	"	"	"	"	"	
Potassium	7.10	0.0500	"	"	"	"	"	"	
Sodium	115	0.0500	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **06/17/19 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	0.503	0.0600	mg/L	1	1906230	06/18/19	06/18/19	EPA 300.0	
Sulfate	619	15.0	"	50	"	"	"	"	
Nitrate as N	9.88	0.0500	"	1	"	"	"	"	

Summit Scientific

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Terracon - Longmont
 1831 Lefthand Circle
 Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
 Project Manager: Mike Skridulis

Reported:
 06/25/19 11:38

SH2-MW03
1906219-03 (Water)

Summit Scientific

Anions by EPA Method 300.0

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Bromide	71.8	10.0	mg/L	50	1906230	06/18/19	06/18/19	EPA 300.0
Nitrite as N	ND	0.0600	"	1	"	"	"	"

Alkalinity by SM2320

Date Sampled: **06/17/19 12:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Alkalinity	410	10.0	mg/L as CaCO3	1	1906279	06/20/19	06/20/19	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
Bicarbonate	410	10.0	"	"	"	"	"	"	
Hydroxide Alkalinity	ND	10.0	"	"	"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 1906223 - EPA 5030 Water MS

Blank (1906223-BLK1)

Prepared & Analyzed: 06/18/19

Benzene	ND	1.0	ug/l
Bromobenzene	ND	1.0	"
Bromochloromethane	ND	5.0	"
Bromodichloromethane	ND	2.0	"
Bromoform	ND	1.0	"
Bromomethane	ND	1.0	"
Carbon tetrachloride	ND	1.0	"
Chlorobenzene	ND	1.0	"
Chlorodibromomethane	ND	1.0	"
Chloroethane	ND	1.0	"
Chloroform	ND	3.0	"
Chloromethane	ND	1.0	"
cis-1,2-Dichloroethene	ND	1.0	"
cis-1,3-Dichloropropene	ND	1.0	"
Dibromomethane	ND	1.0	"
Dichlorodifluoromethane	ND	1.0	"
Di-isopropyl ether	ND	5.0	"
Ethyl tert-butyl ether	ND	10	"
Ethylbenzene	ND	1.0	"
Hexachlorobutadiene	ND	1.0	"
m,p-Xylene	ND	2.0	"
Methyl tert-butyl ether	ND	5.0	"
Isopropylbenzene	ND	1.0	"
Methylene Chloride	ND	5.0	"
Naphthalene	ND	1.0	"
n-Butylbenzene	ND	1.0	"
n-Propylbenzene	ND	1.0	"
o-Xylene	ND	1.0	"
p-Isopropyltoluene	ND	1.0	"
sec-Butylbenzene	ND	1.0	"
Styrene	ND	1.0	"
Tert-amyl methyl ether	ND	1.0	"
Tert-butyl alcohol	ND	20	"
tert-Butylbenzene	ND	1.0	"
Tetrachloroethene	ND	1.0	"
Toluene	ND	1.0	"
trans-1,2-Dichloroethene	ND	1.0	"
trans-1,3-Dichloropropene	ND	1.0	"

Summit Scientific

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Longmont CO, 80501

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Project Manager: Mike Skridulis

Reported:
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Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike	Source	%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1906223 - EPA 5030 Water MS

Blank (1906223-BLK1)

Prepared & Analyzed: 06/18/19

Trichloroethene	ND	1.0	ug/l							
Trichlorofluoromethane	ND	1.0	"							
Vinyl chloride	ND	1.0	"							
1,1,1,2-Tetrachloroethane	ND	1.0	"							
1,1,1-Trichloroethane	ND	1.0	"							
1,1,2,2-Tetrachloroethane	ND	1.0	"							
1,1,2-Trichloroethane	ND	1.0	"							
1,1-Dichloroethane	ND	1.0	"							
1,1-Dichloroethene	ND	1.0	"							
1,1-Dichloropropene	ND	1.0	"							
1,2,3-Trichlorobenzene	ND	1.0	"							
1,2,3-Trichloropropane	ND	1.0	"							
1,2,4-Trichlorobenzene	ND	1.0	"							
1,2,4-Trimethylbenzene	ND	1.0	"							
1,2-Dibromo-3-chloropropane	ND	1.0	"							
1,2-Dibromoethane (EDB)	ND	1.0	"							
1,2-Dichlorobenzene	ND	1.0	"							
1,2-Dichloroethane (EDC)	ND	1.0	"							
1,2-Dichloropropane	ND	1.0	"							
1,3,5-Trimethylbenzene	ND	1.0	"							
1,3-Dichlorobenzene	ND	1.0	"							
1,3-Dichloropropane	ND	1.0	"							
1,4-Dichlorobenzene	ND	1.0	"							
2,2-Dichloropropane	ND	1.0	"							
2-Chlorotoluene	ND	1.0	"							
4-Chlorotoluene	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.8	23-173			
Surrogate: Toluene-d8	12.6		"	13.3		94.4	20-170			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.5	21-167			

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1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

Volatile Organic Compounds by EPA Method 8260B - Quality Control

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Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1906223 - EPA 5030 Water MS

LCS (1906223-BS1)

Prepared & Analyzed: 06/18/19

Analyte	Result	Limit	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Notes
Benzene	51.8	1.0	ug/l	50.0		104	70-130			
Bromobenzene	49.1	1.0	"	50.0		98.2	70-130			
Bromochloromethane	44.8	5.0	"	50.0		89.7	70-130			
Bromodichloromethane	48.4	2.0	"	50.0		96.8	70-130			
Bromoform	41.0	1.0	"	50.0		82.1	70-130			
Bromomethane	44.1	1.0	"	50.0		88.3	70-130			
Carbon tetrachloride	60.2	1.0	"	50.0		120	70-130			
Chlorobenzene	51.7	1.0	"	50.0		103	70-130			
Chlorodibromomethane	45.6	1.0	"	50.0		91.2	70-130			
Chloroethane	52.1	1.0	"	50.0		104	70-130			
Chloroform	52.5	3.0	"	50.0		105	70-130			
Chloromethane	55.0	1.0	"	50.0		110	70-130			
cis-1,2-Dichloroethene	50.4	1.0	"	50.0		101	70-130			
cis-1,3-Dichloropropene	44.8	1.0	"	50.0		89.5	70-130			
Dibromomethane	42.4	1.0	"	50.0		84.8	70-130			
Dichlorodifluoromethane	40.4	1.0	"	50.0		80.7	70-130			
Di-isopropyl ether	47.1	5.0	"	50.0		94.3	70-130			
Ethyl tert-butyl ether	48.6	10	"	50.0		97.3	70-130			
Ethylbenzene	56.4	1.0	"	50.0		113	70-130			
Hexachlorobutadiene	53.3	1.0	"	50.0		107	70-130			
m,p-Xylene	112	2.0	"	100		112	70-130			
Isopropylbenzene	57.6	1.0	"	50.0		115	70-130			
Methyl tert-butyl ether	42.7	5.0	"				70-130			
Methylene Chloride	50.2	5.0	"	50.0		100	70-130			
Naphthalene	40.5	1.0	"	50.0		81.0	70-130			
n-Butylbenzene	64.9	1.0	"	50.0		130	70-130			
n-Propylbenzene	56.8	1.0	"	50.0		114	70-130			
o-Xylene	53.9	1.0	"	50.0		108	70-130			
p-Isopropyltoluene	59.9	1.0	"	50.0		120	70-130			
sec-Butylbenzene	59.8	1.0	"	50.0		120	70-130			
Styrene	51.4	1.0	"	50.0		103	70-130			
Tert-amyl methyl ether	45.4	1.0	"	50.0		90.8	70-130			
Tert-butyl alcohol	274	20	"	250		110	70-130			
tert-Butylbenzene	58.3	1.0	"	50.0		117	70-130			
Tetrachloroethene	58.9	1.0	"	50.0		118	70-130			
Toluene	54.5	1.0	"	50.0		109	70-130			
trans-1,2-Dichloroethene	52.0	1.0	"	50.0		104	70-130			
trans-1,3-Dichloropropene	44.8	1.0	"	50.0		89.5	70-130			

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike	Source		%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

Batch 1906223 - EPA 5030 Water MS

LCS (1906223-BS1)

Prepared & Analyzed: 06/18/19

Trichloroethene	53.4	1.0	ug/l	50.0	107	70-130				
Trichlorofluoromethane	59.8	1.0	"	50.0	120	70-130				
Vinyl chloride	40.2	1.0	"	50.0	80.4	70-130				
1,1,1,2-Tetrachloroethane	52.5	1.0	"	50.0	105	70-130				
1,1,1-Trichloroethane	59.6	1.0	"	50.0	119	70-130				
1,1,2,2-Tetrachloroethane	43.6	1.0	"	50.0	87.3	70-130				
1,1,2-Trichloroethane	42.1	1.0	"	50.0	84.2	70-130				
1,1-Dichloroethane	51.3	1.0	"	50.0	103	70-130				
1,1-Dichloroethene	56.3	1.0	"	50.0	113	70-130				
1,1-Dichloropropene	57.3	1.0	"	50.0	115	70-130				
1,2,3-Trichlorobenzene	47.6	1.0	"	50.0	95.1	70-130				
1,2,3-Trichloropropane	45.3	1.0	"	50.0	90.5	70-130				
1,2,4-Trichlorobenzene	44.0	1.0	"	50.0	88.1	70-130				
1,2,4-Trimethylbenzene	56.9	1.0	"	50.0	114	70-130				
1,2-Dibromo-3-chloropropane	49.2	1.0	"	50.0	98.5	70-130				
1,2-Dibromoethane (EDB)	42.7	1.0	"	50.0	85.4	70-130				
1,2-Dichlorobenzene	52.1	1.0	"	50.0	104	70-130				
1,2-Dichloroethane (EDC)	46.0	1.0	"	50.0	92.0	70-130				
1,2-Dichloropropane	48.5	1.0	"	50.0	96.9	70-130				
1,3,5-Trimethylbenzene	56.1	1.0	"	50.0	112	70-130				
1,3-Dichlorobenzene	52.8	1.0	"	50.0	106	70-130				
1,3-Dichloropropane	43.3	1.0	"	50.0	86.5	70-130				
1,4-Dichlorobenzene	51.9	1.0	"	50.0	104	70-130				
2,2-Dichloropropane	58.3	1.0	"	50.0	117	70-130				
2-Chlorotoluene	54.5	1.0	"	50.0	109	70-130				
4-Chlorotoluene	54.3	1.0	"	50.0	109	70-130				
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.3	97.6	23-173				
Surrogate: Toluene-d8	13.0		"	13.3	97.9	20-170				
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3	98.2	21-167				

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1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

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06/25/19 11:38

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1906223 - EPA 5030 Water MS

Matrix Spike (1906223-MS1)	Source: 1906204-01			Prepared: 06/18/19		Analyzed: 06/19/19	
Benzene	48.0	1.0	ug/l	50.0	ND	95.9	70-130
Bromobenzene	42.8	1.0	"	50.0	ND	85.7	70-130
Bromochloromethane	46.0	5.0	"	50.0	ND	92.1	70-130
Bromodichloromethane	57.8	2.0	"	50.0	ND	116	70-130
Bromoform	36.2	1.0	"	50.0	ND	72.5	70-130
Bromomethane	52.6	1.0	"	50.0	ND	105	70-130
Carbon tetrachloride	43.1	1.0	"	50.0	ND	86.2	70-130
Chlorobenzene	40.6	1.0	"	50.0	ND	81.2	70-130
Chlorodibromomethane	53.8	1.0	"	50.0	ND	108	70-130
Chloroethane	45.5	1.0	"	50.0	ND	91.0	70-130
Chloroform	50.4	3.0	"	50.0	ND	101	70-130
Chloromethane	46.0	1.0	"	50.0	ND	92.0	70-130
cis-1,2-Dichloroethene	54.0	1.0	"	50.0	ND	108	70-130
cis-1,3-Dichloropropene	42.6	1.0	"	50.0	ND	85.2	70-130
Dibromomethane	41.9	1.0	"	50.0	ND	83.8	70-130
Dichlorodifluoromethane	50.4	1.0	"	50.0	ND	101	70-130
Di-isopropyl ether	49.7	5.0	"	50.0	ND	99.4	70-130
Ethyl tert-butyl ether	52.8	10	"	50.0	ND	106	70-130
Ethylbenzene	48.7	1.0	"	50.0	ND	97.4	70-130
Hexachlorobutadiene	44.8	1.0	"	50.0	ND	89.5	70-130
m,p-Xylene	101	2.0	"	100	ND	101	70-130
Isopropylbenzene	48.6	1.0	"	50.0	ND	97.1	70-130
Methyl tert-butyl ether	42.2	5.0	"		ND		70-130
Methylene Chloride	56.8	5.0	"	50.0	ND	114	70-130
Naphthalene	40.4	1.0	"	50.0	ND	80.7	70-130
n-Butylbenzene	40.6	1.0	"	50.0	ND	81.1	70-130
n-Propylbenzene	47.9	1.0	"	50.0	ND	95.7	70-130
o-Xylene	47.8	1.0	"	50.0	ND	95.6	70-130
p-Isopropyltoluene	58.6	1.0	"	50.0	ND	117	70-130
sec-Butylbenzene	46.4	1.0	"	50.0	ND	92.8	70-130
Styrene	55.1	1.0	"	50.0	ND	110	70-130
Tert-amyl methyl ether	52.0	1.0	"	50.0	ND	104	70-130
Tert-butyl alcohol	241	20	"	250	ND	96.4	70-130
tert-Butylbenzene	40.4	1.0	"	50.0	ND	80.7	70-130
Tetrachloroethene	46.8	1.0	"	50.0	ND	93.5	70-130
Toluene	46.2	1.0	"	50.0	ND	92.5	70-130
trans-1,2-Dichloroethene	51.6	1.0	"	50.0	ND	103	70-130
trans-1,3-Dichloropropene	42.6	1.0	"	50.0	ND	85.2	70-130

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1906223 - EPA 5030 Water MS

Matrix Spike (1906223-MS1)	Source: 1906204-01			Prepared: 06/18/19		Analyzed: 06/19/19	
Trichloroethene	48.3	1.0	ug/l	50.0	ND	96.6	70-130
Trichlorofluoromethane	40.2	1.0	"	50.0	ND	80.5	70-130
Vinyl chloride	52.8	1.0	"	50.0	ND	106	70-130
1,1,1,2-Tetrachloroethane	48.7	1.0	"	50.0	ND	97.5	70-130
1,1,1-Trichloroethane	49.0	1.0	"	50.0	ND	98.0	70-130
1,1,2,2-Tetrachloroethane	48.6	1.0	"	50.0	ND	97.2	70-130
1,1,2-Trichloroethane	51.2	1.0	"	50.0	ND	102	70-130
1,1-Dichloroethane	53.7	1.0	"	50.0	ND	107	70-130
1,1-Dichloroethene	51.8	1.0	"	50.0	ND	104	70-130
1,1-Dichloropropene	51.4	1.0	"	50.0	ND	103	70-130
1,2,3-Trichlorobenzene	44.9	1.0	"	50.0	ND	89.8	70-130
1,2,3-Trichloropropane	44.0	1.0	"	50.0	ND	88.1	70-130
1,2,4-Trichlorobenzene	43.3	1.0	"	50.0	ND	86.7	70-130
1,2,4-Trimethylbenzene	55.6	1.0	"	50.0	ND	111	70-130
1,2-Dibromo-3-chloropropane	52.0	1.0	"	50.0	ND	104	70-130
1,2-Dibromoethane (EDB)	46.8	1.0	"	50.0	ND	93.5	70-130
1,2-Dichlorobenzene	42.7	1.0	"	50.0	ND	85.4	70-130
1,2-Dichloroethane (EDC)	58.8	1.0	"	50.0	ND	118	70-130
1,2-Dichloropropane	56.6	1.0	"	50.0	ND	113	70-130
1,3,5-Trimethylbenzene	52.1	1.0	"	50.0	ND	104	70-130
1,3-Dichlorobenzene	45.4	1.0	"	50.0	ND	90.8	70-130
1,3-Dichloropropane	53.6	1.0	"	50.0	ND	107	70-130
1,4-Dichlorobenzene	55.2	1.0	"	50.0	ND	110	70-130
2,2-Dichloropropane	42.5	1.0	"	50.0	ND	84.9	70-130
2-Chlorotoluene	47.0	1.0	"	50.0	ND	94.0	70-130
4-Chlorotoluene	40.8	1.0	"	50.0	ND	81.5	70-130
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.1	23-173
Surrogate: Toluene-d8	12.4		"	13.3		93.0	20-170
Surrogate: 4-Bromofluorobenzene	10.8		"	13.3		81.2	21-167

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Project Manager: Mike Skridulis

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Volatile Organic Compounds by EPA Method 8260B - Quality Control

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Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1906223 - EPA 5030 Water MS

Matrix Spike Dup (1906223-MSD1)

Source: 1906204-01

Prepared: 06/18/19 Analyzed: 06/19/19

Analyte	Result	Limit	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit
Benzene	46.4	1.0	ug/l	50.0	ND	92.8	70-130	3.33	30
Bromobenzene	53.0	1.0	"	50.0	ND	106	70-130	21.2	30
Bromochloromethane	48.5	5.0	"	50.0	ND	96.9	70-130	5.12	30
Bromodichloromethane	52.1	2.0	"	50.0	ND	104	70-130	10.3	30
Bromoform	45.2	1.0	"	50.0	ND	90.4	70-130	22.0	30
Bromomethane	56.7	1.0	"	50.0	ND	113	70-130	7.52	30
Carbon tetrachloride	57.2	1.0	"	50.0	ND	114	70-130	28.2	30
Chlorobenzene	46.5	1.0	"	50.0	ND	93.0	70-130	13.5	30
Chlorodibromomethane	49.6	1.0	"	50.0	ND	99.2	70-130	8.20	30
Chloroethane	58.3	1.0	"	50.0	ND	117	70-130	24.7	30
Chloroform	58.7	3.0	"	50.0	ND	117	70-130	15.3	30
Chloromethane	54.0	1.0	"	50.0	ND	108	70-130	16.0	30
cis-1,2-Dichloroethene	54.2	1.0	"	50.0	ND	108	70-130	0.425	30
cis-1,3-Dichloropropene	47.0	1.0	"	50.0	ND	93.9	70-130	9.80	30
Dibromomethane	44.9	1.0	"	50.0	ND	89.7	70-130	6.82	30
Dichlorodifluoromethane	50.2	1.0	"	50.0	ND	100	70-130	0.358	30
Di-isopropyl ether	52.9	5.0	"	50.0	ND	106	70-130	6.26	30
Ethyl tert-butyl ether	52.3	10	"	50.0	ND	105	70-130	1.08	30
Ethylbenzene	63.0	1.0	"	50.0	ND	126	70-130	25.6	30
Hexachlorobutadiene	59.2	1.0	"	50.0	ND	118	70-130	27.8	30
m,p-Xylene	125	2.0	"	100	ND	125	70-130	20.9	30
Methyl tert-butyl ether	45.3	5.0	"		ND		70-130	7.11	30
Isopropylbenzene	64.5	1.0	"	50.0	ND	129	70-130	28.1	30
Methylene Chloride	53.0	5.0	"	50.0	ND	106	70-130	7.08	30
Naphthalene	45.4	1.0	"	50.0	ND	90.9	70-130	11.8	30
n-Butylbenzene	42.7	1.0	"	50.0	ND	85.4	70-130	5.09	30
n-Propylbenzene	53.2	1.0	"	50.0	ND	106	70-130	10.6	30
o-Xylene	59.8	1.0	"	50.0	ND	120	70-130	22.4	30
p-Isopropyltoluene	56.1	1.0	"	50.0	ND	112	70-130	4.24	30
sec-Butylbenzene	56.6	1.0	"	50.0	ND	113	70-130	19.8	30
Styrene	55.3	1.0	"	50.0	ND	111	70-130	0.363	30
Tert-amyl methyl ether	48.8	1.0	"	50.0	ND	97.6	70-130	6.31	30
Tert-butyl alcohol	240	20	"	250	ND	96.1	70-130	0.278	30
tert-Butylbenzene	54.0	1.0	"	50.0	ND	108	70-130	29.0	30
Tetrachloroethene	56.0	1.0	"	50.0	ND	112	70-130	18.0	30
Toluene	58.9	1.0	"	50.0	ND	118	70-130	24.1	30
trans-1,2-Dichloroethene	57.5	1.0	"	50.0	ND	115	70-130	11.0	30
trans-1,3-Dichloropropene	47.0	1.0	"	50.0	ND	93.9	70-130	9.80	30

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD		

Batch 1906223 - EPA 5030 Water MS

Matrix Spike Dup (1906223-MSD1)

Source: 1906204-01

Prepared: 06/18/19 Analyzed: 06/19/19

Trichloroethene	55.0	1.0	ug/l	50.0	ND	110	70-130	12.9	30
Trichlorofluoromethane	51.8	1.0	"	50.0	ND	104	70-130	25.2	30
Vinyl chloride	48.2	1.0	"	50.0	ND	96.4	70-130	8.97	30
1,1,1,2-Tetrachloroethane	56.2	1.0	"	50.0	ND	112	70-130	14.3	30
1,1,1-Trichloroethane	56.3	1.0	"	50.0	ND	113	70-130	13.9	30
1,1,2,2-Tetrachloroethane	48.8	1.0	"	50.0	ND	97.7	70-130	0.513	30
1,1,2-Trichloroethane	44.4	1.0	"	50.0	ND	88.8	70-130	14.2	30
1,1-Dichloroethane	56.5	1.0	"	50.0	ND	113	70-130	5.21	30
1,1-Dichloroethene	62.7	1.0	"	50.0	ND	125	70-130	19.0	30
1,1-Dichloropropene	64.5	1.0	"	50.0	ND	129	70-130	22.6	30
1,2,3-Trichlorobenzene	53.0	1.0	"	50.0	ND	106	70-130	16.5	30
1,2,3-Trichloropropane	47.5	1.0	"	50.0	ND	94.9	70-130	7.45	30
1,2,4-Trichlorobenzene	50.0	1.0	"	50.0	ND	100	70-130	14.3	30
1,2,4-Trimethylbenzene	62.5	1.0	"	50.0	ND	125	70-130	11.8	30
1,2-Dibromo-3-chloropropane	49.2	1.0	"	50.0	ND	98.4	70-130	5.44	30
1,2-Dibromoethane (EDB)	45.7	1.0	"	50.0	ND	91.4	70-130	2.29	30
1,2-Dichlorobenzene	56.5	1.0	"	50.0	ND	113	70-130	27.8	30
1,2-Dichloroethane (EDC)	49.6	1.0	"	50.0	ND	99.3	70-130	16.8	30
1,2-Dichloropropane	52.1	1.0	"	50.0	ND	104	70-130	8.34	30
1,3,5-Trimethylbenzene	60.3	1.0	"	50.0	ND	121	70-130	14.7	30
1,3-Dichlorobenzene	57.1	1.0	"	50.0	ND	114	70-130	22.9	30
1,3-Dichloropropane	46.8	1.0	"	50.0	ND	93.7	70-130	13.5	30
1,4-Dichlorobenzene	56.2	1.0	"	50.0	ND	112	70-130	1.76	30
2,2-Dichloropropane	51.9	1.0	"	50.0	ND	104	70-130	20.0	30
2-Chlorotoluene	59.8	1.0	"	50.0	ND	120	70-130	23.9	30
4-Chlorotoluene	48.9	1.0	"	50.0	ND	97.8	70-130	18.2	30
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.7	23-173		
Surrogate: Toluene-d8	13.3		"	13.3		99.5	20-170		
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	21-167		

Summit Scientific

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Terracon - Longmont
 1831 Lefthand Circle
 Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
 Project Manager: Mike Skridulis

Reported:
 06/25/19 11:38

Dissolved Gases by RSK-175 - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1906244 - GC

Blank (1906244-BLK1)

Prepared: 06/18/19 Analyzed: 06/24/19

Methane	ND	0.010	mg/L							
Ethene	ND	0.010	"							
Ethane	ND	0.010	"							

LCS (1906244-BS1)

Prepared: 06/18/19 Analyzed: 06/24/19

Methane	0.043	0.010	mg/L	0.0428		101	70-130			
Ethane	0.083	0.010	"	0.0798		104	70-130			

Duplicate (1906244-DUP1)

Source: 1906218-01

Prepared: 06/18/19 Analyzed: 06/24/19

Methane	ND	0.010	mg/L		ND					30
Ethane	ND	0.010	"		ND					30

Matrix Spike (1906244-MS1)

Source: 1906218-01

Prepared: 06/18/19 Analyzed: 06/24/19

Methane	0.042	0.010	mg/L	0.0428	ND	97.0	70-130			
Ethane	0.081	0.010	"	0.0798	ND	101	70-130			

Summit Scientific

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Terracon - Longmont
 1831 Lefthand Circle
 Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
 Project Manager: Mike Skridulis

Reported:
 06/25/19 11:38

Total Metals by EPA Method 200.8 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 1906355 - EPA 200.8

Blank (1906355-BLK1)

Prepared & Analyzed: 06/24/19

Strontium ND 0.00100 mg/L

LCS (1906355-BS1)

Prepared & Analyzed: 06/24/19

Strontium 0.511 0.00100 mg/L 0.500 102 85-115

Duplicate (1906355-DUP1)

Source: 1906218-01

Prepared & Analyzed: 06/24/19

Strontium 2.48 0.00100 mg/L 2.53 1.86 20

Matrix Spike (1906355-MS1)

Source: 1906218-01

Prepared & Analyzed: 06/24/19

Strontium 3.00 0.00100 mg/L 0.500 2.53 95.0 70-130

Matrix Spike Dup (1906355-MSD1)

Source: 1906218-01

Prepared & Analyzed: 06/24/19

Strontium 2.92 0.00100 mg/L 0.500 2.53 78.8 70-130 2.74 25

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

Dissolved Metals by EPA Method 200.8 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 1906239 - EPA 200.8

Blank (1906239-BLK1)

Prepared & Analyzed: 06/18/19

Calcium	ND	0.0500	mg/L							
Iron	ND	0.0100	"							
Magnesium	ND	0.0500	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0500	"							

LCS (1906239-BS1)

Prepared & Analyzed: 06/18/19

Calcium	5.76	0.0500	mg/L	5.00	115	85-115			
Iron	4.72	0.0100	"	5.00	94.4	85-115			
Magnesium	5.20	0.0500	"	5.00	104	85-115			
Potassium	5.18	0.0500	"	5.00	104	85-115			
Sodium	5.10	0.0500	"	5.00	102	85-115			

Duplicate (1906239-DUP1)

Source: 1906213-01

Prepared & Analyzed: 06/18/19

Calcium	78.3	0.0500	mg/L	76.5			2.35	20
Iron	ND	0.0100	"	0.00494				20
Magnesium	12.9	0.0500	"	12.4			3.54	20
Potassium	3.40	0.0500	"	3.31			2.57	20
Sodium	45.2	0.0500	"	43.3			4.20	20

Matrix Spike (1906239-MS1)

Source: 1906213-01

Prepared & Analyzed: 06/18/19

Calcium	81.9	0.0500	mg/L	5.00	76.5	107	70-130	
Iron	4.05	0.0100	"	5.00	0.00494	80.9	70-130	
Magnesium	16.0	0.0500	"	5.00	12.4	71.1	70-130	
Potassium	7.19	0.0500	"	5.00	3.31	77.7	70-130	
Sodium	46.9	0.0500	"	5.00	43.3	72.4	70-130	

Matrix Spike Dup (1906239-MSD1)

Source: 1906213-01

Prepared & Analyzed: 06/18/19

Calcium	82.1	0.0500	mg/L	5.00	76.5	111	70-130	0.243	25
Iron	4.76	0.0100	"	5.00	0.00494	95.0	70-130	16.0	25
Magnesium	17.5	0.0500	"	5.00	12.4	103	70-130	9.45	25
Potassium	8.28	0.0500	"	5.00	3.31	99.3	70-130	14.0	25
Sodium	49.6	0.0500	"	5.00	43.3	126	70-130	5.57	25

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limits	RPD	Limit		

Batch 1906230 - General Preparation

Blank (1906230-BLK1)

Prepared & Analyzed: 06/18/19

Nitrite as N	ND	0.0600	mg/L						
Bromide	ND	0.200	"						
Sulfate	ND	0.300	"						
Nitrate as N	ND	0.0500	"						
Chloride	ND	0.0600	"						

LCS (1906230-BS1)

Prepared & Analyzed: 06/18/19

Sulfate	15.0	0.300	mg/L	15.0	100	90-110		
Nitrite as N	2.81	0.0600	"	3.00	93.7	90-110		
Bromide	10.8	0.200	"	10.0	108	90-110		
Nitrate as N	3.05	0.0500	"	3.00	102	90-110		
Chloride	3.22	0.0600	"	3.00	107	90-110		

Duplicate (1906230-DUP1)

Source: 1906220-01

Prepared & Analyzed: 06/18/19

Nitrite as N	ND	0.0600	mg/L	ND				20
Nitrate as N	ND	0.0500	"	ND				20
Sulfate	19.4	0.300	"	19.7			1.46	20
Bromide	ND	0.200	"	ND				20
Chloride	6.04	0.0600	"	6.16			2.03	20

Matrix Spike (1906230-MS1)

Source: 1906220-01

Prepared & Analyzed: 06/18/19

Nitrite as N	3.24	0.0600	mg/L	3.00	ND	108	80-120	
Nitrate as N	3.44	0.0500	"	3.00	ND	114	80-120	
Sulfate	36.9	0.300	"	15.0	19.7	115	80-120	
Bromide	10.0	0.200	"	10.0	ND	100	80-120	
Chloride	8.97	0.0600	"	3.00	6.16	93.7	80-120	

Summit Scientific

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Terracon - Longmont
 1831 Lefthand Circle
 Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
 Project Manager: Mike Skridulis

Reported:
 06/25/19 11:38

Alkalinity by SM2320 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 1906279 - General Preparation

Blank (1906279-BLK1)

Prepared & Analyzed: 06/20/19

Total Alkalinity	ND	10.0	mg/L as CaCO3							
Carbonate	ND	10.0	"							
Bicarbonate	ND	10.0	"							
Hydroxide Alkalinity	ND	10.0	"							

LCS (1906279-BS1)

Prepared & Analyzed: 06/20/19

Total Alkalinity	100	10.0	mg/L as CaCO3	100		100	80-120			
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Duplicate (1906279-DUP1)

Source: 1906177-01

Prepared & Analyzed: 06/20/19

Total Alkalinity	110	10.0	mg/L as CaCO3		110			0.00	20	
Carbonate	ND	10.0	"		ND				20	
Bicarbonate	110	10.0	"		110			0.00	20	
Hydroxide Alkalinity	ND	10.0	"		ND				20	

Matrix Spike (1906279-MS1)

Source: 1906177-01

Prepared & Analyzed: 06/20/19

Total Alkalinity	190	10.0	mg/L as CaCO3	100	110	80.0	80-120			
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Matrix Spike Dup (1906279-MSD1)

Source: 1906177-01

Prepared & Analyzed: 06/20/19

Total Alkalinity	190	10.0	mg/L as CaCO3	100	110	80.0	80-120	0.00	20	
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Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:38

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Terracon Consultants, Inc - Longmont, CO

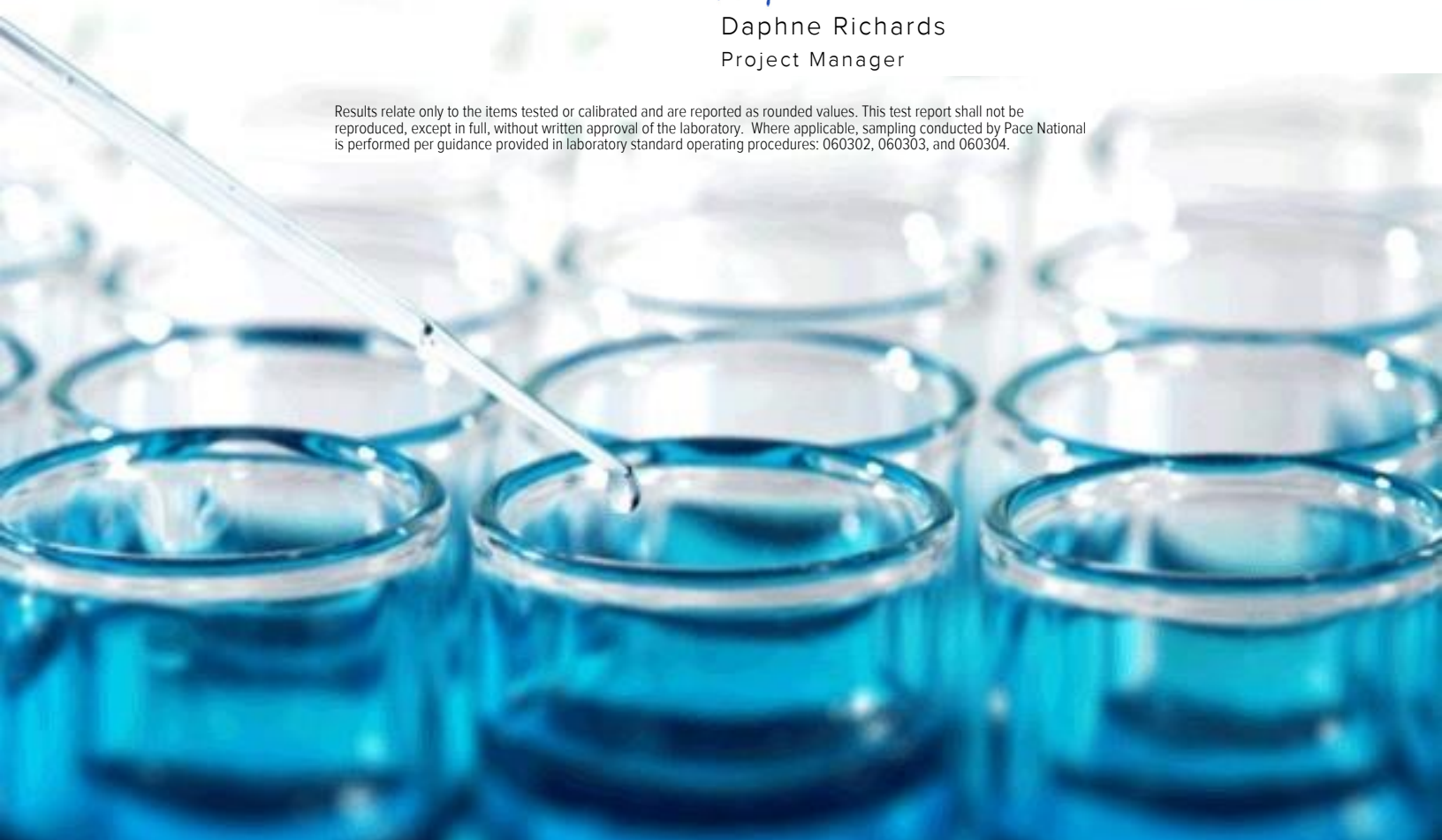
Sample Delivery Group: L1107415
Samples Received: 06/11/2019
Project Number: 22197006
Description: City of Longmont Groundwater Quality Monitoring
Site: S31
Report To: Michael Skridulis
1831 Lefthand Cirlice, Suite C
Longmont, CO 80501

Entire Report Reviewed By:



Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





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SAMPLE SUMMARY

S31-MW01 L1107415-01 GW

Collected by	Collected date/time	Received date/time
Charles A. Covington	06/10/19 14:00	06/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1297087	1	06/17/19 18:44	06/17/19 18:44	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	1	06/11/19 20:33	06/11/19 20:33	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	100	06/11/19 20:48	06/11/19 20:48	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	500	06/12/19 04:46	06/12/19 04:46	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1294663	1	06/13/19 07:23	06/13/19 11:32	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1294663	5	06/13/19 07:23	06/13/19 12:58	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1294334	5	06/11/19 19:39	06/12/19 23:19	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1294631	1	06/12/19 14:57	06/12/19 14:57	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1295201	1	06/13/19 09:16	06/13/19 09:16	ACG	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

S31-MW03 L1107415-02 GW

Collected by	Collected date/time	Received date/time
Charles A. Covington	06/10/19 14:40	06/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1297087	1	06/17/19 18:51	06/17/19 18:51	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	1	06/11/19 21:03	06/11/19 21:03	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1294139	100	06/11/19 21:18	06/11/19 21:18	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1294663	1	06/13/19 07:23	06/13/19 11:35	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1294663	5	06/13/19 07:23	06/13/19 13:01	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1294334	5	06/11/19 19:39	06/12/19 23:24	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1294631	1	06/12/19 15:05	06/12/19 15:05	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1295201	1	06/13/19 09:35	06/13/19 09:35	ACG	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	724		20.0	1	06/17/2019 18:44	WG1297087

Sample Narrative:

L1107415-01 WG1297087: Endpoint pH 4.5 HEADSPACE

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		100	100	06/11/2019 20:48	WG1294139
Chloride	455		100	100	06/11/2019 20:48	WG1294139
Nitrate as (N)	ND		0.100	1	06/11/2019 20:33	WG1294139
Nitrite as (N)	ND		0.100	1	06/11/2019 20:33	WG1294139
Sulfate	11800		2500	500	06/12/2019 04:46	WG1294139

Sample Narrative:

L1107415-01 WG1294139: Br diluted due to matrix : high sulfate

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	415		1.00	1	06/13/2019 11:32	WG1294663
Iron,Dissolved	ND		0.100	1	06/13/2019 11:32	WG1294663
Magnesium,Dissolved	1300		5.00	5	06/13/2019 12:58	WG1294663
Potassium,Dissolved	12.8		1.00	1	06/13/2019 11:32	WG1294663
Sodium,Dissolved	3000		5.00	5	06/13/2019 12:58	WG1294663

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	8.71		0.0500	5	06/12/2019 23:19	WG1294334

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	0.266		0.0100	1	06/12/2019 14:57	WG1294631
Ethane	ND		0.0130	1	06/12/2019 14:57	WG1294631
Ethene	ND		0.0130	1	06/12/2019 14:57	WG1294631
Acetylene	ND		0.0208	1	06/12/2019 14:57	WG1294631

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	06/13/2019 09:16	WG1295201
Acrolein	ND		0.0500	1	06/13/2019 09:16	WG1295201
Acrylonitrile	ND		0.0100	1	06/13/2019 09:16	WG1295201
Benzene	ND		0.00100	1	06/13/2019 09:16	WG1295201
Bromobenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201
Bromodichloromethane	ND		0.00100	1	06/13/2019 09:16	WG1295201
Bromoform	ND		0.00100	1	06/13/2019 09:16	WG1295201
Bromomethane	ND		0.00500	1	06/13/2019 09:16	WG1295201
n-Butylbenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201
sec-Butylbenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201
tert-Butylbenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 06/10/19 14:00

L1107415

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch	
Carbon tetrachloride	ND		0.00100	1	06/13/2019 09:16	WG1295201	1 Cp
Chlorobenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201	2 Tc
Chlorodibromomethane	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Chloroethane	ND		0.00500	1	06/13/2019 09:16	WG1295201	3 Ss
Chloroform	ND		0.00500	1	06/13/2019 09:16	WG1295201	
Chloromethane	ND		0.00250	1	06/13/2019 09:16	WG1295201	4 Cn
2-Chlorotoluene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
4-Chlorotoluene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/13/2019 09:16	WG1295201	5 Sr
1,2-Dibromoethane	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Dibromomethane	ND		0.00100	1	06/13/2019 09:16	WG1295201	6 Qc
1,2-Dichlorobenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,3-Dichlorobenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,4-Dichlorobenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201	7 Gl
Dichlorodifluoromethane	ND		0.00500	1	06/13/2019 09:16	WG1295201	
1,1-Dichloroethane	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,2-Dichloroethane	ND		0.00100	1	06/13/2019 09:16	WG1295201	8 Al
1,1-Dichloroethene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
cis-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
trans-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 09:16	WG1295201	9 Sc
1,2-Dichloropropane	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,1-Dichloropropene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,3-Dichloropropane	ND		0.00100	1	06/13/2019 09:16	WG1295201	
cis-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
trans-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
2,2-Dichloropropane	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Di-isopropyl ether	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Ethylbenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Hexachloro-1,3-butadiene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Isopropylbenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
p-Isopropyltoluene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
2-Butanone (MEK)	ND		0.0100	1	06/13/2019 09:16	WG1295201	
Methylene Chloride	ND		0.00500	1	06/13/2019 09:16	WG1295201	
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/13/2019 09:16	WG1295201	
Methyl tert-butyl ether	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Naphthalene	ND		0.00500	1	06/13/2019 09:16	WG1295201	
n-Propylbenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Styrene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Tetrachloroethene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Toluene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,2,3-Trichlorobenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,2,4-Trichlorobenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,1,1-Trichloroethane	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,1,2-Trichloroethane	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Trichloroethene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Trichlorofluoromethane	ND		0.00500	1	06/13/2019 09:16	WG1295201	
1,2,3-Trichloropropane	ND		0.00250	1	06/13/2019 09:16	WG1295201	
1,2,4-Trimethylbenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,2,3-Trimethylbenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
1,3,5-Trimethylbenzene	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Vinyl chloride	ND		0.00100	1	06/13/2019 09:16	WG1295201	
Xylenes, Total	ND		0.00300	1	06/13/2019 09:16	WG1295201	
(S) Toluene-d8	98.1		80.0-120		06/13/2019 09:16	WG1295201	



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	97.3		77.0-126		06/13/2019 09:16	WG1295201
(S) 1,2-Dichloroethane-d4	107		70.0-130		06/13/2019 09:16	WG1295201

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	1090		20.0	1	06/17/2019 18:51	WG1297087

Sample Narrative:

L1107415-02 WG1297087: Endpoint pH 4.5 HEADSPACE

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	06/11/2019 21:18	WG1294139
Chloride	107		100	100	06/11/2019 21:18	WG1294139
Nitrate as (N)	ND		0.100	1	06/11/2019 21:03	WG1294139
Nitrite as (N)	ND		0.100	1	06/11/2019 21:03	WG1294139
Sulfate	6520		500	100	06/11/2019 21:18	WG1294139

Sample Narrative:

L1107415-02 WG1294139: Br diluted due to matrix : high sulfate

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	463		1.00	1	06/13/2019 11:35	WG1294663
Iron,Dissolved	ND		0.100	1	06/13/2019 11:35	WG1294663
Magnesium,Dissolved	753		1.00	1	06/13/2019 11:35	WG1294663
Potassium,Dissolved	9.42		1.00	1	06/13/2019 11:35	WG1294663
Sodium,Dissolved	1860		5.00	5	06/13/2019 13:01	WG1294663

Metals (ICPMS) by Method 6020

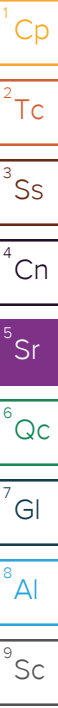
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	8.33		0.0500	5	06/12/2019 23:24	WG1294334

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	0.360		0.0100	1	06/12/2019 15:05	WG1294631
Ethane	ND		0.0130	1	06/12/2019 15:05	WG1294631
Ethene	ND		0.0130	1	06/12/2019 15:05	WG1294631
Acetylene	ND		0.0208	1	06/12/2019 15:05	WG1294631

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	06/13/2019 09:35	WG1295201
Acrolein	ND		0.0500	1	06/13/2019 09:35	WG1295201
Acrylonitrile	ND		0.0100	1	06/13/2019 09:35	WG1295201
Benzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
Bromobenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
Bromodichloromethane	ND		0.00100	1	06/13/2019 09:35	WG1295201
Bromoform	ND		0.00100	1	06/13/2019 09:35	WG1295201
Bromomethane	ND		0.00500	1	06/13/2019 09:35	WG1295201
n-Butylbenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
sec-Butylbenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
tert-Butylbenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201





Collected date/time: 06/10/19 14:40

L1107415

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Carbon tetrachloride	ND		0.00100	1	06/13/2019 09:35	WG1295201
Chlorobenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
Chlorodibromomethane	ND		0.00100	1	06/13/2019 09:35	WG1295201
Chloroethane	ND		0.00500	1	06/13/2019 09:35	WG1295201
Chloroform	ND		0.00500	1	06/13/2019 09:35	WG1295201
Chloromethane	ND		0.00250	1	06/13/2019 09:35	WG1295201
2-Chlorotoluene	ND		0.00100	1	06/13/2019 09:35	WG1295201
4-Chlorotoluene	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/13/2019 09:35	WG1295201
1,2-Dibromoethane	ND		0.00100	1	06/13/2019 09:35	WG1295201
Dibromomethane	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,2-Dichlorobenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,3-Dichlorobenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,4-Dichlorobenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
Dichlorodifluoromethane	ND		0.00500	1	06/13/2019 09:35	WG1295201
1,1-Dichloroethane	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,2-Dichloroethane	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,1-Dichloroethene	ND		0.00100	1	06/13/2019 09:35	WG1295201
cis-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 09:35	WG1295201
trans-1,2-Dichloroethene	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,2-Dichloropropane	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,1-Dichloropropene	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,3-Dichloropropane	ND		0.00100	1	06/13/2019 09:35	WG1295201
cis-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 09:35	WG1295201
trans-1,3-Dichloropropene	ND		0.00100	1	06/13/2019 09:35	WG1295201
2,2-Dichloropropane	ND		0.00100	1	06/13/2019 09:35	WG1295201
Di-isopropyl ether	ND		0.00100	1	06/13/2019 09:35	WG1295201
Ethylbenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
Hexachloro-1,3-butadiene	ND		0.00100	1	06/13/2019 09:35	WG1295201
Isopropylbenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
p-Isopropyltoluene	ND		0.00100	1	06/13/2019 09:35	WG1295201
2-Butanone (MEK)	ND		0.0100	1	06/13/2019 09:35	WG1295201
Methylene Chloride	ND		0.00500	1	06/13/2019 09:35	WG1295201
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/13/2019 09:35	WG1295201
Methyl tert-butyl ether	ND		0.00100	1	06/13/2019 09:35	WG1295201
Naphthalene	ND		0.00500	1	06/13/2019 09:35	WG1295201
n-Propylbenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
Styrene	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/13/2019 09:35	WG1295201
Tetrachloroethene	ND		0.00100	1	06/13/2019 09:35	WG1295201
Toluene	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,2,3-Trichlorobenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,2,4-Trichlorobenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,1,1-Trichloroethane	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,1,2-Trichloroethane	ND		0.00100	1	06/13/2019 09:35	WG1295201
Trichloroethene	ND		0.00100	1	06/13/2019 09:35	WG1295201
Trichlorofluoromethane	ND		0.00500	1	06/13/2019 09:35	WG1295201
1,2,3-Trichloropropane	ND		0.00250	1	06/13/2019 09:35	WG1295201
1,2,4-Trimethylbenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,2,3-Trimethylbenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
1,3,5-Trimethylbenzene	ND		0.00100	1	06/13/2019 09:35	WG1295201
Vinyl chloride	ND		0.00100	1	06/13/2019 09:35	WG1295201
Xylenes, Total	ND		0.00300	1	06/13/2019 09:35	WG1295201
(S) Toluene-d8	100		80.0-120		06/13/2019 09:35	WG1295201

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	103		77.0-126		06/13/2019 09:35	WG1295201
(S) 1,2-Dichloroethane-d4	111		70.0-130		06/13/2019 09:35	WG1295201

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3421824-1 06/17/19 17:15

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	4.51	J	2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1107263-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107263-01 06/17/19 17:35 • (DUP) R3421824-2 06/17/19 17:43

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	52.9	53.1	1	0.330		20

Sample Narrative:

OS: Endpoint pH 4.5 HEADSPACE

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3421824-3 06/17/19 18:35

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	97.0	97.0	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3420192-1 06/11/19 15:56

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1107342-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107342-01 06/11/19 17:05 • (DUP) R3420192-3 06/11/19 17:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.298	1	0.000		15
Chloride	34.4	34.6	1	0.588		15
Nitrate	5.88	5.94	1	0.915		15
Nitrite	ND	0.000	1	0.000		15

⁶ Qc

⁷ Gl

⁸ Al

L1107419-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1107419-03 06/11/19 21:48 • (DUP) R3420192-6 06/11/19 22:33

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	U	0.000	1	0.000		15
Chloride	2.49	2.47	1	0.819		15
Nitrate	U	0.000	1	0.000		15
Nitrite	U	0.000	1	0.000		15
Sulfate	4.05	3.72	1	8.30	↓	15

⁹ Sc

L1107342-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107342-01 06/12/19 03:46 • (DUP) R3420192-8 06/12/19 04:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Sulfate	337	337	5	0.115		15



Laboratory Control Sample (LCS)

(LCS) R3420192-2 06/11/19 16:11

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromide	40.0	40.6	101	80.0-120	
Chloride	40.0	39.9	99.6	80.0-120	
Nitrate	8.00	8.20	103	80.0-120	
Nitrite	8.00	7.99	99.8	80.0-120	
Sulfate	40.0	40.6	101	80.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1107342-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1107342-02 06/11/19 17:35 • (MS) R3420192-4 06/11/19 17:49 • (MSD) R3420192-5 06/11/19 18:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	31.9	30.2	63.3	59.9	1	80.0-120	<u>J6</u>	<u>J6</u>	5.52	15
Chloride	50.0	36.1	84.3	84.3	96.5	96.4	1	80.0-120			0.0261	15
Nitrate	5.00	ND	4.95	4.97	97.2	97.6	1	80.0-120			0.411	15
Nitrite	5.00	ND	5.01	5.00	100	99.9	1	80.0-120			0.160	15
Sulfate	50.0	521	516	516	0.000	0.000	1	80.0-120	<u>EV</u>	<u>EV</u>	0.0996	15

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1107419-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1107419-03 06/11/19 21:48 • (MS) R3420192-7 06/11/19 22:48

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	U	49.7	99.5	1	80.0-120	
Chloride	50.0	2.49	52.6	100	1	80.0-120	
Nitrate	5.00	U	4.98	99.6	1	80.0-120	
Nitrite	5.00	U	5.05	101	1	80.0-120	
Sulfate	50.0	4.05	53.7	99.2	1	80.0-120	



Method Blank (MB)

(MB) R3420724-1 06/13/19 10:19

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Calcium,Dissolved	U		0.0463	1.00
Iron,Dissolved	U		0.0141	0.100
Magnesium,Dissolved	U		0.0111	1.00
Potassium,Dissolved	U		0.102	1.00
Sodium,Dissolved	0.128	⌵	0.0985	1.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420724-2 06/13/19 10:21 • (LCSD) R3420724-3 06/13/19 10:24

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Calcium,Dissolved	10.0	9.80	9.69	98.0	96.9	80.0-120			1.15	20
Iron,Dissolved	10.0	9.75	9.67	97.5	96.7	80.0-120			0.843	20
Magnesium,Dissolved	10.0	9.86	9.70	98.6	97.0	80.0-120			1.58	20
Potassium,Dissolved	10.0	9.46	9.41	94.6	94.1	80.0-120			0.562	20
Sodium,Dissolved	10.0	9.93	9.86	99.3	98.6	80.0-120			0.711	20

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1106619-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106619-01 06/13/19 10:27 • (MS) R3420724-5 06/13/19 10:33 • (MSD) R3420724-6 06/13/19 10:35

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Calcium,Dissolved	10.0	202	206	208	47.2	66.3	1	75.0-125	⌵	⌵	0.920	20
Iron,Dissolved	10.0	U	9.49	9.41	94.9	94.1	1	75.0-125			0.809	20
Magnesium,Dissolved	10.0	43.3	51.8	52.5	84.8	91.9	1	75.0-125			1.36	20
Potassium,Dissolved	10.0	4.40	13.9	13.9	95.2	95.1	1	75.0-125			0.0727	20
Sodium,Dissolved	10.0	459	457	460	0.000	19.2	1	75.0-125	⌵	⌵	0.726	20



Method Blank (MB)

(MB) R3420502-1 06/12/19 19:01

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Strontium	U		0.000160	0.0100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420502-2 06/12/19 19:06 • (LCSD) R3420502-3 06/12/19 19:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0459	0.0455	91.8	91.0	80.0-120			0.857	20

L1106226-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106226-06 06/12/19 19:17 • (MS) R3420502-5 06/12/19 19:28 • (MSD) R3420502-6 06/12/19 19:33

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.00640	0.0546	0.0534	96.3	94.1	1	75.0-125			2.09	20



Method Blank (MB)

(MB) R3420420-1 06/12/19 14:05

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130
Acetylene	U		0.00558	0.0208

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1107415-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107415-01 06/12/19 14:57 • (DUP) R3420420-2 06/12/19 14:59

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	0.266	0.260	1	2.34		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

L1107363-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1107363-01 06/12/19 15:52 • (DUP) R3420420-3 06/12/19 15:55

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	ND	0.000	1	0.000		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3420420-4 06/12/19 16:01 • (LCSD) R3420420-5 06/12/19 16:05

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0768	0.0775	113	114	85.0-115			0.947	20
Ethane	0.129	0.118	0.119	91.2	92.0	85.0-115			0.890	20
Ethene	0.127	0.116	0.117	91.2	92.1	85.0-115			1.06	20
Acetylene	0.208	0.179	0.180	86.1	86.6	85.0-115			0.544	20



Method Blank (MB)

(MB) R3421667-2 06/13/19 03:38

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	U		0.000256	0.00100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3421667-2 06/13/19 03:38

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	U		0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
<i>(S) Toluene-d8</i>	100			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	100			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	116			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3421667-1 06/13/19 03:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.125	0.182	145	19.0-160	
Acrolein	0.125	0.0403	32.2	10.0-160	
Acrylonitrile	0.125	0.162	130	55.0-149	
Benzene	0.0250	0.0242	96.6	70.0-123	



Laboratory Control Sample (LCS)

(LCS) R3421667-1 06/13/19 03:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromobenzene	0.0250	0.0221	88.6	73.0-121	
Bromodichloromethane	0.0250	0.0251	100	75.0-120	
Bromoform	0.0250	0.0276	111	68.0-132	
Bromomethane	0.0250	0.0267	107	10.0-160	
n-Butylbenzene	0.0250	0.0202	81.0	73.0-125	
sec-Butylbenzene	0.0250	0.0222	88.7	75.0-125	
tert-Butylbenzene	0.0250	0.0222	88.7	76.0-124	
Carbon tetrachloride	0.0250	0.0282	113	68.0-126	
Chlorobenzene	0.0250	0.0254	101	80.0-121	
Chlorodibromomethane	0.0250	0.0261	104	77.0-125	
Chloroethane	0.0250	0.0268	107	47.0-150	
Chloroform	0.0250	0.0257	103	73.0-120	
Chloromethane	0.0250	0.0259	104	41.0-142	
2-Chlorotoluene	0.0250	0.0218	87.2	76.0-123	
4-Chlorotoluene	0.0250	0.0215	86.1	75.0-122	
1,2-Dibromo-3-Chloropropane	0.0250	0.0231	92.5	58.0-134	
1,2-Dibromoethane	0.0250	0.0284	114	80.0-122	
Dibromomethane	0.0250	0.0275	110	80.0-120	
1,2-Dichlorobenzene	0.0250	0.0231	92.2	79.0-121	
1,3-Dichlorobenzene	0.0250	0.0239	95.7	79.0-120	
1,4-Dichlorobenzene	0.0250	0.0233	93.1	79.0-120	
Dichlorodifluoromethane	0.0250	0.0247	98.6	51.0-149	
1,1-Dichloroethane	0.0250	0.0245	98.1	70.0-126	
1,2-Dichloroethane	0.0250	0.0270	108	70.0-128	
1,1-Dichloroethene	0.0250	0.0258	103	71.0-124	
cis-1,2-Dichloroethene	0.0250	0.0249	99.6	73.0-120	
trans-1,2-Dichloroethene	0.0250	0.0246	98.3	73.0-120	
1,2-Dichloropropane	0.0250	0.0257	103	77.0-125	
1,1-Dichloropropene	0.0250	0.0247	98.9	74.0-126	
1,3-Dichloropropane	0.0250	0.0266	106	80.0-120	
cis-1,3-Dichloropropene	0.0250	0.0251	100	80.0-123	
trans-1,3-Dichloropropene	0.0250	0.0262	105	78.0-124	
2,2-Dichloropropane	0.0250	0.0206	82.2	58.0-130	
Di-isopropyl ether	0.0250	0.0263	105	58.0-138	
Ethylbenzene	0.0250	0.0246	98.5	79.0-123	
Hexachloro-1,3-butadiene	0.0250	0.0176	70.5	54.0-138	
Isopropylbenzene	0.0250	0.0247	98.8	76.0-127	
p-Isopropyltoluene	0.0250	0.0233	93.0	76.0-125	
2-Butanone (MEK)	0.125	0.171	137	44.0-160	
Methylene Chloride	0.0250	0.0241	96.4	67.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Laboratory Control Sample (LCS)

(LCS) R3421667-1 06/13/19 03:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
4-Methyl-2-pentanone (MIBK)	0.125	0.156	125	68.0-142	
Methyl tert-butyl ether	0.0250	0.0247	98.9	68.0-125	
Naphthalene	0.0250	0.0194	77.7	54.0-135	
n-Propylbenzene	0.0250	0.0208	83.4	77.0-124	
Styrene	0.0250	0.0267	107	73.0-130	
1,1,1,2-Tetrachloroethane	0.0250	0.0260	104	75.0-125	
1,1,2,2-Tetrachloroethane	0.0250	0.0220	88.2	65.0-130	
Tetrachloroethene	0.0250	0.0239	95.8	72.0-132	
Toluene	0.0250	0.0234	93.8	79.0-120	
1,1,2-Trichlorotrifluoroethane	0.0250	0.0258	103	69.0-132	
1,2,3-Trichlorobenzene	0.0250	0.0183	73.3	50.0-138	
1,2,4-Trichlorobenzene	0.0250	0.0178	71.1	57.0-137	
1,1,1-Trichloroethane	0.0250	0.0259	104	73.0-124	
1,1,2-Trichloroethane	0.0250	0.0267	107	80.0-120	
Trichloroethene	0.0250	0.0265	106	78.0-124	
Trichlorofluoromethane	0.0250	0.0256	102	59.0-147	
1,2,3-Trichloropropane	0.0250	0.0250	99.9	73.0-130	
1,2,3-Trimethylbenzene	0.0250	0.0213	85.4	77.0-120	
1,2,4-Trimethylbenzene	0.0250	0.0221	88.6	76.0-121	
1,3,5-Trimethylbenzene	0.0250	0.0212	84.6	76.0-122	
Vinyl chloride	0.0250	0.0250	99.9	67.0-131	
Xylenes, Total	0.0750	0.0740	98.7	79.0-123	
<i>(S) Toluene-d8</i>			103	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			103	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			120	70.0-130	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

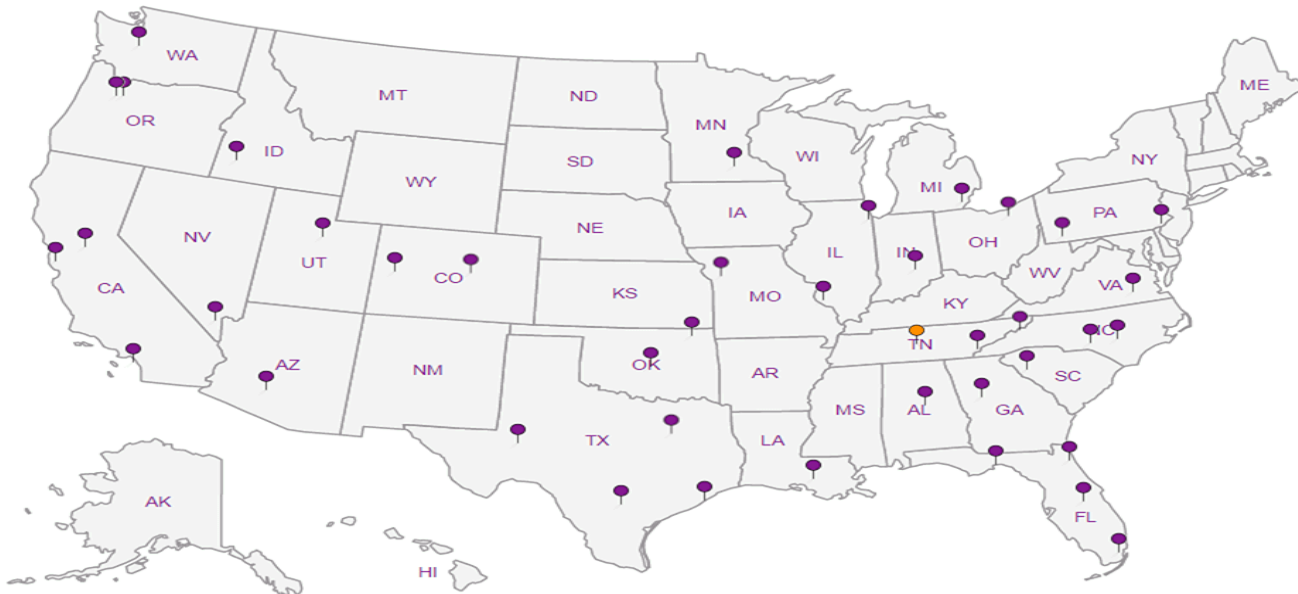
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



**Terracon Consultants, Inc -
Longmont, CO**
1831 Lefthand Circe, Suite C

Billing Information:
Mike Skridulis
1831 Lefthand Circe, Suite C
Longmont, CO 80501

Pres Chk

Chain of Custody Page 1 of 1
Pace Analytical
National Center for Testing & Innovation

Report to:
Michael Skridulis

Email To: mjskridulis@terracon.com

Project Description: **COL Annual GW**

City/State Collected: **Longmont, CO**

Phone: **303-454-5249**
Fax:

Client Project # **22197006**

Lab Project # **TERRALCO-22197006**

Collected by (print):
Charles Covington

Site/Facility ID # **S31**

P.O. #

Collected by (signature):
[Signature]

Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Quote #

Immediately Packed on Ice N Y

Date Results Needed
STANDARD

Analysis / Container / Preservative	
ALK, Br, Cr, NO2, NO3, SO 125mIHDPE-NoPres	
Metals, Dissolved 250mIHDPE-NoPres	
RSK175 40ml/Amb HCl	
SRG 250mIHDPE-HNO3	62
V8260 40ml/Amb-HCl	(3)

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L# **1107415**
C066

Acctnum: **TERRALCO**
Template: **T149893**
Prelogin: **P708314**
TSR: **288 - Daphne Richards**
PB:

Shipped Via: **FedEX Ground**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
531 - MW01	Grab	GW	-	6/10/19	1400	8
531 - MW03	Grab	GW	-	6/10/19	1440	8
		GW				8
		GW				8
		GW				8
		GW				8
		GW				8

Invoice: Date: 15Jan19 Shipping: 0.00
Customer: ESCSLCUT Weight: 10 LBS Special: 0.00
Phone: (615)758-5858 COD: Handling: 0.00
Sat Del: N DV: 0.00 Total: 0.00

Svc: **STANDARD OVERNIGHT**
TRK: 4794 8827 7700

Remarks	Sample # (lab only)
	<i>[Handwritten]</i>
	<i>[Handwritten]</i>

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

Samples returned via:
 UPS FedEx Courier

Tracking # **Fedex 4794 8827 7700**

pH _____ Temp _____
Flow _____ Other _____

Sample Receipt Checklist

COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N
RAD SCREEN: <0.5 mR/hr

Relinquished by: (Signature)
[Signature]

Date: **6/10/19**
Time: **1630**

Received by: (Signature)

Trip Blank Received: Yes/No
0
HCL/MeOH
TBR

Relinquished by: (Signature)

Date: _____
Time: _____

Received by: (Signature)

Temp: **A38F °C**
2.0 ± 0 = 2.0
Bottles Received: **10**

Relinquished by: (Signature)

Date: _____
Time: _____

Received for lab by: (Signature)
[Signature]

Date: **6/11/19**
Time: **8:45**

Hold: _____
Condition: **NCF / OK**

Analysis

Groundwater Sample Constituents

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations – Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

Terracon Consultants, Inc - Longmont, CO

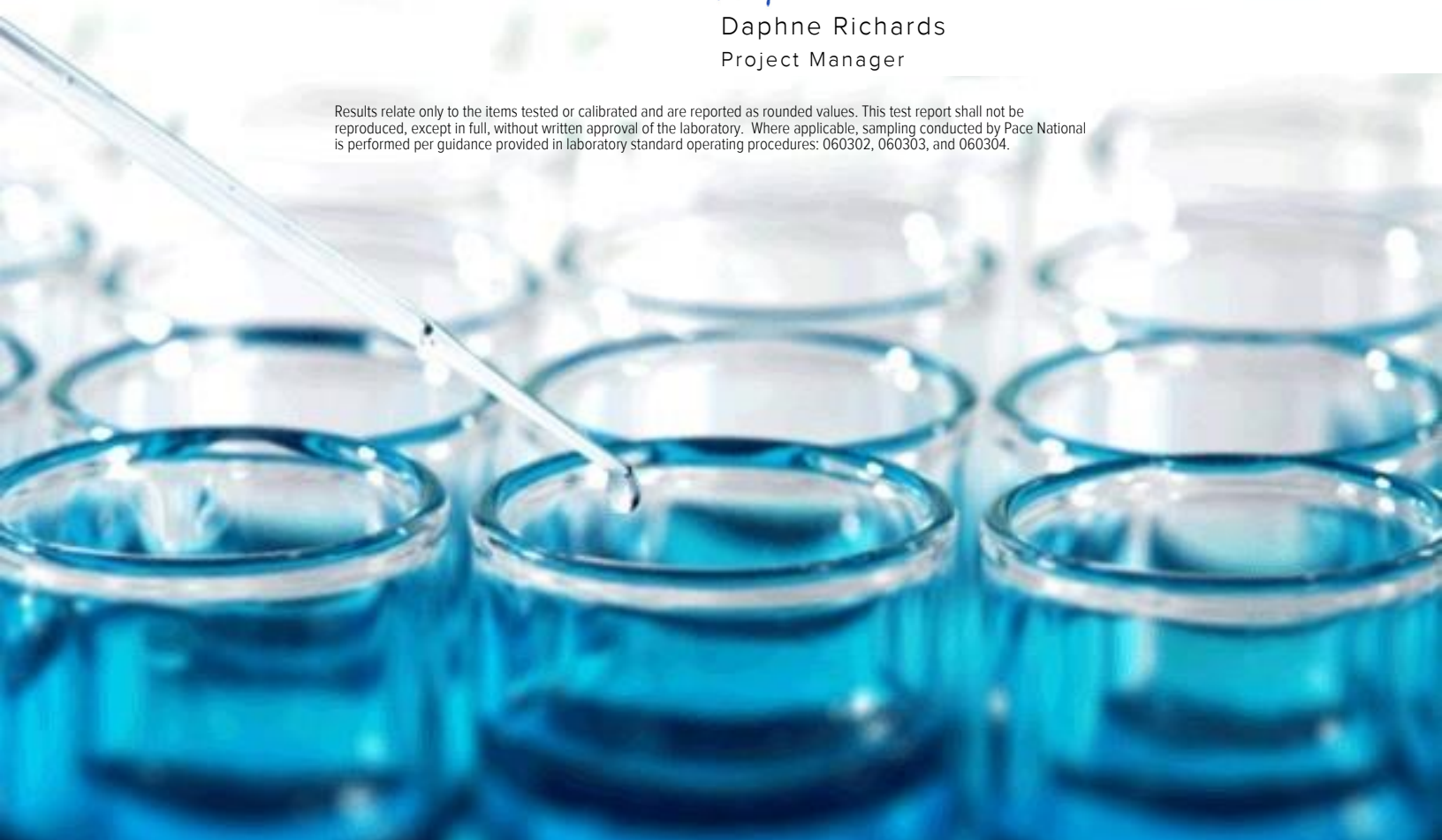
Sample Delivery Group: L1099875
Samples Received: 05/17/2019
Project Number: 22197006
Description: City of Longmont Groundwater Quality Monitoring
Site: TB1
Report To: Michael Skridulis
1831 Lefthand Cirlice, Suite C
Longmont, CO 80501

Entire Report Reviewed By:



Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





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SAMPLE SUMMARY



TB1-MW01 L1099875-01 GW

Collected by Charles A. Covington
 Collected date/time 05/16/19 11:00
 Received date/time 05/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1284522	1	05/22/19 21:20	05/22/19 21:20	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1282927	1	05/17/19 22:02	05/17/19 22:02	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1282927	100	05/17/19 22:17	05/17/19 22:17	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1283232	1	05/21/19 15:07	05/23/19 18:06	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1284298	5	05/23/19 08:17	05/24/19 13:59	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1284168	1	05/21/19 13:09	05/21/19 13:09	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1284066	1	05/20/19 22:39	05/20/19 22:39	TJJ	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

TB1-MW02 L1099875-02 GW

Collected by Charles A. Covington
 Collected date/time 05/16/19 10:40
 Received date/time 05/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1284522	1	05/22/19 21:27	05/22/19 21:27	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1282927	1	05/17/19 22:31	05/17/19 22:31	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1282927	100	05/17/19 22:46	05/17/19 22:46	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1283232	1	05/21/19 15:07	05/23/19 18:52	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1284298	5	05/23/19 08:17	05/24/19 13:54	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1284168	1	05/21/19 13:11	05/21/19 13:11	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1284066	1	05/20/19 22:59	05/20/19 22:59	TJJ	Mt. Juliet, TN

6 Qc

7 Gl

8 Al

9 Sc



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	441		20.0	1	05/22/2019 21:20	WG1284522

Sample Narrative:

L1099875-01 WG1284522: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	05/17/2019 22:17	WG1282927
Chloride	124		100	100	05/17/2019 22:17	WG1282927
Nitrate as (N)	ND		0.100	1	05/17/2019 22:02	WG1282927
Nitrite as (N)	ND		0.100	1	05/17/2019 22:02	WG1282927
Sulfate	4030		500	100	05/17/2019 22:17	WG1282927

Sample Narrative:

L1099875-01 WG1282927: diluted due to interference: high sulfate content

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	477	V	1.00	1	05/23/2019 18:06	WG1283232
Iron,Dissolved	ND		0.100	1	05/23/2019 18:06	WG1283232
Magnesium,Dissolved	482	V	1.00	1	05/23/2019 18:06	WG1283232
Potassium,Dissolved	15.3		1.00	1	05/23/2019 18:06	WG1283232
Sodium,Dissolved	734	V	1.00	1	05/23/2019 18:06	WG1283232

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	6.54		0.0500	5	05/24/2019 13:59	WG1284298

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	05/21/2019 13:09	WG1284168
Ethane	ND		0.0130	1	05/21/2019 13:09	WG1284168
Ethene	ND		0.0130	1	05/21/2019 13:09	WG1284168
Acetylene	ND		0.0208	1	05/21/2019 13:09	WG1284168

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	05/20/2019 22:39	WG1284066
Acrolein	ND		0.0500	1	05/20/2019 22:39	WG1284066
Acrylonitrile	ND		0.0100	1	05/20/2019 22:39	WG1284066
Benzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
Bromobenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
Bromodichloromethane	ND		0.00100	1	05/20/2019 22:39	WG1284066
Bromoform	ND		0.00100	1	05/20/2019 22:39	WG1284066
Bromomethane	ND		0.00500	1	05/20/2019 22:39	WG1284066
n-Butylbenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
sec-Butylbenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
tert-Butylbenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 05/16/19 11:00

L1099875

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Carbon tetrachloride	ND		0.00100	1	05/20/2019 22:39	WG1284066
Chlorobenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
Chlorodibromomethane	ND		0.00100	1	05/20/2019 22:39	WG1284066
Chloroethane	ND		0.00500	1	05/20/2019 22:39	WG1284066
Chloroform	ND		0.00500	1	05/20/2019 22:39	WG1284066
Chloromethane	ND		0.00250	1	05/20/2019 22:39	WG1284066
2-Chlorotoluene	ND		0.00100	1	05/20/2019 22:39	WG1284066
4-Chlorotoluene	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/20/2019 22:39	WG1284066
1,2-Dibromoethane	ND		0.00100	1	05/20/2019 22:39	WG1284066
Dibromomethane	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,2-Dichlorobenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,3-Dichlorobenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,4-Dichlorobenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
Dichlorodifluoromethane	ND		0.00500	1	05/20/2019 22:39	WG1284066
1,1-Dichloroethane	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,2-Dichloroethane	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,1-Dichloroethene	ND		0.00100	1	05/20/2019 22:39	WG1284066
cis-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 22:39	WG1284066
trans-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,2-Dichloropropane	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,1-Dichloropropene	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,3-Dichloropropane	ND		0.00100	1	05/20/2019 22:39	WG1284066
cis-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 22:39	WG1284066
trans-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 22:39	WG1284066
2,2-Dichloropropane	ND		0.00100	1	05/20/2019 22:39	WG1284066
Di-isopropyl ether	ND		0.00100	1	05/20/2019 22:39	WG1284066
Ethylbenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
Hexachloro-1,3-butadiene	ND	J4	0.00100	1	05/20/2019 22:39	WG1284066
Isopropylbenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
p-Isopropyltoluene	ND		0.00100	1	05/20/2019 22:39	WG1284066
2-Butanone (MEK)	ND		0.0100	1	05/20/2019 22:39	WG1284066
Methylene Chloride	ND		0.00500	1	05/20/2019 22:39	WG1284066
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/20/2019 22:39	WG1284066
Methyl tert-butyl ether	ND		0.00100	1	05/20/2019 22:39	WG1284066
Naphthalene	ND		0.00500	1	05/20/2019 22:39	WG1284066
n-Propylbenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
Styrene	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/20/2019 22:39	WG1284066
Tetrachloroethene	ND		0.00100	1	05/20/2019 22:39	WG1284066
Toluene	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,2,3-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 22:39	WG1284066
1,2,4-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 22:39	WG1284066
1,1,1-Trichloroethane	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,1,2-Trichloroethane	ND		0.00100	1	05/20/2019 22:39	WG1284066
Trichloroethene	ND		0.00100	1	05/20/2019 22:39	WG1284066
Trichlorofluoromethane	ND		0.00500	1	05/20/2019 22:39	WG1284066
1,2,3-Trichloropropane	ND		0.00250	1	05/20/2019 22:39	WG1284066
1,2,4-Trimethylbenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,2,3-Trimethylbenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
1,3,5-Trimethylbenzene	ND		0.00100	1	05/20/2019 22:39	WG1284066
Vinyl chloride	ND		0.00100	1	05/20/2019 22:39	WG1284066
Xylenes, Total	ND		0.00300	1	05/20/2019 22:39	WG1284066
(S) Toluene-d8	90.2		80.0-120		05/20/2019 22:39	WG1284066

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 05/16/19 11:00

L1099875

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	98.1		77.0-126		05/20/2019 22:39	WG1284066
(S) 1,2-Dichloroethane-d4	102		70.0-130		05/20/2019 22:39	WG1284066

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	385		20.0	1	05/22/2019 21:27	WG1284522

Sample Narrative:

L1099875-02 WG1284522: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	05/17/2019 22:46	WG1282927
Chloride	298		100	100	05/17/2019 22:46	WG1282927
Nitrate as (N)	7.43		0.100	1	05/17/2019 22:31	WG1282927
Nitrite as (N)	ND		0.100	1	05/17/2019 22:31	WG1282927
Sulfate	2560		500	100	05/17/2019 22:46	WG1282927

Sample Narrative:

L1099875-02 WG1282927: diluted due to interference: high sulfate content

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	349		1.00	1	05/23/2019 18:52	WG1283232
Iron,Dissolved	ND		0.100	1	05/23/2019 18:52	WG1283232
Magnesium,Dissolved	318		1.00	1	05/23/2019 18:52	WG1283232
Potassium,Dissolved	2.79		1.00	1	05/23/2019 18:52	WG1283232
Sodium,Dissolved	657		1.00	1	05/23/2019 18:52	WG1283232

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	6.51		0.0500	5	05/24/2019 13:54	WG1284298

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	05/21/2019 13:11	WG1284168
Ethane	ND		0.0130	1	05/21/2019 13:11	WG1284168
Ethene	ND		0.0130	1	05/21/2019 13:11	WG1284168
Acetylene	ND		0.0208	1	05/21/2019 13:11	WG1284168

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	05/20/2019 22:59	WG1284066
Acrolein	ND		0.0500	1	05/20/2019 22:59	WG1284066
Acrylonitrile	ND		0.0100	1	05/20/2019 22:59	WG1284066
Benzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
Bromobenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
Bromodichloromethane	ND		0.00100	1	05/20/2019 22:59	WG1284066
Bromoform	ND		0.00100	1	05/20/2019 22:59	WG1284066
Bromomethane	ND		0.00500	1	05/20/2019 22:59	WG1284066
n-Butylbenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
sec-Butylbenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
tert-Butylbenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Carbon tetrachloride	ND		0.00100	1	05/20/2019 22:59	WG1284066
Chlorobenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
Chlorodibromomethane	ND		0.00100	1	05/20/2019 22:59	WG1284066
Chloroethane	ND		0.00500	1	05/20/2019 22:59	WG1284066
Chloroform	ND		0.00500	1	05/20/2019 22:59	WG1284066
Chloromethane	ND		0.00250	1	05/20/2019 22:59	WG1284066
2-Chlorotoluene	ND		0.00100	1	05/20/2019 22:59	WG1284066
4-Chlorotoluene	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/20/2019 22:59	WG1284066
1,2-Dibromoethane	ND		0.00100	1	05/20/2019 22:59	WG1284066
Dibromomethane	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,2-Dichlorobenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,3-Dichlorobenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,4-Dichlorobenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
Dichlorodifluoromethane	ND		0.00500	1	05/20/2019 22:59	WG1284066
1,1-Dichloroethane	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,2-Dichloroethane	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,1-Dichloroethene	ND		0.00100	1	05/20/2019 22:59	WG1284066
cis-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 22:59	WG1284066
trans-1,2-Dichloroethene	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,2-Dichloropropane	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,1-Dichloropropene	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,3-Dichloropropane	ND		0.00100	1	05/20/2019 22:59	WG1284066
cis-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 22:59	WG1284066
trans-1,3-Dichloropropene	ND		0.00100	1	05/20/2019 22:59	WG1284066
2,2-Dichloropropane	ND		0.00100	1	05/20/2019 22:59	WG1284066
Di-isopropyl ether	ND		0.00100	1	05/20/2019 22:59	WG1284066
Ethylbenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
Hexachloro-1,3-butadiene	ND	J4	0.00100	1	05/20/2019 22:59	WG1284066
Isopropylbenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
p-Isopropyltoluene	ND		0.00100	1	05/20/2019 22:59	WG1284066
2-Butanone (MEK)	ND		0.0100	1	05/20/2019 22:59	WG1284066
Methylene Chloride	ND		0.00500	1	05/20/2019 22:59	WG1284066
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/20/2019 22:59	WG1284066
Methyl tert-butyl ether	ND		0.00100	1	05/20/2019 22:59	WG1284066
Naphthalene	ND		0.00500	1	05/20/2019 22:59	WG1284066
n-Propylbenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
Styrene	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/20/2019 22:59	WG1284066
Tetrachloroethene	ND		0.00100	1	05/20/2019 22:59	WG1284066
Toluene	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,2,3-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 22:59	WG1284066
1,2,4-Trichlorobenzene	ND	J4	0.00100	1	05/20/2019 22:59	WG1284066
1,1,1-Trichloroethane	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,1,2-Trichloroethane	ND		0.00100	1	05/20/2019 22:59	WG1284066
Trichloroethene	ND		0.00100	1	05/20/2019 22:59	WG1284066
Trichlorofluoromethane	ND		0.00500	1	05/20/2019 22:59	WG1284066
1,2,3-Trichloropropane	ND		0.00250	1	05/20/2019 22:59	WG1284066
1,2,4-Trimethylbenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,2,3-Trimethylbenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
1,3,5-Trimethylbenzene	ND		0.00100	1	05/20/2019 22:59	WG1284066
Vinyl chloride	ND		0.00100	1	05/20/2019 22:59	WG1284066
Xylenes, Total	ND		0.00300	1	05/20/2019 22:59	WG1284066
(S) Toluene-d8	93.9		80.0-120		05/20/2019 22:59	WG1284066

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	101		77.0-126		05/20/2019 22:59	WG1284066
(S) 1,2-Dichloroethane-d4	104		70.0-130		05/20/2019 22:59	WG1284066

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3413927-1 05/22/19 19:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	4.19	↓	2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1099717-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099717-01 05/22/19 19:43 • (DUP) R3413927-3 05/22/19 19:51

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	17.2	15.0	1	13.5	↓	20

Sample Narrative:

OS: Endpoint pH 4.5 headspace
DUP: Endpoint pH 4.5

L1099715-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1099715-02 05/22/19 22:24 • (DUP) R3413927-5 05/22/19 22:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	1410	1410	1	0.362		20

Sample Narrative:

OS: Endpoint pH 4.5
DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3413927-4 05/22/19 20:50

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	104	104	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3412524-1 05/17/19 09:37

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1099863-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099863-01 05/17/19 16:07 • (DUP) R3412524-3 05/17/19 16:21

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	8.12	8.34	1	2.65		15
Nitrate	ND	0.000	1	0.000		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	61.7	62.4	1	1.09		15

⁶ Qc

⁷ Gl

⁸ Al

L1099863-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099863-01 05/17/19 16:36 • (DUP) R3412524-4 05/17/19 16:50

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Chloride	4280	4600	100	7.19		15

⁹ Sc

L1099876-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099876-01 05/17/19 23:00 • (DUP) R3412524-6 05/17/19 23:14

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.000	1	0.000		15
Nitrite	ND	0.000	1	0.000		15



L1099876-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099876-01 05/17/19 23:29 • (DUP) R3412524-9 05/17/19 23:43

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Chloride	128	129	20	0.602		15
Nitrate	11.8	12.0	20	1.53		15
Sulfate	215	217	20	1.13		15

Laboratory Control Sample (LCS)

(LCS) R3412524-2 05/17/19 09:51

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	41.0	102	80.0-120	
Chloride	40.0	40.4	101	80.0-120	
Nitrate	8.00	8.32	104	80.0-120	
Nitrite	8.00	8.07	101	80.0-120	
Sulfate	40.0	40.2	101	80.0-120	

L1099869-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1099869-01 05/17/19 17:33 • (MS) R3412524-5 05/17/19 17:58

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	mg/l	mg/l	mg/l	%		%	
Bromide	50.0	ND	46.0	92.0	1	80.0-120	
Chloride	50.0	32.6	80.3	95.4	1	80.0-120	
Nitrate	5.00	0.971	5.63	93.1	1	80.0-120	
Nitrite	5.00	ND	4.95	99.1	1	80.0-120	
Sulfate	50.0	115	156	81.9	1	80.0-120	E

L1099890-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1099890-03 05/18/19 01:53 • (MS) R3412524-7 05/18/19 02:07 • (MSD) R3412524-8 05/18/19 02:22

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Bromide	50.0	U	50.8	50.8	102	102	1	80.0-120			0.0858	15
Chloride	50.0	0.187	51.1	51.0	102	102	1	80.0-120			0.0762	15
Nitrate	5.00	U	5.13	5.12	103	102	1	80.0-120			0.111	15
Nitrite	5.00	U	5.15	5.14	103	103	1	80.0-120			0.0505	15
Sulfate	50.0	U	50.6	50.7	101	101	1	80.0-120			0.267	15

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Method Blank (MB)

(MB) R3414439-1 05/23/19 17:58

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium,Dissolved	0.479	U	0.0463	1.00
Iron,Dissolved	0.0360	U	0.0141	0.100
Magnesium,Dissolved	U		0.0111	1.00
Potassium,Dissolved	0.234	U	0.102	1.00
Sodium,Dissolved	1.63		0.0985	1.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414439-2 05/23/19 18:00 • (LCSD) R3414439-3 05/23/19 18:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	10.1	10.3	101	103	80.0-120			1.57	20
Iron,Dissolved	10.0	10.0	10.1	100	101	80.0-120			1.08	20
Magnesium,Dissolved	10.0	10.4	10.5	104	105	80.0-120			1.46	20
Potassium,Dissolved	10.0	10.1	10.2	101	102	80.0-120			1.22	20
Sodium,Dissolved	10.0	10.4	10.5	104	105	80.0-120			0.919	20

⁶ Qc

⁷ Gl

⁸ Al

L1099875-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1099875-01 05/23/19 18:06 • (MS) R3414439-5 05/23/19 18:11 • (MSD) R3414439-6 05/23/19 18:14

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	477	481	480	44.1	31.3	1	75.0-125	V	V	0.266	20
Iron,Dissolved	10.0	ND	9.99	10.1	99.9	101	1	75.0-125			1.09	20
Magnesium,Dissolved	10.0	482	486	486	47.3	39.3	1	75.0-125	V	V	0.166	20
Potassium,Dissolved	10.0	15.3	25.3	25.4	100	101	1	75.0-125			0.299	20
Sodium,Dissolved	10.0	734	736	735	19.7	2.67	1	75.0-125	V	V	0.231	20

⁹ Sc



Method Blank (MB)

(MB) R3414764-7 05/24/19 13:18

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Strontium	U		0.000160	0.0100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414764-8 05/24/19 13:23 • (LCSD) R3414764-9 05/24/19 13:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0450	0.0450	89.9	90.0	80.0-120			0.110	20

L1099875-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1099875-01 05/24/19 13:59 • (MS) R3414764-10 05/24/19 16:36 • (MSD) R3414764-11 05/24/19 16:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Strontium	0.0100	6.54	6.68	6.44	276	0.000	5	75.0-125	<u>V</u>	<u>V</u>	3.63	20

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3413251-1 05/21/19 11:45

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130
Acetylene	U		0.00558	0.0208

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1099853-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099853-01 05/21/19 11:48 • (DUP) R3413251-2 05/21/19 12:57

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	0.344	0.345	1	0.115		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

L1099867-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099867-01 05/21/19 11:53 • (DUP) R3413251-3 05/21/19 13:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	0.0539	0.0542	1	0.526		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

L1099918-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099918-01 05/21/19 13:38 • (DUP) R3413251-4 05/21/19 13:46

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	ND	0.000	1	0.000		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3413251-5 05/21/19 13:48 • (LCSD) R3413251-6 05/21/19 13:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Methane	0.0678	0.0741	0.0736	109	109	85.0-115			0.620	20
Ethane	0.129	0.119	0.119	92.0	92.3	85.0-115			0.311	20
Ethene	0.127	0.118	0.118	92.8	93.1	85.0-115			0.314	20
Acetylene	0.208	0.187	0.188	89.9	90.3	85.0-115			0.500	20

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3414407-3 05/20/19 18:12

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	0.000600	U	0.000256	0.00100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3414407-3 05/20/19 18:12

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	0.000408	U	0.000230	0.00100
1,2,4-Trichlorobenzene	0.000357	U	0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	97.7			80.0-120
(S) 4-Bromofluorobenzene	101			77.0-126
(S) 1,2-Dichloroethane-d4	104			70.0-130

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414407-1 05/20/19 17:14 • (LCSD) R3414407-2 05/20/19 17:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.125	0.0883	0.0875	70.7	70.0	19.0-160			0.988	27
Acrolein	0.125	0.191	0.172	153	138	10.0-160			10.4	26
Acrylonitrile	0.125	0.109	0.107	87.3	85.4	55.0-149			2.16	20
Benzene	0.0250	0.0256	0.0248	103	99.1	70.0-123			3.37	20



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414407-1 05/20/19 17:14 • (LCSD) R3414407-2 05/20/19 17:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Bromobenzene	0.0250	0.0254	0.0244	102	97.7	73.0-121			4.02	20
Bromodichloromethane	0.0250	0.0236	0.0234	94.3	93.6	75.0-120			0.743	20
Bromoform	0.0250	0.0196	0.0196	78.4	78.5	68.0-132			0.0575	20
Bromomethane	0.0250	0.0202	0.0196	80.7	78.5	10.0-160			2.86	25
n-Butylbenzene	0.0250	0.0221	0.0219	88.3	87.6	73.0-125			0.805	20
sec-Butylbenzene	0.0250	0.0231	0.0226	92.6	90.2	75.0-125			2.56	20
tert-Butylbenzene	0.0250	0.0243	0.0246	97.1	98.5	76.0-124			1.47	20
Carbon tetrachloride	0.0250	0.0252	0.0245	101	98.0	68.0-126			2.90	20
Chlorobenzene	0.0250	0.0224	0.0231	89.6	92.2	80.0-121			2.88	20
Chlorodibromomethane	0.0250	0.0216	0.0228	86.4	91.3	77.0-125			5.48	20
Chloroethane	0.0250	0.0224	0.0214	89.5	85.7	47.0-150			4.26	20
Chloroform	0.0250	0.0243	0.0233	97.4	93.2	73.0-120			4.40	20
Chloromethane	0.0250	0.0158	0.0155	63.2	61.8	41.0-142			2.28	20
2-Chlorotoluene	0.0250	0.0233	0.0231	93.3	92.4	76.0-123			0.901	20
4-Chlorotoluene	0.0250	0.0230	0.0224	91.9	89.5	75.0-122			2.63	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0184	0.0190	73.5	76.0	58.0-134			3.26	20
1,2-Dibromoethane	0.0250	0.0241	0.0244	96.4	97.6	80.0-122			1.20	20
Dibromomethane	0.0250	0.0251	0.0248	101	99.3	80.0-120			1.32	20
1,2-Dichlorobenzene	0.0250	0.0239	0.0234	95.5	93.5	79.0-121			2.12	20
1,3-Dichlorobenzene	0.0250	0.0244	0.0239	97.5	95.8	79.0-120			1.83	20
1,4-Dichlorobenzene	0.0250	0.0234	0.0228	93.5	91.2	79.0-120			2.43	20
Dichlorodifluoromethane	0.0250	0.0288	0.0278	115	111	51.0-149			3.23	20
1,1-Dichloroethane	0.0250	0.0235	0.0221	94.1	88.2	70.0-126			6.46	20
1,2-Dichloroethane	0.0250	0.0252	0.0249	101	99.6	70.0-128			1.15	20
1,1-Dichloroethene	0.0250	0.0256	0.0234	102	93.8	71.0-124			8.79	20
cis-1,2-Dichloroethene	0.0250	0.0250	0.0240	100	95.8	73.0-120			4.23	20
trans-1,2-Dichloroethene	0.0250	0.0253	0.0244	101	97.4	73.0-120			3.79	20
1,2-Dichloropropane	0.0250	0.0236	0.0230	94.5	91.9	77.0-125			2.73	20
1,1-Dichloropropene	0.0250	0.0240	0.0238	95.9	95.4	74.0-126			0.557	20
1,3-Dichloropropane	0.0250	0.0214	0.0214	85.4	85.8	80.0-120			0.404	20
cis-1,3-Dichloropropene	0.0250	0.0248	0.0239	99.4	95.5	80.0-123			4.00	20
trans-1,3-Dichloropropene	0.0250	0.0238	0.0232	95.1	92.9	78.0-124			2.39	20
2,2-Dichloropropane	0.0250	0.0231	0.0224	92.3	89.4	58.0-130			3.14	20
Di-isopropyl ether	0.0250	0.0206	0.0203	82.5	81.4	58.0-138			1.31	20
Ethylbenzene	0.0250	0.0227	0.0228	90.6	91.1	79.0-123			0.550	20
Hexachloro-1,3-butadiene	0.0250	0.0104	0.0112	41.5	44.9	54.0-138	J4	J4	7.93	20
Isopropylbenzene	0.0250	0.0227	0.0227	90.7	90.7	76.0-127			0.0868	20
p-Isopropyltoluene	0.0250	0.0237	0.0236	94.8	94.5	76.0-125			0.333	20
2-Butanone (MEK)	0.125	0.101	0.0993	81.0	79.4	44.0-160			1.93	20
Methylene Chloride	0.0250	0.0228	0.0220	91.1	88.0	67.0-120			3.51	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414407-1 05/20/19 17:14 • (LCSD) R3414407-2 05/20/19 17:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	0.125	0.0988	0.101	79.0	81.1	68.0-142			2.57	20
Methyl tert-butyl ether	0.0250	0.0262	0.0258	105	103	68.0-125			1.68	20
Naphthalene	0.0250	0.0140	0.0152	55.9	61.0	54.0-135			8.62	20
n-Propylbenzene	0.0250	0.0226	0.0223	90.3	89.4	77.0-124			1.06	20
Styrene	0.0250	0.0207	0.0221	83.0	88.3	73.0-130			6.20	20
1,1,1,2-Tetrachloroethane	0.0250	0.0226	0.0243	90.5	97.3	75.0-125			7.19	20
1,1,2,2-Tetrachloroethane	0.0250	0.0258	0.0253	103	101	65.0-130			1.97	20
Tetrachloroethene	0.0250	0.0221	0.0229	88.6	91.6	72.0-132			3.31	20
Toluene	0.0250	0.0205	0.0212	82.0	84.8	79.0-120			3.33	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0260	0.0237	104	94.7	69.0-132			9.40	20
1,2,3-Trichlorobenzene	0.0250	0.0107	0.0113	42.8	45.1	50.0-138	J4	J4	5.08	20
1,2,4-Trichlorobenzene	0.0250	0.0136	0.0136	54.3	54.5	57.0-137	J4	J4	0.460	20
1,1,1-Trichloroethane	0.0250	0.0232	0.0212	92.7	84.9	73.0-124			8.81	20
1,1,2-Trichloroethane	0.0250	0.0228	0.0229	91.3	91.7	80.0-120			0.437	20
Trichloroethene	0.0250	0.0255	0.0240	102	96.0	78.0-124			5.94	20
Trichlorofluoromethane	0.0250	0.0222	0.0210	88.7	84.0	59.0-147			5.46	20
1,2,3-Trichloropropane	0.0250	0.0262	0.0259	105	104	73.0-130			1.16	20
1,2,3-Trimethylbenzene	0.0250	0.0224	0.0221	89.8	88.4	77.0-120			1.55	20
1,2,4-Trimethylbenzene	0.0250	0.0237	0.0237	94.8	94.7	76.0-121			0.199	20
1,3,5-Trimethylbenzene	0.0250	0.0248	0.0246	99.3	98.4	76.0-122			0.931	20
Vinyl chloride	0.0250	0.0226	0.0213	90.2	85.4	67.0-131			5.50	20
Xylenes, Total	0.0750	0.0649	0.0660	86.5	88.0	79.0-123			1.68	20
(S) Toluene-d8				91.1	95.9	80.0-120				
(S) 4-Bromofluorobenzene				96.9	102	77.0-126				
(S) 1,2-Dichloroethane-d4				105	113	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1099854-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1099854-21 05/20/19 19:03 • (MS) R3414407-4 05/21/19 01:16 • (MSD) R3414407-5 05/21/19 01:36

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	0.125	U	0.0776	0.0840	62.1	67.2	1	10.0-160			7.94	35
Acrolein	0.125	U	0.187	0.189	149	152	1	10.0-160			1.54	39
Acrylonitrile	0.125	U	0.103	0.111	82.6	88.7	1	21.0-160			7.06	32
Benzene	0.0250	U	0.0264	0.0284	105	114	1	17.0-158			7.38	27
Bromobenzene	0.0250	U	0.0257	0.0288	103	115	1	30.0-149			11.5	28
Bromodichloromethane	0.0250	U	0.0236	0.0257	94.3	103	1	31.0-150			8.71	27
Bromoform	0.0250	U	0.0183	0.0188	73.3	75.3	1	29.0-150			2.69	29
Bromomethane	0.0250	U	0.0205	0.0233	82.1	93.4	1	10.0-160			12.8	38



L1099854-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1099854-21 05/20/19 19:03 • (MS) R3414407-4 05/21/19 01:16 • (MSD) R3414407-5 05/21/19 01:36

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
n-Butylbenzene	0.0250	U	0.0237	0.0264	94.8	106	1	31.0-150			10.8	30
sec-Butylbenzene	0.0250	U	0.0246	0.0278	98.5	111	1	33.0-155			12.1	29
tert-Butylbenzene	0.0250	U	0.0265	0.0298	106	119	1	34.0-153			11.8	28
Carbon tetrachloride	0.0250	U	0.0279	0.0306	112	122	1	23.0-159			9.15	28
Chlorobenzene	0.0250	U	0.0233	0.0255	93.2	102	1	33.0-152			9.04	27
Chlorodibromomethane	0.0250	U	0.0205	0.0230	82.2	91.8	1	37.0-149			11.1	27
Chloroethane	0.0250	U	0.0251	0.0269	101	108	1	10.0-160			6.73	30
Chloroform	0.0250	U	0.0256	0.0274	102	109	1	29.0-154			6.65	28
Chloromethane	0.0250	U	0.0161	0.0190	64.3	75.9	1	10.0-160			16.5	29
2-Chlorotoluene	0.0250	U	0.0244	0.0272	97.4	109	1	32.0-153			11.1	28
4-Chlorotoluene	0.0250	U	0.0242	0.0261	96.7	104	1	32.0-150			7.58	28
1,2-Dibromo-3-Chloropropane	0.0250	U	0.0189	0.0214	75.7	85.4	1	22.0-151			12.1	34
1,2-Dibromoethane	0.0250	U	0.0227	0.0256	90.8	102	1	34.0-147			12.1	27
Dibromomethane	0.0250	U	0.0254	0.0245	102	98.2	1	30.0-151			3.45	27
1,2-Dichlorobenzene	0.0250	U	0.0243	0.0271	97.3	108	1	34.0-149			10.7	28
1,3-Dichlorobenzene	0.0250	U	0.0250	0.0280	100	112	1	36.0-146			11.1	27
1,4-Dichlorobenzene	0.0250	U	0.0240	0.0265	96.0	106	1	35.0-142			9.89	27
Dichlorodifluoromethane	0.0250	U	0.0310	0.0329	124	132	1	10.0-160			5.83	29
1,1-Dichloroethane	0.0250	U	0.0246	0.0264	98.4	105	1	25.0-158			6.94	27
1,2-Dichloroethane	0.0250	U	0.0247	0.0277	98.8	111	1	29.0-151			11.4	27
1,1-Dichloroethene	0.0250	U	0.0282	0.0294	113	118	1	11.0-160			4.00	29
cis-1,2-Dichloroethene	0.0250	U	0.0266	0.0289	106	116	1	10.0-160			8.40	27
trans-1,2-Dichloroethene	0.0250	U	0.0274	0.0286	110	114	1	17.0-153			4.15	27
1,2-Dichloropropane	0.0250	U	0.0229	0.0257	91.7	103	1	30.0-156			11.4	27
1,1-Dichloropropene	0.0250	U	0.0254	0.0281	101	112	1	25.0-158			10.2	27
1,3-Dichloropropane	0.0250	U	0.0208	0.0225	83.1	90.1	1	38.0-147			8.14	27
cis-1,3-Dichloropropene	0.0250	U	0.0244	0.0271	97.5	108	1	34.0-149			10.6	28
trans-1,3-Dichloropropene	0.0250	U	0.0223	0.0248	89.3	99.3	1	32.0-149			10.6	28
2,2-Dichloropropane	0.0250	0.000463	0.0251	0.0272	98.5	107	1	24.0-152			8.16	29
Di-isopropyl ether	0.0250	U	0.0203	0.0224	81.3	89.5	1	21.0-160			9.60	28
Ethylbenzene	0.0250	U	0.0243	0.0264	97.0	105	1	30.0-155			8.31	27
Hexachloro-1,3-butadiene	0.0250	U	0.0116	0.0137	46.4	54.6	1	20.0-154			16.3	34
Isopropylbenzene	0.0250	U	0.0238	0.0268	95.3	107	1	28.0-157			11.5	27
p-Isopropyltoluene	0.0250	U	0.0249	0.0284	99.8	114	1	30.0-154			12.9	29
2-Butanone (MEK)	0.125	U	0.0927	0.103	74.1	82.1	1	10.0-160			10.2	32
Methylene Chloride	0.0250	U	0.0225	0.0236	89.9	94.4	1	23.0-144			4.79	28
4-Methyl-2-pentanone (MIBK)	0.125	U	0.0954	0.104	76.3	83.1	1	29.0-160			8.49	29
Methyl tert-butyl ether	0.0250	U	0.0259	0.0280	104	112	1	28.0-150			7.80	29
Naphthalene	0.0250	U	0.0148	0.0180	59.4	71.9	1	12.0-156			19.0	35
n-Propylbenzene	0.0250	U	0.0247	0.0269	98.6	107	1	31.0-154			8.53	28

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



L1099854-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1099854-21 05/20/19 19:03 • (MS) R3414407-4 05/21/19 01:16 • (MSD) R3414407-5 05/21/19 01:36

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Styrene	0.0250	U	0.0212	0.0238	84.6	95.1	1	33.0-155			11.7	28
1,1,1,2-Tetrachloroethane	0.0250	U	0.0230	0.0257	92.1	103	1	36.0-151			11.1	29
1,1,2,2-Tetrachloroethane	0.0250	U	0.0256	0.0294	102	118	1	33.0-150			14.0	28
Tetrachloroethene	0.0250	U	0.0245	0.0267	97.9	107	1	10.0-160			8.71	27
Toluene	0.0250	U	0.0216	0.0237	86.5	95.0	1	26.0-154			9.34	28
1,1,2-Trichlorotrifluoroethane	0.0250	0.000458	0.0286	0.0309	113	122	1	23.0-160			7.90	30
1,2,3-Trichlorobenzene	0.0250	U	0.0115	0.0138	46.1	55.3	1	17.0-150			18.2	36
1,2,4-Trichlorobenzene	0.0250	U	0.0140	0.0163	56.0	65.2	1	24.0-150			15.2	33
1,1,1-Trichloroethane	0.0250	U	0.0246	0.0262	98.2	105	1	23.0-160			6.43	28
1,1,2-Trichloroethane	0.0250	U	0.0218	0.0260	87.1	104	1	35.0-147			17.7	27
Trichloroethene	0.0250	0.106	0.133	0.134	110	114	1	10.0-160			0.783	25
Trichlorofluoromethane	0.0250	U	0.0255	0.0284	102	114	1	17.0-160			10.6	31
1,2,3-Trichloropropane	0.0250	U	0.0267	0.0272	107	109	1	34.0-151			1.98	29
1,2,3-Trimethylbenzene	0.0250	U	0.0230	0.0260	91.9	104	1	32.0-149			12.5	28
1,2,4-Trimethylbenzene	0.0250	U	0.0244	0.0271	97.6	108	1	26.0-154			10.4	27
1,3,5-Trimethylbenzene	0.0250	U	0.0260	0.0282	104	113	1	28.0-153			8.02	27
Vinyl chloride	0.0250	U	0.0249	0.0276	99.4	110	1	10.0-160			10.4	27
Xylenes, Total	0.0750	U	0.0673	0.0733	89.7	97.7	1	29.0-154			8.53	28
(S) Toluene-d8					88.4	91.4		80.0-120				
(S) 4-Bromofluorobenzene					103	97.8		77.0-126				
(S) 1,2-Dichloroethane-d4					102	110		70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

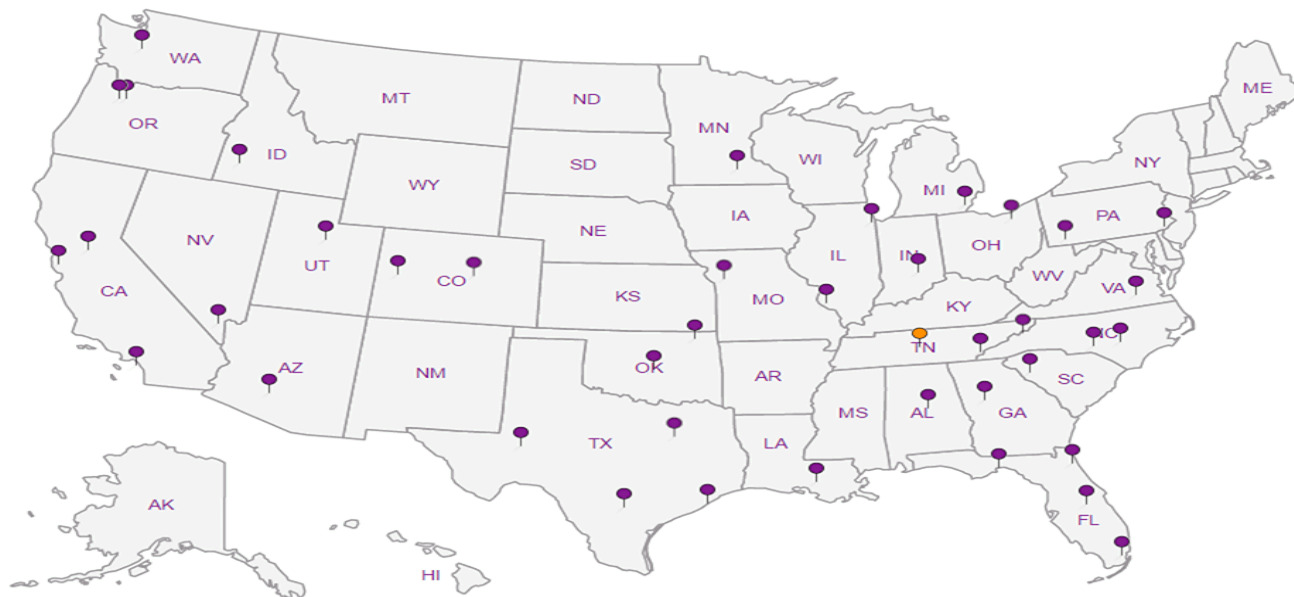
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Terracon Consultants, Inc - Longmont, CO
 1831 Lefthand Circe, Suite C

Billing Information:
Mike Skridulis
 1831 Lefthand Circe, Suite C
 Longmont, CO 80501

Report to:
Michael Skridulis

Email To: mjskridulis@terracon.com

City/State Collected: **Longmont, CO**

Chain of Custody Page 1 of 1



12065 Lebanon Rd
 Mount Juliet, TN 37122
 Phone: 615-758-5858
 Phone: 800-767-5859
 Fax: 615-758-5859



Project Description: **COL Annual GW**

Client Project #: **22197006**

Lab Project #: **TERRALCO-22197006**

Site/Facility ID #: **TB1**

Collected by (print): **Charles A. Covington**

Collected by (signature): *[Signature]*

Rush? (Lab MUST Be Notified)
 ___ Same Day ___ Five Day
 ___ Next Day ___ 5 Day (Rad Only)
 ___ Two Day ___ 10 Day (Rad Only)
 ___ Three Day

Quote #: **STANDARD**

Date Results Needed

Packed on Ice N ___ Y

L# **L1099875**

C033

Acctnum: **TERRALCO**

Template: **T149942**

Prelogin: **P708319**

TSR: **288 - Daphne Richards**

PB:

Shipped Via: **FedEX Ground**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALK, Br, Cr, NO2, NO3, SO	Metals, Dissolved	RSK175 40ml/Amb HCl	SRG 250mlHDPE-HNO3	V8260 40ml/Amb-HCl (3)
TB1 - MW01	Grab	GW	18.02	5/16/19	1100	8	X	X	X	X	X
TB1 - MW02	Grab	GW	17.93	5/16/19	1040	8	X	X	X	X	X
		GW				8	X	X	X	X	X
		GW				8	X	X	X	X	X

Invoice: Customer: ESCDEN Date: 18Feb19
 Weight: 10 LBS
 Phone: (615)758-5858 COD:
 Sat Del: N DV:
 Shipping: 0.00
 Special: 0.00
 Handling: 0.00
 Total: 0.00

Svc: STANDARD OVERNIGHT
 TRACK: 4794 8830 2119

* Matrix: SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:

Samples returned via: ___ UPS ___ FedEx ___ Courier

Tracking # **FedEx 4794 8830 2119**

Relinquished by: (Signature) *[Signature]* Date: **5/16/19** Time: **1600**

Received by: (Signature) *[Signature]* Trip Blank Received: Yes/No HCL/MeOH TBR

Temp: **15.8°C** Bottles Received: **16**

4.6±0=9.6

Relinquished by: (Signature) Date: Time: Received for lab by: (Signature) Date: **5/17/19** Time: **6:45**

Hold: Condition: **NCF / OK**

Sample Receipt Checklist
 COC Seal Present/Intact: NP Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 If Applicable
 VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N

RAD SCREEN: <0.5 mR/hr

If preservation required by Login: Date/Time

Analysis

Groundwater Sample Constituents

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations – Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

Terracon Consultants, Inc - Longmont, CO

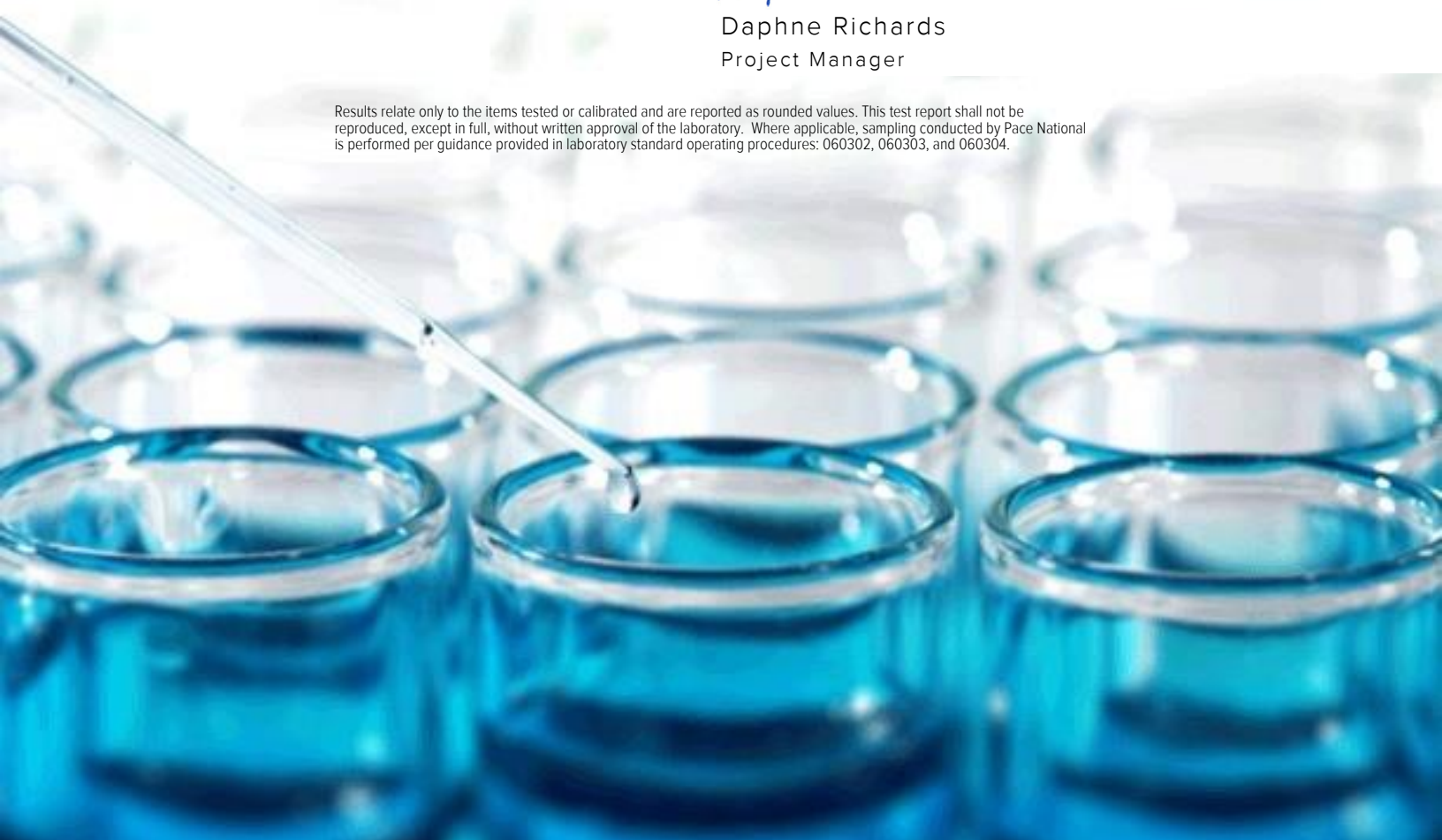
Sample Delivery Group: L1100548
Samples Received: 05/18/2019
Project Number: 22197006
Description: City of Longmont Groundwater Quality Monitoring
Site: TB7
Report To: Michael Skridulis
1831 Lefthand Cirlice, Suite C
Longmont, CO 80501

Entire Report Reviewed By:












Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





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SAMPLE SUMMARY



TB7-MW01 L1100548-01 GW

Collected by Charles A. Covington
 Collected date/time 05/17/19 14:00
 Received date/time 05/18/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1285210	1	05/24/19 02:34	05/24/19 02:34	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1283551	1	05/19/19 13:46	05/19/19 13:46	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1283551	5	05/19/19 16:47	05/19/19 16:47	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284408	1	05/22/19 11:14	05/23/19 13:22	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1284398	1	05/22/19 11:20	05/28/19 20:06	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1284584	1	05/22/19 14:48	05/22/19 14:48	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1286225	1	05/24/19 14:57	05/24/19 14:57	BMB	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

TB7-MW02 L1100548-02 GW

Collected by Charles A. Covington
 Collected date/time 05/17/19 13:20
 Received date/time 05/18/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1285210	1	05/24/19 02:41	05/24/19 02:41	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1283551	1	05/19/19 13:10	05/19/19 13:10	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1283551	5	05/19/19 16:11	05/19/19 16:11	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284408	1	05/22/19 11:14	05/23/19 13:25	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1284398	1	05/22/19 11:20	05/28/19 20:11	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1284584	1	05/22/19 14:50	05/22/19 14:50	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1286225	1	05/24/19 15:17	05/24/19 15:17	BMB	Mt. Juliet, TN

6 Qc

7 Gl

8 Al

9 Sc

TB7-MW03 L1100548-03 GW

Collected by Charles A. Covington
 Collected date/time 05/17/19 13:40
 Received date/time 05/18/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1285210	1	05/24/19 02:48	05/24/19 02:48	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1283551	1	05/19/19 13:28	05/19/19 13:28	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1283551	5	05/19/19 16:29	05/19/19 16:29	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1284408	1	05/22/19 11:14	05/23/19 13:28	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1284398	1	05/22/19 11:20	05/28/19 20:15	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1284584	1	05/22/19 14:54	05/22/19 14:54	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1286225	1	05/24/19 15:37	05/24/19 15:37	BMB	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	313		20.0	1	05/24/2019 02:34	WG1285210

Sample Narrative:

L1100548-01 WG1285210: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	05/19/2019 13:46	WG1283551
Chloride	41.5		1.00	1	05/19/2019 13:46	WG1283551
Nitrate as (N)	6.47		0.100	1	05/19/2019 13:46	WG1283551
Nitrite as (N)	ND		0.100	1	05/19/2019 13:46	WG1283551
Sulfate	448		25.0	5	05/19/2019 16:47	WG1283551

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	127		1.00	1	05/23/2019 13:22	WG1284408
Iron,Dissolved	ND		0.100	1	05/23/2019 13:22	WG1284408
Magnesium,Dissolved	91.5		1.00	1	05/23/2019 13:22	WG1284408
Potassium,Dissolved	2.98		1.00	1	05/23/2019 13:22	WG1284408
Sodium,Dissolved	96.3		1.00	1	05/23/2019 13:22	WG1284408

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	2.78		0.0100	1	05/28/2019 20:06	WG1284398

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	05/22/2019 14:48	WG1284584
Ethane	ND		0.0130	1	05/22/2019 14:48	WG1284584
Ethene	ND		0.0130	1	05/22/2019 14:48	WG1284584
Acetylene	ND		0.0208	1	05/22/2019 14:48	WG1284584

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	05/24/2019 14:57	WG1286225
Acrolein	ND	J4	0.0500	1	05/24/2019 14:57	WG1286225
Acrylonitrile	ND		0.0100	1	05/24/2019 14:57	WG1286225
Benzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
Bromobenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
Bromodichloromethane	ND		0.00100	1	05/24/2019 14:57	WG1286225
Bromoform	ND		0.00100	1	05/24/2019 14:57	WG1286225
Bromomethane	ND		0.00500	1	05/24/2019 14:57	WG1286225
n-Butylbenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
sec-Butylbenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
tert-Butylbenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
Carbon tetrachloride	ND		0.00100	1	05/24/2019 14:57	WG1286225
Chlorobenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
Chlorodibromomethane	ND		0.00100	1	05/24/2019 14:57	WG1286225

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 05/17/19 14:00

L1100548

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloroethane	ND		0.00500	1	05/24/2019 14:57	WG1286225
Chloroform	ND		0.00500	1	05/24/2019 14:57	WG1286225
Chloromethane	ND		0.00250	1	05/24/2019 14:57	WG1286225
2-Chlorotoluene	ND		0.00100	1	05/24/2019 14:57	WG1286225
4-Chlorotoluene	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/24/2019 14:57	WG1286225
1,2-Dibromoethane	ND		0.00100	1	05/24/2019 14:57	WG1286225
Dibromomethane	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,2-Dichlorobenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,3-Dichlorobenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,4-Dichlorobenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
Dichlorodifluoromethane	ND		0.00500	1	05/24/2019 14:57	WG1286225
1,1-Dichloroethane	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,2-Dichloroethane	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,1-Dichloroethene	ND		0.00100	1	05/24/2019 14:57	WG1286225
cis-1,2-Dichloroethene	ND		0.00100	1	05/24/2019 14:57	WG1286225
trans-1,2-Dichloroethene	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,2-Dichloropropane	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,1-Dichloropropene	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,3-Dichloropropane	ND		0.00100	1	05/24/2019 14:57	WG1286225
cis-1,3-Dichloropropene	ND		0.00100	1	05/24/2019 14:57	WG1286225
trans-1,3-Dichloropropene	ND		0.00100	1	05/24/2019 14:57	WG1286225
2,2-Dichloropropane	ND		0.00100	1	05/24/2019 14:57	WG1286225
Di-isopropyl ether	ND		0.00100	1	05/24/2019 14:57	WG1286225
Ethylbenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
Hexachloro-1,3-butadiene	ND		0.00100	1	05/24/2019 14:57	WG1286225
Isopropylbenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
p-Isopropyltoluene	ND		0.00100	1	05/24/2019 14:57	WG1286225
2-Butanone (MEK)	ND		0.0100	1	05/24/2019 14:57	WG1286225
Methylene Chloride	ND		0.00500	1	05/24/2019 14:57	WG1286225
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/24/2019 14:57	WG1286225
Methyl tert-butyl ether	ND		0.00100	1	05/24/2019 14:57	WG1286225
Naphthalene	ND		0.00500	1	05/24/2019 14:57	WG1286225
n-Propylbenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
Styrene	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/24/2019 14:57	WG1286225
Tetrachloroethene	ND		0.00100	1	05/24/2019 14:57	WG1286225
Toluene	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,2,3-Trichlorobenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,2,4-Trichlorobenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,1,1-Trichloroethane	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,1,2-Trichloroethane	ND		0.00100	1	05/24/2019 14:57	WG1286225
Trichloroethene	ND		0.00100	1	05/24/2019 14:57	WG1286225
Trichlorofluoromethane	ND		0.00500	1	05/24/2019 14:57	WG1286225
1,2,3-Trichloropropane	ND		0.00250	1	05/24/2019 14:57	WG1286225
1,2,4-Trimethylbenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,2,3-Trimethylbenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
1,3,5-Trimethylbenzene	ND		0.00100	1	05/24/2019 14:57	WG1286225
Vinyl chloride	ND		0.00100	1	05/24/2019 14:57	WG1286225
Xylenes, Total	ND		0.00300	1	05/24/2019 14:57	WG1286225
(S) Toluene-d8	98.2		80.0-120		05/24/2019 14:57	WG1286225
(S) 4-Bromofluorobenzene	100		77.0-126		05/24/2019 14:57	WG1286225
(S) 1,2-Dichloroethane-d4	94.6		70.0-130		05/24/2019 14:57	WG1286225

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	348		20.0	1	05/24/2019 02:41	WG1285210

Sample Narrative:

L1100548-02 WG1285210: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	05/19/2019 13:10	WG1283551
Chloride	44.9		1.00	1	05/19/2019 13:10	WG1283551
Nitrate as (N)	5.61		0.100	1	05/19/2019 13:10	WG1283551
Nitrite as (N)	ND		0.100	1	05/19/2019 13:10	WG1283551
Sulfate	460		25.0	5	05/19/2019 16:11	WG1283551

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	132		1.00	1	05/23/2019 13:25	WG1284408
Iron,Dissolved	ND		0.100	1	05/23/2019 13:25	WG1284408
Magnesium,Dissolved	97.6		1.00	1	05/23/2019 13:25	WG1284408
Potassium,Dissolved	2.50		1.00	1	05/23/2019 13:25	WG1284408
Sodium,Dissolved	96.1		1.00	1	05/23/2019 13:25	WG1284408

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	3.39		0.0100	1	05/28/2019 20:11	WG1284398

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	05/22/2019 14:50	WG1284584
Ethane	ND		0.0130	1	05/22/2019 14:50	WG1284584
Ethene	ND		0.0130	1	05/22/2019 14:50	WG1284584
Acetylene	ND		0.0208	1	05/22/2019 14:50	WG1284584

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	05/24/2019 15:17	WG1286225
Acrolein	ND	J4	0.0500	1	05/24/2019 15:17	WG1286225
Acrylonitrile	ND		0.0100	1	05/24/2019 15:17	WG1286225
Benzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
Bromobenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
Bromodichloromethane	ND		0.00100	1	05/24/2019 15:17	WG1286225
Bromoform	ND		0.00100	1	05/24/2019 15:17	WG1286225
Bromomethane	ND		0.00500	1	05/24/2019 15:17	WG1286225
n-Butylbenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
sec-Butylbenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
tert-Butylbenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
Carbon tetrachloride	ND		0.00100	1	05/24/2019 15:17	WG1286225
Chlorobenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
Chlorodibromomethane	ND		0.00100	1	05/24/2019 15:17	WG1286225

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 05/17/19 13:20

L1100548

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloroethane	ND		0.00500	1	05/24/2019 15:17	WG1286225
Chloroform	ND		0.00500	1	05/24/2019 15:17	WG1286225
Chloromethane	ND		0.00250	1	05/24/2019 15:17	WG1286225
2-Chlorotoluene	ND		0.00100	1	05/24/2019 15:17	WG1286225
4-Chlorotoluene	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/24/2019 15:17	WG1286225
1,2-Dibromoethane	ND		0.00100	1	05/24/2019 15:17	WG1286225
Dibromomethane	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,2-Dichlorobenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,3-Dichlorobenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,4-Dichlorobenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
Dichlorodifluoromethane	ND		0.00500	1	05/24/2019 15:17	WG1286225
1,1-Dichloroethane	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,2-Dichloroethane	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,1-Dichloroethene	ND		0.00100	1	05/24/2019 15:17	WG1286225
cis-1,2-Dichloroethene	ND		0.00100	1	05/24/2019 15:17	WG1286225
trans-1,2-Dichloroethene	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,2-Dichloropropane	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,1-Dichloropropene	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,3-Dichloropropane	ND		0.00100	1	05/24/2019 15:17	WG1286225
cis-1,3-Dichloropropene	ND		0.00100	1	05/24/2019 15:17	WG1286225
trans-1,3-Dichloropropene	ND		0.00100	1	05/24/2019 15:17	WG1286225
2,2-Dichloropropane	ND		0.00100	1	05/24/2019 15:17	WG1286225
Di-isopropyl ether	ND		0.00100	1	05/24/2019 15:17	WG1286225
Ethylbenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
Hexachloro-1,3-butadiene	ND		0.00100	1	05/24/2019 15:17	WG1286225
Isopropylbenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
p-Isopropyltoluene	ND		0.00100	1	05/24/2019 15:17	WG1286225
2-Butanone (MEK)	ND		0.0100	1	05/24/2019 15:17	WG1286225
Methylene Chloride	ND		0.00500	1	05/24/2019 15:17	WG1286225
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/24/2019 15:17	WG1286225
Methyl tert-butyl ether	ND		0.00100	1	05/24/2019 15:17	WG1286225
Naphthalene	ND		0.00500	1	05/24/2019 15:17	WG1286225
n-Propylbenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
Styrene	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/24/2019 15:17	WG1286225
Tetrachloroethene	ND		0.00100	1	05/24/2019 15:17	WG1286225
Toluene	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,2,3-Trichlorobenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,2,4-Trichlorobenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,1,1-Trichloroethane	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,1,2-Trichloroethane	ND		0.00100	1	05/24/2019 15:17	WG1286225
Trichloroethene	ND		0.00100	1	05/24/2019 15:17	WG1286225
Trichlorofluoromethane	ND		0.00500	1	05/24/2019 15:17	WG1286225
1,2,3-Trichloropropane	ND		0.00250	1	05/24/2019 15:17	WG1286225
1,2,4-Trimethylbenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,2,3-Trimethylbenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
1,3,5-Trimethylbenzene	ND		0.00100	1	05/24/2019 15:17	WG1286225
Vinyl chloride	ND		0.00100	1	05/24/2019 15:17	WG1286225
Xylenes, Total	ND		0.00300	1	05/24/2019 15:17	WG1286225
(S) Toluene-d8	100		80.0-120		05/24/2019 15:17	WG1286225
(S) 4-Bromofluorobenzene	101		77.0-126		05/24/2019 15:17	WG1286225
(S) 1,2-Dichloroethane-d4	97.2		70.0-130		05/24/2019 15:17	WG1286225

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	348		20.0	1	05/24/2019 02:48	WG1285210

Sample Narrative:

L1100548-03 WG1285210: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	05/19/2019 13:28	WG1283551
Chloride	46.1		1.00	1	05/19/2019 13:28	WG1283551
Nitrate as (N)	5.50		0.100	1	05/19/2019 13:28	WG1283551
Nitrite as (N)	ND		0.100	1	05/19/2019 13:28	WG1283551
Sulfate	466		25.0	5	05/19/2019 16:29	WG1283551

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	134		1.00	1	05/23/2019 13:28	WG1284408
Iron,Dissolved	ND		0.100	1	05/23/2019 13:28	WG1284408
Magnesium,Dissolved	99.3		1.00	1	05/23/2019 13:28	WG1284408
Potassium,Dissolved	2.30		1.00	1	05/23/2019 13:28	WG1284408
Sodium,Dissolved	96.3		1.00	1	05/23/2019 13:28	WG1284408

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	2.50		0.0100	1	05/28/2019 20:15	WG1284398

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	05/22/2019 14:54	WG1284584
Ethane	ND		0.0130	1	05/22/2019 14:54	WG1284584
Ethene	ND		0.0130	1	05/22/2019 14:54	WG1284584
Acetylene	ND		0.0208	1	05/22/2019 14:54	WG1284584

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	05/24/2019 15:37	WG1286225
Acrolein	ND	J4	0.0500	1	05/24/2019 15:37	WG1286225
Acrylonitrile	ND		0.0100	1	05/24/2019 15:37	WG1286225
Benzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
Bromobenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
Bromodichloromethane	ND		0.00100	1	05/24/2019 15:37	WG1286225
Bromoform	ND		0.00100	1	05/24/2019 15:37	WG1286225
Bromomethane	ND		0.00500	1	05/24/2019 15:37	WG1286225
n-Butylbenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
sec-Butylbenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
tert-Butylbenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
Carbon tetrachloride	ND		0.00100	1	05/24/2019 15:37	WG1286225
Chlorobenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
Chlorodibromomethane	ND		0.00100	1	05/24/2019 15:37	WG1286225

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 05/17/19 13:40

L1100548

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloroethane	ND		0.00500	1	05/24/2019 15:37	WG1286225
Chloroform	ND		0.00500	1	05/24/2019 15:37	WG1286225
Chloromethane	ND		0.00250	1	05/24/2019 15:37	WG1286225
2-Chlorotoluene	ND		0.00100	1	05/24/2019 15:37	WG1286225
4-Chlorotoluene	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/24/2019 15:37	WG1286225
1,2-Dibromoethane	ND		0.00100	1	05/24/2019 15:37	WG1286225
Dibromomethane	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,2-Dichlorobenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,3-Dichlorobenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,4-Dichlorobenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
Dichlorodifluoromethane	ND		0.00500	1	05/24/2019 15:37	WG1286225
1,1-Dichloroethane	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,2-Dichloroethane	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,1-Dichloroethene	ND		0.00100	1	05/24/2019 15:37	WG1286225
cis-1,2-Dichloroethene	ND		0.00100	1	05/24/2019 15:37	WG1286225
trans-1,2-Dichloroethene	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,2-Dichloropropane	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,1-Dichloropropene	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,3-Dichloropropane	ND		0.00100	1	05/24/2019 15:37	WG1286225
cis-1,3-Dichloropropene	ND		0.00100	1	05/24/2019 15:37	WG1286225
trans-1,3-Dichloropropene	ND		0.00100	1	05/24/2019 15:37	WG1286225
2,2-Dichloropropane	ND		0.00100	1	05/24/2019 15:37	WG1286225
Di-isopropyl ether	ND		0.00100	1	05/24/2019 15:37	WG1286225
Ethylbenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
Hexachloro-1,3-butadiene	ND		0.00100	1	05/24/2019 15:37	WG1286225
Isopropylbenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
p-Isopropyltoluene	ND		0.00100	1	05/24/2019 15:37	WG1286225
2-Butanone (MEK)	ND		0.0100	1	05/24/2019 15:37	WG1286225
Methylene Chloride	ND		0.00500	1	05/24/2019 15:37	WG1286225
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/24/2019 15:37	WG1286225
Methyl tert-butyl ether	ND		0.00100	1	05/24/2019 15:37	WG1286225
Naphthalene	ND		0.00500	1	05/24/2019 15:37	WG1286225
n-Propylbenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
Styrene	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/24/2019 15:37	WG1286225
Tetrachloroethene	ND		0.00100	1	05/24/2019 15:37	WG1286225
Toluene	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,2,3-Trichlorobenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,2,4-Trichlorobenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,1,1-Trichloroethane	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,1,2-Trichloroethane	ND		0.00100	1	05/24/2019 15:37	WG1286225
Trichloroethene	ND		0.00100	1	05/24/2019 15:37	WG1286225
Trichlorofluoromethane	ND		0.00500	1	05/24/2019 15:37	WG1286225
1,2,3-Trichloropropane	ND		0.00250	1	05/24/2019 15:37	WG1286225
1,2,4-Trimethylbenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,2,3-Trimethylbenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
1,3,5-Trimethylbenzene	ND		0.00100	1	05/24/2019 15:37	WG1286225
Vinyl chloride	ND		0.00100	1	05/24/2019 15:37	WG1286225
Xylenes, Total	ND		0.00300	1	05/24/2019 15:37	WG1286225
(S) Toluene-d8	98.5		80.0-120		05/24/2019 15:37	WG1286225
(S) 4-Bromofluorobenzene	99.7		77.0-126		05/24/2019 15:37	WG1286225
(S) 1,2-Dichloroethane-d4	97.6		70.0-130		05/24/2019 15:37	WG1286225

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3414495-1 05/23/19 23:57

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	3.62	↓	2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1099874-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1099874-02 05/24/19 00:27 • (DUP) R3414495-2 05/24/19 00:34

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	576	579	1	0.391		20

Sample Narrative:

OS: Endpoint pH 4.5 headspace

DUP: Endpoint pH 4.5

L1100186-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1100186-09 05/24/19 02:13 • (DUP) R3414495-4 05/24/19 02:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	291	291	1	0.0316		20

Sample Narrative:

OS: Endpoint pH 4.5 headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3414495-3 05/24/19 01:08

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	103	103	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3413019-1 05/19/19 12:52

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1100548-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100548-01 05/19/19 13:46 • (DUP) R3413019-2 05/19/19 14:04

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.000	1	0.000		15
Chloride	41.5	41.4	1	0.214		15
Nitrate	6.47	6.47	1	0.0958		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	447	447	1	0.0338	E	15

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1100548-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100548-01 05/19/19 16:47 • (DUP) R3413019-6 05/19/19 17:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Sulfate	448	448	5	0.0996		15

Laboratory Control Sample (LCS)

(LCS) R3413019-5 05/19/19 14:57

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	40.6	102	80.0-120	
Chloride	40.0	40.4	101	80.0-120	
Nitrate	8.00	8.24	103	80.0-120	
Nitrite	8.00	8.00	100	80.0-120	
Sulfate	40.0	40.7	102	80.0-120	



L1100548-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100548-01 05/19/19 13:46 • (MS) R3413019-3 05/19/19 14:22 • (MSD) R3413019-4 05/19/19 14:39

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	ND	43.7	43.5	87.4	87.0	1	80.0-120			0.444	15
Chloride	50.0	41.5	91.0	91.1	99.1	99.2	1	80.0-120			0.0939	15
Nitrate	5.00	6.47	11.4	11.4	98.3	99.0	1	80.0-120	<u>E</u>	<u>E</u>	0.288	15
Nitrite	5.00	ND	5.18	5.18	104	104	1	80.0-120			0.0714	15
Sulfate	50.0	447	471	471	48.4	48.7	1	80.0-120	<u>EV</u>	<u>EV</u>	0.0233	15

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3414266-1 05/23/19 12:03

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Calcium,Dissolved	U		0.0463	1.00
Iron,Dissolved	U		0.0141	0.100
Magnesium,Dissolved	U		0.0111	1.00
Potassium,Dissolved	0.159	↓	0.102	1.00
Sodium,Dissolved	0.157	↓	0.0985	1.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3414266-2 05/23/19 12:05 • (LCSD) R3414266-3 05/23/19 12:08

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Calcium,Dissolved	10.0	9.34	9.47	93.4	94.7	80.0-120			1.39	20
Iron,Dissolved	10.0	8.95	9.15	89.5	91.5	80.0-120			2.23	20
Magnesium,Dissolved	10.0	9.48	9.55	94.8	95.5	80.0-120			0.779	20
Potassium,Dissolved	10.0	9.34	9.57	93.4	95.7	80.0-120			2.40	20
Sodium,Dissolved	10.0	9.31	9.35	93.1	93.5	80.0-120			0.482	20

⁶ Qc

⁷ Gl

⁸ Al

L1100475-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100475-02 05/23/19 12:11 • (MS) R3414266-5 05/23/19 12:16 • (MSD) R3414266-6 05/23/19 12:19

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Calcium,Dissolved	10.0	48.4	57.8	57.5	94.1	91.6	1	75.0-125			0.434	20
Iron,Dissolved	10.0	2.16	11.3	11.2	91.7	90.6	1	75.0-125			1.00	20
Magnesium,Dissolved	10.0	18.3	27.7	27.5	94.3	92.3	1	75.0-125			0.732	20
Potassium,Dissolved	10.0	109	117	117	87.4	78.9	1	75.0-125			0.732	20
Sodium,Dissolved	10.0	236	242	240	65.9	47.5	1	75.0-125	↓	↓	0.763	20

⁹ Sc



Method Blank (MB)

(MB) R3415586-1 05/28/19 18:09

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Strontium	U		0.000160	0.0100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3415586-2 05/28/19 18:13 • (LCSD) R3415586-3 05/28/19 18:18

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0516	0.0513	103	103	80.0-120			0.553	20

⁷ Gl

⁸ Al

L1099676-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1099676-08 05/28/19 18:23 • (MS) R3415586-5 05/28/19 18:32 • (MSD) R3415586-6 05/28/19 18:36

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0923	0.145	0.145	105	105	1	75.0-125			0.0570	20

⁹ Sc



Method Blank (MB)

(MB) R3413830-1 05/22/19 14:37

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130
Acetylene	U		0.00558	0.0208

L1099869-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1099869-01 05/22/19 14:45 • (DUP) R3413830-2 05/22/19 15:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	ND	0.000	1	0.000		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3413830-3 05/22/19 16:21 • (LCSD) R3413830-4 05/22/19 16:29

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0757	0.0756	112	112	85.0-115			0.148	20
Ethane	0.129	0.118	0.119	91.9	92.1	85.0-115			0.311	20
Ethene	0.127	0.117	0.116	92.4	91.6	85.0-115			0.862	20
Acetylene	0.208	0.184	0.185	88.7	88.8	85.0-115			0.131	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3414715-2 05/24/19 10:23

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	0.00041	U	0.000256	0.00100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3414715-2 05/24/19 10:23

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	0.000270	J	0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	100			80.0-120
(S) 4-Bromofluorobenzene	99.5			77.0-126
(S) 1,2-Dichloroethane-d4	97.8			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3414715-1 05/24/19 09:43

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Acetone	0.125	0.117	93.6	19.0-160	
Acrolein	0.125	0.336	269	10.0-160	J4
Acrylonitrile	0.125	0.135	108	55.0-149	
Benzene	0.0250	0.0246	98.5	70.0-123	



Laboratory Control Sample (LCS)

(LCS) R3414715-1 05/24/19 09:43

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromobenzene	0.0250	0.0223	89.2	73.0-121	
Bromodichloromethane	0.0250	0.0236	94.3	75.0-120	
Bromoform	0.0250	0.0235	93.8	68.0-132	
Bromomethane	0.0250	0.0207	82.8	10.0-160	
n-Butylbenzene	0.0250	0.0241	96.3	73.0-125	
sec-Butylbenzene	0.0250	0.0241	96.4	75.0-125	
tert-Butylbenzene	0.0250	0.0233	93.1	76.0-124	
Carbon tetrachloride	0.0250	0.0255	102	68.0-126	
Chlorobenzene	0.0250	0.0242	96.9	80.0-121	
Chlorodibromomethane	0.0250	0.0246	98.6	77.0-125	
Chloroethane	0.0250	0.0202	80.6	47.0-150	
Chloroform	0.0250	0.0238	95.2	73.0-120	
Chloromethane	0.0250	0.0224	89.7	41.0-142	
2-Chlorotoluene	0.0250	0.0233	93.3	76.0-123	
4-Chlorotoluene	0.0250	0.0230	92.1	75.0-122	
1,2-Dibromo-3-Chloropropane	0.0250	0.0249	99.7	58.0-134	
1,2-Dibromoethane	0.0250	0.0237	94.9	80.0-122	
Dibromomethane	0.0250	0.0244	97.5	80.0-120	
1,2-Dichlorobenzene	0.0250	0.0248	99.3	79.0-121	
1,3-Dichlorobenzene	0.0250	0.0245	97.8	79.0-120	
1,4-Dichlorobenzene	0.0250	0.0243	97.1	79.0-120	
Dichlorodifluoromethane	0.0250	0.0280	112	51.0-149	
1,1-Dichloroethane	0.0250	0.0246	98.4	70.0-126	
1,2-Dichloroethane	0.0250	0.0238	95.1	70.0-128	
1,1-Dichloroethene	0.0250	0.0203	81.3	71.0-124	
cis-1,2-Dichloroethene	0.0250	0.0243	97.2	73.0-120	
trans-1,2-Dichloroethene	0.0250	0.0229	91.4	73.0-120	
1,2-Dichloropropane	0.0250	0.0258	103	77.0-125	
1,1-Dichloropropene	0.0250	0.0244	97.6	74.0-126	
1,3-Dichloropropane	0.0250	0.0237	94.8	80.0-120	
cis-1,3-Dichloropropene	0.0250	0.0248	99.3	80.0-123	
trans-1,3-Dichloropropene	0.0250	0.0236	94.5	78.0-124	
2,2-Dichloropropane	0.0250	0.0240	95.9	58.0-130	
Di-isopropyl ether	0.0250	0.0251	100	58.0-138	
Ethylbenzene	0.0250	0.0243	97.4	79.0-123	
Hexachloro-1,3-butadiene	0.0250	0.0255	102	54.0-138	
Isopropylbenzene	0.0250	0.0245	98.0	76.0-127	
p-Isopropyltoluene	0.0250	0.0239	95.4	76.0-125	
2-Butanone (MEK)	0.125	0.129	104	44.0-160	
Methylene Chloride	0.0250	0.0239	95.7	67.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Laboratory Control Sample (LCS)

(LCS) R3414715-1 05/24/19 09:43

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
4-Methyl-2-pentanone (MIBK)	0.125	0.122	97.6	68.0-142	
Methyl tert-butyl ether	0.0250	0.0245	97.8	68.0-125	
Naphthalene	0.0250	0.0268	107	54.0-135	
n-Propylbenzene	0.0250	0.0229	91.8	77.0-124	
Styrene	0.0250	0.0246	98.3	73.0-130	
1,1,1,2-Tetrachloroethane	0.0250	0.0238	95.2	75.0-125	
1,1,2,2-Tetrachloroethane	0.0250	0.0231	92.3	65.0-130	
Tetrachloroethene	0.0250	0.0254	102	72.0-132	
Toluene	0.0250	0.0229	91.6	79.0-120	
1,1,2-Trichlorotrifluoroethane	0.0250	0.0234	93.4	69.0-132	
1,2,3-Trichlorobenzene	0.0250	0.0256	102	50.0-138	
1,2,4-Trichlorobenzene	0.0250	0.0264	106	57.0-137	
1,1,1-Trichloroethane	0.0250	0.0247	98.8	73.0-124	
1,1,2-Trichloroethane	0.0250	0.0228	91.2	80.0-120	
Trichloroethene	0.0250	0.0249	99.5	78.0-124	
Trichlorofluoromethane	0.0250	0.0244	97.5	59.0-147	
1,2,3-Trichloropropane	0.0250	0.0216	86.4	73.0-130	
1,2,3-Trimethylbenzene	0.0250	0.0234	93.8	77.0-120	
1,2,4-Trimethylbenzene	0.0250	0.0235	93.8	76.0-121	
1,3,5-Trimethylbenzene	0.0250	0.0231	92.5	76.0-122	
Vinyl chloride	0.0250	0.0204	81.8	67.0-131	
Xylenes, Total	0.0750	0.0734	97.9	79.0-123	
<i>(S) Toluene-d8</i>			97.3	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			102	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			107	70.0-130	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.
V	The sample concentration is too high to evaluate accurate spike recoveries.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

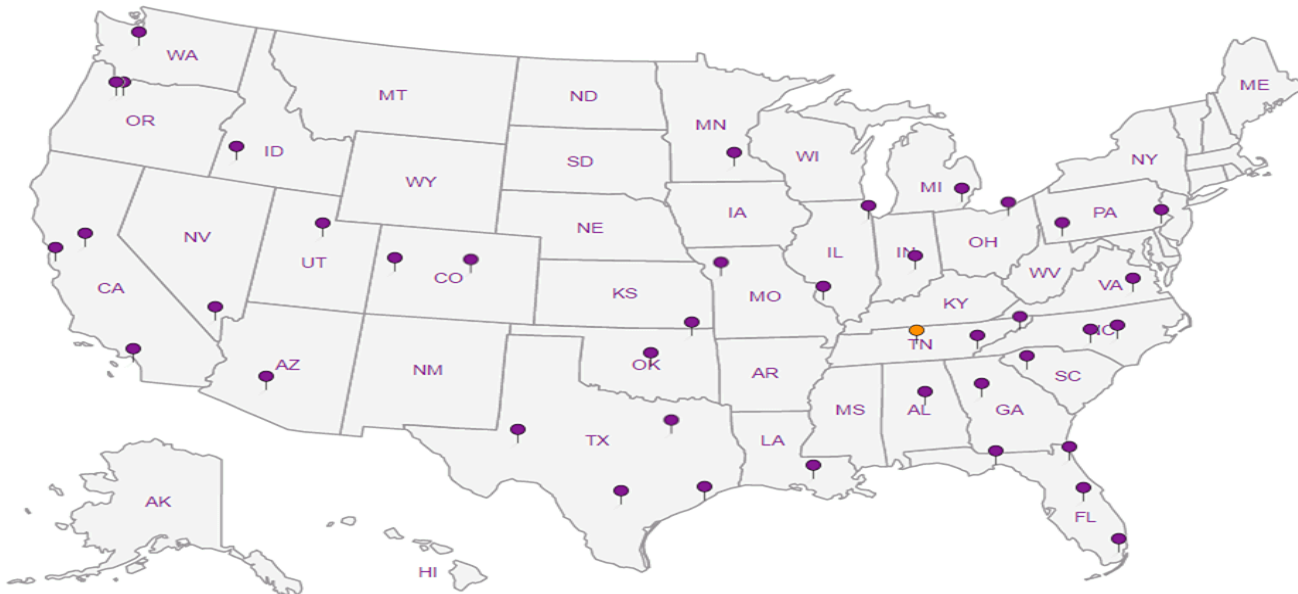
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

**Terracon Consultants, Inc -
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Report to:
Michael Skridulis

Project Description: **COL Annual GW**

Phone: **303-454-5249**
Fax:

Client Project #
22197006

City/State Collected: **Longmont, CO**

Lab Project #
TERRALCO-22197006

Collected by (print):
Charles Covington

Site/Facility ID #
TB7

P.O. #

Collected by (signature):
[Signature]

Rush? (Lab MUST Be Notified)

Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Quote #

Date Results Needed

STANDARD

Immediately Packed on Ice N Y

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALK, Br, Cr, NO2, NO3, SO	125mlHDPE-NoPres	Metals, Dissolved	250mlHDPE-NoPres	RSK175 40mlAmb HCl	SRG 250mlHDPE-HNO3	V8260 40mlAmb-HCl	(3)
TB7 - MW01	Grab	GW	17.00	5/17/19	1400	8	X	X	X	X	X	X	X	
TB7 - MW02	Grab	GW	16.64	5/17/19	1320	8	X	X	X	X	X	X	X	
TB7 - MW03	Grab	GW	16.00	5/17/19	1340	8	X	X	X	X	X	X	X	
		GW				8	X	X	X	X	X	X	X	

Invoice: Customer: ESCSLCUT Date: 23Apr19 Weight: 10 LBS Shipping: 0.00
Phone: (615)758-5858 COD: Handling: 0.00 Special: 0.00
Sat Del: Y DV: 0.00 Total: 0.00

Sves: PRIORITY OVERNIGHT
TRACK: 4794 8837 6522

RAD SCREEN: <0.5 mR/hr

- * Matrix: SS - Soil AIR - Air F - Filter
- GW - Groundwater B - Bioassay
- WW - WasteWater
- DW - Drinking Water
- OT - Other

Remarks:

Samples returned via:

UPS FedEx Courier

Tracking # **4794 8837 6522**

Relinquished by: (Signature) *[Signature]* Date: **5/17/19** Time: **1600**

Received by: (Signature) Trip Blank Received: Yes/No
HCL / MeOH
TBR

Relinquished by: (Signature) Date: Time:

Received by: (Signature) Temp: °C Bottles Received: **24**

Relinquished by: (Signature) Date: Time:

Received for lab by: (Signature) *[Signature]* Date: **5/18/19** Time: **8:45**

Sample Receipt Checklist	
COC Seal Present/Intact:	<input type="checkbox"/> NP <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
COC Signed/Accurate:	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Bottles arrive intact:	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Correct bottles used:	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Sufficient volume sent:	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
If Applicable	
VOA Zero Headspace:	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Preservation Correct/Checked:	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N

If preservation required by Login: Date/Time

Hold: Condition: NCF / OK

Billing Information:
Mike Skridulis
1831 Lefthand Circe, Suite C
Longmont, CO 80501

Email To: mjskridulis@terracon.com

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L# **1100548**
B162

Acctnum: **TERRALCO**

Template: **T149943**

Prelogin: **P708321**

TSR: **288 - Daphne Richards**

PB:

Shipped Via: **FedEX Ground**

Remarks Sample # (lab only)

-01
-02
-03

Analysis

Groundwater Sample Constituents

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations -- Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 25, 2019

Mike Skridulis

Terracon - Longmont

1831 Lefthand Circle

Longmont, CO 80501

RE: COL Annual GW Survey

Work Order # 1906218

Enclosed are the results of analyses for samples received by Summit Scientific on 06/17/19 14:35. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Ben Shrewsbury

Laboratory Manager



Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CL1-MW01	1906218-01	Water	06/17/19 09:30	06/17/19 14:35
CL1-MW02	1906218-02	Water	06/17/19 09:50	06/17/19 14:35
CL1-MW03	1906218-03	Water	06/17/19 10:10	06/17/19 14:35

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

1906218

Summit Scientific

S₂

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310 ♦ 303-374-5933 (f)

Client: Terracon Consultants Inc. Project Manager: Mike Skridulis
 Address: 1831 Lefthand Circle, Suite C E-Mail: mjskridulis@Terracon.com
 City/State/Zip: Longmont, CO, 80501 (303) 454-5249
 Phone: (303) 776-3921 Project Name: COL Annual GW Survey
 Sampler Name: Charles Covington Project Number: 22197006

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested					Special Instructions		
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	V8260	RSK175	Metals (Dissolved)	SRG		PAK, Br, Cr, Pb, Zn, PO ₃ , SO	
1	CLI - MW01	6/17/19	0930	8	X	X	X	X	X				X	X	X	X	X		See attached list of analysis
2	CLI - MW02	6/17/19	0950	8	X	X	X						X	X	X	X	X		
3	CLI - MW03	6/17/19	1010	8	X	X	X						X	X	X	X	X		
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by: <u>Cur K. Gts</u> Date/Time: <u>6/17/19</u>	Received by: <u>[Signature]</u> Date/Time: <u>06/17/19 1435</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> Sample Integrity: Temperature Upon Receipt: <u>4.5</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes: Call PM w/ any questions
Relinquished by: <u>1435-1400</u> Date/Time: <u>1435-1400</u>	Received by: <u>[Signature]</u> Date/Time: <u></u>		
Relinquished by: <u></u> Date/Time: <u></u>	Received by: <u></u> Date/Time: <u></u>		

Sample Receipt Checklist

S2 Work Order 1906218

Client: TERRECON CONSULTANTS INC. Client Project ID: COL Annual GW Survey

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	<u>4.5</u>
-----------	------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<u>X</u>			
Were all samples received intact ⁽¹⁾ ?	<u>X</u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u>X</u>			
If custody seals are present, are they intact ⁽¹⁾ ?			<u>X</u>	
Are samples with holding times due within 48 hours sample due within 48 hours present?		<u>X</u>		
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u>X</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u>X</u>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<u>X</u>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<u>X</u>		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<u>X</u>			<u>HCl</u> <u>1</u> <u>HNO3</u>
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<u>X</u>			<u>pH ∅</u>
If dissolved metals are requested, were samples field filtered?			<u>X</u>	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

TE
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

06/17/19
Date/Time 1435



Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

CL1-MW01
1906218-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/17/19 09:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1906223	06/18/19	06/19/19	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	2.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chlorodibromomethane	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	3.0	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	1.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	10	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
m,p-Xylene	ND	2.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
Methylene Chloride	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	1.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	20	"	"	"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

CL1-MW01
1906218-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
tert-Butylbenzene	ND	1.0	ug/l	1	1906223	06/18/19	06/19/19	EPA 8260B
Tetrachloroethene	ND	1.0	"	"	"	"	"	"
Toluene	ND	1.0	"	"	"	"	"	"
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"
Trichloroethene	ND	1.0	"	"	"	"	"	"
Trichlorofluoromethane	ND	1.0	"	"	"	"	"	"
Vinyl chloride	ND	1.0	"	"	"	"	"	"
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"
1,2,3-Trichloropropane	ND	1.0	"	"	"	"	"	"
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"

Date Sampled: **06/17/19 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.4 %	20-170		"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

CL1-MW01
1906218-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Surrogate: 4-Bromofluorobenzene 99.3 % 21-167 1906223 06/18/19 06/19/19 EPA 8260B

Dissolved Gases by RSK-175

Date Sampled: **06/17/19 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methane	ND	0.010	mg/L	1	1906244	06/18/19	06/24/19	RSK-175 mod	
Ethene	ND	0.010	"	"	"	"	"	"	
Ethane	ND	0.010	"	"	"	"	"	"	

Total Metals by EPA Method 200.8

Date Sampled: **06/17/19 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Strontium	2.53	0.00100	mg/L	1	1906355	06/24/19	06/24/19	EPA 200.8	

Dissolved Metals by EPA Method 200.8

Date Sampled: **06/17/19 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	82.9	0.0500	mg/L	1	1906239	06/18/19	06/18/19	EPA 200.8	
Iron	ND	0.0100	"	"	"	"	"	"	
Magnesium	71.1	0.0500	"	"	"	"	"	"	
Potassium	1.60	0.0500	"	"	"	"	"	"	
Sodium	65.7	0.0500	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **06/17/19 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Nitrite as N	ND	0.0600	mg/L	1	1906230	06/18/19	06/18/19	EPA 300.0	
Sulfate	217	15.0	"	50	"	"	"	"	
Nitrate as N	10.5	0.0500	"	1	"	"	"	"	

Summit Scientific

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Terracon - Longmont
 1831 Lefthand Circle
 Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
 Project Manager: Mike Skridulis

Reported:
 06/25/19 11:27

CL1-MW01
1906218-01 (Water)

Summit Scientific

Anions by EPA Method 300.0

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Chloride	16.2	3.00	mg/L	50	1906230	06/18/19	06/18/19	EPA 300.0
Bromide	1.52	0.200	"	1	"	"	"	"

Alkalinity by SM2320

Date Sampled: **06/17/19 09:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Alkalinity	450	10.0	mg/L as CaCO3	1	1906279	06/20/19	06/20/19	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
Bicarbonate	450	10.0	"	"	"	"	"	"	
Hydroxide Alkalinity	ND	10.0	"	"	"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

CL1-MW02
1906218-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/17/19 09:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1906223	06/18/19	06/19/19	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	2.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chlorodibromomethane	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	3.0	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	1.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	10	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
m,p-Xylene	ND	2.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
Methylene Chloride	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	1.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	20	"	"	"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

CL1-MW02
1906218-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
tert-Butylbenzene	ND	1.0	ug/l	1	1906223	06/18/19	06/19/19	EPA 8260B	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	"
Toluene	ND	1.0	"	"	"	"	"	"	"
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	"
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	"
Trichloroethene	ND	1.0	"	"	"	"	"	"	"
Trichlorofluoromethane	ND	1.0	"	"	"	"	"	"	"
Vinyl chloride	ND	1.0	"	"	"	"	"	"	"
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	"
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	"
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	"
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	"
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	"
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	"
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"	"
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	"
1,2,3-Trichloropropane	ND	1.0	"	"	"	"	"	"	"
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"	"
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	"
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"	"
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	"
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"	"
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	"
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	"
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	"
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"	"
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	"
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	"
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"	"
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"	"

Date Sampled: **06/17/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.1 %	20-170		"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

CL1-MW02
1906218-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Surrogate: 4-Bromofluorobenzene 92.6 % 21-167 1906223 06/18/19 06/19/19 EPA 8260B

Dissolved Gases by RSK-175

Date Sampled: **06/17/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methane	ND	0.010	mg/L	1	1906244	06/18/19	06/24/19	RSK-175 mod	
Ethene	ND	0.010	"	"	"	"	"	"	
Ethane	ND	0.010	"	"	"	"	"	"	

Total Metals by EPA Method 200.8

Date Sampled: **06/17/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Strontium	2.46	0.00100	mg/L	1	1906355	06/24/19	06/24/19	EPA 200.8	

Dissolved Metals by EPA Method 200.8

Date Sampled: **06/17/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	88.7	0.0500	mg/L	1	1906239	06/18/19	06/18/19	EPA 200.8	
Iron	0.0140	0.0100	"	"	"	"	"	"	
Magnesium	73.0	0.0500	"	"	"	"	"	"	
Potassium	1.81	0.0500	"	"	"	"	"	"	
Sodium	70.1	0.0500	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **06/17/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Nitrite as N	ND	0.0600	mg/L	1	1906230	06/18/19	06/18/19	EPA 300.0	
Bromide	1.51	0.200	"	"	"	"	"	"	
Chloride	18.2	3.00	"	50	"	"	"	"	

Summit Scientific

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Terracon - Longmont
 1831 Lefthand Circle
 Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
 Project Manager: Mike Skridulis

Reported:
 06/25/19 11:27

CL1-MW02
1906218-02 (Water)

Summit Scientific

Anions by EPA Method 300.0

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Sulfate	216	15.0	mg/L	50	1906230	06/18/19	06/18/19	EPA 300.0
Nitrate as N	10.6	0.0500	"	1	"	"	"	"

Alkalinity by SM2320

Date Sampled: **06/17/19 09:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Alkalinity	450	10.0	mg/L as CaCO3	1	1906279	06/20/19	06/20/19	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
Bicarbonate	450	10.0	"	"	"	"	"	"	
Hydroxide Alkalinity	ND	10.0	"	"	"	"	"	"	

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

CL1-MW03
1906218-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/17/19 10:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1906223	06/18/19	06/19/19	EPA 8260B	
Bromobenzene	ND	1.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	2.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Chlorodibromomethane	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	3.0	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
Dibromomethane	ND	1.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	1.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	10	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.0	"	"	"	"	"	"	
m,p-Xylene	ND	2.0	"	"	"	"	"	"	
Isopropylbenzene	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Methylene Chloride	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.0	"	"	"	"	"	"	
n-Propylbenzene	ND	1.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.0	"	"	"	"	"	"	
Styrene	ND	1.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	1.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	20	"	"	"	"	"	"	

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

CL1-MW03
1906218-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
tert-Butylbenzene	ND	1.0	ug/l	1	1906223	06/18/19	06/19/19	EPA 8260B
Tetrachloroethene	ND	1.0	"	"	"	"	"	"
Toluene	ND	1.0	"	"	"	"	"	"
trans-1,2-Dichloroethene	ND	1.0	"	"	"	"	"	"
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"
Trichloroethene	ND	1.0	"	"	"	"	"	"
Trichlorofluoromethane	ND	1.0	"	"	"	"	"	"
Vinyl chloride	ND	1.0	"	"	"	"	"	"
1,1,1,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"
1,1-Dichloropropene	ND	1.0	"	"	"	"	"	"
1,2,3-Trichlorobenzene	ND	1.0	"	"	"	"	"	"
1,2,3-Trichloropropane	ND	1.0	"	"	"	"	"	"
1,2,4-Trichlorobenzene	ND	1.0	"	"	"	"	"	"
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"
1,2-Dibromoethane (EDB)	ND	1.0	"	"	"	"	"	"
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"
1,3-Dichloropropane	ND	1.0	"	"	"	"	"	"
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"
2,2-Dichloropropane	ND	1.0	"	"	"	"	"	"
2-Chlorotoluene	ND	1.0	"	"	"	"	"	"
4-Chlorotoluene	ND	1.0	"	"	"	"	"	"

Date Sampled: **06/17/19 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.1 %	20-170		"	"	"	"	

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

CL1-MW03
1906218-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Surrogate: 4-Bromofluorobenzene 97.7 % 21-167 1906223 06/18/19 06/19/19 EPA 8260B

Dissolved Gases by RSK-175

Date Sampled: **06/17/19 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methane	ND	0.010	mg/L	1	1906244	06/18/19	06/24/19	RSK-175 mod	
Ethene	ND	0.010	"	"	"	"	"	"	
Ethane	ND	0.010	"	"	"	"	"	"	

Total Metals by EPA Method 200.8

Date Sampled: **06/17/19 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Strontium	2.32	0.00100	mg/L	1	1906355	06/24/19	06/24/19	EPA 200.8	

Dissolved Metals by EPA Method 200.8

Date Sampled: **06/17/19 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	84.4	0.0500	mg/L	1	1906239	06/18/19	06/18/19	EPA 200.8	
Iron	0.129	0.0100	"	"	"	"	"	"	
Magnesium	73.4	0.0500	"	"	"	"	"	"	
Potassium	1.85	0.0500	"	"	"	"	"	"	
Sodium	74.9	0.0500	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **06/17/19 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	14.4	3.00	mg/L	50	1906230	06/18/19	06/18/19	EPA 300.0	
Sulfate	210	15.0	"	"	"	"	"	"	
Nitrate as N	10.5	0.0500	"	1	"	"	"	"	

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Terracon - Longmont
 1831 Lefthand Circle
 Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
 Project Manager: Mike Skridulis

Reported:
 06/25/19 11:27

CL1-MW03
1906218-03 (Water)

Summit Scientific

Anions by EPA Method 300.0

Anion	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Bromide	1.51	0.200	mg/L	1	1906230	06/18/19	06/18/19	EPA 300.0
Nitrite as N	ND	0.0600	"	"	"	"	"	"

Alkalinity by SM2320

Date Sampled: **06/17/19 10:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Alkalinity	440	10.0	mg/L as CaCO3	1	1906279	06/20/19	06/20/19	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
Bicarbonate	440	10.0	"	"	"	"	"	"	
Hydroxide Alkalinity	ND	10.0	"	"	"	"	"	"	

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Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 1906223 - EPA 5030 Water MS

Blank (1906223-BLK1)

Prepared & Analyzed: 06/18/19

Benzene	ND	1.0	ug/l
Bromobenzene	ND	1.0	"
Bromochloromethane	ND	5.0	"
Bromodichloromethane	ND	2.0	"
Bromoform	ND	1.0	"
Bromomethane	ND	1.0	"
Carbon tetrachloride	ND	1.0	"
Chlorobenzene	ND	1.0	"
Chlorodibromomethane	ND	1.0	"
Chloroethane	ND	1.0	"
Chloroform	ND	3.0	"
Chloromethane	ND	1.0	"
cis-1,2-Dichloroethene	ND	1.0	"
cis-1,3-Dichloropropene	ND	1.0	"
Dibromomethane	ND	1.0	"
Dichlorodifluoromethane	ND	1.0	"
Di-isopropyl ether	ND	5.0	"
Ethyl tert-butyl ether	ND	10	"
Ethylbenzene	ND	1.0	"
Hexachlorobutadiene	ND	1.0	"
m,p-Xylene	ND	2.0	"
Methyl tert-butyl ether	ND	5.0	"
Isopropylbenzene	ND	1.0	"
Methylene Chloride	ND	5.0	"
Naphthalene	ND	1.0	"
n-Butylbenzene	ND	1.0	"
n-Propylbenzene	ND	1.0	"
o-Xylene	ND	1.0	"
p-Isopropyltoluene	ND	1.0	"
sec-Butylbenzene	ND	1.0	"
Styrene	ND	1.0	"
Tert-amyl methyl ether	ND	1.0	"
Tert-butyl alcohol	ND	20	"
tert-Butylbenzene	ND	1.0	"
Tetrachloroethene	ND	1.0	"
Toluene	ND	1.0	"
trans-1,2-Dichloroethene	ND	1.0	"
trans-1,3-Dichloropropene	ND	1.0	"

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1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike		Source		%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit			

Batch 1906223 - EPA 5030 Water MS

Blank (1906223-BLK1)

Prepared & Analyzed: 06/18/19

Trichloroethene	ND	1.0	ug/l									
Trichlorofluoromethane	ND	1.0	"									
Vinyl chloride	ND	1.0	"									
1,1,1,2-Tetrachloroethane	ND	1.0	"									
1,1,1-Trichloroethane	ND	1.0	"									
1,1,2,2-Tetrachloroethane	ND	1.0	"									
1,1,2-Trichloroethane	ND	1.0	"									
1,1-Dichloroethane	ND	1.0	"									
1,1-Dichloroethene	ND	1.0	"									
1,1-Dichloropropene	ND	1.0	"									
1,2,3-Trichlorobenzene	ND	1.0	"									
1,2,3-Trichloropropane	ND	1.0	"									
1,2,4-Trichlorobenzene	ND	1.0	"									
1,2,4-Trimethylbenzene	ND	1.0	"									
1,2-Dibromo-3-chloropropane	ND	1.0	"									
1,2-Dibromoethane (EDB)	ND	1.0	"									
1,2-Dichlorobenzene	ND	1.0	"									
1,2-Dichloroethane (EDC)	ND	1.0	"									
1,2-Dichloropropane	ND	1.0	"									
1,3,5-Trimethylbenzene	ND	1.0	"									
1,3-Dichlorobenzene	ND	1.0	"									
1,3-Dichloropropane	ND	1.0	"									
1,4-Dichlorobenzene	ND	1.0	"									
2,2-Dichloropropane	ND	1.0	"									
2-Chlorotoluene	ND	1.0	"									
4-Chlorotoluene	ND	1.0	"									
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3	94.8	23-173						
Surrogate: Toluene-d8	12.6		"	13.3	94.4	20-170						
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3	94.5	21-167						

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1906223 - EPA 5030 Water MS

LCS (1906223-BS1)

Prepared & Analyzed: 06/18/19

Benzene	51.8	1.0	ug/l	50.0		104	70-130			
Bromobenzene	49.1	1.0	"	50.0		98.2	70-130			
Bromochloromethane	44.8	5.0	"	50.0		89.7	70-130			
Bromodichloromethane	48.4	2.0	"	50.0		96.8	70-130			
Bromoform	41.0	1.0	"	50.0		82.1	70-130			
Bromomethane	44.1	1.0	"	50.0		88.3	70-130			
Carbon tetrachloride	60.2	1.0	"	50.0		120	70-130			
Chlorobenzene	51.7	1.0	"	50.0		103	70-130			
Chlorodibromomethane	45.6	1.0	"	50.0		91.2	70-130			
Chloroethane	52.1	1.0	"	50.0		104	70-130			
Chloroform	52.5	3.0	"	50.0		105	70-130			
Chloromethane	55.0	1.0	"	50.0		110	70-130			
cis-1,2-Dichloroethene	50.4	1.0	"	50.0		101	70-130			
cis-1,3-Dichloropropene	44.8	1.0	"	50.0		89.5	70-130			
Dibromomethane	42.4	1.0	"	50.0		84.8	70-130			
Dichlorodifluoromethane	40.4	1.0	"	50.0		80.7	70-130			
Di-isopropyl ether	47.1	5.0	"	50.0		94.3	70-130			
Ethyl tert-butyl ether	48.6	10	"	50.0		97.3	70-130			
Ethylbenzene	56.4	1.0	"	50.0		113	70-130			
Hexachlorobutadiene	53.3	1.0	"	50.0		107	70-130			
m,p-Xylene	112	2.0	"	100		112	70-130			
Isopropylbenzene	57.6	1.0	"	50.0		115	70-130			
Methyl tert-butyl ether	42.7	5.0	"				70-130			
Methylene Chloride	50.2	5.0	"	50.0		100	70-130			
Naphthalene	40.5	1.0	"	50.0		81.0	70-130			
n-Butylbenzene	64.9	1.0	"	50.0		130	70-130			
n-Propylbenzene	56.8	1.0	"	50.0		114	70-130			
o-Xylene	53.9	1.0	"	50.0		108	70-130			
p-Isopropyltoluene	59.9	1.0	"	50.0		120	70-130			
sec-Butylbenzene	59.8	1.0	"	50.0		120	70-130			
Styrene	51.4	1.0	"	50.0		103	70-130			
Tert-amyl methyl ether	45.4	1.0	"	50.0		90.8	70-130			
Tert-butyl alcohol	274	20	"	250		110	70-130			
tert-Butylbenzene	58.3	1.0	"	50.0		117	70-130			
Tetrachloroethene	58.9	1.0	"	50.0		118	70-130			
Toluene	54.5	1.0	"	50.0		109	70-130			
trans-1,2-Dichloroethene	52.0	1.0	"	50.0		104	70-130			
trans-1,3-Dichloropropene	44.8	1.0	"	50.0		89.5	70-130			

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike	Source		%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

Batch 1906223 - EPA 5030 Water MS

LCS (1906223-BS1)

Prepared & Analyzed: 06/18/19

Trichloroethene	53.4	1.0	ug/l	50.0	107	70-130				
Trichlorofluoromethane	59.8	1.0	"	50.0	120	70-130				
Vinyl chloride	40.2	1.0	"	50.0	80.4	70-130				
1,1,1,2-Tetrachloroethane	52.5	1.0	"	50.0	105	70-130				
1,1,1-Trichloroethane	59.6	1.0	"	50.0	119	70-130				
1,1,2,2-Tetrachloroethane	43.6	1.0	"	50.0	87.3	70-130				
1,1,2-Trichloroethane	42.1	1.0	"	50.0	84.2	70-130				
1,1-Dichloroethane	51.3	1.0	"	50.0	103	70-130				
1,1-Dichloroethene	56.3	1.0	"	50.0	113	70-130				
1,1-Dichloropropene	57.3	1.0	"	50.0	115	70-130				
1,2,3-Trichlorobenzene	47.6	1.0	"	50.0	95.1	70-130				
1,2,3-Trichloropropane	45.3	1.0	"	50.0	90.5	70-130				
1,2,4-Trichlorobenzene	44.0	1.0	"	50.0	88.1	70-130				
1,2,4-Trimethylbenzene	56.9	1.0	"	50.0	114	70-130				
1,2-Dibromo-3-chloropropane	49.2	1.0	"	50.0	98.5	70-130				
1,2-Dibromoethane (EDB)	42.7	1.0	"	50.0	85.4	70-130				
1,2-Dichlorobenzene	52.1	1.0	"	50.0	104	70-130				
1,2-Dichloroethane (EDC)	46.0	1.0	"	50.0	92.0	70-130				
1,2-Dichloropropane	48.5	1.0	"	50.0	96.9	70-130				
1,3,5-Trimethylbenzene	56.1	1.0	"	50.0	112	70-130				
1,3-Dichlorobenzene	52.8	1.0	"	50.0	106	70-130				
1,3-Dichloropropane	43.3	1.0	"	50.0	86.5	70-130				
1,4-Dichlorobenzene	51.9	1.0	"	50.0	104	70-130				
2,2-Dichloropropane	58.3	1.0	"	50.0	117	70-130				
2-Chlorotoluene	54.5	1.0	"	50.0	109	70-130				
4-Chlorotoluene	54.3	1.0	"	50.0	109	70-130				
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.3	97.6	23-173				
Surrogate: Toluene-d8	13.0		"	13.3	97.9	20-170				
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3	98.2	21-167				

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1906223 - EPA 5030 Water MS

Matrix Spike (1906223-MS1)	Source: 1906204-01			Prepared: 06/18/19		Analyzed: 06/19/19	
Benzene	48.0	1.0	ug/l	50.0	ND	95.9	70-130
Bromobenzene	42.8	1.0	"	50.0	ND	85.7	70-130
Bromochloromethane	46.0	5.0	"	50.0	ND	92.1	70-130
Bromodichloromethane	57.8	2.0	"	50.0	ND	116	70-130
Bromoform	36.2	1.0	"	50.0	ND	72.5	70-130
Bromomethane	52.6	1.0	"	50.0	ND	105	70-130
Carbon tetrachloride	43.1	1.0	"	50.0	ND	86.2	70-130
Chlorobenzene	40.6	1.0	"	50.0	ND	81.2	70-130
Chlorodibromomethane	53.8	1.0	"	50.0	ND	108	70-130
Chloroethane	45.5	1.0	"	50.0	ND	91.0	70-130
Chloroform	50.4	3.0	"	50.0	ND	101	70-130
Chloromethane	46.0	1.0	"	50.0	ND	92.0	70-130
cis-1,2-Dichloroethene	54.0	1.0	"	50.0	ND	108	70-130
cis-1,3-Dichloropropene	42.6	1.0	"	50.0	ND	85.2	70-130
Dibromomethane	41.9	1.0	"	50.0	ND	83.8	70-130
Dichlorodifluoromethane	50.4	1.0	"	50.0	ND	101	70-130
Di-isopropyl ether	49.7	5.0	"	50.0	ND	99.4	70-130
Ethyl tert-butyl ether	52.8	10	"	50.0	ND	106	70-130
Ethylbenzene	48.7	1.0	"	50.0	ND	97.4	70-130
Hexachlorobutadiene	44.8	1.0	"	50.0	ND	89.5	70-130
m,p-Xylene	101	2.0	"	100	ND	101	70-130
Isopropylbenzene	48.6	1.0	"	50.0	ND	97.1	70-130
Methyl tert-butyl ether	42.2	5.0	"		ND		70-130
Methylene Chloride	56.8	5.0	"	50.0	ND	114	70-130
Naphthalene	40.4	1.0	"	50.0	ND	80.7	70-130
n-Butylbenzene	40.6	1.0	"	50.0	ND	81.1	70-130
n-Propylbenzene	47.9	1.0	"	50.0	ND	95.7	70-130
o-Xylene	47.8	1.0	"	50.0	ND	95.6	70-130
p-Isopropyltoluene	58.6	1.0	"	50.0	ND	117	70-130
sec-Butylbenzene	46.4	1.0	"	50.0	ND	92.8	70-130
Styrene	55.1	1.0	"	50.0	ND	110	70-130
Tert-amyl methyl ether	52.0	1.0	"	50.0	ND	104	70-130
Tert-butyl alcohol	241	20	"	250	ND	96.4	70-130
tert-Butylbenzene	40.4	1.0	"	50.0	ND	80.7	70-130
Tetrachloroethene	46.8	1.0	"	50.0	ND	93.5	70-130
Toluene	46.2	1.0	"	50.0	ND	92.5	70-130
trans-1,2-Dichloroethene	51.6	1.0	"	50.0	ND	103	70-130
trans-1,3-Dichloropropene	42.6	1.0	"	50.0	ND	85.2	70-130

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1906223 - EPA 5030 Water MS

Matrix Spike (1906223-MS1)	Source: 1906204-01			Prepared: 06/18/19		Analyzed: 06/19/19	
Trichloroethene	48.3	1.0	ug/l	50.0	ND	96.6	70-130
Trichlorofluoromethane	40.2	1.0	"	50.0	ND	80.5	70-130
Vinyl chloride	52.8	1.0	"	50.0	ND	106	70-130
1,1,1,2-Tetrachloroethane	48.7	1.0	"	50.0	ND	97.5	70-130
1,1,1-Trichloroethane	49.0	1.0	"	50.0	ND	98.0	70-130
1,1,2,2-Tetrachloroethane	48.6	1.0	"	50.0	ND	97.2	70-130
1,1,2-Trichloroethane	51.2	1.0	"	50.0	ND	102	70-130
1,1-Dichloroethane	53.7	1.0	"	50.0	ND	107	70-130
1,1-Dichloroethene	51.8	1.0	"	50.0	ND	104	70-130
1,1-Dichloropropene	51.4	1.0	"	50.0	ND	103	70-130
1,2,3-Trichlorobenzene	44.9	1.0	"	50.0	ND	89.8	70-130
1,2,3-Trichloropropane	44.0	1.0	"	50.0	ND	88.1	70-130
1,2,4-Trichlorobenzene	43.3	1.0	"	50.0	ND	86.7	70-130
1,2,4-Trimethylbenzene	55.6	1.0	"	50.0	ND	111	70-130
1,2-Dibromo-3-chloropropane	52.0	1.0	"	50.0	ND	104	70-130
1,2-Dibromoethane (EDB)	46.8	1.0	"	50.0	ND	93.5	70-130
1,2-Dichlorobenzene	42.7	1.0	"	50.0	ND	85.4	70-130
1,2-Dichloroethane (EDC)	58.8	1.0	"	50.0	ND	118	70-130
1,2-Dichloropropane	56.6	1.0	"	50.0	ND	113	70-130
1,3,5-Trimethylbenzene	52.1	1.0	"	50.0	ND	104	70-130
1,3-Dichlorobenzene	45.4	1.0	"	50.0	ND	90.8	70-130
1,3-Dichloropropane	53.6	1.0	"	50.0	ND	107	70-130
1,4-Dichlorobenzene	55.2	1.0	"	50.0	ND	110	70-130
2,2-Dichloropropane	42.5	1.0	"	50.0	ND	84.9	70-130
2-Chlorotoluene	47.0	1.0	"	50.0	ND	94.0	70-130
4-Chlorotoluene	40.8	1.0	"	50.0	ND	81.5	70-130
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.1	23-173
Surrogate: Toluene-d8	12.4		"	13.3		93.0	20-170
Surrogate: 4-Bromofluorobenzene	10.8		"	13.3		81.2	21-167

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1906223 - EPA 5030 Water MS

Matrix Spike Dup (1906223-MSD1)

Source: 1906204-01

Prepared: 06/18/19 Analyzed: 06/19/19

Analyte	Result	Limit	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Notes
Benzene	46.4	1.0	ug/l	50.0	ND	92.8	70-130	3.33	30	
Bromobenzene	53.0	1.0	"	50.0	ND	106	70-130	21.2	30	
Bromochloromethane	48.5	5.0	"	50.0	ND	96.9	70-130	5.12	30	
Bromodichloromethane	52.1	2.0	"	50.0	ND	104	70-130	10.3	30	
Bromoform	45.2	1.0	"	50.0	ND	90.4	70-130	22.0	30	
Bromomethane	56.7	1.0	"	50.0	ND	113	70-130	7.52	30	
Carbon tetrachloride	57.2	1.0	"	50.0	ND	114	70-130	28.2	30	
Chlorobenzene	46.5	1.0	"	50.0	ND	93.0	70-130	13.5	30	
Chlorodibromomethane	49.6	1.0	"	50.0	ND	99.2	70-130	8.20	30	
Chloroethane	58.3	1.0	"	50.0	ND	117	70-130	24.7	30	
Chloroform	58.7	3.0	"	50.0	ND	117	70-130	15.3	30	
Chloromethane	54.0	1.0	"	50.0	ND	108	70-130	16.0	30	
cis-1,2-Dichloroethene	54.2	1.0	"	50.0	ND	108	70-130	0.425	30	
cis-1,3-Dichloropropene	47.0	1.0	"	50.0	ND	93.9	70-130	9.80	30	
Dibromomethane	44.9	1.0	"	50.0	ND	89.7	70-130	6.82	30	
Dichlorodifluoromethane	50.2	1.0	"	50.0	ND	100	70-130	0.358	30	
Di-isopropyl ether	52.9	5.0	"	50.0	ND	106	70-130	6.26	30	
Ethyl tert-butyl ether	52.3	10	"	50.0	ND	105	70-130	1.08	30	
Ethylbenzene	63.0	1.0	"	50.0	ND	126	70-130	25.6	30	
Hexachlorobutadiene	59.2	1.0	"	50.0	ND	118	70-130	27.8	30	
m,p-Xylene	125	2.0	"	100	ND	125	70-130	20.9	30	
Methyl tert-butyl ether	45.3	5.0	"		ND		70-130	7.11	30	
Isopropylbenzene	64.5	1.0	"	50.0	ND	129	70-130	28.1	30	
Methylene Chloride	53.0	5.0	"	50.0	ND	106	70-130	7.08	30	
Naphthalene	45.4	1.0	"	50.0	ND	90.9	70-130	11.8	30	
n-Butylbenzene	42.7	1.0	"	50.0	ND	85.4	70-130	5.09	30	
n-Propylbenzene	53.2	1.0	"	50.0	ND	106	70-130	10.6	30	
o-Xylene	59.8	1.0	"	50.0	ND	120	70-130	22.4	30	
p-Isopropyltoluene	56.1	1.0	"	50.0	ND	112	70-130	4.24	30	
sec-Butylbenzene	56.6	1.0	"	50.0	ND	113	70-130	19.8	30	
Styrene	55.3	1.0	"	50.0	ND	111	70-130	0.363	30	
Tert-amyl methyl ether	48.8	1.0	"	50.0	ND	97.6	70-130	6.31	30	
Tert-butyl alcohol	240	20	"	250	ND	96.1	70-130	0.278	30	
tert-Butylbenzene	54.0	1.0	"	50.0	ND	108	70-130	29.0	30	
Tetrachloroethene	56.0	1.0	"	50.0	ND	112	70-130	18.0	30	
Toluene	58.9	1.0	"	50.0	ND	118	70-130	24.1	30	
trans-1,2-Dichloroethene	57.5	1.0	"	50.0	ND	115	70-130	11.0	30	
trans-1,3-Dichloropropene	47.0	1.0	"	50.0	ND	93.9	70-130	9.80	30	

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD		

Batch 1906223 - EPA 5030 Water MS

Matrix Spike Dup (1906223-MSD1)

Source: 1906204-01

Prepared: 06/18/19 Analyzed: 06/19/19

Trichloroethene	55.0	1.0	ug/l	50.0	ND	110	70-130	12.9	30
Trichlorofluoromethane	51.8	1.0	"	50.0	ND	104	70-130	25.2	30
Vinyl chloride	48.2	1.0	"	50.0	ND	96.4	70-130	8.97	30
1,1,1,2-Tetrachloroethane	56.2	1.0	"	50.0	ND	112	70-130	14.3	30
1,1,1-Trichloroethane	56.3	1.0	"	50.0	ND	113	70-130	13.9	30
1,1,2,2-Tetrachloroethane	48.8	1.0	"	50.0	ND	97.7	70-130	0.513	30
1,1,2-Trichloroethane	44.4	1.0	"	50.0	ND	88.8	70-130	14.2	30
1,1-Dichloroethane	56.5	1.0	"	50.0	ND	113	70-130	5.21	30
1,1-Dichloroethene	62.7	1.0	"	50.0	ND	125	70-130	19.0	30
1,1-Dichloropropene	64.5	1.0	"	50.0	ND	129	70-130	22.6	30
1,2,3-Trichlorobenzene	53.0	1.0	"	50.0	ND	106	70-130	16.5	30
1,2,3-Trichloropropane	47.5	1.0	"	50.0	ND	94.9	70-130	7.45	30
1,2,4-Trichlorobenzene	50.0	1.0	"	50.0	ND	100	70-130	14.3	30
1,2,4-Trimethylbenzene	62.5	1.0	"	50.0	ND	125	70-130	11.8	30
1,2-Dibromo-3-chloropropane	49.2	1.0	"	50.0	ND	98.4	70-130	5.44	30
1,2-Dibromoethane (EDB)	45.7	1.0	"	50.0	ND	91.4	70-130	2.29	30
1,2-Dichlorobenzene	56.5	1.0	"	50.0	ND	113	70-130	27.8	30
1,2-Dichloroethane (EDC)	49.6	1.0	"	50.0	ND	99.3	70-130	16.8	30
1,2-Dichloropropane	52.1	1.0	"	50.0	ND	104	70-130	8.34	30
1,3,5-Trimethylbenzene	60.3	1.0	"	50.0	ND	121	70-130	14.7	30
1,3-Dichlorobenzene	57.1	1.0	"	50.0	ND	114	70-130	22.9	30
1,3-Dichloropropane	46.8	1.0	"	50.0	ND	93.7	70-130	13.5	30
1,4-Dichlorobenzene	56.2	1.0	"	50.0	ND	112	70-130	1.76	30
2,2-Dichloropropane	51.9	1.0	"	50.0	ND	104	70-130	20.0	30
2-Chlorotoluene	59.8	1.0	"	50.0	ND	120	70-130	23.9	30
4-Chlorotoluene	48.9	1.0	"	50.0	ND	97.8	70-130	18.2	30
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.7	23-173		
Surrogate: Toluene-d8	13.3		"	13.3		99.5	20-170		
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	21-167		

Summit Scientific

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Terracon - Longmont
 1831 Lefthand Circle
 Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
 Project Manager: Mike Skridulis

Reported:
 06/25/19 11:27

Dissolved Gases by RSK-175 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch 1906244 - GC

Blank (1906244-BLK1)

Prepared: 06/18/19 Analyzed: 06/24/19

Methane	ND	0.010	mg/L							
Ethene	ND	0.010	"							
Ethane	ND	0.010	"							

LCS (1906244-BS1)

Prepared: 06/18/19 Analyzed: 06/24/19

Methane	0.043	0.010	mg/L	0.0428		101	70-130			
Ethane	0.083	0.010	"	0.0798		104	70-130			

Duplicate (1906244-DUP1)

Source: 1906218-01

Prepared: 06/18/19 Analyzed: 06/24/19

Methane	ND	0.010	mg/L		ND					30
Ethane	ND	0.010	"		ND					30

Matrix Spike (1906244-MS1)

Source: 1906218-01

Prepared: 06/18/19 Analyzed: 06/24/19

Methane	0.042	0.010	mg/L	0.0428	ND	97.0	70-130			
Ethane	0.081	0.010	"	0.0798	ND	101	70-130			

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Terracon - Longmont
 1831 Lefthand Circle
 Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
 Project Manager: Mike Skridulis

Reported:
 06/25/19 11:27

Total Metals by EPA Method 200.8 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 1906355 - EPA 200.8

Blank (1906355-BLK1)

Prepared & Analyzed: 06/24/19

Strontium ND 0.00100 mg/L

LCS (1906355-BS1)

Prepared & Analyzed: 06/24/19

Strontium 0.511 0.00100 mg/L 0.500 102 85-115

Duplicate (1906355-DUP1)

Source: 1906218-01

Prepared & Analyzed: 06/24/19

Strontium 2.48 0.00100 mg/L 2.53 1.86 20

Matrix Spike (1906355-MS1)

Source: 1906218-01

Prepared & Analyzed: 06/24/19

Strontium 3.00 0.00100 mg/L 0.500 2.53 95.0 70-130

Matrix Spike Dup (1906355-MSD1)

Source: 1906218-01

Prepared & Analyzed: 06/24/19

Strontium 2.92 0.00100 mg/L 0.500 2.53 78.8 70-130 2.74 25

Summit Scientific

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Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

Dissolved Metals by EPA Method 200.8 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limits	RPD	Limit		

Batch 1906239 - EPA 200.8

Blank (1906239-BLK1)

Prepared & Analyzed: 06/18/19

Calcium	ND	0.0500	mg/L							
Iron	ND	0.0100	"							
Magnesium	ND	0.0500	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0500	"							

LCS (1906239-BS1)

Prepared & Analyzed: 06/18/19

Calcium	5.76	0.0500	mg/L	5.00	115	85-115				
Iron	4.72	0.0100	"	5.00	94.4	85-115				
Magnesium	5.20	0.0500	"	5.00	104	85-115				
Potassium	5.18	0.0500	"	5.00	104	85-115				
Sodium	5.10	0.0500	"	5.00	102	85-115				

Duplicate (1906239-DUP1)

Source: 1906213-01

Prepared & Analyzed: 06/18/19

Calcium	78.3	0.0500	mg/L	76.5			2.35	20		
Iron	ND	0.0100	"	0.00494				20		
Magnesium	12.9	0.0500	"	12.4			3.54	20		
Potassium	3.40	0.0500	"	3.31			2.57	20		
Sodium	45.2	0.0500	"	43.3			4.20	20		

Matrix Spike (1906239-MS1)

Source: 1906213-01

Prepared & Analyzed: 06/18/19

Calcium	81.9	0.0500	mg/L	5.00	76.5	107	70-130			
Iron	4.05	0.0100	"	5.00	0.00494	80.9	70-130			
Magnesium	16.0	0.0500	"	5.00	12.4	71.1	70-130			
Potassium	7.19	0.0500	"	5.00	3.31	77.7	70-130			
Sodium	46.9	0.0500	"	5.00	43.3	72.4	70-130			

Matrix Spike Dup (1906239-MSD1)

Source: 1906213-01

Prepared & Analyzed: 06/18/19

Calcium	82.1	0.0500	mg/L	5.00	76.5	111	70-130	0.243	25	
Iron	4.76	0.0100	"	5.00	0.00494	95.0	70-130	16.0	25	
Magnesium	17.5	0.0500	"	5.00	12.4	103	70-130	9.45	25	
Potassium	8.28	0.0500	"	5.00	3.31	99.3	70-130	14.0	25	
Sodium	49.6	0.0500	"	5.00	43.3	126	70-130	5.57	25	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limits	RPD	Limit		

Batch 1906230 - General Preparation

Blank (1906230-BLK1)

Prepared & Analyzed: 06/18/19

Chloride	ND	0.0600	mg/L						
Bromide	ND	0.200	"						
Sulfate	ND	0.300	"						
Nitrate as N	ND	0.0500	"						
Nitrite as N	ND	0.0600	"						

LCS (1906230-BS1)

Prepared & Analyzed: 06/18/19

Sulfate	15.0	0.300	mg/L	15.0	100	90-110		
Nitrite as N	2.81	0.0600	"	3.00	93.7	90-110		
Nitrate as N	3.05	0.0500	"	3.00	102	90-110		
Chloride	3.22	0.0600	"	3.00	107	90-110		
Bromide	10.8	0.200	"	10.0	108	90-110		

Duplicate (1906230-DUP1)

Source: 1906220-01

Prepared & Analyzed: 06/18/19

Nitrite as N	ND	0.0600	mg/L	ND				20
Nitrate as N	ND	0.0500	"	ND				20
Chloride	6.04	0.0600	"	6.16		2.03		20
Bromide	ND	0.200	"	ND				20
Sulfate	19.4	0.300	"	19.7		1.46		20

Matrix Spike (1906230-MS1)

Source: 1906220-01

Prepared & Analyzed: 06/18/19

Chloride	8.97	0.0600	mg/L	3.00	6.16	93.7	80-120	
Nitrite as N	3.24	0.0600	"	3.00	ND	108	80-120	
Nitrate as N	3.44	0.0500	"	3.00	ND	114	80-120	
Bromide	10.0	0.200	"	10.0	ND	100	80-120	
Sulfate	36.9	0.300	"	15.0	19.7	115	80-120	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Terracon - Longmont
 1831 Lefthand Circle
 Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
 Project Manager: Mike Skridulis

Reported:
 06/25/19 11:27

Alkalinity by SM2320 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 1906279 - General Preparation

Blank (1906279-BLK1)

Prepared & Analyzed: 06/20/19

Total Alkalinity	ND	10.0	mg/L as CaCO3							
Carbonate	ND	10.0	"							
Bicarbonate	ND	10.0	"							
Hydroxide Alkalinity	ND	10.0	"							

LCS (1906279-BS1)

Prepared & Analyzed: 06/20/19

Total Alkalinity	100	10.0	mg/L as CaCO3	100		100	80-120			
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Duplicate (1906279-DUP1)

Source: 1906177-01

Prepared & Analyzed: 06/20/19

Total Alkalinity	110	10.0	mg/L as CaCO3		110			0.00	20	
Carbonate	ND	10.0	"		ND				20	
Bicarbonate	110	10.0	"		110			0.00	20	
Hydroxide Alkalinity	ND	10.0	"		ND				20	

Matrix Spike (1906279-MS1)

Source: 1906177-01

Prepared & Analyzed: 06/20/19

Total Alkalinity	190	10.0	mg/L as CaCO3	100	110	80.0	80-120			
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Matrix Spike Dup (1906279-MSD1)

Source: 1906177-01

Prepared & Analyzed: 06/20/19

Total Alkalinity	190	10.0	mg/L as CaCO3	100	110	80.0	80-120	0.00	20	
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Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Terracon - Longmont
1831 Lefthand Circle
Longmont CO, 80501

Project: COL Annual GW Survey

Project Number: 22197006
Project Manager: Mike Skridulis

Reported:
06/25/19 11:27

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Terracon Consultants, Inc - Longmont, CO

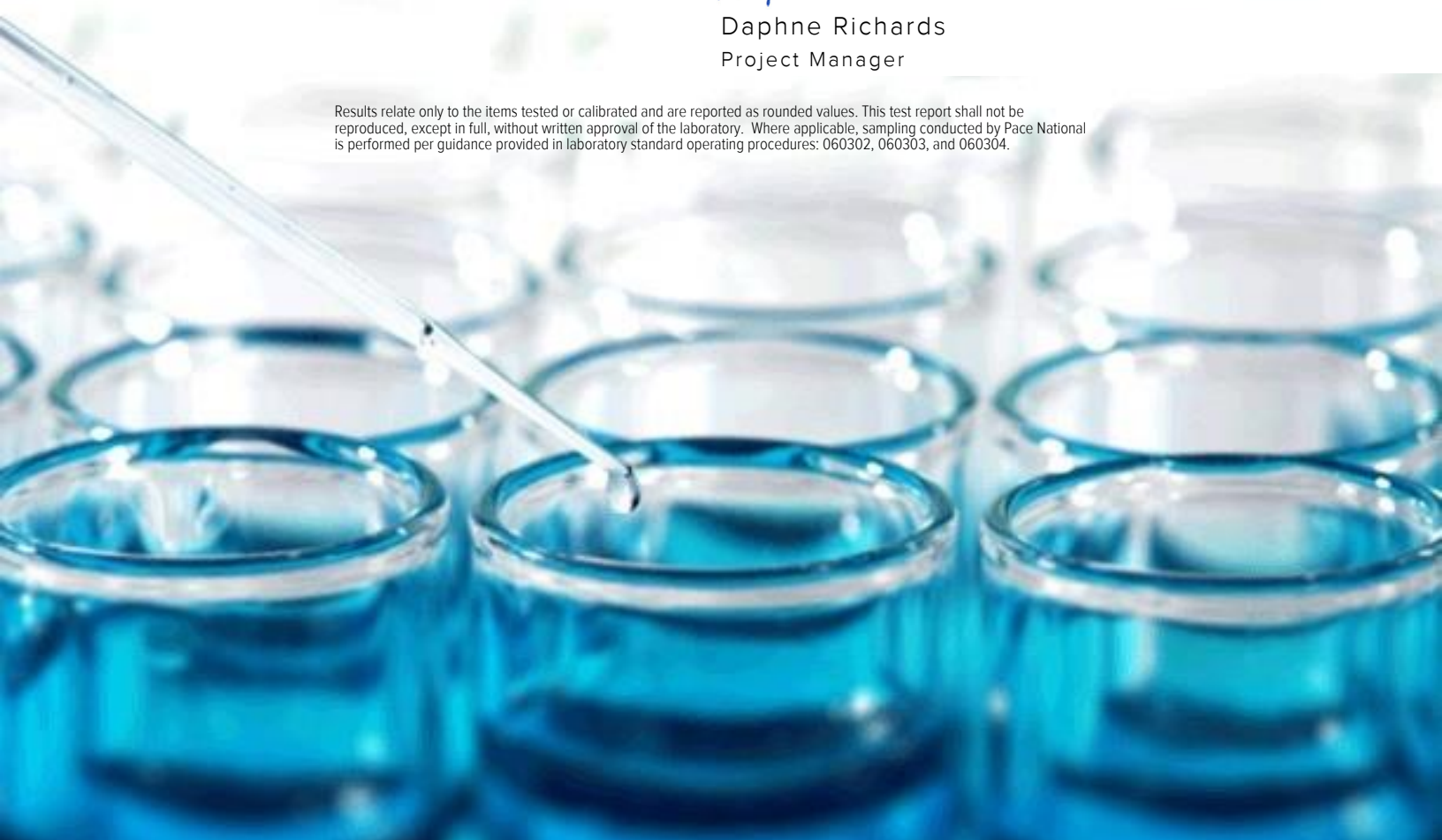
Sample Delivery Group: L1104829
Samples Received: 06/04/2019
Project Number: 22197006
Description: COL Annual GW
Site: DM1
Report To: Michael Skridulis
1831 Lefthand Cirlice, Suite C
Longmont, CO 80501

Entire Report Reviewed By:












Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





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SAMPLE SUMMARY



DM1-MW01 L1104829-01 GW

Collected by Charles Covington Collected date/time 06/03/19 10:00 Received date/time 06/04/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1290694	1	06/04/19 15:54	06/04/19 15:54	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290565	1	06/04/19 15:28	06/04/19 15:28	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290565	5	06/04/19 20:16	06/04/19 20:16	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1291053	1	06/05/19 10:38	06/07/19 22:11	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1291124	1	06/05/19 09:35	06/08/19 13:43	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1291109	1	06/05/19 13:23	06/05/19 13:23	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1291546	1	06/05/19 16:04	06/05/19 16:04	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1292986	1	06/08/19 01:34	06/08/19 01:34	TJJ	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

DM1-MW02 L1104829-02 GW

Collected by Charles Covington Collected date/time 06/03/19 11:45 Received date/time 06/04/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1290694	1	06/04/19 16:02	06/04/19 16:02	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290565	1	06/04/19 15:42	06/04/19 15:42	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290565	5	06/04/19 16:25	06/04/19 16:25	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1291053	1	06/05/19 10:38	06/07/19 22:20	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1291124	1	06/05/19 09:35	06/08/19 13:28	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1291109	1	06/05/19 13:27	06/05/19 13:27	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1291546	1	06/05/19 16:08	06/05/19 16:08	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1292986	1	06/08/19 01:54	06/08/19 01:54	TJJ	Mt. Juliet, TN

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

DM1-MW03 L1104829-03 GW

Collected by Charles Covington Collected date/time 06/03/19 11:00 Received date/time 06/04/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1290694	1	06/04/19 16:09	06/04/19 16:09	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290565	1	06/04/19 16:40	06/04/19 16:40	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290565	5	06/04/19 16:54	06/04/19 16:54	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1291053	1	06/05/19 10:38	06/07/19 22:23	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1291124	1	06/05/19 09:35	06/08/19 13:47	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1291109	1	06/05/19 13:32	06/05/19 13:32	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1291546	1	06/05/19 16:11	06/05/19 16:11	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1292986	1	06/08/19 02:14	06/08/19 02:14	TJJ	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	407		20.0	1	06/04/2019 15:54	WG1290694

Sample Narrative:

L1104829-01 WG1290694: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		5.00	5	06/04/2019 20:16	WG1290565
Chloride	78.4		1.00	1	06/04/2019 15:28	WG1290565
Nitrate as (N)	ND		0.100	1	06/04/2019 15:28	WG1290565
Nitrite as (N)	ND		0.100	1	06/04/2019 15:28	WG1290565
Sulfate	181		25.0	5	06/04/2019 20:16	WG1290565

Sample Narrative:

L1104829-01 WG1290565: reporting Br @ dilution due : high sulfate content

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	52.0		1.00	1	06/07/2019 22:11	WG1291053
Iron,Dissolved	ND		0.100	1	06/07/2019 22:11	WG1291053
Magnesium,Dissolved	74.2		1.00	1	06/07/2019 22:11	WG1291053
Potassium,Dissolved	3.04	<u>B</u>	1.00	1	06/07/2019 22:11	WG1291053
Sodium,Dissolved	144	<u>V</u>	1.00	1	06/07/2019 22:11	WG1291053

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	1.12		0.0100	1	06/08/2019 13:43	WG1291124

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	0.0529		0.0100	1	06/05/2019 13:23	WG1291109
Ethane	ND		0.0130	1	06/05/2019 13:23	WG1291109
Ethene	ND		0.0130	1	06/05/2019 13:23	WG1291109
Acetylene	ND		0.0208	1	06/05/2019 16:04	WG1291546

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	06/08/2019 01:34	WG1292986
Acrolein	ND	<u>J4</u>	0.0500	1	06/08/2019 01:34	WG1292986
Acrylonitrile	ND		0.0100	1	06/08/2019 01:34	WG1292986
Benzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
Bromobenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
Bromodichloromethane	ND		0.00100	1	06/08/2019 01:34	WG1292986
Bromoform	ND		0.00100	1	06/08/2019 01:34	WG1292986
Bromomethane	ND		0.00500	1	06/08/2019 01:34	WG1292986
n-Butylbenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
sec-Butylbenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
tert-Butylbenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 06/03/19 10:00

L1104829

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Carbon tetrachloride	ND		0.00100	1	06/08/2019 01:34	WG1292986
Chlorobenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
Chlorodibromomethane	ND		0.00100	1	06/08/2019 01:34	WG1292986
Chloroethane	ND		0.00500	1	06/08/2019 01:34	WG1292986
Chloroform	ND		0.00500	1	06/08/2019 01:34	WG1292986
Chloromethane	ND	<u>J4</u>	0.00250	1	06/08/2019 01:34	WG1292986
2-Chlorotoluene	ND		0.00100	1	06/08/2019 01:34	WG1292986
4-Chlorotoluene	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/08/2019 01:34	WG1292986
1,2-Dibromoethane	ND		0.00100	1	06/08/2019 01:34	WG1292986
Dibromomethane	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,2-Dichlorobenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,3-Dichlorobenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,4-Dichlorobenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
Dichlorodifluoromethane	ND		0.00500	1	06/08/2019 01:34	WG1292986
1,1-Dichloroethane	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,2-Dichloroethane	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,1-Dichloroethene	ND		0.00100	1	06/08/2019 01:34	WG1292986
cis-1,2-Dichloroethene	ND		0.00100	1	06/08/2019 01:34	WG1292986
trans-1,2-Dichloroethene	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,2-Dichloropropane	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,1-Dichloropropene	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,3-Dichloropropane	ND		0.00100	1	06/08/2019 01:34	WG1292986
cis-1,3-Dichloropropene	ND		0.00100	1	06/08/2019 01:34	WG1292986
trans-1,3-Dichloropropene	ND		0.00100	1	06/08/2019 01:34	WG1292986
2,2-Dichloropropane	ND		0.00100	1	06/08/2019 01:34	WG1292986
Di-isopropyl ether	ND		0.00100	1	06/08/2019 01:34	WG1292986
Ethylbenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
Hexachloro-1,3-butadiene	ND		0.00100	1	06/08/2019 01:34	WG1292986
Isopropylbenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
p-Isopropyltoluene	ND		0.00100	1	06/08/2019 01:34	WG1292986
2-Butanone (MEK)	ND		0.0100	1	06/08/2019 01:34	WG1292986
Methylene Chloride	ND		0.00500	1	06/08/2019 01:34	WG1292986
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/08/2019 01:34	WG1292986
Methyl tert-butyl ether	ND		0.00100	1	06/08/2019 01:34	WG1292986
Naphthalene	ND		0.00500	1	06/08/2019 01:34	WG1292986
n-Propylbenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
Styrene	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/08/2019 01:34	WG1292986
Tetrachloroethene	ND		0.00100	1	06/08/2019 01:34	WG1292986
Toluene	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,2,3-Trichlorobenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,2,4-Trichlorobenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,1,1-Trichloroethane	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,1,2-Trichloroethane	ND		0.00100	1	06/08/2019 01:34	WG1292986
Trichloroethene	ND		0.00100	1	06/08/2019 01:34	WG1292986
Trichlorofluoromethane	ND		0.00500	1	06/08/2019 01:34	WG1292986
1,2,3-Trichloropropane	ND		0.00250	1	06/08/2019 01:34	WG1292986
1,2,4-Trimethylbenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,2,3-Trimethylbenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
1,3,5-Trimethylbenzene	ND		0.00100	1	06/08/2019 01:34	WG1292986
Vinyl chloride	ND		0.00100	1	06/08/2019 01:34	WG1292986
Xylenes, Total	ND		0.00300	1	06/08/2019 01:34	WG1292986
(S) Toluene-d8	103		80.0-120		06/08/2019 01:34	WG1292986

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	95.6		77.0-126		06/08/2019 01:34	WG1292986
(S) 1,2-Dichloroethane-d4	97.5		70.0-130		06/08/2019 01:34	WG1292986

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	367		20.0	1	06/04/2019 16:02	WG1290694

Sample Narrative:

L1104829-02 WG1290694: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		5.00	5	06/04/2019 16:25	WG1290565
Chloride	89.5		1.00	1	06/04/2019 15:42	WG1290565
Nitrate as (N)	ND		0.100	1	06/04/2019 15:42	WG1290565
Nitrite as (N)	ND		0.100	1	06/04/2019 15:42	WG1290565
Sulfate	286		25.0	5	06/04/2019 16:25	WG1290565

Sample Narrative:

L1104829-02 WG1290565: reporting Br @ dilution due : high sulfate content

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	84.8		1.00	1	06/07/2019 22:20	WG1291053
Iron,Dissolved	ND		0.100	1	06/07/2019 22:20	WG1291053
Magnesium,Dissolved	65.6		1.00	1	06/07/2019 22:20	WG1291053
Potassium,Dissolved	3.20	<u>B</u>	1.00	1	06/07/2019 22:20	WG1291053
Sodium,Dissolved	164		1.00	1	06/07/2019 22:20	WG1291053

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	0.945	<u>V</u>	0.0100	1	06/08/2019 13:28	WG1291124

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	0.173		0.0100	1	06/05/2019 13:27	WG1291109
Ethane	ND		0.0130	1	06/05/2019 13:27	WG1291109
Ethene	ND		0.0130	1	06/05/2019 13:27	WG1291109
Acetylene	ND		0.0208	1	06/05/2019 16:08	WG1291546

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	06/08/2019 01:54	WG1292986
Acrolein	ND	<u>J4</u>	0.0500	1	06/08/2019 01:54	WG1292986
Acrylonitrile	ND		0.0100	1	06/08/2019 01:54	WG1292986
Benzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
Bromobenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
Bromodichloromethane	ND		0.00100	1	06/08/2019 01:54	WG1292986
Bromoform	ND		0.00100	1	06/08/2019 01:54	WG1292986
Bromomethane	ND		0.00500	1	06/08/2019 01:54	WG1292986
n-Butylbenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
sec-Butylbenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
tert-Butylbenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 06/03/19 11:45

L1104829

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Carbon tetrachloride	ND		0.00100	1	06/08/2019 01:54	WG1292986
Chlorobenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
Chlorodibromomethane	ND		0.00100	1	06/08/2019 01:54	WG1292986
Chloroethane	ND		0.00500	1	06/08/2019 01:54	WG1292986
Chloroform	ND		0.00500	1	06/08/2019 01:54	WG1292986
Chloromethane	ND	J4	0.00250	1	06/08/2019 01:54	WG1292986
2-Chlorotoluene	ND		0.00100	1	06/08/2019 01:54	WG1292986
4-Chlorotoluene	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/08/2019 01:54	WG1292986
1,2-Dibromoethane	ND		0.00100	1	06/08/2019 01:54	WG1292986
Dibromomethane	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,2-Dichlorobenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,3-Dichlorobenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,4-Dichlorobenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
Dichlorodifluoromethane	ND		0.00500	1	06/08/2019 01:54	WG1292986
1,1-Dichloroethane	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,2-Dichloroethane	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,1-Dichloroethene	ND		0.00100	1	06/08/2019 01:54	WG1292986
cis-1,2-Dichloroethene	ND		0.00100	1	06/08/2019 01:54	WG1292986
trans-1,2-Dichloroethene	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,2-Dichloropropane	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,1-Dichloropropene	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,3-Dichloropropane	ND		0.00100	1	06/08/2019 01:54	WG1292986
cis-1,3-Dichloropropene	ND		0.00100	1	06/08/2019 01:54	WG1292986
trans-1,3-Dichloropropene	ND		0.00100	1	06/08/2019 01:54	WG1292986
2,2-Dichloropropane	ND		0.00100	1	06/08/2019 01:54	WG1292986
Di-isopropyl ether	ND		0.00100	1	06/08/2019 01:54	WG1292986
Ethylbenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
Hexachloro-1,3-butadiene	ND		0.00100	1	06/08/2019 01:54	WG1292986
Isopropylbenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
p-Isopropyltoluene	ND		0.00100	1	06/08/2019 01:54	WG1292986
2-Butanone (MEK)	ND		0.0100	1	06/08/2019 01:54	WG1292986
Methylene Chloride	ND		0.00500	1	06/08/2019 01:54	WG1292986
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/08/2019 01:54	WG1292986
Methyl tert-butyl ether	ND		0.00100	1	06/08/2019 01:54	WG1292986
Naphthalene	ND		0.00500	1	06/08/2019 01:54	WG1292986
n-Propylbenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
Styrene	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/08/2019 01:54	WG1292986
Tetrachloroethene	ND		0.00100	1	06/08/2019 01:54	WG1292986
Toluene	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,2,3-Trichlorobenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,2,4-Trichlorobenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,1,1-Trichloroethane	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,1,2-Trichloroethane	ND		0.00100	1	06/08/2019 01:54	WG1292986
Trichloroethene	ND		0.00100	1	06/08/2019 01:54	WG1292986
Trichlorofluoromethane	ND		0.00500	1	06/08/2019 01:54	WG1292986
1,2,3-Trichloropropane	ND		0.00250	1	06/08/2019 01:54	WG1292986
1,2,4-Trimethylbenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,2,3-Trimethylbenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
1,3,5-Trimethylbenzene	ND		0.00100	1	06/08/2019 01:54	WG1292986
Vinyl chloride	ND		0.00100	1	06/08/2019 01:54	WG1292986
Xylenes, Total	ND		0.00300	1	06/08/2019 01:54	WG1292986
(S) Toluene-d8	97.2		80.0-120		06/08/2019 01:54	WG1292986

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	93.0		77.0-126		06/08/2019 01:54	WG1292986
(S) 1,2-Dichloroethane-d4	96.3		70.0-130		06/08/2019 01:54	WG1292986

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	216		20.0	1	06/04/2019 16:09	WG1290694

Sample Narrative:

L1104829-03 WG1290694: Endpoint pH 4.5 headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		5.00	5	06/04/2019 16:54	WG1290565
Chloride	90.1		1.00	1	06/04/2019 16:40	WG1290565
Nitrate as (N)	0.432		0.100	1	06/04/2019 16:40	WG1290565
Nitrite as (N)	ND		0.100	1	06/04/2019 16:40	WG1290565
Sulfate	282		25.0	5	06/04/2019 16:54	WG1290565

Sample Narrative:

L1104829-03 WG1290565: reporting Br @ dilution due : high sulfate content

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	84.3		1.00	1	06/07/2019 22:23	WG1291053
Iron,Dissolved	ND		0.100	1	06/07/2019 22:23	WG1291053
Magnesium,Dissolved	46.4		1.00	1	06/07/2019 22:23	WG1291053
Potassium,Dissolved	2.08	<u>B</u>	1.00	1	06/07/2019 22:23	WG1291053
Sodium,Dissolved	122		1.00	1	06/07/2019 22:23	WG1291053

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	0.790		0.0100	1	06/08/2019 13:47	WG1291124

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	06/05/2019 13:32	WG1291109
Ethane	ND		0.0130	1	06/05/2019 13:32	WG1291109
Ethene	ND		0.0130	1	06/05/2019 13:32	WG1291109
Acetylene	ND		0.0208	1	06/05/2019 16:11	WG1291546

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	06/08/2019 02:14	WG1292986
Acrolein	ND	<u>J4</u>	0.0500	1	06/08/2019 02:14	WG1292986
Acrylonitrile	ND		0.0100	1	06/08/2019 02:14	WG1292986
Benzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
Bromobenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
Bromodichloromethane	ND		0.00100	1	06/08/2019 02:14	WG1292986
Bromoform	ND		0.00100	1	06/08/2019 02:14	WG1292986
Bromomethane	ND		0.00500	1	06/08/2019 02:14	WG1292986
n-Butylbenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
sec-Butylbenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
tert-Butylbenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986





Collected date/time: 06/03/19 11:00

L1104829

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Carbon tetrachloride	ND		0.00100	1	06/08/2019 02:14	WG1292986
Chlorobenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
Chlorodibromomethane	ND		0.00100	1	06/08/2019 02:14	WG1292986
Chloroethane	ND		0.00500	1	06/08/2019 02:14	WG1292986
Chloroform	ND		0.00500	1	06/08/2019 02:14	WG1292986
Chloromethane	ND	<u>J4</u>	0.00250	1	06/08/2019 02:14	WG1292986
2-Chlorotoluene	ND		0.00100	1	06/08/2019 02:14	WG1292986
4-Chlorotoluene	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/08/2019 02:14	WG1292986
1,2-Dibromoethane	ND		0.00100	1	06/08/2019 02:14	WG1292986
Dibromomethane	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,2-Dichlorobenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,3-Dichlorobenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,4-Dichlorobenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
Dichlorodifluoromethane	ND		0.00500	1	06/08/2019 02:14	WG1292986
1,1-Dichloroethane	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,2-Dichloroethane	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,1-Dichloroethene	ND		0.00100	1	06/08/2019 02:14	WG1292986
cis-1,2-Dichloroethene	ND		0.00100	1	06/08/2019 02:14	WG1292986
trans-1,2-Dichloroethene	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,2-Dichloropropane	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,1-Dichloropropene	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,3-Dichloropropane	ND		0.00100	1	06/08/2019 02:14	WG1292986
cis-1,3-Dichloropropene	ND		0.00100	1	06/08/2019 02:14	WG1292986
trans-1,3-Dichloropropene	ND		0.00100	1	06/08/2019 02:14	WG1292986
2,2-Dichloropropane	ND		0.00100	1	06/08/2019 02:14	WG1292986
Di-isopropyl ether	ND		0.00100	1	06/08/2019 02:14	WG1292986
Ethylbenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
Hexachloro-1,3-butadiene	ND		0.00100	1	06/08/2019 02:14	WG1292986
Isopropylbenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
p-Isopropyltoluene	ND		0.00100	1	06/08/2019 02:14	WG1292986
2-Butanone (MEK)	ND		0.0100	1	06/08/2019 02:14	WG1292986
Methylene Chloride	ND		0.00500	1	06/08/2019 02:14	WG1292986
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/08/2019 02:14	WG1292986
Methyl tert-butyl ether	ND		0.00100	1	06/08/2019 02:14	WG1292986
Naphthalene	ND		0.00500	1	06/08/2019 02:14	WG1292986
n-Propylbenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
Styrene	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/08/2019 02:14	WG1292986
Tetrachloroethene	ND		0.00100	1	06/08/2019 02:14	WG1292986
Toluene	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,2,3-Trichlorobenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,2,4-Trichlorobenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,1,1-Trichloroethane	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,1,2-Trichloroethane	ND		0.00100	1	06/08/2019 02:14	WG1292986
Trichloroethene	ND		0.00100	1	06/08/2019 02:14	WG1292986
Trichlorofluoromethane	ND		0.00500	1	06/08/2019 02:14	WG1292986
1,2,3-Trichloropropane	ND		0.00250	1	06/08/2019 02:14	WG1292986
1,2,4-Trimethylbenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,2,3-Trimethylbenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
1,3,5-Trimethylbenzene	ND		0.00100	1	06/08/2019 02:14	WG1292986
Vinyl chloride	ND		0.00100	1	06/08/2019 02:14	WG1292986
Xylenes, Total	ND		0.00300	1	06/08/2019 02:14	WG1292986
(S) Toluene-d8	96.1		80.0-120		06/08/2019 02:14	WG1292986

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	95.3		77.0-126		06/08/2019 02:14	WG1292986
(S) 1,2-Dichloroethane-d4	95.9		70.0-130		06/08/2019 02:14	WG1292986

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3417758-1 06/04/19 13:43

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1104532-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1104532-01 06/04/19 14:40 • (DUP) R3417758-2 06/04/19 14:47

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	52.4	51.3	1	2.02		20

Sample Narrative:

OS: Endpoint pH 4.5 headspace

DUP: Endpoint pH 4.5

L1104844-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1104844-02 06/04/19 16:52 • (DUP) R3417758-4 06/04/19 17:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	271	272	1	0.0433		20

Sample Narrative:

OS: Endpoint pH 4.5 headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3417758-3 06/04/19 15:18

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	101	101	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3417845-1 06/04/19 09:58

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

L1104797-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1104797-01 06/04/19 14:30 • (DUP) R3417845-3 06/04/19 14:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.000	1	0.000		15
Chloride	27.5	27.6	1	0.396		15
Nitrate	3.41	3.43	1	0.445		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	12.8	12.8	1	0.631		15

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1104844-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1104844-01 06/04/19 18:35 • (DUP) R3417845-6 06/04/19 19:18

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.000	1	0.000		15
Chloride	3.91	3.91	1	0.0358		15
Nitrate	0.705	0.722	1	2.34		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	55.1	55.4	1	0.494		15

Laboratory Control Sample (LCS)

(LCS) R3417845-2 06/04/19 10:13

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	41.0	102	80.0-120	
Chloride	40.0	40.7	102	80.0-120	
Nitrate	8.00	8.41	105	80.0-120	
Nitrite	8.00	8.22	103	80.0-120	



Laboratory Control Sample (LCS)

(LCS) R3417845-2 06/04/19 10:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Sulfate	40.0	41.5	104	80.0-120	

L1104797-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1104797-01 06/04/19 14:30 • (MS) R3417845-4 06/04/19 14:59 • (MSD) R3417845-5 06/04/19 15:13

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	48.5	48.6	96.9	97.3	1	80.0-120			0.360	15
Chloride	50.0	27.5	76.5	76.9	98.0	98.7	1	80.0-120			0.424	15
Nitrate	5.00	3.41	8.33	8.35	98.4	98.9	1	80.0-120			0.290	15
Nitrite	5.00	ND	5.09	5.11	102	102	1	80.0-120			0.320	15
Sulfate	50.0	12.8	62.5	62.7	99.5	99.9	1	80.0-120			0.332	15

L1104844-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1104844-01 06/04/19 18:35 • (MS) R3417845-7 06/04/19 19:33

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	ND	47.1	94.1	1	80.0-120	
Chloride	50.0	3.91	54.2	101	1	80.0-120	
Nitrate	5.00	0.705	5.75	101	1	80.0-120	
Nitrite	5.00	ND	5.15	103	1	80.0-120	
Sulfate	50.0	55.1	102	94.3	1	80.0-120	<u>E</u>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3419076-1 06/07/19 22:04

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium,Dissolved	U		0.0463	1.00
Iron,Dissolved	U		0.0141	0.100
Magnesium,Dissolved	0.0410	↓	0.0111	1.00
Potassium,Dissolved	0.320	↓	0.102	1.00
Sodium,Dissolved	0.301	↓	0.0985	1.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3419076-2 06/07/19 22:06 • (LCSD) R3419076-3 06/07/19 22:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	10.1	9.95	101	99.5	80.0-120			1.19	20
Iron,Dissolved	10.0	9.77	9.68	97.7	96.8	80.0-120			0.902	20
Magnesium,Dissolved	10.0	10.4	10.1	104	101	80.0-120			2.85	20
Potassium,Dissolved	10.0	10.3	10.2	103	102	80.0-120			1.56	20
Sodium,Dissolved	10.0	10.6	10.3	106	103	80.0-120			2.81	20

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1104829-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1104829-01 06/07/19 22:11 • (MS) R3419076-5 06/07/19 22:16 • (MSD) R3419076-6 06/07/19 22:18

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	52.0	60.7	60.4	86.9	84.7	1	75.0-125			0.364	20
Iron,Dissolved	10.0	ND	9.85	9.64	98.5	96.4	1	75.0-125			2.24	20
Magnesium,Dissolved	10.0	74.2	82.0	81.7	77.8	75.1	1	75.0-125			0.337	20
Potassium,Dissolved	10.0	3.04	12.7	12.7	96.6	97.0	1	75.0-125			0.310	20
Sodium,Dissolved	10.0	144	149	149	51.5	51.2	1	75.0-125	↓	↓	0.0169	20



Method Blank (MB)

(MB) R3419176-1 06/08/19 13:17

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Strontium	0.000203	↓	0.000160	0.0100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3419176-2 06/08/19 13:20 • (LCSD) R3419176-3 06/08/19 13:24

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0526	0.0539	105	108	80.0-120			2.40	20

L1104829-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1104829-02 06/08/19 13:28 • (MS) R3419176-5 06/08/19 13:35 • (MSD) R3419176-6 06/08/19 13:39

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.945	0.980	0.989	70.1	86.8	1	75.0-125	↓		0.847	20

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3418038-1 06/05/19 11:24

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130

L1104517-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1104517-01 06/05/19 12:05 • (DUP) R3418038-2 06/05/19 12:59

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	4.78	4.61	1	3.63		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20

L1104517-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1104517-04 06/05/19 13:09 • (DUP) R3418038-3 06/05/19 14:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	4.92	5.20	1	5.70		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3418038-4 06/05/19 14:08 • (LCSD) R3418038-5 06/05/19 14:14

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0708	0.0740	104	109	85.0-115			4.42	20
Ethane	0.129	0.114	0.119	88.6	92.3	85.0-115			4.15	20
Ethene	0.127	0.113	0.118	89.0	92.7	85.0-115			4.12	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3418121-1 06/05/19 16:01

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Acetylene	U		0.00558	0.0208

1 Cp

2 Tc

3 Ss

L1104932-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1104932-01 06/05/19 16:13 • (DUP) R3418121-2 06/05/19 16:33

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Acetylene	ND	0.000	1	0.000		20

4 Cn

5 Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3418121-3 06/05/19 16:49 • (LCSD) R3418121-4 06/05/19 16:52

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Acetylene	0.208	0.192	0.184	92.2	88.3	85.0-115			4.35	20

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3419189-2 06/08/19 01:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	U		0.000256	0.00100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3419189-2 06/08/19 01:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	U		0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
<i>(S) Toluene-d8</i>	96.6			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	89.9			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	97.7			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3419189-1 06/08/19 00:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.125	0.149	119	19.0-160	
Acrolein	0.125	0.239	191	10.0-160	<u>J4</u>
Acrylonitrile	0.125	0.149	119	55.0-149	
Benzene	0.0250	0.0250	100	70.0-123	



Laboratory Control Sample (LCS)

(LCS) R3419189-1 06/08/19 00:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromobenzene	0.0250	0.0248	99.2	73.0-121	
Bromodichloromethane	0.0250	0.0241	96.6	75.0-120	
Bromoform	0.0250	0.0235	93.8	68.0-132	
Bromomethane	0.0250	0.00827	33.1	10.0-160	
n-Butylbenzene	0.0250	0.0242	96.8	73.0-125	
sec-Butylbenzene	0.0250	0.0237	94.6	75.0-125	
tert-Butylbenzene	0.0250	0.0242	97.0	76.0-124	
Carbon tetrachloride	0.0250	0.0239	95.7	68.0-126	
Chlorobenzene	0.0250	0.0258	103	80.0-121	
Chlorodibromomethane	0.0250	0.0242	96.6	77.0-125	
Chloroethane	0.0250	0.0207	82.6	47.0-150	
Chloroform	0.0250	0.0253	101	73.0-120	
Chloromethane	0.0250	0.00985	39.4	41.0-142	J4
2-Chlorotoluene	0.0250	0.0238	95.4	76.0-123	
4-Chlorotoluene	0.0250	0.0252	101	75.0-122	
1,2-Dibromo-3-Chloropropane	0.0250	0.0222	88.9	58.0-134	
1,2-Dibromoethane	0.0250	0.0253	101	80.0-122	
Dibromomethane	0.0250	0.0233	93.3	80.0-120	
1,2-Dichlorobenzene	0.0250	0.0261	104	79.0-121	
1,3-Dichlorobenzene	0.0250	0.0253	101	79.0-120	
1,4-Dichlorobenzene	0.0250	0.0244	97.8	79.0-120	
Dichlorodifluoromethane	0.0250	0.0306	122	51.0-149	
1,1-Dichloroethane	0.0250	0.0258	103	70.0-126	
1,2-Dichloroethane	0.0250	0.0237	94.9	70.0-128	
1,1-Dichloroethene	0.0250	0.0269	108	71.0-124	
cis-1,2-Dichloroethene	0.0250	0.0263	105	73.0-120	
trans-1,2-Dichloroethene	0.0250	0.0280	112	73.0-120	
1,2-Dichloropropane	0.0250	0.0255	102	77.0-125	
1,1-Dichloropropene	0.0250	0.0263	105	74.0-126	
1,3-Dichloropropane	0.0250	0.0260	104	80.0-120	
cis-1,3-Dichloropropene	0.0250	0.0226	90.2	80.0-123	
trans-1,3-Dichloropropene	0.0250	0.0216	86.4	78.0-124	
2,2-Dichloropropane	0.0250	0.0199	79.5	58.0-130	
Di-isopropyl ether	0.0250	0.0277	111	58.0-138	
Ethylbenzene	0.0250	0.0258	103	79.0-123	
Hexachloro-1,3-butadiene	0.0250	0.0226	90.6	54.0-138	
Isopropylbenzene	0.0250	0.0249	99.7	76.0-127	
p-Isopropyltoluene	0.0250	0.0237	95.0	76.0-125	
2-Butanone (MEK)	0.125	0.137	109	44.0-160	
Methylene Chloride	0.0250	0.0242	96.6	67.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Laboratory Control Sample (LCS)

(LCS) R3419189-1 06/08/19 00:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
4-Methyl-2-pentanone (MIBK)	0.125	0.139	111	68.0-142	
Methyl tert-butyl ether	0.0250	0.0259	103	68.0-125	
Naphthalene	0.0250	0.0251	100	54.0-135	
n-Propylbenzene	0.0250	0.0248	99.1	77.0-124	
Styrene	0.0250	0.0255	102	73.0-130	
1,1,1,2-Tetrachloroethane	0.0250	0.0239	95.7	75.0-125	
1,1,2,2-Tetrachloroethane	0.0250	0.0234	93.7	65.0-130	
Tetrachloroethene	0.0250	0.0269	108	72.0-132	
Toluene	0.0250	0.0248	99.3	79.0-120	
1,1,2-Trichlorotrifluoroethane	0.0250	0.0273	109	69.0-132	
1,2,3-Trichlorobenzene	0.0250	0.0248	99.3	50.0-138	
1,2,4-Trichlorobenzene	0.0250	0.0250	100	57.0-137	
1,1,1-Trichloroethane	0.0250	0.0259	103	73.0-124	
1,1,2-Trichloroethane	0.0250	0.0246	98.5	80.0-120	
Trichloroethene	0.0250	0.0270	108	78.0-124	
Trichlorofluoromethane	0.0250	0.0260	104	59.0-147	
1,2,3-Trichloropropane	0.0250	0.0256	103	73.0-130	
1,2,3-Trimethylbenzene	0.0250	0.0239	95.7	77.0-120	
1,2,4-Trimethylbenzene	0.0250	0.0248	99.1	76.0-121	
1,3,5-Trimethylbenzene	0.0250	0.0236	94.4	76.0-122	
Vinyl chloride	0.0250	0.0260	104	67.0-131	
Xylenes, Total	0.0750	0.0750	100	79.0-123	
(S) Toluene-d8			97.7	80.0-120	
(S) 4-Bromofluorobenzene			98.0	77.0-126	
(S) 1,2-Dichloroethane-d4			107	70.0-130	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

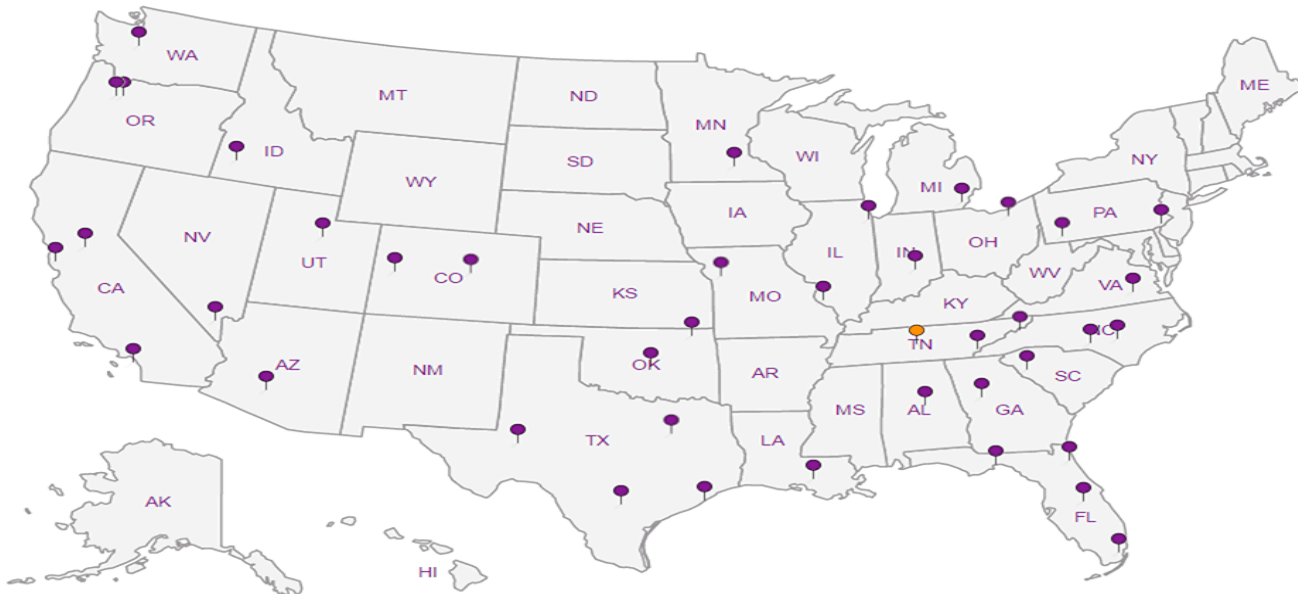
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Terracon Consultants, Inc - Longmont, CO
 1831 Lefthand Circe, Suite C

Billing Information:
Mike Skridulis
 1831 Lefthand Circe, Suite C
 Longmont, CO 80501

Report to:
Michael Skridulis

Email To: mjskridulis@terracon.com

Project Description: **COL Annual GW**

City/State Collected: **Longmont, CO**

Phone: **303-454-5249**
 Fax:

Client Project #
22197006

Lab Project #
TERRALCO-22197006

Collected by (print):
Charles Covington

Site/Facility ID #
DM1

P.O. #

Collected by (signature):
Charles Covington

Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Quote #
 Date Results Needed
STANDARD

Immediately Packed on Ice N Y

Analysis / Container / Preservative		Pres Chk
ALK, Br, Cr, NO2, NO3, SO	125mlHDPE-NoPres	L2
Metals, Dissolved	250mlHDPE-NoPres	
RSK175	40mlAmb HCl	
SRG	250mlHDPE-HNO3	(3)
V8260	40mlAmb-HCl	

Chain of Custody Page 1 of 1



12065 Lebanon Rd
 Mount Juliet, TN 37122
 Phone: 615-758-5858
 Phone: 800-767-5859
 Fax: 615-758-5859



L# **L1104829**
D039

Acctnum: **TERRALCO**
 Template: **T149935**
 Prelogin: **P708284**
 TSR: **288 - Daphne Richards**
 PB:

Shipped Via: **FedEX Ground**

Remarks	Sample # (lab only)
	-01
	-02
	-03

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
DM1-MW01	Grab	GW	11.45	6/3/19	1000	8
DM1-MW02	Grab	GW	12.55	6/3/19	1145	8
DM1-MW03	Grab	GW	12.80	6/3/19	1100	8
		GW				8

Invoice # _____ Date: 18Feb19
 Customer: ESCDEN Weight: 10 LBS
 Phone: (615)758-5858 COD: _____
 Set Dr: N DV: 0.00

Shipping: 0.00
 Special: 0.00
 Handling: 0.00
 Total: 0.00

Svc: STANDARD OVERNIGHT
 TRK: 4794 8830 2222

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other _____

Remarks:

Samples returned via:
 UPS FedEx Courier _____

Tracking # **4794 8830 2222**

pH _____ Temp _____
 Flow _____ Other _____

Sample Receipt Checklist

COC Seal Present/Intact: Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N

If Applicable
 VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N

RAD SCREEN: <0.5 mR/hr

Relinquished by: (Signature) *Charles Covington*
 Date: **6/3/19** Time: **1700**

Relinquished by: (Signature) _____
 Date: _____ Time: _____

Relinquished by: (Signature) _____
 Date: _____ Time: _____

Received by: (Signature) _____
 Trip Blank Received: Yes No
 HCL/MeOH TBR

Received by: (Signature) _____
 Temp: **AZBF °C**
4.0 ± 0.4 Bottles Received: **24**

Received for lab by: (Signature) *AW*
 Date: **6/4/19** Time: **8:45**

If preservation required by Login: Date/Time _____

Hold: _____ Condition: **NCF / OK**

L1104829

Analysis

Groundwater Sample Constituents

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations – Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

Terracon Consultants, Inc - Longmont, CO

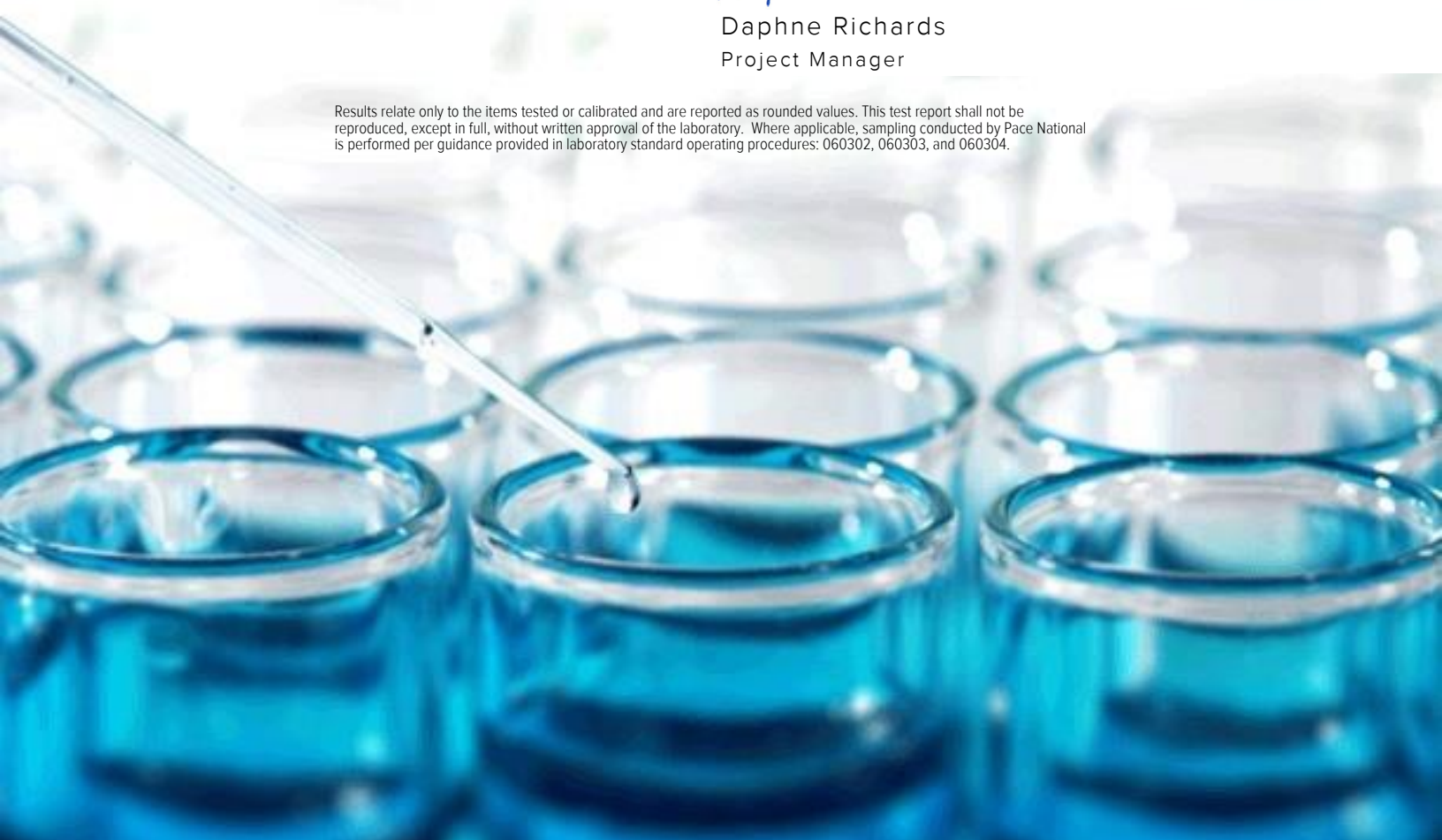
Sample Delivery Group: L1106391
Samples Received: 06/07/2019
Project Number: 22197006
Description: City of Longmont Groundwater Quality Monitoring
Site: CL1
Report To: Michael Skridulis
1831 Lefthand Cirlice, Suite C
Longmont, CO 80501

Entire Report Reviewed By:












Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





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SAMPLE SUMMARY



E6T-MW01 L1106391-01 GW

Collected by Charles Covington
Collected date/time 06/06/19 09:25
Received date/time 06/07/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1294783	1	06/13/19 17:17	06/13/19 17:17	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1292684	1	06/07/19 15:50	06/07/19 15:50	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1292684	50	06/07/19 16:01	06/07/19 16:01	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1293084	1	06/08/19 15:59	06/10/19 21:05	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1292924	1	06/07/19 16:36	06/08/19 18:46	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1293555	1	06/10/19 13:27	06/10/19 13:27	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1293837	1	06/10/19 15:46	06/10/19 15:46	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1293517	1	06/10/19 04:53	06/10/19 04:53	JAH	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

E6T-MW02 L1106391-02 GW

Collected by Charles Covington
Collected date/time 06/06/19 10:10
Received date/time 06/07/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1294783	1	06/13/19 17:24	06/13/19 17:24	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1292684	1	06/07/19 16:12	06/07/19 16:12	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1292684	100	06/07/19 16:23	06/07/19 16:23	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1293084	1	06/08/19 15:59	06/10/19 21:22	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1292924	1	06/07/19 16:36	06/08/19 18:51	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1293555	1	06/10/19 13:30	06/10/19 13:30	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1293837	1	06/10/19 15:49	06/10/19 15:49	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1293517	1	06/10/19 05:12	06/10/19 05:12	JAH	Mt. Juliet, TN

6 Qc

7 Gl

8 Al

9 Sc

E6T-MW03 L1106391-03 GW

Collected by Charles Covington
Collected date/time 06/06/19 09:55
Received date/time 06/07/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1294783	1	06/13/19 17:30	06/13/19 17:30	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1292684	1	06/07/19 16:34	06/07/19 16:34	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1292684	100	06/07/19 16:45	06/07/19 16:45	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1293084	1	06/08/19 15:59	06/10/19 21:31	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1293084	5	06/08/19 15:59	06/11/19 01:05	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1292924	1	06/07/19 16:36	06/08/19 18:56	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1293555	1	06/10/19 13:33	06/10/19 13:33	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1293837	1	06/10/19 15:52	06/10/19 15:52	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1293517	1	06/10/19 05:30	06/10/19 05:30	JAH	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	309		20.0	1	06/13/2019 17:17	WG1294783

Sample Narrative:

L1106391-01 WG1294783: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		50.0	50	06/07/2019 16:01	WG1292684
Chloride	76.3		1.00	1	06/07/2019 15:50	WG1292684
Nitrate as (N)	ND		0.100	1	06/07/2019 15:50	WG1292684
Nitrite as (N)	ND		0.100	1	06/07/2019 15:50	WG1292684
Sulfate	1550		250	50	06/07/2019 16:01	WG1292684

Sample Narrative:

L1106391-01 WG1292684: Br @50X DUE TO HIGH SO4

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	174	V	1.00	1	06/10/2019 21:05	WG1293084
Iron,Dissolved	ND		0.100	1	06/10/2019 21:05	WG1293084
Magnesium,Dissolved	110	V	1.00	1	06/10/2019 21:05	WG1293084
Potassium,Dissolved	3.64		1.00	1	06/10/2019 21:05	WG1293084
Sodium,Dissolved	560	V	1.00	1	06/10/2019 21:05	WG1293084

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	2.38		0.0100	1	06/08/2019 18:46	WG1292924

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	06/10/2019 13:27	WG1293555
Ethane	ND		0.0130	1	06/10/2019 13:27	WG1293555
Ethene	ND		0.0130	1	06/10/2019 13:27	WG1293555
Acetylene	ND		0.0208	1	06/10/2019 15:46	WG1293837

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	06/10/2019 04:53	WG1293517
Acrolein	ND		0.0500	1	06/10/2019 04:53	WG1293517
Acrylonitrile	ND		0.0100	1	06/10/2019 04:53	WG1293517
Benzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
Bromobenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
Bromodichloromethane	ND		0.00100	1	06/10/2019 04:53	WG1293517
Bromoform	ND		0.00100	1	06/10/2019 04:53	WG1293517
Bromomethane	ND		0.00500	1	06/10/2019 04:53	WG1293517
n-Butylbenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
sec-Butylbenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
tert-Butylbenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 06/06/19 09:25

L1106391

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Carbon tetrachloride	ND		0.00100	1	06/10/2019 04:53	WG1293517
Chlorobenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
Chlorodibromomethane	ND		0.00100	1	06/10/2019 04:53	WG1293517
Chloroethane	ND		0.00500	1	06/10/2019 04:53	WG1293517
Chloroform	ND		0.00500	1	06/10/2019 04:53	WG1293517
Chloromethane	ND		0.00250	1	06/10/2019 04:53	WG1293517
2-Chlorotoluene	ND		0.00100	1	06/10/2019 04:53	WG1293517
4-Chlorotoluene	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/10/2019 04:53	WG1293517
1,2-Dibromoethane	ND		0.00100	1	06/10/2019 04:53	WG1293517
Dibromomethane	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,2-Dichlorobenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,3-Dichlorobenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,4-Dichlorobenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
Dichlorodifluoromethane	ND		0.00500	1	06/10/2019 04:53	WG1293517
1,1-Dichloroethane	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,2-Dichloroethane	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,1-Dichloroethene	ND		0.00100	1	06/10/2019 04:53	WG1293517
cis-1,2-Dichloroethene	ND		0.00100	1	06/10/2019 04:53	WG1293517
trans-1,2-Dichloroethene	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,2-Dichloropropane	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,1-Dichloropropene	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,3-Dichloropropane	ND		0.00100	1	06/10/2019 04:53	WG1293517
cis-1,3-Dichloropropene	ND		0.00100	1	06/10/2019 04:53	WG1293517
trans-1,3-Dichloropropene	ND		0.00100	1	06/10/2019 04:53	WG1293517
2,2-Dichloropropane	ND		0.00100	1	06/10/2019 04:53	WG1293517
Di-isopropyl ether	ND		0.00100	1	06/10/2019 04:53	WG1293517
Ethylbenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
Hexachloro-1,3-butadiene	ND		0.00100	1	06/10/2019 04:53	WG1293517
Isopropylbenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
p-Isopropyltoluene	ND		0.00100	1	06/10/2019 04:53	WG1293517
2-Butanone (MEK)	ND		0.0100	1	06/10/2019 04:53	WG1293517
Methylene Chloride	ND		0.00500	1	06/10/2019 04:53	WG1293517
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/10/2019 04:53	WG1293517
Methyl tert-butyl ether	ND		0.00100	1	06/10/2019 04:53	WG1293517
Naphthalene	ND		0.00500	1	06/10/2019 04:53	WG1293517
n-Propylbenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
Styrene	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/10/2019 04:53	WG1293517
Tetrachloroethene	ND		0.00100	1	06/10/2019 04:53	WG1293517
Toluene	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,2,3-Trichlorobenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,2,4-Trichlorobenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,1,1-Trichloroethane	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,1,2-Trichloroethane	ND		0.00100	1	06/10/2019 04:53	WG1293517
Trichloroethene	ND		0.00100	1	06/10/2019 04:53	WG1293517
Trichlorofluoromethane	ND		0.00500	1	06/10/2019 04:53	WG1293517
1,2,3-Trichloropropane	ND		0.00250	1	06/10/2019 04:53	WG1293517
1,2,4-Trimethylbenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,2,3-Trimethylbenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
1,3,5-Trimethylbenzene	ND		0.00100	1	06/10/2019 04:53	WG1293517
Vinyl chloride	ND		0.00100	1	06/10/2019 04:53	WG1293517
Xylenes, Total	ND		0.00300	1	06/10/2019 04:53	WG1293517
(S) Toluene-d8	97.9		80.0-120		06/10/2019 04:53	WG1293517

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	103		77.0-126		06/10/2019 04:53	WG1293517
(S) 1,2-Dichloroethane-d4	123		70.0-130		06/10/2019 04:53	WG1293517

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	184		20.0	1	06/13/2019 17:24	WG1294783

Sample Narrative:

L1106391-02 WG1294783: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	06/07/2019 16:23	WG1292684
Chloride	92.7		1.00	1	06/07/2019 16:12	WG1292684
Nitrate as (N)	1.39		0.100	1	06/07/2019 16:12	WG1292684
Nitrite as (N)	ND		0.100	1	06/07/2019 16:12	WG1292684
Sulfate	3170		500	100	06/07/2019 16:23	WG1292684

Sample Narrative:

L1106391-02 WG1292684: Br @100X DUE TO HIGH SO4

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	426		1.00	1	06/10/2019 21:22	WG1293084
Iron,Dissolved	ND		0.100	1	06/10/2019 21:22	WG1293084
Magnesium,Dissolved	371		1.00	1	06/10/2019 21:22	WG1293084
Potassium,Dissolved	7.82		1.00	1	06/10/2019 21:22	WG1293084
Sodium,Dissolved	490		1.00	1	06/10/2019 21:22	WG1293084

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	6.01		0.0100	1	06/08/2019 18:51	WG1292924

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	06/10/2019 13:30	WG1293555
Ethane	ND		0.0130	1	06/10/2019 13:30	WG1293555
Ethene	ND		0.0130	1	06/10/2019 13:30	WG1293555
Acetylene	ND		0.0208	1	06/10/2019 15:49	WG1293837

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	06/10/2019 05:12	WG1293517
Acrolein	ND		0.0500	1	06/10/2019 05:12	WG1293517
Acrylonitrile	ND		0.0100	1	06/10/2019 05:12	WG1293517
Benzene	ND		0.00100	1	06/10/2019 05:12	WG1293517
Bromobenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517
Bromodichloromethane	ND		0.00100	1	06/10/2019 05:12	WG1293517
Bromoform	ND		0.00100	1	06/10/2019 05:12	WG1293517
Bromomethane	ND		0.00500	1	06/10/2019 05:12	WG1293517
n-Butylbenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517
sec-Butylbenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517
tert-Butylbenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 06/06/19 10:10

L1106391

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch	
Carbon tetrachloride	ND		0.00100	1	06/10/2019 05:12	WG1293517	1 Cp
Chlorobenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517	2 Tc
Chlorodibromomethane	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Chloroethane	ND		0.00500	1	06/10/2019 05:12	WG1293517	3 Ss
Chloroform	ND		0.00500	1	06/10/2019 05:12	WG1293517	
Chloromethane	ND		0.00250	1	06/10/2019 05:12	WG1293517	4 Cn
2-Chlorotoluene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
4-Chlorotoluene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/10/2019 05:12	WG1293517	5 Sr
1,2-Dibromoethane	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Dibromomethane	ND		0.00100	1	06/10/2019 05:12	WG1293517	6 Qc
1,2-Dichlorobenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,3-Dichlorobenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,4-Dichlorobenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517	7 Gl
Dichlorodifluoromethane	ND		0.00500	1	06/10/2019 05:12	WG1293517	
1,1-Dichloroethane	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,2-Dichloroethane	ND		0.00100	1	06/10/2019 05:12	WG1293517	8 Al
1,1-Dichloroethene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
cis-1,2-Dichloroethene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
trans-1,2-Dichloroethene	ND		0.00100	1	06/10/2019 05:12	WG1293517	9 Sc
1,2-Dichloropropane	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,1-Dichloropropene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,3-Dichloropropane	ND		0.00100	1	06/10/2019 05:12	WG1293517	
cis-1,3-Dichloropropene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
trans-1,3-Dichloropropene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
2,2-Dichloropropane	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Di-isopropyl ether	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Ethylbenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Hexachloro-1,3-butadiene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Isopropylbenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
p-Isopropyltoluene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
2-Butanone (MEK)	ND		0.0100	1	06/10/2019 05:12	WG1293517	
Methylene Chloride	ND		0.00500	1	06/10/2019 05:12	WG1293517	
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/10/2019 05:12	WG1293517	
Methyl tert-butyl ether	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Naphthalene	ND		0.00500	1	06/10/2019 05:12	WG1293517	
n-Propylbenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Styrene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Tetrachloroethene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Toluene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,2,3-Trichlorobenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,2,4-Trichlorobenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,1,1-Trichloroethane	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,1,2-Trichloroethane	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Trichloroethene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Trichlorofluoromethane	ND		0.00500	1	06/10/2019 05:12	WG1293517	
1,2,3-Trichloropropane	ND		0.00250	1	06/10/2019 05:12	WG1293517	
1,2,4-Trimethylbenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,2,3-Trimethylbenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
1,3,5-Trimethylbenzene	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Vinyl chloride	ND		0.00100	1	06/10/2019 05:12	WG1293517	
Xylenes, Total	ND		0.00300	1	06/10/2019 05:12	WG1293517	
(S) Toluene-d8	99.5		80.0-120		06/10/2019 05:12	WG1293517	



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	106		77.0-126		06/10/2019 05:12	WG1293517
(S) 1,2-Dichloroethane-d4	120		70.0-130		06/10/2019 05:12	WG1293517

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	06/13/2019 17:30	WG1294783

Sample Narrative:

L1106391-03 WG1294783: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	06/07/2019 16:45	WG1292684
Chloride	162		100	100	06/07/2019 16:45	WG1292684
Nitrate as (N)	3.00		0.100	1	06/07/2019 16:34	WG1292684
Nitrite as (N)	ND		0.100	1	06/07/2019 16:34	WG1292684
Sulfate	6290		500	100	06/07/2019 16:45	WG1292684

Sample Narrative:

L1106391-03 WG1292684: Br @100X DUE TO HIGH SO4

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	392		1.00	1	06/10/2019 21:31	WG1293084
Iron,Dissolved	ND		0.100	1	06/10/2019 21:31	WG1293084
Magnesium,Dissolved	764		1.00	1	06/10/2019 21:31	WG1293084
Potassium,Dissolved	7.61		1.00	1	06/10/2019 21:31	WG1293084
Sodium,Dissolved	1180		5.00	5	06/11/2019 01:05	WG1293084

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	9.71		0.0100	1	06/08/2019 18:56	WG1292924

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	06/10/2019 13:33	WG1293555
Ethane	ND		0.0130	1	06/10/2019 13:33	WG1293555
Ethene	ND		0.0130	1	06/10/2019 13:33	WG1293555
Acetylene	ND		0.0208	1	06/10/2019 15:52	WG1293837

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	06/10/2019 05:30	WG1293517
Acrolein	ND		0.0500	1	06/10/2019 05:30	WG1293517
Acrylonitrile	ND		0.0100	1	06/10/2019 05:30	WG1293517
Benzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
Bromobenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
Bromodichloromethane	ND		0.00100	1	06/10/2019 05:30	WG1293517
Bromoform	ND		0.00100	1	06/10/2019 05:30	WG1293517
Bromomethane	ND		0.00500	1	06/10/2019 05:30	WG1293517
n-Butylbenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
sec-Butylbenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
tert-Butylbenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 06/06/19 09:55

L1106391

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Carbon tetrachloride	ND		0.00100	1	06/10/2019 05:30	WG1293517
Chlorobenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
Chlorodibromomethane	ND		0.00100	1	06/10/2019 05:30	WG1293517
Chloroethane	ND		0.00500	1	06/10/2019 05:30	WG1293517
Chloroform	ND		0.00500	1	06/10/2019 05:30	WG1293517
Chloromethane	ND		0.00250	1	06/10/2019 05:30	WG1293517
2-Chlorotoluene	ND		0.00100	1	06/10/2019 05:30	WG1293517
4-Chlorotoluene	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/10/2019 05:30	WG1293517
1,2-Dibromoethane	ND		0.00100	1	06/10/2019 05:30	WG1293517
Dibromomethane	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,2-Dichlorobenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,3-Dichlorobenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,4-Dichlorobenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
Dichlorodifluoromethane	ND		0.00500	1	06/10/2019 05:30	WG1293517
1,1-Dichloroethane	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,2-Dichloroethane	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,1-Dichloroethene	ND		0.00100	1	06/10/2019 05:30	WG1293517
cis-1,2-Dichloroethene	ND		0.00100	1	06/10/2019 05:30	WG1293517
trans-1,2-Dichloroethene	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,2-Dichloropropane	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,1-Dichloropropene	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,3-Dichloropropane	ND		0.00100	1	06/10/2019 05:30	WG1293517
cis-1,3-Dichloropropene	ND		0.00100	1	06/10/2019 05:30	WG1293517
trans-1,3-Dichloropropene	ND		0.00100	1	06/10/2019 05:30	WG1293517
2,2-Dichloropropane	ND		0.00100	1	06/10/2019 05:30	WG1293517
Di-isopropyl ether	ND		0.00100	1	06/10/2019 05:30	WG1293517
Ethylbenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
Hexachloro-1,3-butadiene	ND		0.00100	1	06/10/2019 05:30	WG1293517
Isopropylbenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
p-Isopropyltoluene	ND		0.00100	1	06/10/2019 05:30	WG1293517
2-Butanone (MEK)	ND		0.0100	1	06/10/2019 05:30	WG1293517
Methylene Chloride	ND		0.00500	1	06/10/2019 05:30	WG1293517
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/10/2019 05:30	WG1293517
Methyl tert-butyl ether	ND		0.00100	1	06/10/2019 05:30	WG1293517
Naphthalene	ND		0.00500	1	06/10/2019 05:30	WG1293517
n-Propylbenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
Styrene	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/10/2019 05:30	WG1293517
Tetrachloroethene	ND		0.00100	1	06/10/2019 05:30	WG1293517
Toluene	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,2,3-Trichlorobenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,2,4-Trichlorobenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,1,1-Trichloroethane	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,1,2-Trichloroethane	ND		0.00100	1	06/10/2019 05:30	WG1293517
Trichloroethene	ND		0.00100	1	06/10/2019 05:30	WG1293517
Trichlorofluoromethane	ND		0.00500	1	06/10/2019 05:30	WG1293517
1,2,3-Trichloropropane	ND		0.00250	1	06/10/2019 05:30	WG1293517
1,2,4-Trimethylbenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,2,3-Trimethylbenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
1,3,5-Trimethylbenzene	ND		0.00100	1	06/10/2019 05:30	WG1293517
Vinyl chloride	ND		0.00100	1	06/10/2019 05:30	WG1293517
Xylenes, Total	ND		0.00300	1	06/10/2019 05:30	WG1293517
(S) Toluene-d8	98.8		80.0-120		06/10/2019 05:30	WG1293517

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	105		77.0-126		06/10/2019 05:30	WG1293517
(S) 1,2-Dichloroethane-d4	124		70.0-130		06/10/2019 05:30	WG1293517

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3420849-1 06/13/19 14:41

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	2.93	↓	2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1106129-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1106129-01 06/13/19 14:57 • (DUP) R3420849-2 06/13/19 15:04

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	19.1	19.2	1	0.325	↓	20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1106375-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1106375-01 06/13/19 16:27 • (DUP) R3420849-5 06/13/19 16:42

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	585	585	1	0.0414		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3420849-3 06/13/19 16:03

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	98.6	98.6	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3418882-1 06/07/19 08:52

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

L1106344-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1106344-01 06/07/19 11:33 • (DUP) R3418882-3 06/07/19 11:44

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	U	0.000	1	0.000		15
Chloride	46.2	46.1	1	0.102		15
Nitrate	2.41	2.41	1	0.116		15
Nitrite	0.0538	0.0533	1	0.934	J	15
Sulfate	18.7	18.6	1	0.383		15

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1106430-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1106430-01 06/07/19 18:23 • (DUP) R3418882-6 06/07/19 18:34

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.000	1	0.000		15
Chloride	9.41	9.44	1	0.272		15
Nitrate	ND	0.000	1	0.000		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	12.0	11.9	1	0.373		15

Laboratory Control Sample (LCS)

(LCS) R3418882-2 06/07/19 09:03

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	40.9	102	80.0-120	
Chloride	40.0	40.2	101	80.0-120	
Nitrate	8.00	8.57	107	80.0-120	
Nitrite	8.00	8.08	101	80.0-120	



Laboratory Control Sample (LCS)

(LCS) R3418882-2 06/07/19 09:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Sulfate	40.0	40.6	101	80.0-120	

L1106344-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106344-01 06/07/19 11:33 • (MS) R3418882-4 06/07/19 11:55 • (MSD) R3418882-5 06/07/19 12:06

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	U	47.2	47.5	94.4	94.9	1	80.0-120			0.529	15
Chloride	50.0	46.2	93.4	93.6	94.5	94.9	1	80.0-120			0.247	15
Nitrate	5.00	2.41	7.45	7.47	101	101	1	80.0-120			0.335	15
Nitrite	5.00	0.0538	4.95	4.99	98.0	98.8	1	80.0-120			0.800	15
Sulfate	50.0	18.7	66.8	66.9	96.2	96.5	1	80.0-120			0.169	15

L1106430-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1106430-01 06/07/19 18:23 • (MS) R3418882-7 06/07/19 18:45

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	ND	48.5	97.1	1	80.0-120	
Chloride	50.0	9.41	58.6	98.4	1	80.0-120	
Nitrate	5.00	ND	5.02	100	1	80.0-120	
Nitrite	5.00	ND	4.99	99.8	1	80.0-120	
Sulfate	50.0	12.0	60.9	97.8	1	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3419697-1 06/10/19 20:56

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Calcium,Dissolved	U		0.0463	1.00
Iron,Dissolved	U		0.0141	0.100
Magnesium,Dissolved	0.0441	↓	0.0111	1.00
Potassium,Dissolved	0.252	↓	0.102	1.00
Sodium,Dissolved	0.510	↓	0.0985	1.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3419697-2 06/10/19 20:59 • (LCSD) R3419697-3 06/10/19 21:02

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Calcium,Dissolved	10.0	9.92	10.1	99.2	101	80.0-120			1.95	20
Iron,Dissolved	10.0	9.69	9.92	96.9	99.2	80.0-120			2.33	20
Magnesium,Dissolved	10.0	9.65	9.89	96.5	98.9	80.0-120			2.53	20
Potassium,Dissolved	10.0	9.56	9.71	95.6	97.1	80.0-120			1.53	20
Sodium,Dissolved	10.0	9.86	10.1	98.6	101	80.0-120			1.95	20

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1106391-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106391-01 06/10/19 21:05 • (MS) R3419697-5 06/10/19 21:10 • (MSD) R3419697-6 06/10/19 21:13

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Calcium,Dissolved	10.0	174	182	178	76.0	42.5	1	75.0-125		↓	1.86	20
Iron,Dissolved	10.0	ND	9.67	9.55	96.7	95.5	1	75.0-125			1.25	20
Magnesium,Dissolved	10.0	110	118	116	82.6	64.4	1	75.0-125		↓	1.56	20
Potassium,Dissolved	10.0	3.64	13.3	13.2	97.1	95.3	1	75.0-125			1.37	20
Sodium,Dissolved	10.0	560	562	555	20.4	0.000	1	75.0-125	↓	↓	1.26	20



Method Blank (MB)

(MB) R3419146-1 06/08/19 11:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Strontium	U		0.000160	0.0100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3419146-2 06/08/19 11:44 • (LCSD) R3419146-3 06/08/19 11:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0488	0.0484	97.6	96.8	80.0-120			0.843	20

L1106315-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106315-01 06/08/19 11:54 • (MS) R3419146-5 06/08/19 12:03 • (MSD) R3419146-6 06/08/19 12:07

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.548	0.597	0.612	96.3	128	1	75.0-125		V	2.62	20

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3419527-1 06/10/19 11:17

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130

L1106619-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1106619-02 06/10/19 12:54 • (DUP) R3419527-2 06/10/19 13:14

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	0.156	0.129	1	18.4		20
Ethane	U	0.000	1	0.000		20
Ethene	U	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3419527-3 06/10/19 13:48 • (LCSD) R3419527-4 06/10/19 13:53

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0750	0.0738	111	109	85.0-115			1.52	20
Ethane	0.129	0.113	0.117	87.9	90.5	85.0-115			2.89	20
Ethene	0.127	0.112	0.116	88.2	91.2	85.0-115			3.30	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3419617-1 06/10/19 15:41

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetylene	U		0.00558	0.0208

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3419617-2 06/10/19 16:04 • (LCSD) R3419617-3 06/10/19 16:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetylene	0.208	0.196	0.189	94.2	91.1	85.0-115			3.36	20

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3420821-2 06/10/19 02:04

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	U		0.000256	0.00100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3420821-2 06/10/19 02:04

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	U		0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
<i>(S) Toluene-d8</i>	97.9			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	106			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	113			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3420821-1 06/10/19 01:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.125	0.185	148	19.0-160	
Acrolein	0.125	0.121	96.9	10.0-160	
Acrylonitrile	0.125	0.148	118	55.0-149	
Benzene	0.0250	0.0237	94.8	70.0-123	



Laboratory Control Sample (LCS)

(LCS) R3420821-1 06/10/19 01:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromobenzene	0.0250	0.0234	93.8	73.0-121	
Bromodichloromethane	0.0250	0.0248	99.0	75.0-120	
Bromoform	0.0250	0.0262	105	68.0-132	
Bromomethane	0.0250	0.0251	100	10.0-160	
n-Butylbenzene	0.0250	0.0226	90.5	73.0-125	
sec-Butylbenzene	0.0250	0.0233	93.2	75.0-125	
tert-Butylbenzene	0.0250	0.0236	94.6	76.0-124	
Carbon tetrachloride	0.0250	0.0283	113	68.0-126	
Chlorobenzene	0.0250	0.0246	98.4	80.0-121	
Chlorodibromomethane	0.0250	0.0257	103	77.0-125	
Chloroethane	0.0250	0.0260	104	47.0-150	
Chloroform	0.0250	0.0256	102	73.0-120	
Chloromethane	0.0250	0.0270	108	41.0-142	
2-Chlorotoluene	0.0250	0.0240	96.1	76.0-123	
4-Chlorotoluene	0.0250	0.0227	90.7	75.0-122	
1,2-Dibromo-3-Chloropropane	0.0250	0.0229	91.5	58.0-134	
1,2-Dibromoethane	0.0250	0.0263	105	80.0-122	
Dibromomethane	0.0250	0.0256	103	80.0-120	
1,2-Dichlorobenzene	0.0250	0.0240	96.0	79.0-121	
1,3-Dichlorobenzene	0.0250	0.0238	95.3	79.0-120	
1,4-Dichlorobenzene	0.0250	0.0234	93.6	79.0-120	
Dichlorodifluoromethane	0.0250	0.0283	113	51.0-149	
1,1-Dichloroethane	0.0250	0.0258	103	70.0-126	
1,2-Dichloroethane	0.0250	0.0271	109	70.0-128	
1,1-Dichloroethene	0.0250	0.0246	98.4	71.0-124	
cis-1,2-Dichloroethene	0.0250	0.0246	98.3	73.0-120	
trans-1,2-Dichloroethene	0.0250	0.0241	96.6	73.0-120	
1,2-Dichloropropane	0.0250	0.0264	106	77.0-125	
1,1-Dichloropropene	0.0250	0.0247	98.6	74.0-126	
1,3-Dichloropropane	0.0250	0.0258	103	80.0-120	
cis-1,3-Dichloropropene	0.0250	0.0256	102	80.0-123	
trans-1,3-Dichloropropene	0.0250	0.0260	104	78.0-124	
2,2-Dichloropropane	0.0250	0.0256	102	58.0-130	
Di-isopropyl ether	0.0250	0.0270	108	58.0-138	
Ethylbenzene	0.0250	0.0241	96.5	79.0-123	
Hexachloro-1,3-butadiene	0.0250	0.0217	86.6	54.0-138	
Isopropylbenzene	0.0250	0.0253	101	76.0-127	
p-Isopropyltoluene	0.0250	0.0239	95.6	76.0-125	
2-Butanone (MEK)	0.125	0.158	126	44.0-160	
Methylene Chloride	0.0250	0.0240	96.1	67.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Laboratory Control Sample (LCS)

(LCS) R3420821-1 06/10/19 01:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
4-Methyl-2-pentanone (MIBK)	0.125	0.143	114	68.0-142	
Methyl tert-butyl ether	0.0250	0.0252	101	68.0-125	
Naphthalene	0.0250	0.0222	88.6	54.0-135	
n-Propylbenzene	0.0250	0.0224	89.5	77.0-124	
Styrene	0.0250	0.0261	105	73.0-130	
1,1,1,2-Tetrachloroethane	0.0250	0.0255	102	75.0-125	
1,1,2,2-Tetrachloroethane	0.0250	0.0233	93.2	65.0-130	
Tetrachloroethene	0.0250	0.0242	96.7	72.0-132	
Toluene	0.0250	0.0226	90.4	79.0-120	
1,1,2-Trichlorotrifluoroethane	0.0250	0.0249	99.8	69.0-132	
1,2,3-Trichlorobenzene	0.0250	0.0216	86.6	50.0-138	
1,2,4-Trichlorobenzene	0.0250	0.0218	87.3	57.0-137	
1,1,1-Trichloroethane	0.0250	0.0264	106	73.0-124	
1,1,2-Trichloroethane	0.0250	0.0244	97.6	80.0-120	
Trichloroethene	0.0250	0.0249	99.6	78.0-124	
Trichlorofluoromethane	0.0250	0.0247	98.8	59.0-147	
1,2,3-Trichloropropane	0.0250	0.0238	95.3	73.0-130	
1,2,3-Trimethylbenzene	0.0250	0.0222	89.0	77.0-120	
1,2,4-Trimethylbenzene	0.0250	0.0234	93.7	76.0-121	
1,3,5-Trimethylbenzene	0.0250	0.0231	92.3	76.0-122	
Vinyl chloride	0.0250	0.0257	103	67.0-131	
Xylenes, Total	0.0750	0.0740	98.7	79.0-123	
<i>(S) Toluene-d8</i>			101	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			105	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			118	70.0-130	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

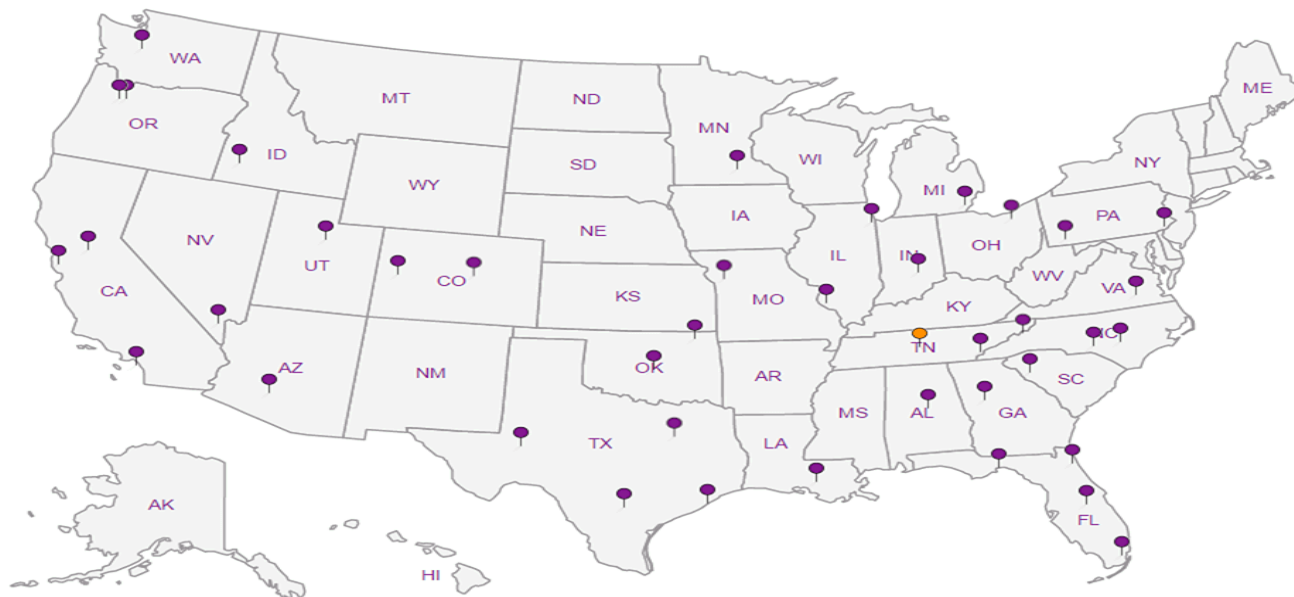
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Terracon Consultants, Inc - Longmont, CO
1831 Lefthand Circe, Suite C

Billing Information:
Mike Skridulis
1831 Lefthand Circe, Suite C
Longmont, CO 80501

Report to:
Michael Skridulis

Email To: mjskridulis@terracon.com

Project Description: **Annual GW COL**

City/State Collected: **Longmont, CO**

Phone: **303-454-5249**
Fax:

Client Project #
22197006

Lab Project #
TERRALCO-22197006

Collected by (print):
Charles Covington

Site/Facility ID #
E6T

P.O. #

Collected by (signature):
Charles Covington

Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Quote #
STANDARD

Immediately Packed on Ice N Y X

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No of Cnts	Analysis / Container / Preservative										
							ALK, Br, Cr, NO2, NO3, SO	125mlHDPE-NoPres	Metals, Dissolved	250mlHDPE-NoPres	RSK175 40mlAmb HCl	SRG 250mlHDPE-HNO3	V82260 40mlAmb-HCl (3)				
E6T - MW01	Grab	GW	-	6/6/19	0925	8	X	X	X	X	X						
E6T - MW02	Grab	GW	-	6/6/19	1010	8	X	X	X	X	X						
E6T - MW03	Grab	GW	-	6/6/19	0955	8	X	X	X	X	X						
		GW				8	X	X	X	X	X						

Chain of Custody Page 1 of 1



12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L# **1106391**
G201

Acctnum: **TERRALCO**
Template: **T149938**
Prelogin: **P708279**
TSR: **288 - Daphne Richards**
PB:
Shipped Via: **FedEX Ground**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No of Cnts
E6T - MW01	Grab	GW	-	6/6/19	0925	8
E6T - MW02	Grab	GW	-	6/6/19	1010	8
E6T - MW03	Grab	GW	-	6/6/19	0955	8
		GW				8

Invoice: Date: 18Feb19 Shipping: 0.00
 Customer: ESCDEN Weight: 10 LBS Special: 0.00
 Phone: (615)758-5858 COD: 0.00 Handling: 0.00
 Sat Del: N DV: 0.00 Total: 0.00

Svcs: STANDARD OVERNIGHT
TRACK: 4794 8830 2211

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:
 pH _____ Temp _____
 Flow _____ Other _____

Samples returned via:
 UPS FedEx Courier

Tracking # **4794 8830 2211**

Sample Receipt Checklist

COC Seal Present/Intact: NP N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N

If Applicable
 VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N

Relinquished by: (Signature)
Charles Covington

Date: **6/6/19**

Time: **1500**

Received by: (Signature)
Wm

Date: **6/7/19**

Time: **845**

Trip Blank Received: Yes/No
HCL/MeOH TBR

Temp: **13.8F°C**
38-.2=3.6

Bottles Received: **24**

RAD SCREEN: **<0.5 mR/hr**

If preservation required by Login: Date/Time

Hold:

Condition: **NCF / OK**

Analysis

Groundwater Sample Constituents

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations – Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

Terracon Consultants, Inc - Longmont, CO

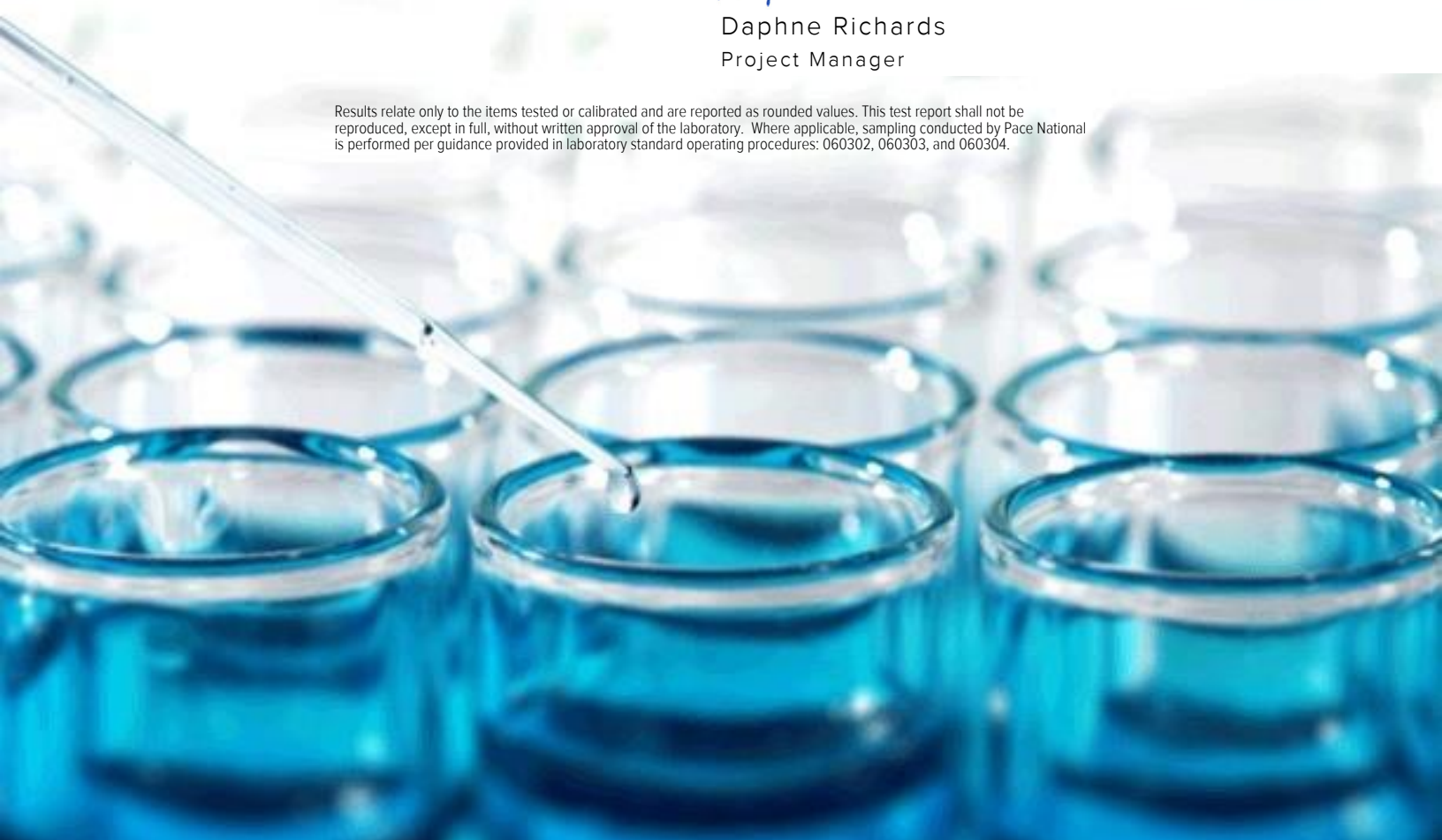
Sample Delivery Group: L1106393
Samples Received: 06/07/2019
Project Number: 22197006
Description: COL Annual GW
Site: PL1
Report To: Michael Skridulis
1831 Lefthand Cirlice, Suite C
Longmont, CO 80501

Entire Report Reviewed By:












Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





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SAMPLE SUMMARY



				Collected by	Collected date/time	Received date/time	
EGW-MW01 L1106393-01 GW				Charles A. Covington	06/06/19 12:10	06/07/19 08:45	1 Cp
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	2 Tc
Wet Chemistry by Method 2320 B-2011	WG1294783	1	06/13/19 17:44	06/13/19 17:44	MCG	Mt. Juliet, TN	3 Ss
Wet Chemistry by Method 9056A	WG1292684	1	06/07/19 16:56	06/07/19 16:56	ELN	Mt. Juliet, TN	4 Cn
Wet Chemistry by Method 9056A	WG1292684	20	06/07/19 17:07	06/07/19 17:07	ELN	Mt. Juliet, TN	5 Sr
Metals (ICP) by Method 6010B	WG1293084	1	06/08/19 15:59	06/10/19 21:33	EL	Mt. Juliet, TN	6 Qc
Metals (ICPMS) by Method 6020	WG1292924	1	06/07/19 16:36	06/08/19 19:00	LD	Mt. Juliet, TN	7 Gl
Volatile Organic Compounds (GC) by Method RSK175	WG1293555	1	06/10/19 13:35	06/10/19 13:35	DAH	Mt. Juliet, TN	8 Al
Volatile Organic Compounds (GC) by Method RSK175	WG1293837	1	06/10/19 15:55	06/10/19 15:55	DAH	Mt. Juliet, TN	9 Sc
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1293517	1	06/10/19 05:49	06/10/19 05:49	JAH	Mt. Juliet, TN	

				Collected by	Collected date/time	Received date/time	
EGW-MW02 L1106393-02 GW				Charles A. Covington	06/06/19 12:40	06/07/19 08:45	1 Cp
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	2 Tc
Wet Chemistry by Method 2320 B-2011	WG1294783	1	06/13/19 17:51	06/13/19 17:51	MCG	Mt. Juliet, TN	3 Ss
Wet Chemistry by Method 9056A	WG1292684	1	06/07/19 17:18	06/07/19 17:18	ELN	Mt. Juliet, TN	4 Cn
Wet Chemistry by Method 9056A	WG1292684	20	06/07/19 17:28	06/07/19 17:28	ELN	Mt. Juliet, TN	5 Sr
Metals (ICP) by Method 6010B	WG1293084	1	06/08/19 15:59	06/10/19 21:36	EL	Mt. Juliet, TN	6 Qc
Metals (ICPMS) by Method 6020	WG1292924	1	06/07/19 16:36	06/08/19 19:05	LD	Mt. Juliet, TN	7 Gl
Volatile Organic Compounds (GC) by Method RSK175	WG1293555	1	06/10/19 13:41	06/10/19 13:41	DAH	Mt. Juliet, TN	8 Al
Volatile Organic Compounds (GC) by Method RSK175	WG1293837	1	06/10/19 15:59	06/10/19 15:59	DAH	Mt. Juliet, TN	9 Sc
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1293517	1	06/10/19 06:08	06/10/19 06:08	JAH	Mt. Juliet, TN	

				Collected by	Collected date/time	Received date/time	
EGW-MW03 L1106393-03 GW				Charles A. Covington	06/06/19 11:45	06/07/19 08:45	1 Cp
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	2 Tc
Wet Chemistry by Method 2320 B-2011	WG1294783	1	06/13/19 17:58	06/13/19 17:58	MCG	Mt. Juliet, TN	3 Ss
Wet Chemistry by Method 9056A	WG1292684	1	06/07/19 18:01	06/07/19 18:01	ELN	Mt. Juliet, TN	4 Cn
Wet Chemistry by Method 9056A	WG1292684	20	06/07/19 18:12	06/07/19 18:12	ELN	Mt. Juliet, TN	5 Sr
Metals (ICP) by Method 6010B	WG1293084	1	06/08/19 15:59	06/10/19 21:39	EL	Mt. Juliet, TN	6 Qc
Metals (ICPMS) by Method 6020	WG1292924	1	06/07/19 16:36	06/08/19 19:10	LD	Mt. Juliet, TN	7 Gl
Volatile Organic Compounds (GC) by Method RSK175	WG1293555	1	06/10/19 13:46	06/10/19 13:46	DAH	Mt. Juliet, TN	8 Al
Volatile Organic Compounds (GC) by Method RSK175	WG1293837	1	06/10/19 16:01	06/10/19 16:01	DAH	Mt. Juliet, TN	9 Sc
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1293517	1	06/10/19 06:27	06/10/19 06:27	JAH	Mt. Juliet, TN	



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	312		20.0	1	06/13/2019 17:44	WG1294783

Sample Narrative:

L1106393-01 WG1294783: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		20.0	20	06/07/2019 17:07	WG1292684
Chloride	31.8		1.00	1	06/07/2019 16:56	WG1292684
Nitrate as (N)	1.65		0.100	1	06/07/2019 16:56	WG1292684
Nitrite as (N)	ND		0.100	1	06/07/2019 16:56	WG1292684
Sulfate	955		100	20	06/07/2019 17:07	WG1292684

Sample Narrative:

L1106393-01 WG1292684: Br @20X DUE TO HIGH SO4

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	207		1.00	1	06/10/2019 21:33	WG1293084
Iron,Dissolved	ND		0.100	1	06/10/2019 21:33	WG1293084
Magnesium,Dissolved	119		1.00	1	06/10/2019 21:33	WG1293084
Potassium,Dissolved	4.25		1.00	1	06/10/2019 21:33	WG1293084
Sodium,Dissolved	172		1.00	1	06/10/2019 21:33	WG1293084

Metals (ICPMS) by Method 6020

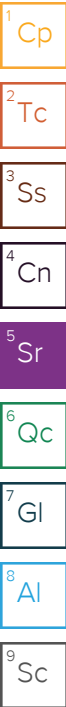
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	3.50		0.0100	1	06/08/2019 19:00	WG1292924

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	06/10/2019 13:35	WG1293555
Ethane	ND		0.0130	1	06/10/2019 13:35	WG1293555
Ethene	ND		0.0130	1	06/10/2019 13:35	WG1293555
Acetylene	ND		0.0208	1	06/10/2019 15:55	WG1293837

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	06/10/2019 05:49	WG1293517
Acrolein	ND		0.0500	1	06/10/2019 05:49	WG1293517
Acrylonitrile	ND		0.0100	1	06/10/2019 05:49	WG1293517
Benzene	ND		0.00100	1	06/10/2019 05:49	WG1293517
Bromobenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517
Bromodichloromethane	ND		0.00100	1	06/10/2019 05:49	WG1293517
Bromoform	ND		0.00100	1	06/10/2019 05:49	WG1293517
Bromomethane	ND		0.00500	1	06/10/2019 05:49	WG1293517
n-Butylbenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517
sec-Butylbenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517
tert-Butylbenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517





Collected date/time: 06/06/19 12:10

L1106393

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch	
Carbon tetrachloride	ND		0.00100	1	06/10/2019 05:49	WG1293517	1 Cp
Chlorobenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517	2 Tc
Chlorodibromomethane	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Chloroethane	ND		0.00500	1	06/10/2019 05:49	WG1293517	3 Ss
Chloroform	ND		0.00500	1	06/10/2019 05:49	WG1293517	
Chloromethane	ND		0.00250	1	06/10/2019 05:49	WG1293517	4 Cn
2-Chlorotoluene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
4-Chlorotoluene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/10/2019 05:49	WG1293517	5 Sr
1,2-Dibromoethane	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Dibromomethane	ND		0.00100	1	06/10/2019 05:49	WG1293517	6 Qc
1,2-Dichlorobenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,3-Dichlorobenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,4-Dichlorobenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517	7 Gl
Dichlorodifluoromethane	ND		0.00500	1	06/10/2019 05:49	WG1293517	
1,1-Dichloroethane	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,2-Dichloroethane	ND		0.00100	1	06/10/2019 05:49	WG1293517	8 Al
1,1-Dichloroethene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
cis-1,2-Dichloroethene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
trans-1,2-Dichloroethene	ND		0.00100	1	06/10/2019 05:49	WG1293517	9 Sc
1,2-Dichloropropane	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,1-Dichloropropene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,3-Dichloropropane	ND		0.00100	1	06/10/2019 05:49	WG1293517	
cis-1,3-Dichloropropene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
trans-1,3-Dichloropropene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
2,2-Dichloropropane	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Di-isopropyl ether	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Ethylbenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Hexachloro-1,3-butadiene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Isopropylbenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
p-Isopropyltoluene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
2-Butanone (MEK)	ND		0.0100	1	06/10/2019 05:49	WG1293517	
Methylene Chloride	ND		0.00500	1	06/10/2019 05:49	WG1293517	
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/10/2019 05:49	WG1293517	
Methyl tert-butyl ether	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Naphthalene	ND		0.00500	1	06/10/2019 05:49	WG1293517	
n-Propylbenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Styrene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Tetrachloroethene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Toluene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,2,3-Trichlorobenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,2,4-Trichlorobenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,1,1-Trichloroethane	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,1,2-Trichloroethane	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Trichloroethene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Trichlorofluoromethane	ND		0.00500	1	06/10/2019 05:49	WG1293517	
1,2,3-Trichloropropane	ND		0.00250	1	06/10/2019 05:49	WG1293517	
1,2,4-Trimethylbenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,2,3-Trimethylbenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
1,3,5-Trimethylbenzene	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Vinyl chloride	ND		0.00100	1	06/10/2019 05:49	WG1293517	
Xylenes, Total	ND		0.00300	1	06/10/2019 05:49	WG1293517	
(S) Toluene-d8	96.6		80.0-120		06/10/2019 05:49	WG1293517	



Collected date/time: 06/06/19 12:10

L1106393

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	103		77.0-126		06/10/2019 05:49	WG1293517
(S) 1,2-Dichloroethane-d4	120		70.0-130		06/10/2019 05:49	WG1293517

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	277		20.0	1	06/13/2019 17:51	WG1294783

Sample Narrative:

L1106393-02 WG1294783: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		20.0	20	06/07/2019 17:28	WG1292684
Chloride	30.8		1.00	1	06/07/2019 17:18	WG1292684
Nitrate as (N)	1.12		0.100	1	06/07/2019 17:18	WG1292684
Nitrite as (N)	ND		0.100	1	06/07/2019 17:18	WG1292684
Sulfate	1120		100	20	06/07/2019 17:28	WG1292684

Sample Narrative:

L1106393-02 WG1292684: Br @20X DUE TO HIGH SO4

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	194		1.00	1	06/10/2019 21:36	WG1293084
Iron,Dissolved	ND		0.100	1	06/10/2019 21:36	WG1293084
Magnesium,Dissolved	150		1.00	1	06/10/2019 21:36	WG1293084
Potassium,Dissolved	10.4		1.00	1	06/10/2019 21:36	WG1293084
Sodium,Dissolved	188		1.00	1	06/10/2019 21:36	WG1293084

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	3.44		0.0100	1	06/08/2019 19:05	WG1292924

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	06/10/2019 13:41	WG1293555
Ethane	ND		0.0130	1	06/10/2019 13:41	WG1293555
Ethene	ND		0.0130	1	06/10/2019 13:41	WG1293555
Acetylene	ND		0.0208	1	06/10/2019 15:59	WG1293837

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	06/10/2019 06:08	WG1293517
Acrolein	ND		0.0500	1	06/10/2019 06:08	WG1293517
Acrylonitrile	ND		0.0100	1	06/10/2019 06:08	WG1293517
Benzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
Bromobenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
Bromodichloromethane	ND		0.00100	1	06/10/2019 06:08	WG1293517
Bromoform	ND		0.00100	1	06/10/2019 06:08	WG1293517
Bromomethane	ND		0.00500	1	06/10/2019 06:08	WG1293517
n-Butylbenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
sec-Butylbenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
tert-Butylbenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 06/06/19 12:40

L1106393

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Carbon tetrachloride	ND		0.00100	1	06/10/2019 06:08	WG1293517
Chlorobenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
Chlorodibromomethane	ND		0.00100	1	06/10/2019 06:08	WG1293517
Chloroethane	ND		0.00500	1	06/10/2019 06:08	WG1293517
Chloroform	ND		0.00500	1	06/10/2019 06:08	WG1293517
Chloromethane	ND		0.00250	1	06/10/2019 06:08	WG1293517
2-Chlorotoluene	ND		0.00100	1	06/10/2019 06:08	WG1293517
4-Chlorotoluene	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/10/2019 06:08	WG1293517
1,2-Dibromoethane	ND		0.00100	1	06/10/2019 06:08	WG1293517
Dibromomethane	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,2-Dichlorobenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,3-Dichlorobenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,4-Dichlorobenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
Dichlorodifluoromethane	ND		0.00500	1	06/10/2019 06:08	WG1293517
1,1-Dichloroethane	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,2-Dichloroethane	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,1-Dichloroethene	ND		0.00100	1	06/10/2019 06:08	WG1293517
cis-1,2-Dichloroethene	ND		0.00100	1	06/10/2019 06:08	WG1293517
trans-1,2-Dichloroethene	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,2-Dichloropropane	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,1-Dichloropropene	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,3-Dichloropropane	ND		0.00100	1	06/10/2019 06:08	WG1293517
cis-1,3-Dichloropropene	ND		0.00100	1	06/10/2019 06:08	WG1293517
trans-1,3-Dichloropropene	ND		0.00100	1	06/10/2019 06:08	WG1293517
2,2-Dichloropropane	ND		0.00100	1	06/10/2019 06:08	WG1293517
Di-isopropyl ether	ND		0.00100	1	06/10/2019 06:08	WG1293517
Ethylbenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
Hexachloro-1,3-butadiene	ND		0.00100	1	06/10/2019 06:08	WG1293517
Isopropylbenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
p-Isopropyltoluene	ND		0.00100	1	06/10/2019 06:08	WG1293517
2-Butanone (MEK)	ND		0.0100	1	06/10/2019 06:08	WG1293517
Methylene Chloride	ND		0.00500	1	06/10/2019 06:08	WG1293517
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/10/2019 06:08	WG1293517
Methyl tert-butyl ether	ND		0.00100	1	06/10/2019 06:08	WG1293517
Naphthalene	ND		0.00500	1	06/10/2019 06:08	WG1293517
n-Propylbenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
Styrene	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/10/2019 06:08	WG1293517
Tetrachloroethene	ND		0.00100	1	06/10/2019 06:08	WG1293517
Toluene	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,2,3-Trichlorobenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,2,4-Trichlorobenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,1,1-Trichloroethane	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,1,2-Trichloroethane	ND		0.00100	1	06/10/2019 06:08	WG1293517
Trichloroethene	ND		0.00100	1	06/10/2019 06:08	WG1293517
Trichlorofluoromethane	ND		0.00500	1	06/10/2019 06:08	WG1293517
1,2,3-Trichloropropane	ND		0.00250	1	06/10/2019 06:08	WG1293517
1,2,4-Trimethylbenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,2,3-Trimethylbenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
1,3,5-Trimethylbenzene	ND		0.00100	1	06/10/2019 06:08	WG1293517
Vinyl chloride	ND		0.00100	1	06/10/2019 06:08	WG1293517
Xylenes, Total	ND		0.00300	1	06/10/2019 06:08	WG1293517
(S) Toluene-d8	97.9		80.0-120		06/10/2019 06:08	WG1293517

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	104		77.0-126		06/10/2019 06:08	WG1293517
(S) 1,2-Dichloroethane-d4	124		70.0-130		06/10/2019 06:08	WG1293517

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	298		20.0	1	06/13/2019 17:58	WG1294783

Sample Narrative:

L1106393-03 WG1294783: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		20.0	20	06/07/2019 18:12	WG1292684
Chloride	30.1		1.00	1	06/07/2019 18:01	WG1292684
Nitrate as (N)	1.16		0.100	1	06/07/2019 18:01	WG1292684
Nitrite as (N)	ND		0.100	1	06/07/2019 18:01	WG1292684
Sulfate	1200		100	20	06/07/2019 18:12	WG1292684

Sample Narrative:

L1106393-03 WG1292684: Br @20X DUE TO HIGH SO4

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	250		1.00	1	06/10/2019 21:39	WG1293084
Iron,Dissolved	ND		0.100	1	06/10/2019 21:39	WG1293084
Magnesium,Dissolved	146		1.00	1	06/10/2019 21:39	WG1293084
Potassium,Dissolved	7.26		1.00	1	06/10/2019 21:39	WG1293084
Sodium,Dissolved	192		1.00	1	06/10/2019 21:39	WG1293084

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	3.89		0.0100	1	06/08/2019 19:10	WG1292924

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	06/10/2019 13:46	WG1293555
Ethane	ND		0.0130	1	06/10/2019 13:46	WG1293555
Ethene	ND		0.0130	1	06/10/2019 13:46	WG1293555
Acetylene	ND		0.0208	1	06/10/2019 16:01	WG1293837

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	06/10/2019 06:27	WG1293517
Acrolein	ND		0.0500	1	06/10/2019 06:27	WG1293517
Acrylonitrile	ND		0.0100	1	06/10/2019 06:27	WG1293517
Benzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
Bromobenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
Bromodichloromethane	ND		0.00100	1	06/10/2019 06:27	WG1293517
Bromoform	ND		0.00100	1	06/10/2019 06:27	WG1293517
Bromomethane	ND		0.00500	1	06/10/2019 06:27	WG1293517
n-Butylbenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
sec-Butylbenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
tert-Butylbenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 06/06/19 11:45

L1106393

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Carbon tetrachloride	ND		0.00100	1	06/10/2019 06:27	WG1293517
Chlorobenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
Chlorodibromomethane	ND		0.00100	1	06/10/2019 06:27	WG1293517
Chloroethane	ND		0.00500	1	06/10/2019 06:27	WG1293517
Chloroform	ND		0.00500	1	06/10/2019 06:27	WG1293517
Chloromethane	ND		0.00250	1	06/10/2019 06:27	WG1293517
2-Chlorotoluene	ND		0.00100	1	06/10/2019 06:27	WG1293517
4-Chlorotoluene	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/10/2019 06:27	WG1293517
1,2-Dibromoethane	ND		0.00100	1	06/10/2019 06:27	WG1293517
Dibromomethane	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,2-Dichlorobenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,3-Dichlorobenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,4-Dichlorobenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
Dichlorodifluoromethane	ND		0.00500	1	06/10/2019 06:27	WG1293517
1,1-Dichloroethane	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,2-Dichloroethane	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,1-Dichloroethene	ND		0.00100	1	06/10/2019 06:27	WG1293517
cis-1,2-Dichloroethene	ND		0.00100	1	06/10/2019 06:27	WG1293517
trans-1,2-Dichloroethene	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,2-Dichloropropane	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,1-Dichloropropene	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,3-Dichloropropane	ND		0.00100	1	06/10/2019 06:27	WG1293517
cis-1,3-Dichloropropene	ND		0.00100	1	06/10/2019 06:27	WG1293517
trans-1,3-Dichloropropene	ND		0.00100	1	06/10/2019 06:27	WG1293517
2,2-Dichloropropane	ND		0.00100	1	06/10/2019 06:27	WG1293517
Di-isopropyl ether	ND		0.00100	1	06/10/2019 06:27	WG1293517
Ethylbenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
Hexachloro-1,3-butadiene	ND		0.00100	1	06/10/2019 06:27	WG1293517
Isopropylbenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
p-Isopropyltoluene	ND		0.00100	1	06/10/2019 06:27	WG1293517
2-Butanone (MEK)	ND		0.0100	1	06/10/2019 06:27	WG1293517
Methylene Chloride	ND		0.00500	1	06/10/2019 06:27	WG1293517
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/10/2019 06:27	WG1293517
Methyl tert-butyl ether	ND		0.00100	1	06/10/2019 06:27	WG1293517
Naphthalene	ND		0.00500	1	06/10/2019 06:27	WG1293517
n-Propylbenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
Styrene	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/10/2019 06:27	WG1293517
Tetrachloroethene	ND		0.00100	1	06/10/2019 06:27	WG1293517
Toluene	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,2,3-Trichlorobenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,2,4-Trichlorobenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,1,1-Trichloroethane	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,1,2-Trichloroethane	ND		0.00100	1	06/10/2019 06:27	WG1293517
Trichloroethene	ND		0.00100	1	06/10/2019 06:27	WG1293517
Trichlorofluoromethane	ND		0.00500	1	06/10/2019 06:27	WG1293517
1,2,3-Trichloropropane	ND		0.00250	1	06/10/2019 06:27	WG1293517
1,2,4-Trimethylbenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,2,3-Trimethylbenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
1,3,5-Trimethylbenzene	ND		0.00100	1	06/10/2019 06:27	WG1293517
Vinyl chloride	ND		0.00100	1	06/10/2019 06:27	WG1293517
Xylenes, Total	ND		0.00300	1	06/10/2019 06:27	WG1293517
(S) Toluene-d8	101		80.0-120		06/10/2019 06:27	WG1293517

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 4-Bromofluorobenzene	100		77.0-126		06/10/2019 06:27	WG1293517
(S) 1,2-Dichloroethane-d4	124		70.0-130		06/10/2019 06:27	WG1293517

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3420849-1 06/13/19 14:41

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	2.93	↓	2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1106129-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1106129-01 06/13/19 14:57 • (DUP) R3420849-2 06/13/19 15:04

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	19.1	19.2	1	0.325	↓	20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1106375-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1106375-01 06/13/19 16:27 • (DUP) R3420849-5 06/13/19 16:42

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	585	585	1	0.0414		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3420849-3 06/13/19 16:03

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	98.6	98.6	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3418882-1 06/07/19 08:52

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

L1106344-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1106344-01 06/07/19 11:33 • (DUP) R3418882-3 06/07/19 11:44

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	U	0.000	1	0.000		15
Chloride	46.2	46.1	1	0.102		15
Nitrate	2.41	2.41	1	0.116		15
Nitrite	0.0538	0.0533	1	0.934	J	15
Sulfate	18.7	18.6	1	0.383		15

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1106430-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1106430-01 06/07/19 18:23 • (DUP) R3418882-6 06/07/19 18:34

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.000	1	0.000		15
Chloride	9.41	9.44	1	0.272		15
Nitrate	ND	0.000	1	0.000		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	12.0	11.9	1	0.373		15

Laboratory Control Sample (LCS)

(LCS) R3418882-2 06/07/19 09:03

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	40.9	102	80.0-120	
Chloride	40.0	40.2	101	80.0-120	
Nitrate	8.00	8.57	107	80.0-120	
Nitrite	8.00	8.08	101	80.0-120	



Laboratory Control Sample (LCS)

(LCS) R3418882-2 06/07/19 09:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Sulfate	40.0	40.6	101	80.0-120	

L1106344-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106344-01 06/07/19 11:33 • (MS) R3418882-4 06/07/19 11:55 • (MSD) R3418882-5 06/07/19 12:06

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	U	47.2	47.5	94.4	94.9	1	80.0-120			0.529	15
Chloride	50.0	46.2	93.4	93.6	94.5	94.9	1	80.0-120			0.247	15
Nitrate	5.00	2.41	7.45	7.47	101	101	1	80.0-120			0.335	15
Nitrite	5.00	0.0538	4.95	4.99	98.0	98.8	1	80.0-120			0.800	15
Sulfate	50.0	18.7	66.8	66.9	96.2	96.5	1	80.0-120			0.169	15

L1106430-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1106430-01 06/07/19 18:23 • (MS) R3418882-7 06/07/19 18:45

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	ND	48.5	97.1	1	80.0-120	
Chloride	50.0	9.41	58.6	98.4	1	80.0-120	
Nitrate	5.00	ND	5.02	100	1	80.0-120	
Nitrite	5.00	ND	4.99	99.8	1	80.0-120	
Sulfate	50.0	12.0	60.9	97.8	1	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3419697-1 06/10/19 20:56

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Calcium,Dissolved	U		0.0463	1.00
Iron,Dissolved	U		0.0141	0.100
Magnesium,Dissolved	0.0441	↓	0.0111	1.00
Potassium,Dissolved	0.252	↓	0.102	1.00
Sodium,Dissolved	0.510	↓	0.0985	1.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3419697-2 06/10/19 20:59 • (LCSD) R3419697-3 06/10/19 21:02

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Calcium,Dissolved	10.0	9.92	10.1	99.2	101	80.0-120			1.95	20
Iron,Dissolved	10.0	9.69	9.92	96.9	99.2	80.0-120			2.33	20
Magnesium,Dissolved	10.0	9.65	9.89	96.5	98.9	80.0-120			2.53	20
Potassium,Dissolved	10.0	9.56	9.71	95.6	97.1	80.0-120			1.53	20
Sodium,Dissolved	10.0	9.86	10.1	98.6	101	80.0-120			1.95	20

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1106391-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106391-01 06/10/19 21:05 • (MS) R3419697-5 06/10/19 21:10 • (MSD) R3419697-6 06/10/19 21:13

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Calcium,Dissolved	10.0	174	182	178	76.0	42.5	1	75.0-125		↓	1.86	20
Iron,Dissolved	10.0	ND	9.67	9.55	96.7	95.5	1	75.0-125			1.25	20
Magnesium,Dissolved	10.0	110	118	116	82.6	64.4	1	75.0-125		↓	1.56	20
Potassium,Dissolved	10.0	3.64	13.3	13.2	97.1	95.3	1	75.0-125			1.37	20
Sodium,Dissolved	10.0	560	562	555	20.4	0.000	1	75.0-125	↓	↓	1.26	20



Method Blank (MB)

(MB) R3419146-1 06/08/19 11:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Strontium	U		0.000160	0.0100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3419146-2 06/08/19 11:44 • (LCSD) R3419146-3 06/08/19 11:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0488	0.0484	97.6	96.8	80.0-120			0.843	20

L1106315-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106315-01 06/08/19 11:54 • (MS) R3419146-5 06/08/19 12:03 • (MSD) R3419146-6 06/08/19 12:07

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.548	0.597	0.612	96.3	128	1	75.0-125		V	2.62	20



Method Blank (MB)

(MB) R3419527-1 06/10/19 11:17

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130

L1106619-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1106619-02 06/10/19 12:54 • (DUP) R3419527-2 06/10/19 13:14

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	0.156	0.129	1	18.4		20
Ethane	U	0.000	1	0.000		20
Ethene	U	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3419527-3 06/10/19 13:48 • (LCSD) R3419527-4 06/10/19 13:53

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0750	0.0738	111	109	85.0-115			1.52	20
Ethane	0.129	0.113	0.117	87.9	90.5	85.0-115			2.89	20
Ethene	0.127	0.112	0.116	88.2	91.2	85.0-115			3.30	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3419617-1 06/10/19 15:41

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetylene	U		0.00558	0.0208

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3419617-2 06/10/19 16:04 • (LCSD) R3419617-3 06/10/19 16:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetylene	0.208	0.196	0.189	94.2	91.1	85.0-115			3.36	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3420821-2 06/10/19 02:04

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	U		0.000256	0.00100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3420821-2 06/10/19 02:04

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	U		0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
<i>(S) Toluene-d8</i>	97.9			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	106			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	113			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3420821-1 06/10/19 01:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.125	0.185	148	19.0-160	
Acrolein	0.125	0.121	96.9	10.0-160	
Acrylonitrile	0.125	0.148	118	55.0-149	
Benzene	0.0250	0.0237	94.8	70.0-123	



Laboratory Control Sample (LCS)

(LCS) R3420821-1 06/10/19 01:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromobenzene	0.0250	0.0234	93.8	73.0-121	
Bromodichloromethane	0.0250	0.0248	99.0	75.0-120	
Bromoform	0.0250	0.0262	105	68.0-132	
Bromomethane	0.0250	0.0251	100	10.0-160	
n-Butylbenzene	0.0250	0.0226	90.5	73.0-125	
sec-Butylbenzene	0.0250	0.0233	93.2	75.0-125	
tert-Butylbenzene	0.0250	0.0236	94.6	76.0-124	
Carbon tetrachloride	0.0250	0.0283	113	68.0-126	
Chlorobenzene	0.0250	0.0246	98.4	80.0-121	
Chlorodibromomethane	0.0250	0.0257	103	77.0-125	
Chloroethane	0.0250	0.0260	104	47.0-150	
Chloroform	0.0250	0.0256	102	73.0-120	
Chloromethane	0.0250	0.0270	108	41.0-142	
2-Chlorotoluene	0.0250	0.0240	96.1	76.0-123	
4-Chlorotoluene	0.0250	0.0227	90.7	75.0-122	
1,2-Dibromo-3-Chloropropane	0.0250	0.0229	91.5	58.0-134	
1,2-Dibromoethane	0.0250	0.0263	105	80.0-122	
Dibromomethane	0.0250	0.0256	103	80.0-120	
1,2-Dichlorobenzene	0.0250	0.0240	96.0	79.0-121	
1,3-Dichlorobenzene	0.0250	0.0238	95.3	79.0-120	
1,4-Dichlorobenzene	0.0250	0.0234	93.6	79.0-120	
Dichlorodifluoromethane	0.0250	0.0283	113	51.0-149	
1,1-Dichloroethane	0.0250	0.0258	103	70.0-126	
1,2-Dichloroethane	0.0250	0.0271	109	70.0-128	
1,1-Dichloroethene	0.0250	0.0246	98.4	71.0-124	
cis-1,2-Dichloroethene	0.0250	0.0246	98.3	73.0-120	
trans-1,2-Dichloroethene	0.0250	0.0241	96.6	73.0-120	
1,2-Dichloropropane	0.0250	0.0264	106	77.0-125	
1,1-Dichloropropene	0.0250	0.0247	98.6	74.0-126	
1,3-Dichloropropane	0.0250	0.0258	103	80.0-120	
cis-1,3-Dichloropropene	0.0250	0.0256	102	80.0-123	
trans-1,3-Dichloropropene	0.0250	0.0260	104	78.0-124	
2,2-Dichloropropane	0.0250	0.0256	102	58.0-130	
Di-isopropyl ether	0.0250	0.0270	108	58.0-138	
Ethylbenzene	0.0250	0.0241	96.5	79.0-123	
Hexachloro-1,3-butadiene	0.0250	0.0217	86.6	54.0-138	
Isopropylbenzene	0.0250	0.0253	101	76.0-127	
p-Isopropyltoluene	0.0250	0.0239	95.6	76.0-125	
2-Butanone (MEK)	0.125	0.158	126	44.0-160	
Methylene Chloride	0.0250	0.0240	96.1	67.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Laboratory Control Sample (LCS)

(LCS) R3420821-1 06/10/19 01:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
4-Methyl-2-pentanone (MIBK)	0.125	0.143	114	68.0-142	
Methyl tert-butyl ether	0.0250	0.0252	101	68.0-125	
Naphthalene	0.0250	0.0222	88.6	54.0-135	
n-Propylbenzene	0.0250	0.0224	89.5	77.0-124	
Styrene	0.0250	0.0261	105	73.0-130	
1,1,1,2-Tetrachloroethane	0.0250	0.0255	102	75.0-125	
1,1,2,2-Tetrachloroethane	0.0250	0.0233	93.2	65.0-130	
Tetrachloroethene	0.0250	0.0242	96.7	72.0-132	
Toluene	0.0250	0.0226	90.4	79.0-120	
1,1,2-Trichlorotrifluoroethane	0.0250	0.0249	99.8	69.0-132	
1,2,3-Trichlorobenzene	0.0250	0.0216	86.6	50.0-138	
1,2,4-Trichlorobenzene	0.0250	0.0218	87.3	57.0-137	
1,1,1-Trichloroethane	0.0250	0.0264	106	73.0-124	
1,1,2-Trichloroethane	0.0250	0.0244	97.6	80.0-120	
Trichloroethene	0.0250	0.0249	99.6	78.0-124	
Trichlorofluoromethane	0.0250	0.0247	98.8	59.0-147	
1,2,3-Trichloropropane	0.0250	0.0238	95.3	73.0-130	
1,2,3-Trimethylbenzene	0.0250	0.0222	89.0	77.0-120	
1,2,4-Trimethylbenzene	0.0250	0.0234	93.7	76.0-121	
1,3,5-Trimethylbenzene	0.0250	0.0231	92.3	76.0-122	
Vinyl chloride	0.0250	0.0257	103	67.0-131	
Xylenes, Total	0.0750	0.0740	98.7	79.0-123	
<i>(S) Toluene-d8</i>			101	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			105	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			118	70.0-130	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

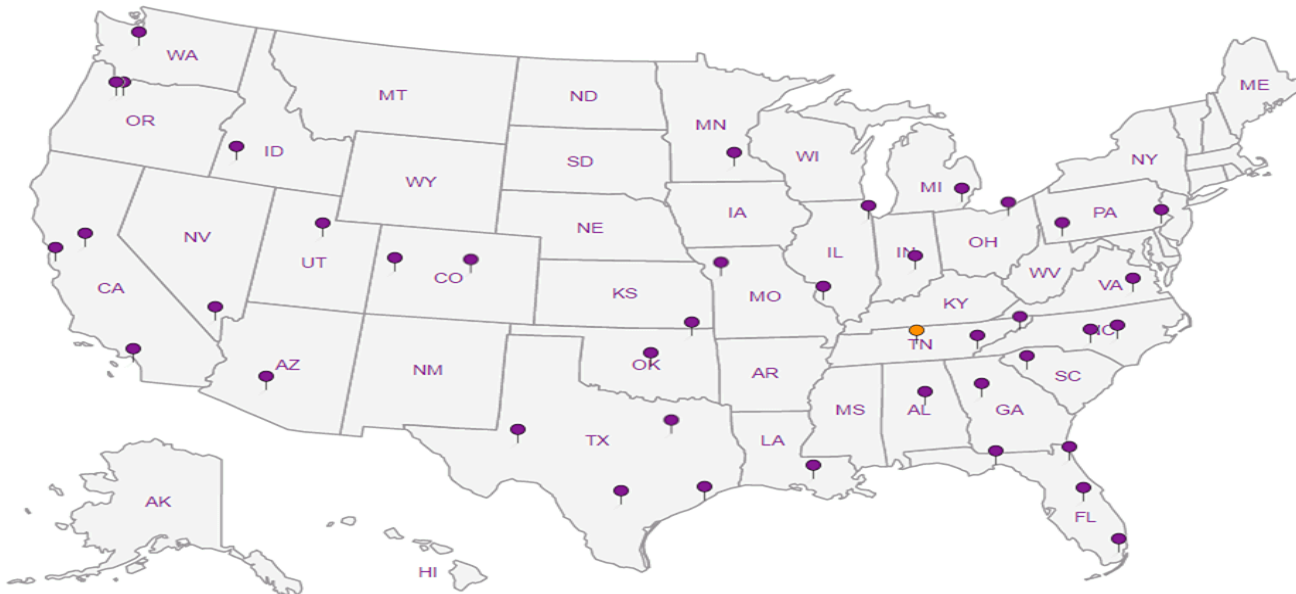
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Terracon Consultants, Inc - Longmont, CO
1831 Lefthand Circe, Suite C

Billing Information:
Mike Skridulis
1831 Lefthand Circe, Suite C
Longmont, CO 80501

Pres Chk



Report to:
Michael Skridulis

Email To: mjskridulis@terracon.com

Project Description: **COL Annual GW**

City/State Collected: **Longmont, CO**

Phone: **303-454-5249**
Fax:

Client Project # **22197006**

Lab Project # **TERRALCO-22197006**

Collected by (print): **Charles A. Covington**

Site/Facility ID # **PL1**

P.O. #

Collected by (signature): *[Signature]*
Immediately Packed on Ice N Y

Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Quote # **STANDARD**
Date Results Needed

Analysis / Container / Preservative		Pres Chk
ALK, Br, Cr, NO2, NO3, SO	125mlHDPE-NoPres	<input checked="" type="checkbox"/>
Metals, Dissolved	250mlHDPE-NoPres	<input type="checkbox"/>
RSK175 40mlAmb HCl		<input type="checkbox"/>
SRG 250mlHDPE-HNO3		<input type="checkbox"/>
V8260 40mlAmb-HCl	(3)	<input type="checkbox"/>

L# **L1106393**
F137
Acctnum: **TERRALCO**
Template: **T149939**
Prelogin: **P708318**
TSR: **288 - Daphne Richards**
PB:
Shipped Via: **FedEX Ground**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
EGW-MW01	Grab	GW	-	6/6/19	1210	8
EGW-MW02	Grab	GW	-	6/6/19	1240	8
EGW-MW03	Grab	GW	-	6/6/19	1145	8
		GW				8

Invoice: Customer: ESCDEN Date: 18Feb19 Weight: 10 LBS Shipping: 0.00
 Phone: (615)758-5858 COD: Shipping Special: 0.00
 Sat Del: N DV: 0.00 Handling: 0.00
 Total: 0.00
 Svc: STANDARD OVERNIGHT
 TRCK: 4794 8830 2406

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:
 Samples returned via: UPS FedEx Courier
 Tracking # **4794 8830 2406**
 pH _____ Temp _____
 Flow _____ Other _____

Sample Receipt Checklist
 COC Seal Present/Intact: NP Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 If Applicable
 VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N

Relinquished by: (Signature) *[Signature]*
 Relinquished by: (Signature)
 Relinquished by: (Signature)

Date: **6/6/19**
 Time: **1500**

Received by: (Signature) *[Signature]*
 Received by: (Signature)
 Received for lab by: (Signature) *[Signature]*

Trip Blank Received: Yes/No
 HCL/MeOH TBR
 Temp: **13.6 °C**
 1.1-2=0.9
 Bottles Received: **24**
 Date: **6/7/19**
 Time: **845**

Hold:
 Condition: NCF / OK
 RAD SCREEN: **<0.5 mR/hr**
 If preservation required by Login: Date/Time

L1106393

Analysis

Groundwater Sample Constituents

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations – Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

Terracon Consultants, Inc - Longmont, CO

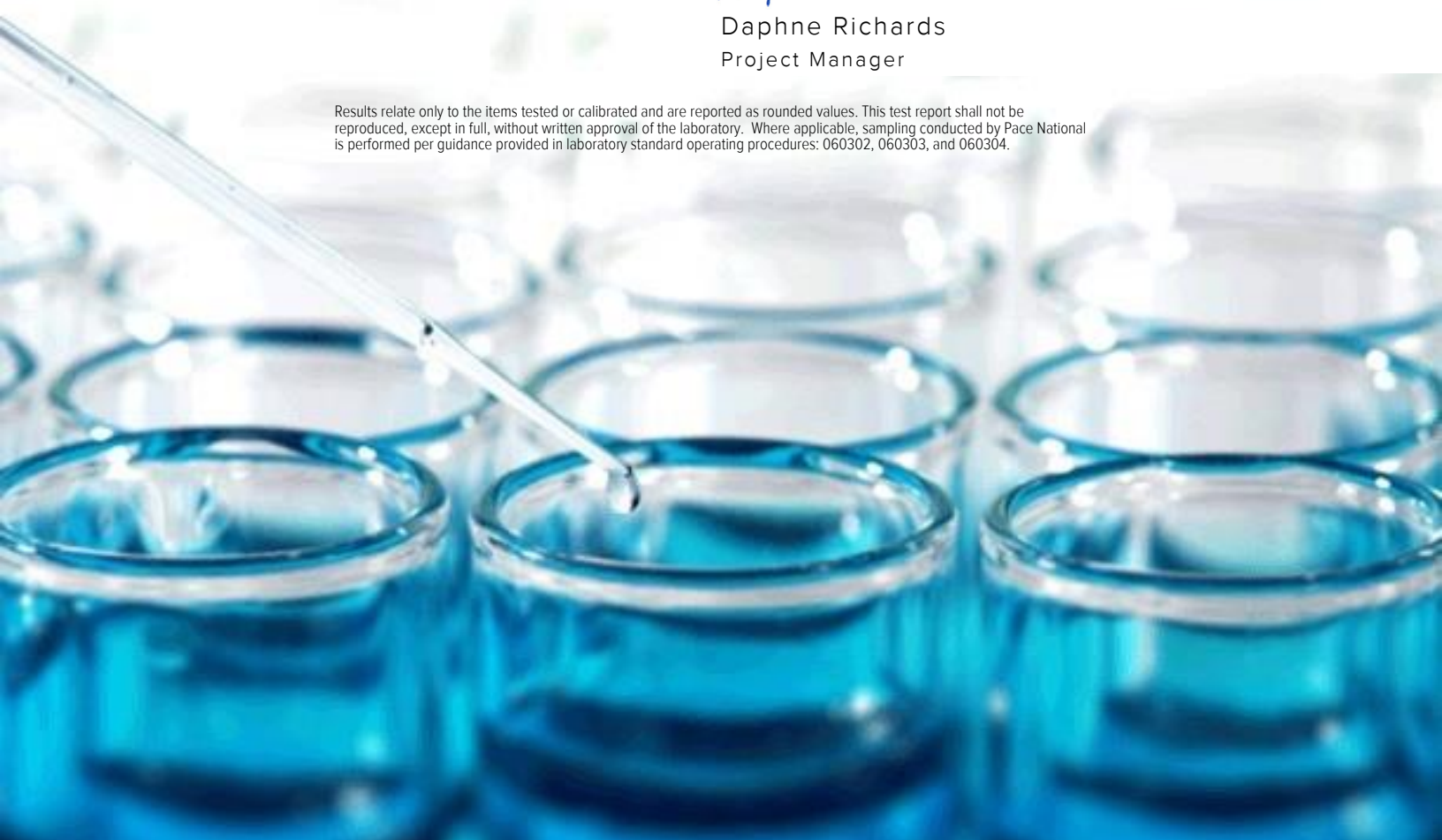
Sample Delivery Group: L1105269
Samples Received: 06/05/2019
Project Number: 22197006
Description: COL Annual GW
Site: DM1
Report To: Michael Skridulis
1831 Lefthand Cirlice, Suite C
Longmont, CO 80501

Entire Report Reviewed By:












Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





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SAMPLE SUMMARY



GM1-MW01 L1105269-01 GW

Collected by Charles Covington
Collected date/time 06/04/19 15:30
Received date/time 06/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1292488	1	06/10/19 21:47	06/10/19 21:47	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1291221	1	06/05/19 16:14	06/05/19 16:14	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1291221	5	06/05/19 17:42	06/05/19 17:42	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1291427	1	06/06/19 09:50	06/07/19 19:43	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1291426	5	06/06/19 11:44	06/07/19 18:02	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1291782	1	06/06/19 15:02	06/06/19 15:02	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1293034	1	06/08/19 03:07	06/08/19 03:07	TJJ	Mt. Juliet, TN

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Al

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GM1-MW02 L1105269-02 GW

Collected by Charles Covington
Collected date/time 06/04/19 16:00
Received date/time 06/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1292488	1	06/10/19 21:56	06/10/19 21:56	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1291221	1	06/05/19 17:59	06/05/19 17:59	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1291221	10	06/06/19 04:06	06/06/19 04:06	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1291427	1	06/06/19 09:50	06/07/19 19:51	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1291426	5	06/06/19 11:44	06/07/19 18:07	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1291782	1	06/06/19 15:04	06/06/19 15:04	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1293034	1	06/08/19 03:27	06/08/19 03:27	TJJ	Mt. Juliet, TN

GM1-MW03 L1105269-03 GW

Collected by Charles Covington
Collected date/time 06/04/19 15:00
Received date/time 06/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1292488	1	06/10/19 22:05	06/10/19 22:05	GB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1291221	1	06/05/19 18:35	06/05/19 18:35	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1291221	10	06/05/19 18:52	06/05/19 18:52	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1291427	1	06/06/19 09:50	06/07/19 19:54	TRB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1291426	5	06/06/19 11:44	06/07/19 18:11	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1291782	1	06/06/19 15:06	06/06/19 15:06	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1293034	1	06/08/19 03:48	06/08/19 03:48	TJJ	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	376		20.0	1	06/10/2019 21:47	WG1292488

Sample Narrative:

L1105269-01 WG1292488: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	06/05/2019 16:14	WG1291221
Chloride	24.8		1.00	1	06/05/2019 16:14	WG1291221
Nitrate as (N)	7.26		0.100	1	06/05/2019 16:14	WG1291221
Nitrite as (N)	ND		0.100	1	06/05/2019 16:14	WG1291221
Sulfate	410		25.0	5	06/05/2019 17:42	WG1291221

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	95.9		1.00	1	06/07/2019 19:43	WG1291427
Iron,Dissolved	ND		0.100	1	06/07/2019 19:43	WG1291427
Magnesium,Dissolved	80.9		1.00	1	06/07/2019 19:43	WG1291427
Potassium,Dissolved	3.84	B	1.00	1	06/07/2019 19:43	WG1291427
Sodium,Dissolved	146		1.00	1	06/07/2019 19:43	WG1291427

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Strontium	2.08		0.0500	5	06/07/2019 18:02	WG1291426

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	06/06/2019 15:02	WG1291782
Ethane	ND		0.0130	1	06/06/2019 15:02	WG1291782
Ethene	ND		0.0130	1	06/06/2019 15:02	WG1291782
Acetylene	ND		0.0208	1	06/06/2019 15:02	WG1291782

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	06/08/2019 03:07	WG1293034
Acrolein	ND		0.0500	1	06/08/2019 03:07	WG1293034
Acrylonitrile	ND		0.0100	1	06/08/2019 03:07	WG1293034
Benzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
Bromobenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
Bromodichloromethane	ND		0.00100	1	06/08/2019 03:07	WG1293034
Bromoform	ND		0.00100	1	06/08/2019 03:07	WG1293034
Bromomethane	ND		0.00500	1	06/08/2019 03:07	WG1293034
n-Butylbenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
sec-Butylbenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
tert-Butylbenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
Carbon tetrachloride	ND		0.00100	1	06/08/2019 03:07	WG1293034
Chlorobenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
Chlorodibromomethane	ND		0.00100	1	06/08/2019 03:07	WG1293034

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 06/04/19 15:30

L1105269

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloroethane	ND		0.00500	1	06/08/2019 03:07	WG1293034
Chloroform	ND		0.00500	1	06/08/2019 03:07	WG1293034
Chloromethane	ND		0.00250	1	06/08/2019 03:07	WG1293034
2-Chlorotoluene	ND		0.00100	1	06/08/2019 03:07	WG1293034
4-Chlorotoluene	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/08/2019 03:07	WG1293034
1,2-Dibromoethane	ND		0.00100	1	06/08/2019 03:07	WG1293034
Dibromomethane	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,2-Dichlorobenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,3-Dichlorobenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,4-Dichlorobenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
Dichlorodifluoromethane	ND		0.00500	1	06/08/2019 03:07	WG1293034
1,1-Dichloroethane	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,2-Dichloroethane	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,1-Dichloroethene	ND		0.00100	1	06/08/2019 03:07	WG1293034
cis-1,2-Dichloroethene	ND		0.00100	1	06/08/2019 03:07	WG1293034
trans-1,2-Dichloroethene	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,2-Dichloropropane	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,1-Dichloropropene	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,3-Dichloropropane	ND		0.00100	1	06/08/2019 03:07	WG1293034
cis-1,3-Dichloropropene	ND		0.00100	1	06/08/2019 03:07	WG1293034
trans-1,3-Dichloropropene	ND		0.00100	1	06/08/2019 03:07	WG1293034
2,2-Dichloropropane	ND		0.00100	1	06/08/2019 03:07	WG1293034
Di-isopropyl ether	ND		0.00100	1	06/08/2019 03:07	WG1293034
Ethylbenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
Hexachloro-1,3-butadiene	ND		0.00100	1	06/08/2019 03:07	WG1293034
Isopropylbenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
p-Isopropyltoluene	ND		0.00100	1	06/08/2019 03:07	WG1293034
2-Butanone (MEK)	ND		0.0100	1	06/08/2019 03:07	WG1293034
Methylene Chloride	ND		0.00500	1	06/08/2019 03:07	WG1293034
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/08/2019 03:07	WG1293034
Methyl tert-butyl ether	ND		0.00100	1	06/08/2019 03:07	WG1293034
Naphthalene	ND		0.00500	1	06/08/2019 03:07	WG1293034
n-Propylbenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
Styrene	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/08/2019 03:07	WG1293034
Tetrachloroethene	ND		0.00100	1	06/08/2019 03:07	WG1293034
Toluene	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,2,3-Trichlorobenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,2,4-Trichlorobenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,1,1-Trichloroethane	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,1,2-Trichloroethane	ND		0.00100	1	06/08/2019 03:07	WG1293034
Trichloroethene	ND		0.00100	1	06/08/2019 03:07	WG1293034
Trichlorofluoromethane	ND		0.00500	1	06/08/2019 03:07	WG1293034
1,2,3-Trichloropropane	ND		0.00250	1	06/08/2019 03:07	WG1293034
1,2,4-Trimethylbenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,2,3-Trimethylbenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
1,3,5-Trimethylbenzene	ND		0.00100	1	06/08/2019 03:07	WG1293034
Vinyl chloride	ND		0.00100	1	06/08/2019 03:07	WG1293034
Xylenes, Total	ND		0.00300	1	06/08/2019 03:07	WG1293034
(S) Toluene-d8	101		80.0-120		06/08/2019 03:07	WG1293034
(S) 4-Bromofluorobenzene	105		77.0-126		06/08/2019 03:07	WG1293034
(S) 1,2-Dichloroethane-d4	102		70.0-130		06/08/2019 03:07	WG1293034

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	401		20.0	1	06/10/2019 21:56	WG1292488

Sample Narrative:

L1105269-02 WG1292488: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	06/05/2019 17:59	WG1291221
Chloride	32.3		1.00	1	06/05/2019 17:59	WG1291221
Nitrate as (N)	8.15		0.100	1	06/05/2019 17:59	WG1291221
Nitrite as (N)	ND		0.100	1	06/05/2019 17:59	WG1291221
Sulfate	550		50.0	10	06/06/2019 04:06	WG1291221

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	88.9		1.00	1	06/07/2019 19:51	WG1291427
Iron,Dissolved	ND		0.100	1	06/07/2019 19:51	WG1291427
Magnesium,Dissolved	82.8		1.00	1	06/07/2019 19:51	WG1291427
Potassium,Dissolved	3.54	B	1.00	1	06/07/2019 19:51	WG1291427
Sodium,Dissolved	141		1.00	1	06/07/2019 19:51	WG1291427

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	3.08		0.0500	5	06/07/2019 18:07	WG1291426

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	06/06/2019 15:04	WG1291782
Ethane	ND		0.0130	1	06/06/2019 15:04	WG1291782
Ethene	ND		0.0130	1	06/06/2019 15:04	WG1291782
Acetylene	ND		0.0208	1	06/06/2019 15:04	WG1291782

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	06/08/2019 03:27	WG1293034
Acrolein	ND		0.0500	1	06/08/2019 03:27	WG1293034
Acrylonitrile	ND		0.0100	1	06/08/2019 03:27	WG1293034
Benzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
Bromobenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
Bromodichloromethane	ND		0.00100	1	06/08/2019 03:27	WG1293034
Bromoform	ND		0.00100	1	06/08/2019 03:27	WG1293034
Bromomethane	ND		0.00500	1	06/08/2019 03:27	WG1293034
n-Butylbenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
sec-Butylbenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
tert-Butylbenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
Carbon tetrachloride	ND		0.00100	1	06/08/2019 03:27	WG1293034
Chlorobenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
Chlorodibromomethane	ND		0.00100	1	06/08/2019 03:27	WG1293034

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 06/04/19 16:00

L1105269

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloroethane	ND		0.00500	1	06/08/2019 03:27	WG1293034
Chloroform	ND		0.00500	1	06/08/2019 03:27	WG1293034
Chloromethane	ND		0.00250	1	06/08/2019 03:27	WG1293034
2-Chlorotoluene	ND		0.00100	1	06/08/2019 03:27	WG1293034
4-Chlorotoluene	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/08/2019 03:27	WG1293034
1,2-Dibromoethane	ND		0.00100	1	06/08/2019 03:27	WG1293034
Dibromomethane	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,2-Dichlorobenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,3-Dichlorobenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,4-Dichlorobenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
Dichlorodifluoromethane	ND		0.00500	1	06/08/2019 03:27	WG1293034
1,1-Dichloroethane	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,2-Dichloroethane	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,1-Dichloroethene	ND		0.00100	1	06/08/2019 03:27	WG1293034
cis-1,2-Dichloroethene	ND		0.00100	1	06/08/2019 03:27	WG1293034
trans-1,2-Dichloroethene	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,2-Dichloropropane	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,1-Dichloropropene	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,3-Dichloropropane	ND		0.00100	1	06/08/2019 03:27	WG1293034
cis-1,3-Dichloropropene	ND		0.00100	1	06/08/2019 03:27	WG1293034
trans-1,3-Dichloropropene	ND		0.00100	1	06/08/2019 03:27	WG1293034
2,2-Dichloropropane	ND		0.00100	1	06/08/2019 03:27	WG1293034
Di-isopropyl ether	ND		0.00100	1	06/08/2019 03:27	WG1293034
Ethylbenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
Hexachloro-1,3-butadiene	ND		0.00100	1	06/08/2019 03:27	WG1293034
Isopropylbenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
p-Isopropyltoluene	ND		0.00100	1	06/08/2019 03:27	WG1293034
2-Butanone (MEK)	ND		0.0100	1	06/08/2019 03:27	WG1293034
Methylene Chloride	ND		0.00500	1	06/08/2019 03:27	WG1293034
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/08/2019 03:27	WG1293034
Methyl tert-butyl ether	ND		0.00100	1	06/08/2019 03:27	WG1293034
Naphthalene	ND		0.00500	1	06/08/2019 03:27	WG1293034
n-Propylbenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
Styrene	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/08/2019 03:27	WG1293034
Tetrachloroethene	ND		0.00100	1	06/08/2019 03:27	WG1293034
Toluene	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,2,3-Trichlorobenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,2,4-Trichlorobenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,1,1-Trichloroethane	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,1,2-Trichloroethane	ND		0.00100	1	06/08/2019 03:27	WG1293034
Trichloroethene	ND		0.00100	1	06/08/2019 03:27	WG1293034
Trichlorofluoromethane	ND		0.00500	1	06/08/2019 03:27	WG1293034
1,2,3-Trichloropropane	ND		0.00250	1	06/08/2019 03:27	WG1293034
1,2,4-Trimethylbenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,2,3-Trimethylbenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
1,3,5-Trimethylbenzene	ND		0.00100	1	06/08/2019 03:27	WG1293034
Vinyl chloride	ND		0.00100	1	06/08/2019 03:27	WG1293034
Xylenes, Total	ND		0.00300	1	06/08/2019 03:27	WG1293034
(S) Toluene-d8	94.3		80.0-120		06/08/2019 03:27	WG1293034
(S) 4-Bromofluorobenzene	97.8		77.0-126		06/08/2019 03:27	WG1293034
(S) 1,2-Dichloroethane-d4	102		70.0-130		06/08/2019 03:27	WG1293034

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	311		20.0	1	06/10/2019 22:05	WG1292488

Sample Narrative:

L1105269-03 WG1292488: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	06/05/2019 18:35	WG1291221
Chloride	34.5		1.00	1	06/05/2019 18:35	WG1291221
Nitrate as (N)	9.23		0.100	1	06/05/2019 18:35	WG1291221
Nitrite as (N)	ND		0.100	1	06/05/2019 18:35	WG1291221
Sulfate	989		50.0	10	06/05/2019 18:52	WG1291221

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	191		1.00	1	06/07/2019 19:54	WG1291427
Iron,Dissolved	ND		0.100	1	06/07/2019 19:54	WG1291427
Magnesium,Dissolved	178		1.00	1	06/07/2019 19:54	WG1291427
Potassium,Dissolved	4.47	B	1.00	1	06/07/2019 19:54	WG1291427
Sodium,Dissolved	306		1.00	1	06/07/2019 19:54	WG1291427

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Strontium	6.08		0.0500	5	06/07/2019 18:11	WG1291426

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	06/06/2019 15:06	WG1291782
Ethane	ND		0.0130	1	06/06/2019 15:06	WG1291782
Ethene	ND		0.0130	1	06/06/2019 15:06	WG1291782
Acetylene	ND		0.0208	1	06/06/2019 15:06	WG1291782

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	06/08/2019 03:48	WG1293034
Acrolein	ND		0.0500	1	06/08/2019 03:48	WG1293034
Acrylonitrile	ND		0.0100	1	06/08/2019 03:48	WG1293034
Benzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
Bromobenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
Bromodichloromethane	ND		0.00100	1	06/08/2019 03:48	WG1293034
Bromoform	ND		0.00100	1	06/08/2019 03:48	WG1293034
Bromomethane	ND		0.00500	1	06/08/2019 03:48	WG1293034
n-Butylbenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
sec-Butylbenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
tert-Butylbenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
Carbon tetrachloride	ND		0.00100	1	06/08/2019 03:48	WG1293034
Chlorobenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
Chlorodibromomethane	ND		0.00100	1	06/08/2019 03:48	WG1293034

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Collected date/time: 06/04/19 15:00

L1105269

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloroethane	ND		0.00500	1	06/08/2019 03:48	WG1293034
Chloroform	ND		0.00500	1	06/08/2019 03:48	WG1293034
Chloromethane	ND		0.00250	1	06/08/2019 03:48	WG1293034
2-Chlorotoluene	ND		0.00100	1	06/08/2019 03:48	WG1293034
4-Chlorotoluene	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	06/08/2019 03:48	WG1293034
1,2-Dibromoethane	ND		0.00100	1	06/08/2019 03:48	WG1293034
Dibromomethane	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,2-Dichlorobenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,3-Dichlorobenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,4-Dichlorobenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
Dichlorodifluoromethane	ND		0.00500	1	06/08/2019 03:48	WG1293034
1,1-Dichloroethane	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,2-Dichloroethane	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,1-Dichloroethene	ND		0.00100	1	06/08/2019 03:48	WG1293034
cis-1,2-Dichloroethene	ND		0.00100	1	06/08/2019 03:48	WG1293034
trans-1,2-Dichloroethene	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,2-Dichloropropane	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,1-Dichloropropene	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,3-Dichloropropane	ND		0.00100	1	06/08/2019 03:48	WG1293034
cis-1,3-Dichloropropene	ND		0.00100	1	06/08/2019 03:48	WG1293034
trans-1,3-Dichloropropene	ND		0.00100	1	06/08/2019 03:48	WG1293034
2,2-Dichloropropane	ND		0.00100	1	06/08/2019 03:48	WG1293034
Di-isopropyl ether	ND		0.00100	1	06/08/2019 03:48	WG1293034
Ethylbenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
Hexachloro-1,3-butadiene	ND		0.00100	1	06/08/2019 03:48	WG1293034
Isopropylbenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
p-Isopropyltoluene	ND		0.00100	1	06/08/2019 03:48	WG1293034
2-Butanone (MEK)	ND		0.0100	1	06/08/2019 03:48	WG1293034
Methylene Chloride	ND		0.00500	1	06/08/2019 03:48	WG1293034
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	06/08/2019 03:48	WG1293034
Methyl tert-butyl ether	ND		0.00100	1	06/08/2019 03:48	WG1293034
Naphthalene	ND		0.00500	1	06/08/2019 03:48	WG1293034
n-Propylbenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
Styrene	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,1,1,2-Tetrachloroethane	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,1,2,2-Tetrachloroethane	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	06/08/2019 03:48	WG1293034
Tetrachloroethene	ND		0.00100	1	06/08/2019 03:48	WG1293034
Toluene	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,2,3-Trichlorobenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,2,4-Trichlorobenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,1,1-Trichloroethane	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,1,2-Trichloroethane	ND		0.00100	1	06/08/2019 03:48	WG1293034
Trichloroethene	ND		0.00100	1	06/08/2019 03:48	WG1293034
Trichlorofluoromethane	ND		0.00500	1	06/08/2019 03:48	WG1293034
1,2,3-Trichloropropane	ND		0.00250	1	06/08/2019 03:48	WG1293034
1,2,4-Trimethylbenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,2,3-Trimethylbenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
1,3,5-Trimethylbenzene	ND		0.00100	1	06/08/2019 03:48	WG1293034
Vinyl chloride	ND		0.00100	1	06/08/2019 03:48	WG1293034
Xylenes, Total	ND		0.00300	1	06/08/2019 03:48	WG1293034
(S) Toluene-d8	99.3		80.0-120		06/08/2019 03:48	WG1293034
(S) 4-Bromofluorobenzene	102		77.0-126		06/08/2019 03:48	WG1293034
(S) 1,2-Dichloroethane-d4	102		70.0-130		06/08/2019 03:48	WG1293034

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3419976-1 06/10/19 21:10

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	6.16	↓	2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1105226-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1105226-01 06/10/19 21:23 • (DUP) R3419976-2 06/10/19 21:32

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	275	274	1	0.256		20

Sample Narrative:

OS: Endpoint pH 4.5 headspace

DUP: Endpoint pH 4.5

L1105353-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1105353-01 06/10/19 23:30 • (DUP) R3419976-4 06/10/19 23:36

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	26.8	27.8	1	3.44		20

Sample Narrative:

OS: Endpoint pH 4.5 headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3419976-3 06/10/19 22:37

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	100	100	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3418218-1 06/05/19 11:55

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

L1105315-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1105315-01 06/05/19 15:39 • (DUP) R3418218-3 06/05/19 15:56

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.000	1	0.000		15
Chloride	67.7	69.3	1	2.35		15
Nitrate	ND	0.000	1	0.000		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	117	118	1	1.03	E	15

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1105333-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1105333-06 06/06/19 00:27 • (DUP) R3418218-6 06/06/19 00:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.000	1	0.000		15
Chloride	3.45	3.44	1	0.171		15
Nitrate	ND	0.000	1	0.000		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	2160	2160	1	0.0602	E	15

Laboratory Control Sample (LCS)

(LCS) R3418218-2 06/05/19 12:12

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	40.9	102	80.0-120	
Chloride	40.0	40.3	101	80.0-120	
Nitrate	8.00	8.24	103	80.0-120	
Nitrite	8.00	8.09	101	80.0-120	



Laboratory Control Sample (LCS)

(LCS) R3418218-2 06/05/19 12:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Sulfate	40.0	40.8	102	80.0-120	

L1105269-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1105269-01 06/05/19 16:14 • (MS) R3418218-4 06/05/19 17:07 • (MSD) R3418218-5 06/05/19 17:24

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	41.9	41.6	83.9	83.2	1	80.0-120			0.807	15
Chloride	50.0	24.8	73.4	73.6	97.2	97.7	1	80.0-120			0.348	15
Nitrate	5.00	7.26	12.0	12.1	95.3	96.0	1	80.0-120	<u>E</u>	<u>E</u>	0.319	15
Nitrite	5.00	ND	5.08	5.11	102	102	1	80.0-120			0.642	15
Sulfate	50.0	418	441	442	46.0	47.5	1	80.0-120	<u>EV</u>	<u>EV</u>	0.169	15

L1105333-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1105333-06 06/06/19 00:27 • (MS) R3418218-7 06/06/19 01:02

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	ND	ND	0.000	1	80.0-120	<u>J6</u>
Chloride	50.0	3.45	53.1	99.3	1	80.0-120	
Nitrate	5.00	ND	4.55	90.9	1	80.0-120	
Nitrite	5.00	ND	5.08	102	1	80.0-120	
Sulfate	50.0	2160	2120	0.000	1	80.0-120	<u>EV</u>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3419137-1 06/08/19 09:09

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Calcium,Dissolved	U		0.0463	1.00
Iron,Dissolved	U		0.0141	0.100
Magnesium,Dissolved	U		0.0111	1.00
Potassium,Dissolved	0.574	↓	0.102	1.00
Sodium,Dissolved	0.486	↓	0.0985	1.00

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3419137-2 06/08/19 09:12 • (LCSD) R3419137-3 06/08/19 09:14

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Calcium,Dissolved	10.0	10.3	10.2	103	102	80.0-120			0.523	20
Iron,Dissolved	10.0	10.5	10.5	105	105	80.0-120			0.320	20
Magnesium,Dissolved	10.0	10.5	10.4	105	104	80.0-120			0.980	20
Potassium,Dissolved	10.0	10.9	10.8	109	108	80.0-120			0.829	20
Sodium,Dissolved	10.0	10.6	10.5	106	105	80.0-120			0.689	20

L1105135-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1105135-01 06/07/19 18:58 • (MS) R3419142-5 06/07/19 19:03 • (MSD) R3419142-6 06/07/19 19:06

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Calcium,Dissolved	10.0	ND	10.9	10.9	99.6	99.6	1	75.0-125			0.0712	20
Iron,Dissolved	10.0	0.496	10.3	10.4	98.4	99.0	1	75.0-125			0.553	20
Magnesium,Dissolved	10.0	1.08	11.4	11.5	103	104	1	75.0-125			0.484	20
Potassium,Dissolved	10.0	5.89	13.7	13.7	78.3	78.3	1	75.0-125			0.00641	20
Sodium,Dissolved	10.0	11.8	20.5	20.5	86.9	87.6	1	75.0-125			0.316	20



Method Blank (MB)

(MB) R3418668-1 06/06/19 19:29

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Strontium	0.000172	<u>J</u>	0.000160	0.0100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3418668-2 06/06/19 19:34 • (LCSD) R3418668-3 06/06/19 19:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	0.0471	0.0479	94.2	95.9	80.0-120			1.73	20

L1105269-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1105269-01 06/06/19 19:44 • (MS) R3418668-5 06/06/19 19:55 • (MSD) R3418668-6 06/06/19 20:00

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Strontium	0.0500	2.36	2.36	2.43	0.000	127	1	75.0-125	<u>EV</u>	<u>EV</u>	2.68	20

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3418510-1 06/06/19 14:49

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130
Acetylene	U		0.00558	0.0208

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1105306-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1105306-01 06/06/19 14:51 • (DUP) R3418510-2 06/06/19 15:21

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Methane	ND	0.000	1	0.000		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Acetylene	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3418510-3 06/06/19 15:55 • (LCSD) R3418510-4 06/06/19 15:59

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0764	0.0755	113	111	85.0-115			1.18	20
Ethane	0.129	0.118	0.117	91.3	90.4	85.0-115			0.992	20
Ethene	0.127	0.116	0.115	91.6	90.8	85.0-115			0.945	20
Acetylene	0.208	0.185	0.182	89.1	87.5	85.0-115			1.83	20



Method Blank (MB)

(MB) R3419181-2 06/07/19 21:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Ethylbenzene	U		0.000384	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Hexachloro-1,3-butadiene	U		0.000256	0.00100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3419181-2 06/07/19 21:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	0.000334	U	0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Xylenes, Total	U		0.00106	0.00300
Vinyl chloride	U		0.000259	0.00100
(S) Toluene-d8	97.8			80.0-120
(S) 4-Bromofluorobenzene	101			77.0-126
(S) 1,2-Dichloroethane-d4	104			70.0-130

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Laboratory Control Sample (LCS)

(LCS) R3419181-1 06/07/19 20:22

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Benzene	0.0250	0.0259	104	70.0-123	
Acetone	0.125	0.0751	60.1	19.0-160	
Acrolein	0.125	0.173	139	10.0-160	
Acrylonitrile	0.125	0.110	88.0	55.0-149	



Laboratory Control Sample (LCS)

(LCS) R3419181-1 06/07/19 20:22

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromobenzene	0.0250	0.0273	109	73.0-121	
Bromodichloromethane	0.0250	0.0240	96.2	75.0-120	
Bromoform	0.0250	0.0240	96.2	68.0-132	
Bromomethane	0.0250	0.0193	77.4	10.0-160	
n-Butylbenzene	0.0250	0.0261	104	73.0-125	
sec-Butylbenzene	0.0250	0.0266	106	75.0-125	
tert-Butylbenzene	0.0250	0.0289	116	76.0-124	
Carbon tetrachloride	0.0250	0.0271	108	68.0-126	
Chlorobenzene	0.0250	0.0240	96.2	80.0-121	
Chlorodibromomethane	0.0250	0.0269	108	77.0-125	
Chloroethane	0.0250	0.0248	99.2	47.0-150	
Chloroform	0.0250	0.0248	99.3	73.0-120	
Chloromethane	0.0250	0.0151	60.3	41.0-142	
2-Chlorotoluene	0.0250	0.0259	104	76.0-123	
4-Chlorotoluene	0.0250	0.0244	97.5	75.0-122	
1,2-Dibromo-3-Chloropropane	0.0250	0.0266	106	58.0-134	
1,2-Dibromoethane	0.0250	0.0277	111	80.0-122	
Dibromomethane	0.0250	0.0237	95.0	80.0-120	
1,2-Dichlorobenzene	0.0250	0.0289	116	79.0-121	
1,3-Dichlorobenzene	0.0250	0.0272	109	79.0-120	
1,4-Dichlorobenzene	0.0250	0.0264	106	79.0-120	
Dichlorodifluoromethane	0.0250	0.0272	109	51.0-149	
1,1-Dichloroethane	0.0250	0.0243	97.3	70.0-126	
Ethylbenzene	0.0250	0.0244	97.7	79.0-123	
1,2-Dichloroethane	0.0250	0.0247	98.9	70.0-128	
1,1-Dichloroethene	0.0250	0.0251	101	71.0-124	
cis-1,2-Dichloroethene	0.0250	0.0262	105	73.0-120	
trans-1,2-Dichloroethene	0.0250	0.0223	89.2	73.0-120	
1,2-Dichloropropane	0.0250	0.0230	92.2	77.0-125	
1,1-Dichloropropene	0.0250	0.0242	96.7	74.0-126	
1,3-Dichloropropane	0.0250	0.0243	97.1	80.0-120	
cis-1,3-Dichloropropene	0.0250	0.0236	94.4	80.0-123	
trans-1,3-Dichloropropene	0.0250	0.0252	101	78.0-124	
2,2-Dichloropropane	0.0250	0.0228	91.2	58.0-130	
Di-isopropyl ether	0.0250	0.0208	83.1	58.0-138	
Methyl tert-butyl ether	0.0250	0.0247	98.9	68.0-125	
Hexachloro-1,3-butadiene	0.0250	0.0223	89.3	54.0-138	
Isopropylbenzene	0.0250	0.0259	103	76.0-127	
p-Isopropyltoluene	0.0250	0.0274	110	76.0-125	
2-Butanone (MEK)	0.125	0.0997	79.8	44.0-160	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Laboratory Control Sample (LCS)

(LCS) R3419181-1 06/07/19 20:22

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Toluene	0.0250	0.0251	100	79.0-120	
Methylene Chloride	0.0250	0.0176	70.6	67.0-120	
4-Methyl-2-pentanone (MIBK)	0.125	0.107	85.9	68.0-142	
Naphthalene	0.0250	0.0315	126	54.0-135	
n-Propylbenzene	0.0250	0.0243	97.2	77.0-124	
Styrene	0.0250	0.0257	103	73.0-130	
1,1,1,2-Tetrachloroethane	0.0250	0.0263	105	75.0-125	
1,1,2,2-Tetrachloroethane	0.0250	0.0267	107	65.0-130	
Tetrachloroethene	0.0250	0.0274	110	72.0-132	
Xylenes, Total	0.0750	0.0768	102	79.0-123	
1,1,2-Trichlorotrifluoroethane	0.0250	0.0245	97.9	69.0-132	
1,2,3-Trichlorobenzene	0.0250	0.0271	109	50.0-138	
1,2,4-Trichlorobenzene	0.0250	0.0240	96.1	57.0-137	
1,1,1-Trichloroethane	0.0250	0.0249	99.5	73.0-124	
1,1,2-Trichloroethane	0.0250	0.0254	102	80.0-120	
Trichloroethene	0.0250	0.0258	103	78.0-124	
Trichlorofluoromethane	0.0250	0.0255	102	59.0-147	
1,2,3-Trichloropropane	0.0250	0.0283	113	73.0-130	
1,2,3-Trimethylbenzene	0.0250	0.0257	103	77.0-120	
1,2,4-Trimethylbenzene	0.0250	0.0273	109	76.0-121	
1,3,5-Trimethylbenzene	0.0250	0.0276	111	76.0-122	
Vinyl chloride	0.0250	0.0236	94.3	67.0-131	
(S) Toluene-d8			103	80.0-120	
(S) 4-Bromofluorobenzene			108	77.0-126	
(S) 1,2-Dichloroethane-d4			114	70.0-130	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

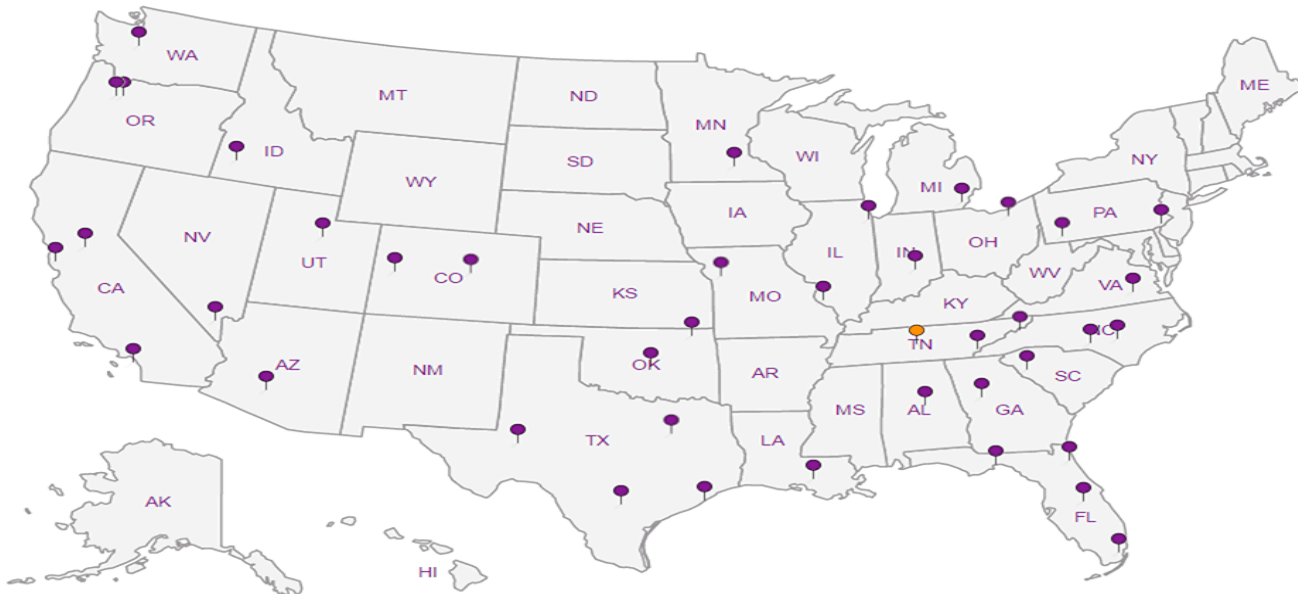
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Terracon Consultants, Inc - Longmont, CO
 1831 Lefthand Circe, Suite C

Billing Information:
Mike Skridulis
 1831 Lefthand Circe, Suite C
 Longmont, CO 80501

Report to:
Michael Skridulis

Email To: mjskridulis@terracon.com

Project Description: **COL Annual GW**

City/State Collected: **Longmont, CO**

Phone: **303-454-5249**
 Fax:

Client Project #
22197006

Lab Project #
TERRALCO-22197006

Collected by (print):
Charles Covington

Site/Facility ID #
DM1

P.O. #

Collected by (signature):
Charles Covington

Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Quote #
 Date Results Needed
STANDARD

Immediately Packed on Ice N Y

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALK, Br, Cr, NO2, NO3, SO	125mIHDPE-NoPres	Metals, Dissolved 250mIHDPE-NoPres	RSK175 40mlAmb HCl	SRG 250mIHDPE-HNO3	V8260 40mlAmb-HCl							
GMI - MW01	Grab	GW	10.82	6/4/19	1530	8	X	X	X	X	X	X							
GMI - MW02	Grab	GW	11.45	6/4/19	1600	8	X	X	X	X	X	X							
GMI - MW03	Grab	GW	11.20	6/3/19	1500	8	X	X	X	X	X	X							
		GW				8	X	X	X	X	X	X							

Analysis / Container / Preservative												Chain of Custody							
Pres Chk																			

Pace Analytical
 National Center for Testing & Innovation

12065 Lebanon Rd
 Mount Juliet, TN 37122
 Phone: 615-758-5858
 Phone: 800-767-5859
 Fax: 615-758-5859

L# **L1105269**
C138

Acctnum: **TERRALCO**
 Template: **T149935**
 Prelogin: **P708284**
 TSR: 288 - Daphne Richards
 PB:
 Shipped Via: **FedEX Ground**

Invoice: Date: 15Jan19
 Customer: ESCSLCUT Weight: 10 LBS
 Phone: (615)758-5858 COD:
 Sat Del: N DV: 0.00 Shipping: 0.00
 Special: 0.00
 Handling: 0.00
 Total: 0.00

Svs: **STANDARD OVERNIGHT**
 TRCK: 4794 8827 7846

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:

Samples returned via:
 UPS FedEx Courier

Tracking# **Fedex 4794 8827 7846**

pH _____ Temp _____
 Flow _____ Other _____

Sample Receipt Checklist

COC Seal Present/Intact: NP Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N

If Applicable
 VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N

Relinquished by: (Signature)
Charles Covington

Date: **6/4/19**
 Time: **1700**

Received by: (Signature)

Trip Blank Received: Yes/No
 HCL/MeOH
 TBR

RAD SCREEN: <0.5 mR/hr

Relinquished by: (Signature)

Date: _____
 Time: _____

Received by: (Signature)

Temp: **13.8F** °C
0.8+/-0.9 Bottles Received: **24**

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date: _____
 Time: _____

Received for lab by: (Signature)
[Signature]

Date: **6/5/19** Time: **8:45**

Hold: _____ Condition: **NCF / OK**

L1105269

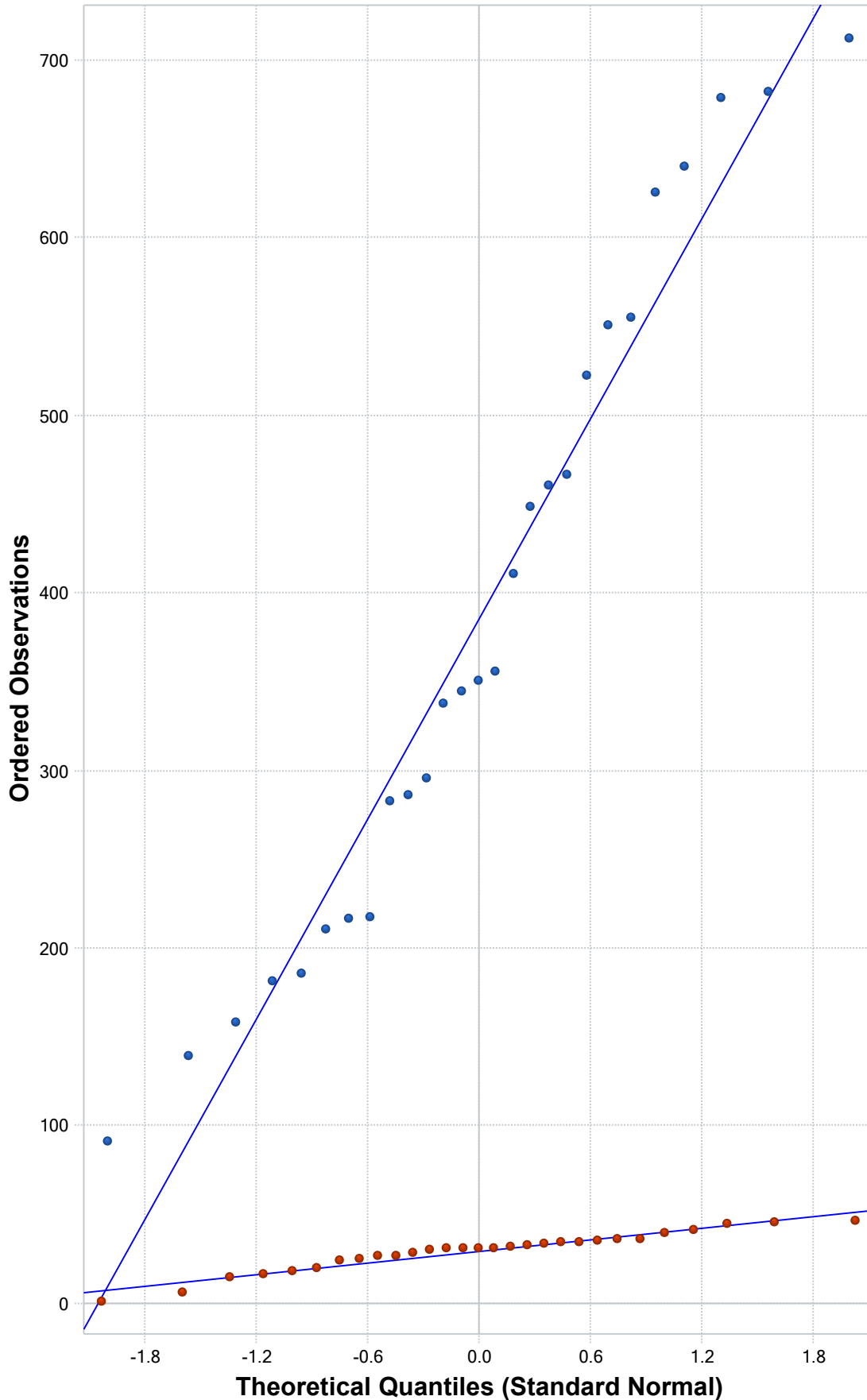
Analysis

Groundwater Sample Constituents

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	EPA Method 8260
Dissolved Gases: Methane, Ethane and Ethylene	RSK 175
Major Cations - Dissolved (Calcium, Magnesium, Sodium, Iron, and Potassium)	EPA Method 6010B
Nitrate and Nitrite	EPA Method 9056
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Sulfate	EPA Method 300.0
Alkalinity	SM 2320B
Strontium	EPA Method 6020

APPENDIX C
PROUCL STATISTICAL ANALYSIS OUTPUTS

Normal Q-Q Plot



Sulfate Concentrations

N = 27
Mean = 385
Sd = 185.8
Slope = 187.7
Intercept = 385
Correlation, R = 0.981

Chloride Concentrations

N = 29
Mean = 29.28
Sd = 10.9
Slope = 10.88
Intercept = 29.28
Correlation, R = 0.97

■ Best Fit Line

● Sulfate Concentrations ● Chloride Concentrations

	A	B	C	D	E	F	G	H	I	J	K	L
1	Normal UCL Statistics for Uncensored Full Data Sets											
2												
3	User Selected Options											
4	Date/Time of Computation		ProUCL 5.17/22/2019 1:00:16 PM									
5	From File		WorkSheet.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8												
9												
10	Sulfate Concentrations											
11												
12	General Statistics											
13	Total Number of Observations			27			Number of Distinct Observations			27		
14							Number of Missing Observations			0		
15	Minimum			90.7			Mean			385		
16	Maximum			712			Median			350		
17	SD			185.8			SD of logged Data			0.55		
18	Coefficient of Variation			0.483			Skewness			0.282		
19												
20	Normal GOF Test											
21	Shapiro Wilk Test Statistic			0.945			Shapiro Wilk GOF Test					
22	5% Shapiro Wilk Critical Value			0.923			Data appear Normal at 5% Significance Level					
23	Lilliefors Test Statistic			0.12			Lilliefors GOF Test					
24	5% Lilliefors Critical Value			0.167			Data appear Normal at 5% Significance Level					
25	Data appear Normal at 5% Significance Level											
26												
27	Assuming Normal Distribution											
28	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
29	95% Student's-t UCL			445.9			95% Adjusted-CLT UCL (Chen-1995)			445.8		
30							95% Modified-t UCL (Johnson-1978)			446.3		
31												
32	Suggested UCL to Use											
33	95% Student's-t UCL			445.9								
34												
35	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
36	Recommendations are based upon data size, data distribution, and skewness.											
37	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
38	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
39												

	A	B	C	D	E	F	G	H	I	J	K	L
1	Normal UCL Statistics for Uncensored Full Data Sets											
2												
3	User Selected Options											
4	Date/Time of Computation		ProUCL 5.17/22/2019 1:16:03 PM									
5	From File		WorkSheet.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8												
9												
10	Chloride Concentrations											
11												
12	General Statistics											
13	Total Number of Observations			29			Number of Distinct Observations			28		
14							Number of Missing Observations			0		
15	Minimum			0.503			Mean			29.28		
16	Maximum			46.1			Median			31.1		
17	SD			10.9			SD of logged Data			0.858		
18	Coefficient of Variation			0.372			Skewness			-0.829		
19												
20	Normal GOF Test											
21	Shapiro Wilk Test Statistic			0.941			Shapiro Wilk GOF Test					
22	5% Shapiro Wilk Critical Value			0.926			Data appear Normal at 5% Significance Level					
23	Lilliefors Test Statistic			0.151			Lilliefors GOF Test					
24	5% Lilliefors Critical Value			0.161			Data appear Normal at 5% Significance Level					
25	Data appear Normal at 5% Significance Level											
26												
27	Assuming Normal Distribution											
28	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
29	95% Student's-t UCL			32.72			95% Adjusted-CLT UCL (Chen-1995)			32.27		
30							95% Modified-t UCL (Johnson-1978)			32.67		
31												
32	Suggested UCL to Use											
33	95% Student's-t UCL			32.72								
34												
35	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
36	Recommendations are based upon data size, data distribution, and skewness.											
37	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
38	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
39												
40	Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be											
41	reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.											
42												