Limited Soil, Groundwater, and Soil Gas Investigation

Longmont 8-10K Oil and Gas Well Site
Longmont, Colorado

January 22, 2018
Terracon Project No. 22177046

Prepared for:
City of Longmont
Longmont, Colorado

Prepared by:
Terracon Consultants, Inc.
Longmont, Colorado

January 22, 2018

City of Longmont
385 Kimbark Street
Longmont, Colorado 80501

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

Re: Limited Soil, Groundwater, and Soil Gas Investigation
Longmont 8-10K Oil and Gas Well Site
Longmont, Colorado
Terracon Project No. 22177046

Dear Mr. Elkins:

Terracon Consultants, Inc. (Terracon) is pleased to submit our report of Limited Soil and Soil Gas Investigation activities completed at the site referenced above. Terracon conducted the Investigation in general accordance with our proposal (P22177046), dated November 20, 2017.

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.

Michael J. Skriduils
Project Manager

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

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EXECUTIVE SUMMARY

This Limited Soil, Groundwater, and Soil Gas Investigation was performed in accordance with the scope of services outlined in Terracon Proposal No. P22177046, dated November 20, 2017. A total of three soil borings (SB-01 through SB-03), which SB-01 and SB-02 were converted to soil vapor points (SVP-01 and SVP-02), and three groundwater monitoring wells (MW-01 through MW-03) were installed at the site to evaluate potential petroleum impacted soil, groundwater, and soil gas based on historical oil and gas (O&G) extraction operations at the site. Soil, groundwater, and soil vapor samples were collected and analyzed in accordance with the procedures outlined in Section 3 of this 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

The lithology encountered at the site consists of sands and gravels from approximately 0 to 13 feet bgs in SB-01 and 0 to 16 feet in SB-02 and SB-03, underlain by competent bedrock to the termination of soil borings at approximately 16 to 18 feet bgs. The observed depth to groundwater was approximately 14 feet bgs during drilling activities.

Acetone was reported at concentrations above the laboratory detection limits in the soil samples submitted for laboratory analysis collected from soil borings SB-01 (0.0671 milligrams per kilogram [mg/kg]), SB-02 (0.0678 mg/kg), and SB-03 (0.0682 mg/kg). These reported concentrations did not exceed their respective regulatory action levels for soil.

Benzene was reported at concentrations above the laboratory detection limits in the soil sample submitted for laboratory analysis collected from soil boring SB-01 (0.0011 mg/kg); however, the reported concentration did not exceed its respective regulatory action levels for soil.

Volatile organic compounds (VOCs) constituents were not detected at concentrations above laboratory detection limits in the groundwater samples collected during this investigation.

The chloride concentration reported in groundwater samples collected from monitoring wells MW-01, MW-02 and MW-03 exceeded the COGCC Concentration Level; however, the reported concentrations did not exceed the CDPHE Regulation 41 Standard.

The sulfate concentration reported in groundwater samples collected from monitoring wells MW-01, MW-02 and MW-03 exceeded both the COGCC Concentration Level and the CDPHE Regulation 41 Standard.

Methane was reported in the groundwater sample collected from monitoring well MW-03 at a concentration of 26.3 micrograms per liter (µg/L). Neither CDPHE nor the COGCC have developed groundwater standards for methane.

VOC constituents detected in the soil gas samples were compared to the 2016 CDPHE Indoor Air Screening Concentrations (ASC) – Residential and Worker Remediation Goals, and the June 2017 United States Environmental Protection Agency (USEPA) Residential and Industrial Indoor Air Regional Screening Levels (RSLs), after applying a 3% attenuation factor for subslab soil gas per the USEPA Office of Solid Waste and Emergency Response (OSWER) Technical Guide for Assessing and Mitigating the Gas Intrusion Pathway from Subsurface Gas Sources to Indoor Air (OSWER Guidance, June 2015). Reference to the OSWER guidance is not meant to imply that the scope of this soil gas investigation was designed to include the guidance's subsurface characterization criteria or that Terracon conducted a detailed vapor intrusion risk assessment. Reported concentrations are also summarized in Table 3 of Appendix A and the laboratory report is provided in Appendix D of this report.

A number of VOCs were detected across the site above residential and industrial RSLs. After applying the 3% attenuation factor, no VOCs in soil gas were calculated at concentrations that represent a vapor intrusion concern for residential/industrial/commercial property use. Methane was not detected in any of the soil gas samples collected as part of this investigation above its respective laboratory detection limit.

Conclusions

Based on laboratory analytical detections and field observations; soil, groundwater, and soil gas at the site do not appear to have been impacted by potential constituents of concern.

Recommendations

The objective of the investigation was to evaluate the presence of constituents of concern in the on-site soils, groundwater, and soil gas above relevant laboratory detection limits and/or regulatory limits associated with historical O&G operations at the site.

Based on the scope of services, limitations, and conclusions of this assessment, additional investigation does not appear warranted at this time.

1.0 SITE DESCRIPTION

Site Name	Longmont 8-10K O&G Well Site
Site Location	40.150489, -105.023448, South of Hwy 119, Longmont, Colorado

A Topographic Map showing the site location is included as Exhibit 1 and a Site Diagram is included as Exhibit 2 in Appendix A.

2.0 SCOPE OF SERVICES

In 2012, Terracon was retained by the City of Longmont (COL) to assess seventeen plugged and abandoned oil and gas wells located within the City of Longmont limits. The objective of the 2012 assessment was to provide information concerning the plugging and abandoning of 17 O&G wellheads located within the City of Longmont and to assess the potential presence of surficial soil impacts, methane and other gasses in the subsurface near the surveyed well locations.

The Longmont 8-10K well site was formally part of the City of Longmont's Annual Groundwater Quality Monitoring Project of active O&G wells. Terracon installed three groundwater monitoring wells at the site as part of this program in 2013 (Terracon Project No. 25127127). Due to the 500-year flood event occurred in November of 2014, the groundwater at the site dropped in elevation due to changes in lithology and riparian flow in the region. Since this time, annual measurements of the monitoring wells have observed the monitoring wells to be dry. TOP Operating (TOP) performed plugging and abandonment of this well site in November/December of 2017.

On May 2, 2017, the Colorado Oil and Gas Conservation Commission (COGCC) issued a statewide Notice to Operators (NTO) directing operators to inspect their inventory of existing flowlines and verify that any existing flowline not in active use, regardless of when it was installed or taken out of service, is abandoned pursuant to COGCC Rule 1103. Terracon understands that the City of Longmont would like to expand the scope of work from the 2012 project to include assessing the condition of soil, groundwater, and soil gas at select locations.

The objective of the environmental services was to install replacement groundwater monitoring wells and to provide information concerning the Longmont 8-10K O&G well located within the City of Longmont to assess the potential presence of surficial/subsurface soil and groundwater impacts and presence of methane and other gasses in the subsurface near the reported well location.

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 Investigation. Subsurface conditions may vary from those encountered at specific borings or 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 and Subsurface Utilities

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. Terracon contacted Colorado 811 and requested location and markings for subsurface utilities that the service was responsible for before commencing intrusive activities at the site.

3.2 Sampling and Analytical Program Summary

On December 11, 2017, a total of three soil borings (SB-01 through SB-03), which SB-01 and SB-02 were converted to soil vapor points (SVP-01 and SVP-02), were installed at the site. Due to restrictions with initial drilling equipment, Terracon remobilized to the site on December 18, 2017 to install three groundwater monitoring wells (MW-01 through MW-03). The sample locations were selected to generally represent the area with the highest potential for detecting constituents of concern based on the historical locations of equipment used in previous oil and gas production at the site. Refer to the attached Site Diagram (Exhibit 2, Appendix A) for a depiction of the sample locations and pertinent site features. The sampling and analytical program is outlined below.

Soil and groundwater samples were collected and placed in laboratory-prepared glassware, labeled, and placed on ice in a sample cooler. Soil gas samples were collected in laboratory-prepared Summa® canisters, labeled and placed in a shipping box. The sample cooler/box were released via chain-of-custody and secured with a custody seal and shipped to the selected analytical laboratory. The sample cooler/box and completed chain-of-custody forms were relinquished to ESC Lab Sciences (ESC) in Mt. Juliet, Tennessee, a National Environmental Laboratory Accreditation Program (NELAP) laboratory, for analysis on normal turnaround.

Sampling personnel wore dedicated nitrile gloves to minimize the potential for sample cross-contamination. Non-expendable sampling equipment (e.g., drilling equipment) was decontaminated at the beginning of the project and decontaminated between each sampling location. The equipment was hand-scrubbed in an Alconoxä and potable water solution and rinsed with potable water.

SAMPLING AND ANALYTICAL PROGRAM	
Area of Concern	**Longmont 8-10K O&G Well Site**
Soil Borings (Total Depth)	SB-01 through SB-03 (16-18 feet)
Groundwater	MW-01 through MW-03
Soil Vapor Points	SVP-01 and SVP-02
Soil Analysis	VOCs/TPH-GRO – EPA 8260 TPH-DRO/ORO – EPA 8015

SAMPLING AND ANALYTICAL PROGRAM	
Area of Concern	**Longmont 8-10K O&G Well Site**
Groundwater Analysis	VOCs – EPA 8260 Dissolved Gasses – RSK 175 Major Cations, Dissolved – EPA 6010B Nitrite, Nitrate, Bromide, Chloride, Sulfate – EPA 300.0 Alkalinity – SM 2320B Strontium – EPA 6020
Soil Gas Analysis	VOCs – EPA TO-15 Methane – EPA D1946

EPA = Environmental Protection Agency; SW-846 analytical methods
VOCs = volatile organic compounds
TPH = total petroleum hydrocarbons
G/D/ORO = gasoline, diesel, and oil range organics

Additionally, temperature, pH, specific conductivity, dissolved oxygen and oxygen reducing potential measurements were collected in the field during groundwater sampling.

3.3 Field Procedures

3.3.1 Soil Boring Advancement

Drilling services were performed using a direct-push technology (DPT) Geoprobe® (SB-01 through SB-03, SVP-01 and SVP-02) and hollow stem auger (MW-01 through MW-03) drilling rigs. Oversight of the drilling activities were conducted by a Terracon field professional. Soil samples were collected using 4-foot direct-push sampling tubes lined with dedicated PVC liners. Drilling equipment was cleaned using a high-pressure washer prior to beginning the project. Non-dedicated sampling equipment was cleaned using an Alconox® wash and potable water rinse prior to the beginning of the project and before collecting each soil sample.

Soil samples were collected continuously and observed to document soil lithology, color, moisture content and sensory evidence of impairment. The soil samples were field-screened at 4-foot intervals using a photoionization detector (PID) equipped with a 10.6 electron volt ultraviolet lamp source to qualitatively evaluate the potential volatile organic vapors to indicate the presence of VOCs. Terracon calibrated the PID in accordance with the manufacturer's recommendations before the field activities. The boring logs attached in Appendix C include the lithology and field screening results for each soil boring completed as part of this investigation.

Terracon's soil sampling program involved assigning one soil sample from each soil boring for laboratory analysis. The soil sample selected for laboratory analysis was collected from the interval exhibiting the highest PID reading and/or highest likelihood of a release based on the field professional's judgment. The soil samples were collected using Terracon standard operating

procedures (SOPs) and field methods. Soil sample intervals for each boring are presented on the soil boring logs included in Appendix C.

3.3.2 Groundwater Monitoring Well Installation

Using the lithologic data collected from the soil borings, the subcontracted drillers offset laterally from the soil boring locations approximately five feet and groundwater monitoring wells were drilled and constructed. The wells were constructed to approximately 19 feet bgs using 2.0-inch diameter polyvinyl chloride (PVC) with 10 feet of factory slotted well screen and approximately nine feet of blank PVC casing to surface. A silica sand filter pack was placed around the well screen to approximately two feet above the top of well screen, followed by a 6.5-foot thick hydrated bentonite seal, and approximately 0.5 feet of sand to the surface. The monitoring wells were fitted with J-plug well caps and bolt-down, flush-mounted well covers set in concrete. The well construction details are provided on the well logs presented in Appendix C.

On December 20, 2017, Terracon personnel visited the site to collect static groundwater levels, develop the monitoring wells, and collect groundwater samples for laboratory analysis. Depth to groundwater ranged from approximately 12.02 feet below top of monitoring well casing (TOC) in MW-02 to 12.18 feet below TOC in MW-01. Monitoring wells MW-01 through MW-03 were developed by repeatedly surging the wells with a 2-inch diameter PVC surge block and purging the groundwater from the wells with a single-use PVC bailer in accordance with the Terracon SOP 10 – *Monitor Well Development.* Monitoring wells MW-01 through MW-03 were immediately sampled after development.

The TOCs were surveyed in accordance with Terracon SOP *E.1800 Physical Field Measurements*. For this project, Terracon used a level, tripod and rod to establish the relative elevation of ground surface and TOC at each monitoring well constructed onsite.

3.3.3 Soil Vapor Point Installation

After soil borings SB-01 and SB-02 were completed to depth and soil samples were collected, the soil borings were backfilled to approximately 8 feet bgs and completed as SVPs in the vicinity of the former site O&G well head and separator for collection of soil gas samples for laboratory analysis. The soil gas points, consisting of 8.0-inch long stainless steel screened points and Teflon tubing, were placed into each boring at an approximate depth of 8 feet bgs and backfilled with silica sand to approximately 6 inches above the top of the screen, followed by hydrated bentonite to near surface. Locations are depicted on Exhibit 2 in Appendix A.

Sampling of the soil gas points was performed by an environmental professional on December 15, 2017 (SVP-01 and SVP-02), allowing the soil gas points time to equilibrate. Soil gas sampling was conducted within a polyethylene shroud placed over the sample point. Extracted soil gas was screened in the field utilizing a Multi-Rae gas detection monitor, which was calibrated prior to use in accordance with the manufacturer's specifications. The Multi-Rae was used to assess

potential explosive gas (methane) and VOCs. Sample tubing was connected to the sampling point and routed to the exterior of the shroud. Leak detection was conducted by introducing helium tracer gas into the sampling shroud through a separate port prior to sampling and using a portable helium gas detector to monitor for potential leaks in the sampling train. A peristaltic pump was utilized to purge the sample train tubing prior to collecting the laboratory sample within laboratory supplied 6-liter summa canisters. Field measurements by the portable helium gas detector were within acceptable levels (less than [<]5 percent [%] of the helium concentration in the shroud was detected through the sampling train).

After purging the sampling point of approximately three sampling train volumes and observing that there were no detected leaks, a laboratory-supplied 1-liter summa canister was filled with soil gas for laboratory analysis. The canister was connected to the sampling point using dedicated nylon sample tubing and was equipped with a laboratory-supplied flow regulator allowing for sample collection at a low-flow rate (i.e. <200 milliliters per minute [ml/min]).

Upon completion of sample collection, the summa canister valve was closed, secured, and appropriately labeled with pertinent sample information. Canister pressures were recorded prior to and after sample collection. The sample canisters were placed into a shipping container and transported under chain-of-custody to ESC Lab Sciences (ESC) located in Mt. Juliet, Tennessee for analysis.

4.0 FIELD INVESTIGATION RESULTS

4.1 Geology/Hydrogeology

The boring logs contained in Appendix C detail the observed soil stratigraphy. In general, Terracon encountered sands and gravels from approximately 0 to 13 feet bgs in SB-01 and 0 to 16 feet in SB-02 and SB-03, underlain by competent bedrock to the termination of soil borings at approximately 16 to 18 feet bgs. The observed depth to groundwater was approximately 14 feet bgs during drilling activities.

4.2 Field Screening

The field screening results are summarized on the boring logs contained in Appendix C. PID readings were not observed above 1 part per million (ppm) in any of the soil samples collected from the soil borings as part of this investigation.

5.0 ANALYTICAL RESULTS

The laboratory analytical reports and chain-of-custody records are attached in Appendix D. The following sections describe the results of the analytical testing performed as part of this limited

site investigation. The constituents of concern concentrations were compared to the May 2016, USEPA, Residential and Industrial RSLs, and USEPA May 2016 Residential and Industrial Indoor Air RSLs, January 2015 COGCC Table 910-1 (Concentration Levels) for soil. Groundwater analytical results were compared to June 30, 2016 CDPHE Groundwater Quality Standards (GWQSs) and January 2015 COGCC Table 910-1 Groundwater Concentration Levels (910-1 Levels). CDPHE January 2016 Residential and Industrial ASCs and the June 2017 USEPA Residential and Industrial Indoor Air RSLs, after applying a 3% attenuation factor for subslab soil gas per the USEPA OSWER Technical Guide for Assessing and Mitigating the Gas Intrusion Pathway from Subsurface Gas Sources to Indoor Air (OSWER Guidance, June 2015) were used for soil gas comparison.

5.1 Soil Sample Results

The soil analytical data and corresponding action levels are summarized in Table 1 (Appendix B).

Acetone was reported at concentrations above the laboratory detection limits in the soil samples submitted for laboratory analysis collected from soil borings SB-01 (0.0671 milligrams per kilogram [mg/kg]), SB-02 (0.0678 mg/kg), and SB-03 (0.0682 mg/kg). These reported concentrations did not exceed their respective regulatory action levels for soil.

Benzene was reported at concentrations above the laboratory detection limits in the soil sample submitted for laboratory analysis collected from soil boring SB-01 (0.0011 mg/kg); however, the reported concentration did not exceed its respective regulatory action levels for soil.

5.2 Groundwater Sample Results

The groundwater analytical data and corresponding action levels are summarized in Table 2 (Appendix B).

VOC constituents were not reported at concentrations above laboratory detection limits in the groundwater samples collected during this investigation.

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 2017 analytical data for chloride and sulfate from the sites sampled during the City of Longmont 2017 Annual Groundwater Quality Monitoring sampling event (Terracon Project No. 22177002) 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 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, there were no potential outliers; 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) times 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 (µg/L)	Sulfate (µg/L)
Mean (from background well data)	41,730	665,900
COGCC cleanup goal (1.25 x background)	52,160	832,400
Standard Deviation	6,240	148,600
Sample Size	44	21

The chloride concentration reported in groundwater samples collected from monitoring wells MW-01, MW-02 and MW-03 exceeded the COGCC Concentration Level; however, the reported concentrations did not exceed the CDPHE Regulation 41 Standard.

The sulfate concentration reported in groundwater samples collected from monitoring wells MW-01, MW-02 and MW-03 exceeded both the COGCC Concentration Level and the CDPHE Regulation 41 Standard.

Methane was reported in the groundwater sample collected from monitoring well MW-03 at a concentration of 26.3 micrograms per liter (µg/L). Neither CDPHE nor the COGCC have developed groundwater standards for methane.

Specific conductance was reported in the groundwater samples ranging from 2,546 to 2,742 micro Siemens per centimeter (µS/cm). Generally, relatively higher concentrations of specific conductance were reported in groundwater samples with higher concentrations of alkalinity, bromide, chloride, nitrate, nitrite, sulfate and sulfide. Higher concentrations of specific

conductance generally correspond to more turbid samples which have more sediment and subsequently more inorganics from the sediment. This occurs when monitoring wells do not recharge sufficiently during purging and the formation contains clays.

Groundwater samples were reported to have a neutral pH (i.e. near 7.0). The pH values in the groundwater monitoring wells measured during purging were reported in a range from 7.37 to 7.66 S.U., which is within the range of CDPHE's basic standard for groundwater for pH of 6.5 to 8.5 S.U.

5.3 Soil Gas Sample Results

VOC constituents reported in the soil gas samples were compared to the 2016 CDPHE Indoor ASC – Residential and Worker Remediation Goals, and the June 2017 USEPA Residential and Industrial Indoor Air RSLs, after applying a 3% attenuation factor for subslab soil gas per the USEPA OSWER Technical Guide for Assessing and Mitigating the Gas Intrusion Pathway from Subsurface Gas Sources to Indoor Air (OSWER Guidance, June 2015). Reference to the OSWER guidance is not meant to imply that the scope of this soil gas investigation was designed to include the guidance's subsurface characterization criteria or that Terracon conducted a detailed vapor intrusion risk assessment. A summary of the analytical results is provided below. The soil gas analytical data reported above regulatory detection limits and corresponding action levels are summarized in Table 3 (Appendix B).

A number of VOCs were reported across the site above residential and industrial RSLs. After applying the 3% attenuation factor, VOCs in soil gas were not reported at concentrations that represent a vapor intrusion concern for residential/industrial/commercial property use.

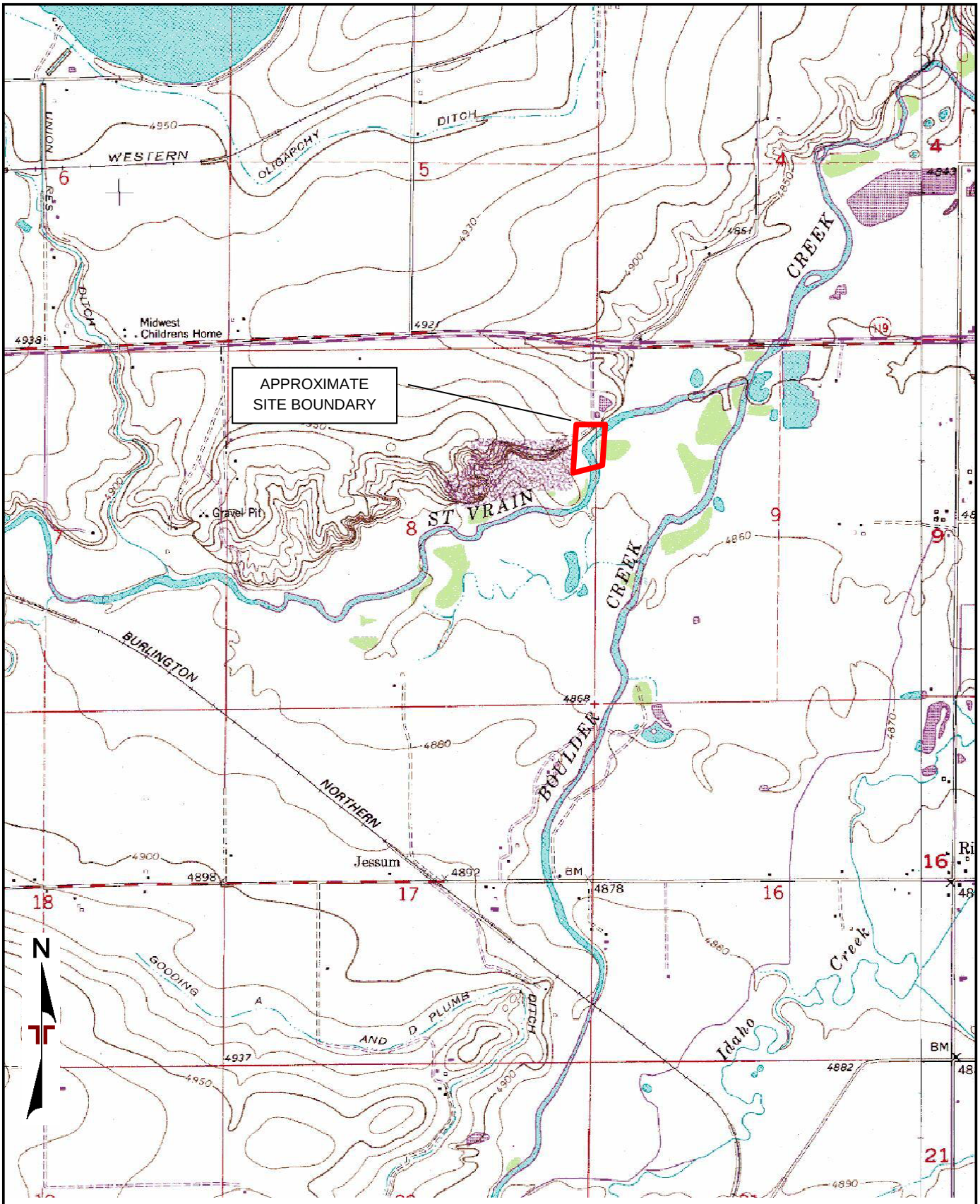
Methane was not reported in any of the soil gas samples collected as part of this investigation above its respective laboratory detection limit.

APPENDIX A – EXHIBITS

Exhibit 1 – Topographic Map

Exhibit 2 – Site Diagram

Exhibit 3 – Groundwater Contour Map



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: LONGMONT, CO (1/1/1979) and GOWANDA, CO (1/1/1979).

Project Manager: ?MJS	Project No. 22177046	Terracon 1242 Bramwood Pl Longmont, CO 80501-6100	TOPOGRAPHIC MAP	Exhibit
Drawn by: MJS	Scale: 1"=2,000'		Longmont 8-10K PA O&G Site Longmont, CO	1
Checked by: ?	File Name: 22177046			
Approved by: JCG	Date: 01/16/2018			

*Oil & Gas Site Features Have Been Removed Form Property

0 15' 30' 60'

DIAGRAM IS INTENDED FOR GENERAL USE ONLY, AND IS NOT FOR CONSTRUCTION PURPOSES. LOCATIONS ARE APPROXIMATE.

Project Mngr:	MJS
Drawn By:	CPD
Checked By:	MJS
Approved By:	DAB
Project No.	22177046
Scale:	AS-SHOWN
File No.	22177046.DWG
Date:	01.10.2018

Terracon
Consulting Engineers and Scientists
1242 BRAMWOOD PLACE LONGMONT, CO 80501
PH. (303) 776-3921 FAX. (303) 776-4041

SITE DIAGRAM

LONGMONT 8-10K
CITY OF LONGMONT
LONGMONT, COLORADO

EXHIBIT No. 2

*Oil & Gas Site Features Have Been Removed From Property

0 15' 30' 60'

DIAGRAM IS INTENDED FOR GENERAL USE ONLY, AND IS NOT FOR CONSTRUCTION PURPOSES. LOCATIONS ARE APPROXIMATE.

Project Mngr:	MJS
Drawn By:	CPD
Checked By:	MJS
Approved By:	DAB
Project No.	22177046
Scale:	AS-SHOWN
File No.	22177046.DWG
Date:	01.10.2018

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POTENTIOMETRIC SURFACE MAP

LONGMONT 8-10K
CITY OF LONGMONT
LONGMONT, COLORADO

EXHIBIT No. 3

APPENDIX B – TABLES

Table 1 – Soil Analytical Summary
Table 2 – Groundwater Analytical Summary
Table 3 – Soil Gas Analytical Summary

Table 1
Soil Analytical Summary
Longmont 8-10K Oil and Gas Well Site
Longmont, Colorado
Terracon Project No. 22177046

Sample ID and Depth					SB-01 (13-14)	SB-02 (13-14)	SB-03 (13-14)
Collection Date					12/11/17	12/11/17	12/11/17
Parameter	Residential RSL	Industrial RSL	COGCC Concentration Levels	CDPHE GPV	mg/kg	mg/kg	mg/kg
VOC (8260B)							
Acetone	**61,000**	**670,000**	**NE**	**32**	**0.0671**	**0.0678**	**0.0682**
Benzene	**1.2**	**5.1**	**0.17**	**0.17**	**0.0011**	<0.001	<0.001

Only detected analytes shown (detected concentrations are **bold**)
RSL = EPA Regional Screening Level (May 2016)
CDPHE GPV = Colorado Department of Public Health and Environmental Groundwater Protection Value (March 2014)
NE = Not Established
VOC = Volatile Organic Compounds
COGCC = Colorado Oil and Gas Conservation Comission
COGCC Concentration Levels = COGCC Table 910-1 (January 2015)

Table 2
Groundwater Analytical Summary
Longmont 8-10K Oil and Gas Well Site
Longmont, Colorado
Terracon Project No. 22177046

Sample ID			MW-01	MW-02	MW-03
Collect Date			12/20/17	12/20/17	12/20/17
Parameter	CDPHE Reg. 41 Groundwater Standard[1]	COGCC Concentration Levels[2]	µg/L	µg/L	µg/L
Other Organics					
Methane	NE	NE	<10	<10	**26.3**
Inorganic Parameters					
Calcium, Dissolved	NE	NE	**339,000**	**182,000**	**209,000**
Magnesium, Dissolved	NE	NE	**120,000**	**152,000**	**173,000**
Potassium, Dissolved	NE	NE	**22,700**	**9,380**	**11,500**
Sodium, Dissolved	NE	NE	**203,000**	**244,000**	**255,000**
Strontium	NE	NE	**2,680**	**2,320**	**2,760**
Alkalinity, Total as CaCO3	NE	NE	**244,000**	**246,000**	**211,000**
Chloride	**250,000**	**52,160***	**90,200**	**79,900**	**95,900**
Nitrogen as Nitrate	**10,000**	NE	**875**	**423**	**5,120**
Nitrogen as Nitrate and Nitrite	**10,000**	NE	**875**	**423**	**5,120**
Sulfate	**250,000**	**832,400***	**1,410,000**	**1,190,000**	**1,370,000**
General Parameters					
Specific Conductance (mS/cm)	NE	NE	**2,742**	**2,546**	**2,685**
Temperature (°C)	NE	NE	**14.13**	**14.13**	**13.69**
Dissolved Oxygen (mg/L)	NE	NE	**9.11**	**3.75**	**4.49**
ORP	NE	NE	**90.1**	**-48.0**	**-33.9**
pH	**6.5-8.5**	NE	**7.66**	**7.37**	**7.43**

1) CDPHE GW Quality Standards – Regulation 41 Table A, Ground Water Organic Chemical Standards (June 30, 2016)
2) COGCC Concentration Levels = COGCC Table 910-1 (January 2015)
*) 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.
Only detected analytes shown (detected concentrations are **bold**)
NE = Not Established
COGCC = Colorado Oil and Gas Conservation Comission

Table 3
Soil Vapor Analytical Summary
Longmont 8-10K Oil and Gas Well Site
Longmont, Colorado
Terracon Project No. 22177046

Sample ID			SVP-01	SVP-02
Collect Date			12/15/2017	12/15/2017
Parameter	Residential RSL	Residential VISL[1]	µg/m^3	µg/m^3
VOC (TO-15)				
Acetone	**32,000**	**1,066,667**	**11.5**	**11.3**
Benzene	**0.36**	**12**	**0.654**	<0.639
Carbon disulfide	**73**	**2,433**	**2.1**	<0.622
Chloroform	**0.12**	**4**	**3.36**	<0.973
Ethanol	**NE**	**NE**	**5.78**	**4.58**
Ethylbenzene	**1.1**	**37**	**1.76**	<0.867
4-Ethyltoluene	**NE**	**NE**	**2.06**	<0.982
Dichlorodifluoromethane	**100**	**3,333**	**1.39**	**1.19**
n-Hexane	**730**	**24,333**	**3.25**	**3.20**
2-Propanol	**210**	**7,000**	**5.94**	**8.56**
Propene	**3,100**	**103,333**	**1.57**	<0.689
Tetrahydrofuran	**2,100**	**70,000**	**4.64**	<0.590
Toluene	**5,200**	**173,333**	**2.39**	**1.57**
1,2,4-Trimethylbenzene	**7.3**	**243**	**4.3**	<0.982
1,3,5-Trimethylbenzene	**NE**	**NE**	**3.09**	<0.982
m&p-Xylene	**100**	**3,333**	**5.94**	**1.98**
o-Xylene	**100**	**3,333**	**2.87**	<0.867

1) VISL - Vapor Intrusion Screening Level (calculated by dividing the RSL for residential indoor air by the State approved 3% [0.03] attenuation factor).
RSL = USEPA Indoor Air Regional Screening Level (HQ=0.1 June 2017)
ND = Not Detected
NE = Not Established
NA = Not Applicable
Only detected analytes shown (detected concentrations are **bold**)

APPENDIX C – SOIL BORING LOGS

BORING LOG NO. SB-03

PROJECT: Longmont 8-10K

CLIENT: City of Longmont
Longmont, CO

SITE:
Longmont, Colorado

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH — MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	SANDY GRAVEL (GP), fill material, tan/brown, dry				<1	
	4.0 **SP - POORLY GRADED SAND (SM)**, trace gravel, fine to coarse grained, tan/brown, dry	5			<1	
	12.0 **SP - POORLY GRADED SAND (SM)**, trace gravel, fine to coarse grained, tan/brown, wet	10	▽		<1	SB-03 (13-14)
	16.0 ***Auger Refusal at 16 Feet***	15				

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Direct Push

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

Notes:

WATER LEVEL OBSERVATIONS

▽ *14.0 during exploration*

Terracon
1901 Sharp Point Dr Ste C
Fort Collins, CO

Boring Started: 12-11-2017 | Boring Completed: 12-11-2017

Drill Rig: Geoprobe | Driller: Drill Pro

Project No.: 22177046 | Exhibit: B-1

WELL LOG NO. MW-01

PROJECT: Longmont 8-10K

CLIENT: City of Longmont
Longmont, CO

SITE:
Longmont, Colorado

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH MATERIAL DESCRIPTION	INSTALLATION DETAILS Well Completion:	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
		Flushmount Bentonite chips with riser pipe Solid pipe in sand Screen pack in sand	5 10 15	▽			

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Direct Push

Abandonment Method:
Boring completed as a monitoring well

Notes:

WATER LEVEL OBSERVATIONS

▽ *12.18, 12/20/17*

Terracon
1901 Sharp Point Dr Ste C
Fort Collins, CO

Well Started: 12-18-2017	Well Completed: 12-18-2017
Drill Rig: Geoprobe	Driller: Drill Pro
Project No.: 22177046	Exhibit: B-2

WELL LOG NO. MW-02

PROJECT: Longmont 8-10K

CLIENT: City of Longmont
Longmont, CO

SITE:
Longmont, Colorado

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH MATERIAL DESCRIPTION	INSTALLATION DETAILS Well Completion:	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
		Flushmount Bentonite chips with riser pipe Solid pipe in sand Screen pack in sand	5 10 15	▽			

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Direct Push

Abandonment Method:
Boring completed as a monitoring well

Notes:

WATER LEVEL OBSERVATIONS

▽ *12.02, 12/20/17*

Terracon
1901 Sharp Point Dr Ste C
Fort Collins, CO

Well Started: 12-18-2017
Well Completed: 12-18-2017
Drill Rig: Geoprobe
Driller: Drill Pro
Project No.: 22177046
Exhibit: B-3

WELL LOG NO. MW-03

PROJECT: Longmont 8-10K

CLIENT: City of Longmont
Longmont, CO

SITE:
Longmont, Colorado

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS Well Completion:	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
			Flushmount Bentonite chips with riser pipe Solid pipe in sand Screen pack in sand	5 10 15	▽			

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Direct Push

Abandonment Method:
Boring completed as a monitoring well

Notes:

WATER LEVEL OBSERVATIONS

▽ *12.05, 12/20/17*

Terracon
1901 Sharp Point Dr Ste C
Fort Collins, CO

Well Started: 12-18-2017
Well Completed: 12-18-2017
Drill Rig: Geoprobe
Driller: Drill Pro
Project No.: 22177046
Exhibit: B-4

WELL LOG NO. SB-01/SVP-01

PROJECT: Longmont 8-10K

CLIENT: City of Longmont
Longmont, CO

SITE:
Longmont, Colorado

DEPTH	MATERIAL DESCRIPTION
	LOCATION See Exhibit A-2
4.0	**SANDY GRAVEL (GP)**, fill material, tan, dry
8.0	**SP - POORLY GRADED SAND (SP)**, fine to coarse grained, tan/brown, dry
12.0	**SP - POORLY GRADED SAND (SP)**, trace gravel, fine to coarse grained, tan/brown, dry
13.0	**SP - POORLY GRADED SAND (SP)**, trace gravel, fine to coarse grained, tan/brown, wet
15.0	**SEDIMENTARY BEDROCK - CLAYSTONE (CL)**, blue/black/gray, moist
17.0	**SEDIMENTARY BEDROCK - CLAYSTONE (CL)**, dry
	Auger Refusal at 17 Feet

INSTALLATION DETAILS

Well Completion:

Top cap
Slough backfill above bentonite seal
Bentonite chips with riser pipe
Screen pack in sand
Sand pack below pipe
Bentonite below sand pack

DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
5				
10				
15				SB-01 (13-14)

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Direct Push

Abandonment Method:
Boring completed as soil vapor point

Notes:

WATER LEVEL OBSERVATIONS

Terracon
1901 Sharp Point Dr Ste C
Fort Collins, CO

Well Started: 12-11-2017
Well Completed: 12-11-2017
Drill Rig: Geoprobe
Driller: Drill Pro
Project No.: 22177046
Exhibit: B-5

WELL LOG NO. SB-02/SVP-02

PROJECT: Longmont 8-10K

CLIENT: City of Longmont
Longmont, CO

SITE:
Longmont, Colorado

DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS
	LOCATION See Exhibit A-2	Well Completion:
4.0	**SANDY GRAVEL (GP)**, fill material, tan, dry	Top cap; Slough backfill above bentonite seal; Bentonite chips with riser pipe
8.0	**SP - POORLY GRADED SAND (SP)**, trace gravel, fine to coarse grained, tan, dry	Screen pack in sand; Sand pack below pipe
12.0	**SP - POORLY GRADED SAND (SP)**, trace gravel, fine to coarse grained, tan, moist	
16.0	**SP - POORLY GRADED SAND (SP)**, trace gravel, fine to coarse grained, tan, wet	Bentonite below sand pack
18.0	**SEDIMENTARY BEDROCK - CLAYSTONE (CL)**, blue/black/gray, dry	
	Auger Refusal at 18 Feet	

DEPTH (ft): 5, 10, 15

SAMPLE SENT TO LAB (ID NUMBER): SB-01 (13-14)

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Direct Push

Abandonment Method:
Boring completed as soil vapor point

Notes:

WATER LEVEL OBSERVATIONS

Terracon
1901 Sharp Point Dr Ste C
Fort Collins, CO

Well Started: 12-11-2017
Well Completed: 12-11-2017
Drill Rig: Geoprobe
Driller: Drill Pro
Project No.: 22177046
Exhibit: B-6

APPENDIX D – ANALYTICAL REPORTS AND CHAINS OF CUSTODY

ANALYTICAL REPORT

December 20, 2017

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L957239
Samples Received:	12/13/2017
Project Number:	22177046
Description:	Longmont 8-10K

Report To: Mike Skridulis
1242 Bramwood Place
Longmont, CO 80501

Entire Report Reviewed By:

Jason Romer
Technical Service Representative

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 ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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SB-01(13-14) L957239-01 Solid

Collected by	Collected date/time	Received date/time
M. Skridulis	12/11/17 10:45	12/13/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1053196	1	12/13/17 22:21	12/14/17 12:31	JAH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1053507	1	12/13/17 22:21	12/14/17 18:00	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1053716	1	12/19/17 13:54	12/20/17 03:40	ACM

SB-02(13-14) L957239-02 Solid

Collected by	Collected date/time	Received date/time
M. Skridulis	12/11/17 11:50	12/13/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1053196	1	12/13/17 22:21	12/14/17 12:53	JAH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1053507	1	12/13/17 22:21	12/14/17 18:20	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1053716	1	12/19/17 13:54	12/20/17 03:53	ACM

SB-03(13-14) L957239-03 Solid

Collected by	Collected date/time	Received date/time
M. Skridulis	12/11/17 12:40	12/13/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1053196	1	12/13/17 22:21	12/14/17 13:15	JAH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1053507	1	12/13/17 22:21	12/14/17 18:40	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1053716	1	12/19/17 13:54	12/20/17 04:05	ACM

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. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. 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.

Jason Romer
Technical Service Representative

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	12/14/2017 12:31	WG1053196
(S) a,a,a-Trifluorotoluene(FID)	*97.1*		*77.0-120*		*12/14/2017 12:31*	WG1053196

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0671		0.0500	1	12/14/2017 18:00	WG1053507
Acrylonitrile	ND	J3	0.0100	1	12/14/2017 18:00	WG1053507
Benzene	0.00110		0.00100	1	12/14/2017 18:00	WG1053507
Bromobenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
Bromodichloromethane	ND		0.00100	1	12/14/2017 18:00	WG1053507
Bromoform	ND		0.00100	1	12/14/2017 18:00	WG1053507
Bromomethane	ND		0.00500	1	12/14/2017 18:00	WG1053507
n-Butylbenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
sec-Butylbenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
tert-Butylbenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
Carbon tetrachloride	ND		0.00100	1	12/14/2017 18:00	WG1053507
Chlorobenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
Chlorodibromomethane	ND		0.00100	1	12/14/2017 18:00	WG1053507
Chloroethane	ND		0.00500	1	12/14/2017 18:00	WG1053507
Chloroform	ND		0.00500	1	12/14/2017 18:00	WG1053507
Chloromethane	ND		0.00250	1	12/14/2017 18:00	WG1053507
2-Chlorotoluene	ND		0.00100	1	12/14/2017 18:00	WG1053507
4-Chlorotoluene	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	12/14/2017 18:00	WG1053507
1,2-Dibromoethane	ND		0.00100	1	12/14/2017 18:00	WG1053507
Dibromomethane	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,2-Dichlorobenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,3-Dichlorobenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,4-Dichlorobenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
Dichlorodifluoromethane	ND		0.00500	1	12/14/2017 18:00	WG1053507
1,1-Dichloroethane	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,2-Dichloroethane	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,1-Dichloroethene	ND		0.00100	1	12/14/2017 18:00	WG1053507
cis-1,2-Dichloroethene	ND		0.00100	1	12/14/2017 18:00	WG1053507
trans-1,2-Dichloroethene	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,2-Dichloropropane	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,1-Dichloropropene	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,3-Dichloropropane	ND		0.00100	1	12/14/2017 18:00	WG1053507
cis-1,3-Dichloropropene	ND		0.00100	1	12/14/2017 18:00	WG1053507
trans-1,3-Dichloropropene	ND		0.00100	1	12/14/2017 18:00	WG1053507
2,2-Dichloropropane	ND		0.00100	1	12/14/2017 18:00	WG1053507
Di-isopropyl ether	ND		0.00100	1	12/14/2017 18:00	WG1053507
Ethylbenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
Hexachloro-1,3-butadiene	ND	J4	0.00100	1	12/14/2017 18:00	WG1053507
Isopropylbenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
p-Isopropyltoluene	ND		0.00100	1	12/14/2017 18:00	WG1053507
2-Butanone (MEK)	ND		0.0100	1	12/14/2017 18:00	WG1053507
Methylene Chloride	ND		0.00500	1	12/14/2017 18:00	WG1053507
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	12/14/2017 18:00	WG1053507
Methyl tert-butyl ether	ND		0.00100	1	12/14/2017 18:00	WG1053507
Naphthalene	ND		0.00500	1	12/14/2017 18:00	WG1053507
n-Propylbenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
Styrene	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,1,1,2-Tetrachloroethane	ND		0.00100	1	12/14/2017 18:00	WG1053507

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1,1,2,2-Tetrachloroethane	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	12/14/2017 18:00	WG1053507
Tetrachloroethene	ND		0.00100	1	12/14/2017 18:00	WG1053507
Toluene	ND		0.00500	1	12/14/2017 18:00	WG1053507
1,2,3-Trichlorobenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,2,4-Trichlorobenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,1,1-Trichloroethane	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,1,2-Trichloroethane	ND		0.00100	1	12/14/2017 18:00	WG1053507
Trichloroethene	ND		0.00100	1	12/14/2017 18:00	WG1053507
Trichlorofluoromethane	ND		0.00500	1	12/14/2017 18:00	WG1053507
1,2,3-Trichloropropane	ND		0.00250	1	12/14/2017 18:00	WG1053507
1,2,4-Trimethylbenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,2,3-Trimethylbenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
1,3,5-Trimethylbenzene	ND		0.00100	1	12/14/2017 18:00	WG1053507
Vinyl chloride	ND		0.00100	1	12/14/2017 18:00	WG1053507
Xylenes, Total	ND		0.00300	1	12/14/2017 18:00	WG1053507
(S) Toluene-d8	*92.2*		*80.0-120*		*12/14/2017 18:00*	WG1053507
(S) Dibromofluoromethane	*110*		*74.0-131*		*12/14/2017 18:00*	WG1053507
(S) 4-Bromofluorobenzene	*115*		*64.0-132*		*12/14/2017 18:00*	WG1053507

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	12/20/2017 03:40	WG1053716
C28-C40 Oil Range	ND		4.00	1	12/20/2017 03:40	WG1053716
(S) o-Terphenyl	*48.2*		*18.0-148*		*12/20/2017 03:40*	WG1053716

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	12/14/2017 12:53	WG1053196
(S) a,a,a-Trifluorotoluene(FID)	*98.9*		*77.0-120*		*12/14/2017 12:53*	WG1053196

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0678		0.0500	1	12/14/2017 18:20	WG1053507
Acrylonitrile	ND	J3	0.0100	1	12/14/2017 18:20	WG1053507
Benzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
Bromobenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
Bromodichloromethane	ND		0.00100	1	12/14/2017 18:20	WG1053507
Bromoform	ND		0.00100	1	12/14/2017 18:20	WG1053507
Bromomethane	ND		0.00500	1	12/14/2017 18:20	WG1053507
n-Butylbenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
sec-Butylbenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
tert-Butylbenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
Carbon tetrachloride	ND		0.00100	1	12/14/2017 18:20	WG1053507
Chlorobenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
Chlorodibromomethane	ND		0.00100	1	12/14/2017 18:20	WG1053507
Chloroethane	ND		0.00500	1	12/14/2017 18:20	WG1053507
Chloroform	ND		0.00500	1	12/14/2017 18:20	WG1053507
Chloromethane	ND		0.00250	1	12/14/2017 18:20	WG1053507
2-Chlorotoluene	ND		0.00100	1	12/14/2017 18:20	WG1053507
4-Chlorotoluene	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	12/14/2017 18:20	WG1053507
1,2-Dibromoethane	ND		0.00100	1	12/14/2017 18:20	WG1053507
Dibromomethane	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,2-Dichlorobenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,3-Dichlorobenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,4-Dichlorobenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
Dichlorodifluoromethane	ND		0.00500	1	12/14/2017 18:20	WG1053507
1,1-Dichloroethane	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,2-Dichloroethane	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,1-Dichloroethene	ND		0.00100	1	12/14/2017 18:20	WG1053507
cis-1,2-Dichloroethene	ND		0.00100	1	12/14/2017 18:20	WG1053507
trans-1,2-Dichloroethene	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,2-Dichloropropane	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,1-Dichloropropene	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,3-Dichloropropane	ND		0.00100	1	12/14/2017 18:20	WG1053507
cis-1,3-Dichloropropene	ND		0.00100	1	12/14/2017 18:20	WG1053507
trans-1,3-Dichloropropene	ND		0.00100	1	12/14/2017 18:20	WG1053507
2,2-Dichloropropane	ND		0.00100	1	12/14/2017 18:20	WG1053507
Di-isopropyl ether	ND		0.00100	1	12/14/2017 18:20	WG1053507
Ethylbenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
Hexachloro-1,3-butadiene	ND	J4	0.00100	1	12/14/2017 18:20	WG1053507
Isopropylbenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
p-Isopropyltoluene	ND		0.00100	1	12/14/2017 18:20	WG1053507
2-Butanone (MEK)	ND		0.0100	1	12/14/2017 18:20	WG1053507
Methylene Chloride	ND		0.00500	1	12/14/2017 18:20	WG1053507
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	12/14/2017 18:20	WG1053507
Methyl tert-butyl ether	ND		0.00100	1	12/14/2017 18:20	WG1053507
Naphthalene	ND		0.00500	1	12/14/2017 18:20	WG1053507
n-Propylbenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
Styrene	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,1,1,2-Tetrachloroethane	ND		0.00100	1	12/14/2017 18:20	WG1053507

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1,1,2,2-Tetrachloroethane	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	12/14/2017 18:20	WG1053507
Tetrachloroethene	ND		0.00100	1	12/14/2017 18:20	WG1053507
Toluene	ND		0.00500	1	12/14/2017 18:20	WG1053507
1,2,3-Trichlorobenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,2,4-Trichlorobenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,1,1-Trichloroethane	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,1,2-Trichloroethane	ND		0.00100	1	12/14/2017 18:20	WG1053507
Trichloroethene	ND		0.00100	1	12/14/2017 18:20	WG1053507
Trichlorofluoromethane	ND		0.00500	1	12/14/2017 18:20	WG1053507
1,2,3-Trichloropropane	ND		0.00250	1	12/14/2017 18:20	WG1053507
1,2,4-Trimethylbenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,2,3-Trimethylbenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
1,3,5-Trimethylbenzene	ND		0.00100	1	12/14/2017 18:20	WG1053507
Vinyl chloride	ND		0.00100	1	12/14/2017 18:20	WG1053507
Xylenes, Total	ND		0.00300	1	12/14/2017 18:20	WG1053507
(S) Toluene-d8	*95.8*		*80.0-120*		*12/14/2017 18:20*	WG1053507
(S) Dibromofluoromethane	*103*		*74.0-131*		*12/14/2017 18:20*	WG1053507
(S) 4-Bromofluorobenzene	*100*		*64.0-132*		*12/14/2017 18:20*	WG1053507

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	12/20/2017 03:53	WG1053716
C28-C40 Oil Range	ND		4.00	1	12/20/2017 03:53	WG1053716
(S) o-Terphenyl	*62.7*		*18.0-148*		*12/20/2017 03:53*	WG1053716

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	12/14/2017 13:15	WG1053196
(S) a,a,a-Trifluorotoluene(FID)	*99.2*		*77.0-120*		*12/14/2017 13:15*	WG1053196

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0682		0.0500	1	12/14/2017 18:40	WG1053507
Acrylonitrile	ND	J3	0.0100	1	12/14/2017 18:40	WG1053507
Benzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
Bromobenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
Bromodichloromethane	ND		0.00100	1	12/14/2017 18:40	WG1053507
Bromoform	ND		0.00100	1	12/14/2017 18:40	WG1053507
Bromomethane	ND		0.00500	1	12/14/2017 18:40	WG1053507
n-Butylbenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
sec-Butylbenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
tert-Butylbenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
Carbon tetrachloride	ND		0.00100	1	12/14/2017 18:40	WG1053507
Chlorobenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
Chlorodibromomethane	ND		0.00100	1	12/14/2017 18:40	WG1053507
Chloroethane	ND		0.00500	1	12/14/2017 18:40	WG1053507
Chloroform	ND		0.00500	1	12/14/2017 18:40	WG1053507
Chloromethane	ND		0.00250	1	12/14/2017 18:40	WG1053507
2-Chlorotoluene	ND		0.00100	1	12/14/2017 18:40	WG1053507
4-Chlorotoluene	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	12/14/2017 18:40	WG1053507
1,2-Dibromoethane	ND		0.00100	1	12/14/2017 18:40	WG1053507
Dibromomethane	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,2-Dichlorobenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,3-Dichlorobenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,4-Dichlorobenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
Dichlorodifluoromethane	ND		0.00500	1	12/14/2017 18:40	WG1053507
1,1-Dichloroethane	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,2-Dichloroethane	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,1-Dichloroethene	ND		0.00100	1	12/14/2017 18:40	WG1053507
cis-1,2-Dichloroethene	ND		0.00100	1	12/14/2017 18:40	WG1053507
trans-1,2-Dichloroethene	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,2-Dichloropropane	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,1-Dichloropropene	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,3-Dichloropropane	ND		0.00100	1	12/14/2017 18:40	WG1053507
cis-1,3-Dichloropropene	ND		0.00100	1	12/14/2017 18:40	WG1053507
trans-1,3-Dichloropropene	ND		0.00100	1	12/14/2017 18:40	WG1053507
2,2-Dichloropropane	ND		0.00100	1	12/14/2017 18:40	WG1053507
Di-isopropyl ether	ND		0.00100	1	12/14/2017 18:40	WG1053507
Ethylbenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
Hexachloro-1,3-butadiene	ND	J4	0.00100	1	12/14/2017 18:40	WG1053507
Isopropylbenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
p-Isopropyltoluene	ND		0.00100	1	12/14/2017 18:40	WG1053507
2-Butanone (MEK)	ND		0.0100	1	12/14/2017 18:40	WG1053507
Methylene Chloride	ND		0.00500	1	12/14/2017 18:40	WG1053507
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	12/14/2017 18:40	WG1053507
Methyl tert-butyl ether	ND		0.00100	1	12/14/2017 18:40	WG1053507
Naphthalene	ND		0.00500	1	12/14/2017 18:40	WG1053507
n-Propylbenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
Styrene	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,1,1,2-Tetrachloroethane	ND		0.00100	1	12/14/2017 18:40	WG1053507

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1,1,2,2-Tetrachloroethane	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	12/14/2017 18:40	WG1053507
Tetrachloroethene	ND		0.00100	1	12/14/2017 18:40	WG1053507
Toluene	ND		0.00500	1	12/14/2017 18:40	WG1053507
1,2,3-Trichlorobenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,2,4-Trichlorobenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,1,1-Trichloroethane	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,1,2-Trichloroethane	ND		0.00100	1	12/14/2017 18:40	WG1053507
Trichloroethene	ND		0.00100	1	12/14/2017 18:40	WG1053507
Trichlorofluoromethane	ND		0.00500	1	12/14/2017 18:40	WG1053507
1,2,3-Trichloropropane	ND		0.00250	1	12/14/2017 18:40	WG1053507
1,2,4-Trimethylbenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,2,3-Trimethylbenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
1,3,5-Trimethylbenzene	ND		0.00100	1	12/14/2017 18:40	WG1053507
Vinyl chloride	ND		0.00100	1	12/14/2017 18:40	WG1053507
Xylenes, Total	ND		0.00300	1	12/14/2017 18:40	WG1053507
(S) Toluene-d8	*97.0*		*80.0-120*		*12/14/2017 18:40*	WG1053507
(S) Dibromofluoromethane	*105*		*74.0-131*		*12/14/2017 18:40*	WG1053507
(S) 4-Bromofluorobenzene	*99.9*		*64.0-132*		*12/14/2017 18:40*	WG1053507

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	12/20/2017 04:05	WG1053716
C28-C40 Oil Range	ND		4.00	1	12/20/2017 04:05	WG1053716
(S) o-Terphenyl	*64.9*		*18.0-148*		*12/20/2017 04:05*	WG1053716

Method Blank (MB)

(MB) R3274104-3 12/13/17 22:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*102*			*77.0-120*

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

(LCS) R3274104-1 12/13/17 21:48 • (LCSD) R3274104-2 12/13/17 22:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	6.17	5.29	112	96.2	70.0-136			15.3	20
(S) a,a,a-Trifluorotoluene(FID)				*105*	*102*	*77.0-120*				

Method Blank (MB)

(MB) R3273146-3 12/14/17 11:12

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.0100	0.0500
Acrylonitrile	U		0.00179	0.0100
Benzene	U		0.000270	0.00100
Bromobenzene	U		0.000284	0.00100
Bromodichloromethane	U		0.000254	0.00100
Bromoform	U		0.000424	0.00100
Bromomethane	U		0.00134	0.00500
n-Butylbenzene	U		0.000258	0.00100
sec-Butylbenzene	U		0.000201	0.00100
tert-Butylbenzene	U		0.000206	0.00100
Carbon tetrachloride	U		0.000328	0.00100
Chlorobenzene	U		0.000212	0.00100
Chlorodibromomethane	U		0.000373	0.00100
Chloroethane	U		0.000946	0.00500
Chloroform	U		0.000229	0.00500
Chloromethane	U		0.000375	0.00250
2-Chlorotoluene	U		0.000301	0.00100
4-Chlorotoluene	U		0.000240	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00105	0.00500
1,2-Dibromoethane	U		0.000343	0.00100
Dibromomethane	U		0.000382	0.00100
1,2-Dichlorobenzene	U		0.000305	0.00100
1,3-Dichlorobenzene	U		0.000239	0.00100
1,4-Dichlorobenzene	U		0.000226	0.00100
Dichlorodifluoromethane	U		0.000713	0.00500
1,1-Dichloroethane	U		0.000199	0.00100
1,2-Dichloroethane	U		0.000265	0.00100
1,1-Dichloroethene	U		0.000303	0.00100
cis-1,2-Dichloroethene	U		0.000235	0.00100
trans-1,2-Dichloroethene	U		0.000264	0.00100
1,2-Dichloropropane	U		0.000358	0.00100
1,1-Dichloropropene	U		0.000317	0.00100
1,3-Dichloropropane	U		0.000207	0.00100
cis-1,3-Dichloropropene	U		0.000262	0.00100
trans-1,3-Dichloropropene	U		0.000267	0.00100
2,2-Dichloropropane	U		0.000279	0.00100
Di-isopropyl ether	U		0.000248	0.00100
Ethylbenzene	U		0.000297	0.00100
Hexachloro-1,3-butadiene	U		0.000342	0.00100
Isopropylbenzene	U		0.000243	0.00100

Method Blank (MB)

(MB) R3273146-3 12/14/17 11:12

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
p-Isopropyltoluene	U		0.000204	0.00100
2-Butanone (MEK)	U		0.00468	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00188	0.0100
Methyl tert-butyl ether	U		0.000212	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000206	0.00100
Styrene	U		0.000234	0.00100
1,1,1,2-Tetrachloroethane	U		0.000264	0.00100
1,1,2,2-Tetrachloroethane	U		0.000365	0.00100
Tetrachloroethene	U		0.000276	0.00100
Toluene	U		0.000434	0.00500
1,1,2-Trichlorotrifluoroethane	U		0.000365	0.00100
1,2,3-Trichlorobenzene	U		0.000306	0.00100
1,2,4-Trichlorobenzene	U		0.000388	0.00100
1,1,1-Trichloroethane	U		0.000286	0.00100
1,1,2-Trichloroethane	U		0.000277	0.00100
Trichloroethene	U		0.000279	0.00100
Trichlorofluoromethane	U		0.000382	0.00500
1,2,3-Trichloropropane	U		0.000741	0.00250
1,2,3-Trimethylbenzene	U		0.000287	0.00100
1,2,4-Trimethylbenzene	U		0.000211	0.00100
1,3,5-Trimethylbenzene	U		0.000266	0.00100
Vinyl chloride	U		0.000291	0.00100
Xylenes, Total	U		0.000698	0.00300
(S) Toluene-d8	*101*			*80.0-120*
(S) Dibromofluoromethane	*94.6*			*74.0-131*
(S) 4-Bromofluorobenzene	*95.8*			*64.0-132*

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

(LCS) R3273146-1 12/14/17 10:14 • (LCSD) R3273146-2 12/14/17 10:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.125	0.151	0.122	121	97.7	11.0-160			21.5	23
Acrylonitrile	0.125	0.142	0.112	114	89.6	61.0-143		J3	23.9	20
Benzene	0.0250	0.0230	0.0228	92.1	91.0	71.0-124			1.13	20
Bromobenzene	0.0250	0.0251	0.0239	100	95.4	78.0-120			4.89	20
Bromodichloromethane	0.0250	0.0239	0.0239	95.5	95.7	75.0-120			0.248	20

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

(LCS) R3273146-1 12/14/17 10:14 • (LCSD) R3273146-2 12/14/17 10:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromoform	0.0250	0.0267	0.0244	107	97.6	65.0-133			8.94	20
Bromomethane	0.0250	0.0246	0.0237	98.6	94.9	26.0-160			3.76	20
n-Butylbenzene	0.0250	0.0289	0.0280	116	112	73.0-126			3.03	20
sec-Butylbenzene	0.0250	0.0274	0.0268	110	107	75.0-121			2.46	20
tert-Butylbenzene	0.0250	0.0272	0.0261	109	104	74.0-122			4.16	20
Carbon tetrachloride	0.0250	0.0239	0.0234	95.6	93.7	66.0-123			2.02	20
Chlorobenzene	0.0250	0.0253	0.0246	101	98.3	79.0-121			2.71	20
Chlorodibromomethane	0.0250	0.0254	0.0245	102	98.2	74.0-128			3.42	20
Chloroethane	0.0250	0.0250	0.0240	99.8	95.9	51.0-147			3.99	20
Chloroform	0.0250	0.0239	0.0238	95.7	95.2	73.0-123			0.562	20
Chloromethane	0.0250	0.0288	0.0282	115	113	51.0-138			2.14	20
2-Chlorotoluene	0.0250	0.0261	0.0254	104	102	72.0-124			2.70	20
4-Chlorotoluene	0.0250	0.0254	0.0245	102	98.1	78.0-120			3.52	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0262	0.0258	105	103	65.0-126			1.76	20
1,2-Dibromoethane	0.0250	0.0257	0.0236	103	94.2	78.0-122			8.68	20
Dibromomethane	0.0250	0.0261	0.0255	105	102	79.0-120			2.65	20
1,2-Dichlorobenzene	0.0250	0.0260	0.0253	104	101	80.0-120			2.66	20
1,3-Dichlorobenzene	0.0250	0.0264	0.0257	105	103	72.0-123			2.57	20
1,4-Dichlorobenzene	0.0250	0.0261	0.0254	105	101	77.0-120			3.02	20
Dichlorodifluoromethane	0.0250	0.0260	0.0245	104	98.0	49.0-155			5.83	20
1,1-Dichloroethane	0.0250	0.0256	0.0256	102	102	70.0-128			0.0589	20
1,2-Dichloroethane	0.0250	0.0276	0.0272	110	109	69.0-128			1.47	20
1,1-Dichloroethene	0.0250	0.0222	0.0216	88.9	86.5	63.0-131			2.77	20
cis-1,2-Dichloroethene	0.0250	0.0234	0.0221	93.7	88.5	74.0-123			5.73	20
trans-1,2-Dichloroethene	0.0250	0.0230	0.0229	91.8	91.7	72.0-122			0.101	20
1,2-Dichloropropane	0.0250	0.0272	0.0276	109	110	75.0-126			1.41	20
1,1-Dichloropropene	0.0250	0.0254	0.0244	102	97.5	72.0-130			4.16	20
1,3-Dichloropropane	0.0250	0.0261	0.0247	104	98.6	80.0-121			5.62	20
cis-1,3-Dichloropropene	0.0250	0.0252	0.0244	101	97.8	80.0-125			3.11	20
trans-1,3-Dichloropropene	0.0250	0.0259	0.0250	104	99.9	75.0-129			3.83	20
2,2-Dichloropropane	0.0250	0.0235	0.0253	94.1	101	60.0-129			7.04	20
Di-isopropyl ether	0.0250	0.0297	0.0298	119	119	62.0-133			0.492	20
Ethylbenzene	0.0250	0.0254	0.0246	102	98.3	77.0-120			3.42	20
Hexachloro-1,3-butadiene	0.0250	0.0331	0.0320	132	128	68.0-128	J4		3.31	20
Isopropylbenzene	0.0250	0.0264	0.0255	106	102	75.0-120			3.61	20
p-Isopropyltoluene	0.0250	0.0286	0.0280	115	112	74.0-125			2.36	20
2-Butanone (MEK)	0.125	0.120	0.106	96.4	84.5	37.0-159			13.1	20
Methylene Chloride	0.0250	0.0243	0.0240	97.1	95.9	67.0-123			1.26	20
4-Methyl-2-pentanone (MIBK)	0.125	0.161	0.142	129	114	60.0-144			12.2	20
Methyl tert-butyl ether	0.0250	0.0246	0.0251	98.6	100	66.0-125			1.67	20

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

(LCS) R3273146-1 12/14/17 10:14 • (LCSD) R3273146-2 12/14/17 10:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Naphthalene	0.0250	0.0259	0.0247	103	98.7	64.0-125			4.68	20
n-Propylbenzene	0.0250	0.0265	0.0256	106	102	78.0-120			3.67	20
Styrene	0.0250	0.0250	0.0235	100	94.1	78.0-124			6.25	20
1,1,1,2-Tetrachloroethane	0.0250	0.0257	0.0251	103	100	74.0-124			2.16	20
1,1,2,2-Tetrachloroethane	0.0250	0.0249	0.0231	99.7	92.2	73.0-120			7.86	20
Tetrachloroethene	0.0250	0.0264	0.0248	105	99.3	70.0-127			5.99	20
Toluene	0.0250	0.0231	0.0224	92.5	89.5	77.0-120			3.31	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0260	0.0258	104	103	64.0-135			0.832	20
1,2,3-Trichlorobenzene	0.0250	0.0266	0.0258	106	103	68.0-126			3.04	20
1,2,4-Trichlorobenzene	0.0250	0.0269	0.0269	107	107	70.0-127			0.0483	20
1,1,1-Trichloroethane	0.0250	0.0239	0.0231	95.7	92.5	69.0-125			3.35	20
1,1,2-Trichloroethane	0.0250	0.0233	0.0221	93.3	88.3	78.0-120			5.55	20
Trichloroethene	0.0250	0.0250	0.0249	100	99.5	79.0-120			0.566	20
Trichlorofluoromethane	0.0250	0.0254	0.0252	102	101	59.0-136			1.05	20
1,2,3-Trichloropropane	0.0250	0.0235	0.0226	93.8	90.3	73.0-124			3.80	20
1,2,3-Trimethylbenzene	0.0250	0.0266	0.0263	107	105	76.0-120			1.32	20
1,2,4-Trimethylbenzene	0.0250	0.0269	0.0262	107	105	75.0-120			2.62	20
1,3,5-Trimethylbenzene	0.0250	0.0265	0.0257	106	103	75.0-120			3.22	20
Vinyl chloride	0.0250	0.0268	0.0260	107	104	63.0-134			3.13	20
Xylenes, Total	0.0750	0.0775	0.0743	103	99.1	77.0-120			4.22	20
(S) Toluene-d8				*98.3*	*95.4*	*80.0-120*				
(S) Dibromofluoromethane				*97.6*	*99.2*	*74.0-131*				
(S) 4-Bromofluorobenzene				*98.1*	*94.1*	*64.0-132*				

L957224-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L957224-05 12/14/17 17:41 • (MS) R3273146-4 12/14/17 19:19 • (MSD) R3273146-5 12/14/17 19:39

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	0.125	ND	0.0395	0.0294	31.6	23.5	1	10.0-160			29.3	36
Acrylonitrile	0.125	ND	0.0353	0.0215	28.2	17.2	1	14.0-160		J3	48.4	33
Benzene	0.0250	ND	0.00653	0.00294	26.1	11.8	1	13.0-146		J3 J6	75.7	27
Bromobenzene	0.0250	ND	0.00271	0.00134	10.8	5.34	1	10.0-149		J3 J6	67.9	33
Bromodichloromethane	0.0250	ND	0.00393	0.00172	15.7	6.87	1	15.0-142		J3 J6	78.4	28
Bromoform	0.0250	ND	0.00209	0.00106	8.36	4.25	1	10.0-147	J6	J3 J6	65.2	31
Bromomethane	0.0250	ND	0.00706	0.00291	28.3	11.6	1	10.0-160		J3	83.3	32
n-Butylbenzene	0.0250	ND	0.00287	0.00189	11.5	7.55	1	10.0-154		J3 J6	41.3	37
sec-Butylbenzene	0.0250	ND	0.00380	0.00225	15.2	9.01	1	10.0-151		J3 J6	51.1	36
tert-Butylbenzene	0.0250	ND	0.00414	0.00231	16.5	9.25	1	10.0-152		J3 J6	56.5	35

L957224-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L957224-05 12/14/17 17:41 • (MS) R3273146-4 12/14/17 19:19 • (MSD) R3273146-5 12/14/17 19:39

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Carbon tetrachloride	0.0250	ND	0.00882	0.00410	35.3	16.4	1	13.0-140		J3	73.1	30
Chlorobenzene	0.0250	ND	0.00319	0.00141	12.8	5.64	1	10.0-149		J3 J6	77.3	31
Chlorodibromomethane	0.0250	ND	0.00286	0.00123	11.4	4.93	1	12.0-147	J6	J3 J6	79.5	29
Chloroethane	0.0250	ND	0.0108	0.00460	43.2	18.4	1	10.0-159		J3	80.5	33
Chloroform	0.0250	ND	0.00628	0.00271	25.1	10.8	1	18.0-148		J3 J6	79.4	28
Chloromethane	0.0250	ND	0.0122	0.00588	48.9	23.5	1	10.0-146		J3	70.1	29
2-Chlorotoluene	0.0250	ND	0.00311	0.00159	12.4	6.36	1	10.0-151		J3 J6	64.6	35
4-Chlorotoluene	0.0250	ND	0.00270	0.00134	10.8	5.38	1	10.0-150		J3 J6	66.9	35
1,2-Dibromo-3-Chloropropane	0.0250	ND	0.00251	ND	10.0	0.000	1	10.0-149		J3 J6	200	34
1,2-Dibromoethane	0.0250	ND	0.00355	0.00157	14.2	6.29	1	14.0-145		J3 J6	77.3	28
Dibromomethane	0.0250	ND	0.00518	0.00247	20.7	9.87	1	18.0-144		J3 J6	70.9	27
1,2-Dichlorobenzene	0.0250	ND	0.00175	0.000942	7.00	3.77	1	10.0-153	J6	J3 J6	60.0	34
1,3-Dichlorobenzene	0.0250	ND	0.00200	0.00110	8.02	4.41	1	10.0-150	J6	J3 J6	58.0	35
1,4-Dichlorobenzene	0.0250	ND	0.00206	0.00108	8.22	4.31	1	10.0-148	J6	J3 J6	62.4	34
Dichlorodifluoromethane	0.0250	ND	0.0131	0.00627	52.2	25.1	1	10.0-160		J3	70.3	30
1,1-Dichloroethane	0.0250	ND	0.00775	0.00336	31.0	13.4	1	19.0-148		J3 J6	79.2	28
1,2-Dichloroethane	0.0250	ND	0.00556	0.00271	22.2	10.8	1	17.0-147		J3 J6	68.9	27
1,1-Dichloroethene	0.0250	ND	0.00992	0.00459	39.7	18.4	1	10.0-150		J3	73.4	31
cis-1,2-Dichloroethene	0.0250	ND	0.00601	0.00254	24.1	10.1	1	16.0-145		J3 J6	81.4	28
trans-1,2-Dichloroethene	0.0250	ND	0.00798	0.00347	31.9	13.9	1	11.0-142		J3	78.7	29
1,2-Dichloropropane	0.0250	ND	0.00530	0.00224	21.2	8.96	1	17.0-148		J3 J6	81.2	28
1,1-Dichloropropene	0.0250	ND	0.00924	0.00435	37.0	17.4	1	10.0-150		J3	72.1	30
1,3-Dichloropropane	0.0250	ND	0.00387	0.00164	15.5	6.56	1	16.0-148	J6	J3 J6	81.0	27
cis-1,3-Dichloropropene	0.0250	ND	0.00366	0.00148	14.6	5.91	1	13.0-150		J3 J6	85.0	28
trans-1,3-Dichloropropene	0.0250	ND	0.00306	0.00124	12.3	4.97	1	10.0-152		J3 J6	84.6	29
2,2-Dichloropropane	0.0250	ND	0.00834	0.00371	33.3	14.8	1	16.0-143		J3 J6	76.9	30
Di-isopropyl ether	0.0250	ND	0.00627	0.00258	25.1	10.3	1	16.0-149		J3 J6	83.4	28
Ethylbenzene	0.0250	ND	0.00498	0.00246	19.9	9.86	1	10.0-147		J3 J6	67.5	31
Hexachloro-1,3-butadiene	0.0250	ND	0.00210	0.00200	8.39	8.00	1	10.0-154	J6	J6	4.82	40
Isopropylbenzene	0.0250	ND	0.00477	0.00240	19.1	9.59	1	10.0-147		J3 J6	66.2	33
p-Isopropyltoluene	0.0250	ND	0.00347	0.00213	13.9	8.50	1	10.0-156		J3 J6	48.1	37
2-Butanone (MEK)	0.125	ND	0.0280	0.0162	22.4	12.9	1	10.0-160		J3	53.7	33
Methylene Chloride	0.0250	ND	0.00599	0.00237	24.0	9.49	1	16.0-139		J3 J6	86.6	29
4-Methyl-2-pentanone (MIBK)	0.125	ND	0.0291	0.0138	23.3	11.0	1	12.0-160		J3 J6	71.4	32
Methyl tert-butyl ether	0.0250	ND	0.00509	0.00227	20.3	9.09	1	21.0-145	J6	J3 J6	76.5	29
Naphthalene	0.0250	ND	0.00136	ND	5.45	0.000	1	10.0-153	J6	J3 J6	200	36
n-Propylbenzene	0.0250	ND	0.00413	0.00220	16.5	8.79	1	10.0-151		J3 J6	61.1	34
Styrene	0.0250	ND	0.00254	0.000934	10.1	3.74	1	10.0-155		J3 J6	92.3	34
1,1,1,2-Tetrachloroethane	0.0250	ND	0.00322	0.00140	12.9	5.60	1	10.0-147		J3 J6	78.9	30
1,1,2,2-Tetrachloroethane	0.0250	ND	0.00268	0.00135	10.7	5.40	1	10.0-155		J3 J6	66.1	31

L957224-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L957224-05 12/14/17 17:41 • (MS) R3273146-4 12/14/17 19:19 • (MSD) R3273146-5 12/14/17 19:39

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Tetrachloroethene	0.0250	ND	0.00629	0.00287	25.2	11.5	1	10.0-144		J3	74.9	32
Toluene	0.0250	ND	0.00558	0.00276	22.3	11.0	1	10.0-144		J3	67.5	28
1,1,2-Trichlorotrifluoroethane	0.0250	ND	0.0133	0.00694	53.3	27.7	1	10.0-153		J3	63.0	33
1,2,3-Trichlorobenzene	0.0250	ND	0.00118	0.000760	4.74	3.04	1	10.0-153	J6	J3 J6	43.7	40
1,2,4-Trichlorobenzene	0.0250	ND	0.00127	0.000958	5.08	3.83	1	10.0-156	J6	J6	28.0	40
1,1,1-Trichloroethane	0.0250	ND	0.00877	0.00392	35.1	15.7	1	18.0-145		J3 J6	76.6	29
1,1,2-Trichloroethane	0.0250	ND	0.00356	0.00158	14.2	6.33	1	12.0-151		J3 J6	77.0	28
Trichloroethene	0.0250	ND	0.00643	0.00281	25.7	11.2	1	11.0-148		J3	78.4	29
Trichlorofluoromethane	0.0250	ND	0.0117	0.00614	46.8	24.5	1	10.0-157		J3	62.5	34
1,2,3-Trichloropropane	0.0250	ND	0.00334	0.00147	13.4	5.86	1	10.0-154		J3 J6	78.0	32
1,2,3-Trimethylbenzene	0.0250	ND	0.00291	0.00161	11.6	6.43	1	10.0-150		J3 J6	57.7	33
1,2,4-Trimethylbenzene	0.0250	ND	0.00311	0.00177	12.5	7.06	1	10.0-151		J3 J6	55.3	34
1,3,5-Trimethylbenzene	0.0250	ND	0.00320	0.00190	12.8	7.62	1	10.0-150		J3 J6	50.7	33
Vinyl chloride	0.0250	ND	0.0130	0.00635	51.9	25.4	1	10.0-150		J3	68.6	29
Xylenes, Total	0.0750	ND	0.0120	0.00586	16.0	7.81	1	10.0-150		J3 J6	68.8	31
(S) Toluene-d8					*94.2*	*93.9*		*80.0-120*				
(S) Dibromofluoromethane					*103*	*103*		*74.0-131*				
(S) 4-Bromofluorobenzene					*105*	*102*		*64.0-132*				

Method Blank (MB)

(MB) R3274388-1 12/20/17 02:23

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*57.5*			*18.0-148*

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

(LCS) R3274388-2 12/20/17 02:36 • (LCSD) R3274388-3 12/20/17 02:49

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
C10-C28 Diesel Range	60.0	31.8	33.9	52.9	56.5	50.0-150			6.59	20
(S) o-Terphenyl				*62.5*	*62.8*	*18.0-148*				

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, 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.
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
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.

ESC Lab Sciences 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.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

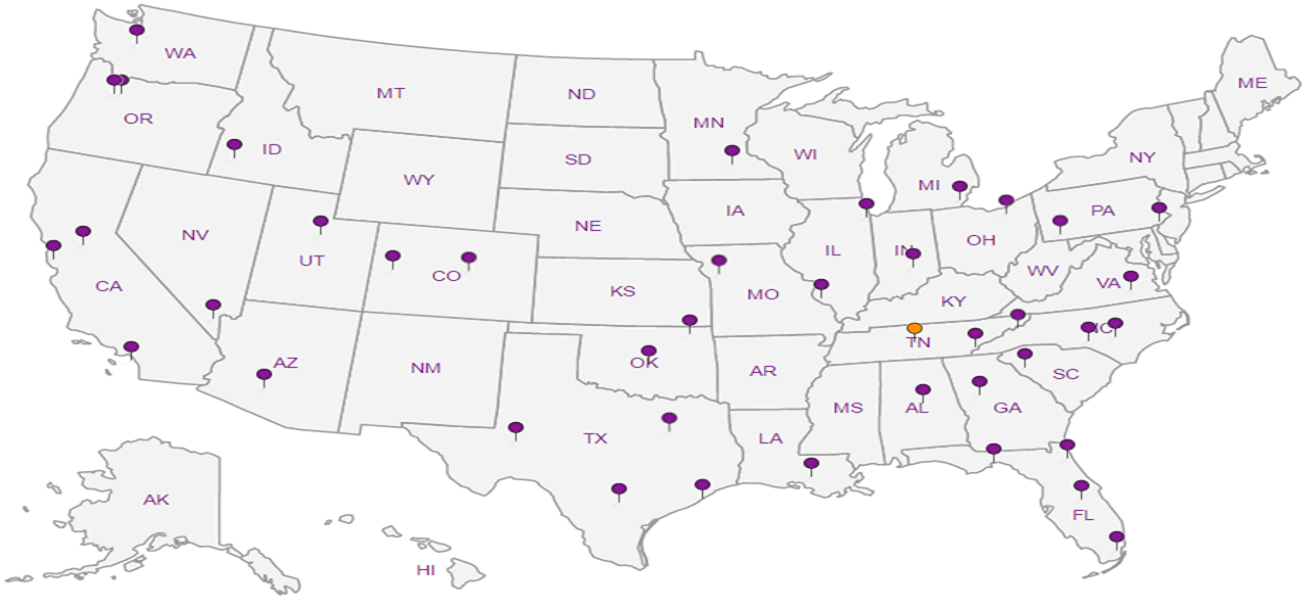
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

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

Our Locations

ESC Lab Sciences 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. **ESC Lab Sciences performs all testing at our central laboratory.**



Company Name/Address:
Terracon - Longmont
1242 Bramwood Pl.
Longmont, CO 80501

Billing Information:
SAME

Report to: **Michael Skridulis**

Email To: **mjskridulis@terracon.com**

Project Description: Longmont 8-10K

City/State Collected: Longmont CO

Phone: **303-776-3921**
Fax: **303-776-4041**

Client Project # 22177046

Lab Project #

Collected by (print): M. Skridulis

Site/Facility ID #

P.O. #

Collected by (signature): M. S

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed: STANDARD

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260 - 40ml/NaHSO4/SynMeOH 4oz Soil Jar	TPH-GRO - 4oz Soil Jar	TPH DRO - 4oz Soil Jar	TPH-ORO - 4oz Soil Jar	Rem./Contaminant	Sample # (lab only)
SB-01(13-14)	G	SS		12/11/17	1045	3	X	X	X	X		-01
SB-02(13-14)	↓	SS		↓	1150	3	X	X	X	X		02
SB-03(13-14)	↓	SS		↓	1240	3	X	X	X	X		03

Chain of Custody Page 1 of 1

ESC LAB SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# LG 57239

Tab E046

Acctnum: TERRALCO
Template:
Prelogin:
TSR:
PB:
Shipped Via:

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: Fedex: 4094 8309 9940

pH _____ Temp _____
Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
M. S	12/12/17	1200	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ____
Temp: 0.3 °C Bottles Received: 4
Date: 12/13/17 Time: 8:45

Condition: (lab use only) OK
COC Seal Intact: ✓ Y ___N ___NA
pH Checked: NCF:

ESC LAB SCIENCES
Cooler Receipt Form

Client:	TERRACO	SDG#	L957239
Cooler Received/Opened On: 12/13/17		Temperature:	0.3
Received by : Christian Kacar			
Signature:			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

ANALYTICAL REPORT

December 29, 2017

Terracon Consultants, Inc - Longmont, CO

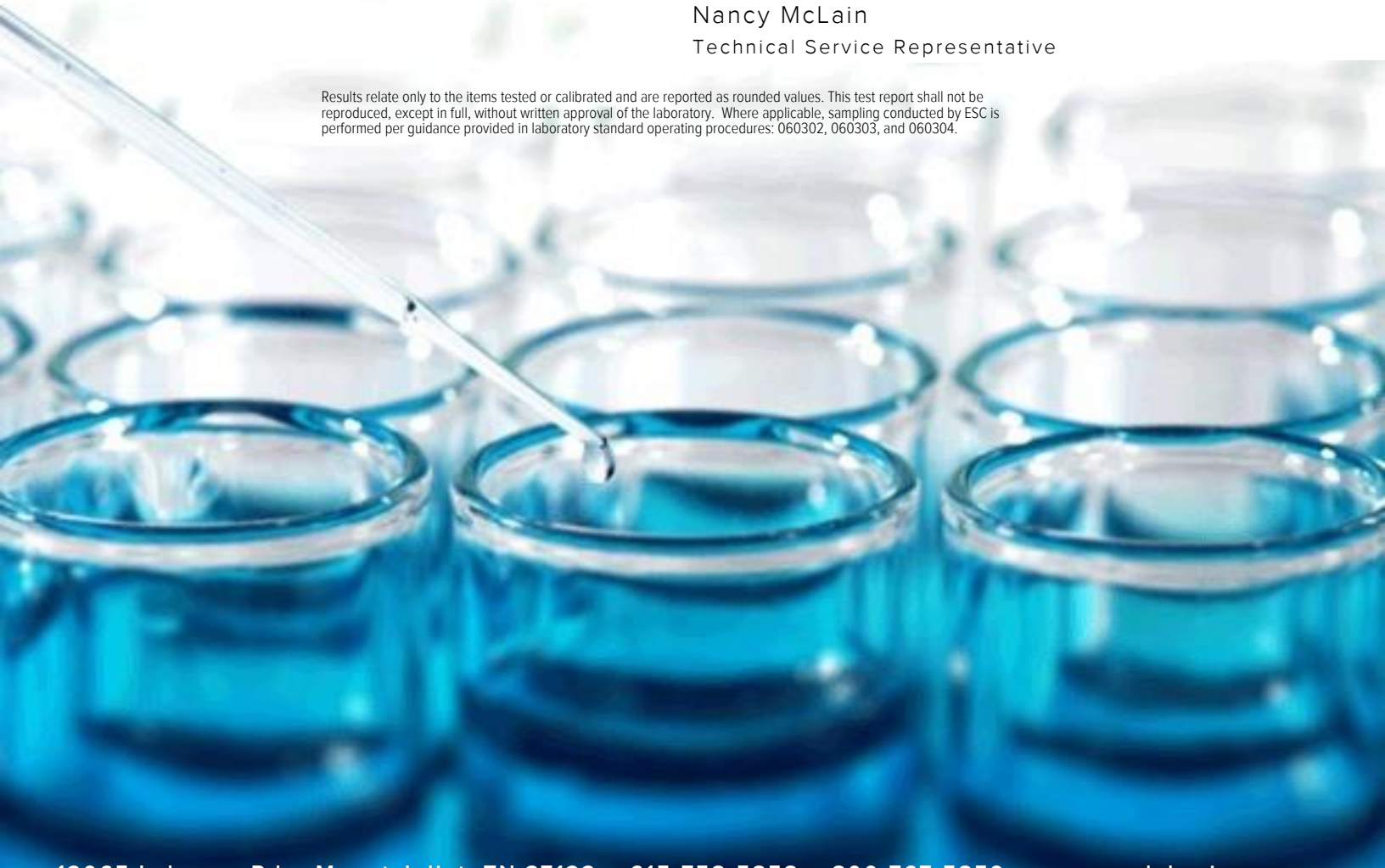
Sample Delivery Group:	L959000
Samples Received:	12/21/2017
Project Number:	22177046
Description:	Longmont 8-10K

Report To: Mike Skridulis
1242 Bramwood Place
Longmont, CO 80501

Entire Report Reviewed By:

Nancy McLain
Technical Service Representative

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 ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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MW-01 L959000-01 GW

Collected by: M. Skridulis
Collected date/time: 12/20/17 00:00
Received date/time: 12/21/17 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1057430	1	12/27/17 15:42	12/27/17 15:42	MCG
Wet Chemistry by Method 4500CO2 D-2011	WG1057430	1	12/27/17 15:42	12/27/17 15:42	MCG
Wet Chemistry by Method 9056A	WG1056248	1	12/21/17 17:31	12/21/17 17:31	DR
Wet Chemistry by Method 9056A	WG1056619	20	12/22/17 18:20	12/22/17 18:20	KCF
Metals (ICP) by Method 6010B	WG1056298	1	12/21/17 16:33	12/22/17 10:04	TRB
Volatile Organic Compounds (GC) by Method RSK175	WG1056434	1	12/22/17 10:12	12/22/17 10:12	BG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1056322	1	12/21/17 17:46	12/21/17 17:46	BMB

MW-02 L959000-02 GW

Collected by: M. Skridulis
Collected date/time: 12/20/17 00:00
Received date/time: 12/21/17 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1057430	1	12/27/17 15:49	12/27/17 15:49	MCG
Wet Chemistry by Method 4500CO2 D-2011	WG1057430	1	12/27/17 15:49	12/27/17 15:49	MCG
Wet Chemistry by Method 9056A	WG1056248	1	12/21/17 17:44	12/21/17 17:44	DR
Wet Chemistry by Method 9056A	WG1056619	20	12/22/17 18:33	12/22/17 18:33	KCF
Metals (ICP) by Method 6010B	WG1056298	1	12/21/17 16:33	12/22/17 10:28	TRB
Volatile Organic Compounds (GC) by Method RSK175	WG1056434	1	12/22/17 10:15	12/22/17 10:15	BG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1056322	1	12/21/17 18:06	12/21/17 18:06	BMB

MW-03 L959000-03 GW

Collected by: M. Skridulis
Collected date/time: 12/20/17 00:00
Received date/time: 12/21/17 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1057430	1	12/27/17 15:55	12/27/17 15:55	MCG
Wet Chemistry by Method 4500CO2 D-2011	WG1057430	1	12/27/17 15:55	12/27/17 15:55	MCG
Wet Chemistry by Method 9056A	WG1056248	1	12/21/17 18:11	12/21/17 18:11	DR
Wet Chemistry by Method 9056A	WG1056619	20	12/22/17 18:46	12/22/17 18:46	KCF
Metals (ICP) by Method 6010B	WG1056298	1	12/21/17 16:33	12/22/17 10:31	TRB
Volatile Organic Compounds (GC) by Method RSK175	WG1056434	1	12/22/17 10:18	12/22/17 10:18	BG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1056322	1	12/21/17 18:26	12/21/17 18:26	BMB

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. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. 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.

Nancy McLain
Technical Service Representative

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	244		20.0	1	12/27/2017 15:42	WG1057430

Sample Narrative:
L959000-01 WG1057430: Endpoint pH 4.5

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Free Carbon Dioxide	ND	T8	20.0	1	12/27/2017 15:42	WG1057430

Sample Narrative:
L959000-01 WG1057430: 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	12/21/2017 17:31	WG1056248
Chloride	90.2		1.00	1	12/21/2017 17:31	WG1056248
Nitrate as (N)	0.875		0.100	1	12/21/2017 17:31	WG1056248
Nitrite as (N)	ND		0.100	1	12/21/2017 17:31	WG1056248
Sulfate	1410		100	20	12/22/2017 18:20	WG1056619

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	339	O1 V	1.00	1	12/22/2017 10:04	WG1056298
Iron,Dissolved	ND		0.100	1	12/22/2017 10:04	WG1056298
Magnesium,Dissolved	120	V	1.00	1	12/22/2017 10:04	WG1056298
Potassium,Dissolved	22.7		1.00	1	12/22/2017 10:04	WG1056298
Sodium,Dissolved	203	V	1.00	1	12/22/2017 10:04	WG1056298
Strontium,Dissolved	2.68		0.0100	1	12/22/2017 10:04	WG1056298

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	12/22/2017 10:12	WG1056434
Ethane	ND		0.0130	1	12/22/2017 10:12	WG1056434
Ethene	ND		0.0130	1	12/22/2017 10:12	WG1056434

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	12/21/2017 17:46	WG1056322
Acrolein	ND		0.0500	1	12/21/2017 17:46	WG1056322
Acrylonitrile	ND		0.0100	1	12/21/2017 17:46	WG1056322
Benzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
Bromobenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
Bromodichloromethane	ND		0.00100	1	12/21/2017 17:46	WG1056322
Bromoform	ND		0.00100	1	12/21/2017 17:46	WG1056322
Bromomethane	ND		0.00500	1	12/21/2017 17:46	WG1056322
n-Butylbenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
sec-Butylbenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
tert-Butylbenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322

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	12/21/2017 17:46	WG1056322
Chlorobenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
Chlorodibromomethane	ND		0.00100	1	12/21/2017 17:46	WG1056322
Chloroethane	ND		0.00500	1	12/21/2017 17:46	WG1056322
Chloroform	ND		0.00500	1	12/21/2017 17:46	WG1056322
Chloromethane	ND		0.00250	1	12/21/2017 17:46	WG1056322
2-Chlorotoluene	ND		0.00100	1	12/21/2017 17:46	WG1056322
4-Chlorotoluene	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	12/21/2017 17:46	WG1056322
1,2-Dibromoethane	ND		0.00100	1	12/21/2017 17:46	WG1056322
Dibromomethane	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,2-Dichlorobenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,3-Dichlorobenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,4-Dichlorobenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
Dichlorodifluoromethane	ND		0.00500	1	12/21/2017 17:46	WG1056322
1,1-Dichloroethane	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,2-Dichloroethane	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,1-Dichloroethene	ND		0.00100	1	12/21/2017 17:46	WG1056322
cis-1,2-Dichloroethene	ND		0.00100	1	12/21/2017 17:46	WG1056322
trans-1,2-Dichloroethene	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,2-Dichloropropane	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,1-Dichloropropene	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,3-Dichloropropane	ND		0.00100	1	12/21/2017 17:46	WG1056322
cis-1,3-Dichloropropene	ND		0.00100	1	12/21/2017 17:46	WG1056322
trans-1,3-Dichloropropene	ND		0.00100	1	12/21/2017 17:46	WG1056322
2,2-Dichloropropane	ND		0.00100	1	12/21/2017 17:46	WG1056322
Di-isopropyl ether	ND		0.00100	1	12/21/2017 17:46	WG1056322
Ethylbenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
Hexachloro-1,3-butadiene	ND		0.00100	1	12/21/2017 17:46	WG1056322
Isopropylbenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
p-Isopropyltoluene	ND		0.00100	1	12/21/2017 17:46	WG1056322
2-Butanone (MEK)	ND		0.0100	1	12/21/2017 17:46	WG1056322
Methylene Chloride	ND		0.00500	1	12/21/2017 17:46	WG1056322
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	12/21/2017 17:46	WG1056322
Methyl tert-butyl ether	ND		0.00100	1	12/21/2017 17:46	WG1056322
Naphthalene	ND		0.00500	1	12/21/2017 17:46	WG1056322
n-Propylbenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
Styrene	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,1,1,2-Tetrachloroethane	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,1,2,2-Tetrachloroethane	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	12/21/2017 17:46	WG1056322
Tetrachloroethene	ND		0.00100	1	12/21/2017 17:46	WG1056322
Toluene	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,2,3-Trichlorobenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,2,4-Trichlorobenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,1,1-Trichloroethane	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,1,2-Trichloroethane	ND		0.00100	1	12/21/2017 17:46	WG1056322
Trichloroethene	ND		0.00100	1	12/21/2017 17:46	WG1056322
Trichlorofluoromethane	ND		0.00500	1	12/21/2017 17:46	WG1056322
1,2,3-Trichloropropane	ND		0.00250	1	12/21/2017 17:46	WG1056322
1,2,4-Trimethylbenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,2,3-Trimethylbenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
1,3,5-Trimethylbenzene	ND		0.00100	1	12/21/2017 17:46	WG1056322
Vinyl chloride	ND		0.00100	1	12/21/2017 17:46	WG1056322
Xylenes, Total	ND		0.00300	1	12/21/2017 17:46	WG1056322
(S) Toluene-d8	*105*		*80.0-120*		*12/21/2017 17:46*	WG1056322

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) Dibromofluoromethane	*96.3*		*76.0-123*		*12/21/2017 17:46*	WG1056322
(S) 4-Bromofluorobenzene	*103*		*80.0-120*		*12/21/2017 17:46*	WG1056322

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	246		20.0	1	12/27/2017 15:49	WG1057430

Sample Narrative:
L959000-02 WG1057430: Endpoint pH 4.5

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Free Carbon Dioxide	ND	T8	20.0	1	12/27/2017 15:49	WG1057430

Sample Narrative:
L959000-02 WG1057430: 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	12/21/2017 17:44	WG1056248
Chloride	79.9		1.00	1	12/21/2017 17:44	WG1056248
Nitrate as (N)	0.423		0.100	1	12/21/2017 17:44	WG1056248
Nitrite as (N)	ND		0.100	1	12/21/2017 17:44	WG1056248
Sulfate	1190		100	20	12/22/2017 18:33	WG1056619

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	182		1.00	1	12/22/2017 10:28	WG1056298
Iron,Dissolved	ND		0.100	1	12/22/2017 10:28	WG1056298
Magnesium,Dissolved	152		1.00	1	12/22/2017 10:28	WG1056298
Potassium,Dissolved	9.38		1.00	1	12/22/2017 10:28	WG1056298
Sodium,Dissolved	244		1.00	1	12/22/2017 10:28	WG1056298
Strontium,Dissolved	2.32		0.0100	1	12/22/2017 10:28	WG1056298

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	12/22/2017 10:15	WG1056434
Ethane	ND		0.0130	1	12/22/2017 10:15	WG1056434
Ethene	ND		0.0130	1	12/22/2017 10:15	WG1056434

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	12/21/2017 18:06	WG1056322
Acrolein	ND		0.0500	1	12/21/2017 18:06	WG1056322
Acrylonitrile	ND		0.0100	1	12/21/2017 18:06	WG1056322
Benzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
Bromobenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
Bromodichloromethane	ND		0.00100	1	12/21/2017 18:06	WG1056322
Bromoform	ND		0.00100	1	12/21/2017 18:06	WG1056322
Bromomethane	ND		0.00500	1	12/21/2017 18:06	WG1056322
n-Butylbenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
sec-Butylbenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
tert-Butylbenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322

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	12/21/2017 18:06	WG1056322
Chlorobenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
Chlorodibromomethane	ND		0.00100	1	12/21/2017 18:06	WG1056322
Chloroethane	ND		0.00500	1	12/21/2017 18:06	WG1056322
Chloroform	ND		0.00500	1	12/21/2017 18:06	WG1056322
Chloromethane	ND		0.00250	1	12/21/2017 18:06	WG1056322
2-Chlorotoluene	ND		0.00100	1	12/21/2017 18:06	WG1056322
4-Chlorotoluene	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	12/21/2017 18:06	WG1056322
1,2-Dibromoethane	ND		0.00100	1	12/21/2017 18:06	WG1056322
Dibromomethane	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,2-Dichlorobenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,3-Dichlorobenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,4-Dichlorobenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
Dichlorodifluoromethane	ND		0.00500	1	12/21/2017 18:06	WG1056322
1,1-Dichloroethane	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,2-Dichloroethane	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,1-Dichloroethene	ND		0.00100	1	12/21/2017 18:06	WG1056322
cis-1,2-Dichloroethene	ND		0.00100	1	12/21/2017 18:06	WG1056322
trans-1,2-Dichloroethene	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,2-Dichloropropane	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,1-Dichloropropene	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,3-Dichloropropane	ND		0.00100	1	12/21/2017 18:06	WG1056322
cis-1,3-Dichloropropene	ND		0.00100	1	12/21/2017 18:06	WG1056322
trans-1,3-Dichloropropene	ND		0.00100	1	12/21/2017 18:06	WG1056322
2,2-Dichloropropane	ND		0.00100	1	12/21/2017 18:06	WG1056322
Di-isopropyl ether	ND		0.00100	1	12/21/2017 18:06	WG1056322
Ethylbenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
Hexachloro-1,3-butadiene	ND		0.00100	1	12/21/2017 18:06	WG1056322
Isopropylbenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
p-Isopropyltoluene	ND		0.00100	1	12/21/2017 18:06	WG1056322
2-Butanone (MEK)	ND		0.0100	1	12/21/2017 18:06	WG1056322
Methylene Chloride	ND		0.00500	1	12/21/2017 18:06	WG1056322
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	12/21/2017 18:06	WG1056322
Methyl tert-butyl ether	ND		0.00100	1	12/21/2017 18:06	WG1056322
Naphthalene	ND		0.00500	1	12/21/2017 18:06	WG1056322
n-Propylbenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
Styrene	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,1,1,2-Tetrachloroethane	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,1,2,2-Tetrachloroethane	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	12/21/2017 18:06	WG1056322
Tetrachloroethene	ND		0.00100	1	12/21/2017 18:06	WG1056322
Toluene	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,2,3-Trichlorobenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,2,4-Trichlorobenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,1,1-Trichloroethane	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,1,2-Trichloroethane	ND		0.00100	1	12/21/2017 18:06	WG1056322
Trichloroethene	ND		0.00100	1	12/21/2017 18:06	WG1056322
Trichlorofluoromethane	ND		0.00500	1	12/21/2017 18:06	WG1056322
1,2,3-Trichloropropane	ND		0.00250	1	12/21/2017 18:06	WG1056322
1,2,4-Trimethylbenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,2,3-Trimethylbenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
1,3,5-Trimethylbenzene	ND		0.00100	1	12/21/2017 18:06	WG1056322
Vinyl chloride	ND		0.00100	1	12/21/2017 18:06	WG1056322
Xylenes, Total	ND		0.00300	1	12/21/2017 18:06	WG1056322
(S) Toluene-d8	*107*		*80.0-120*		*12/21/2017 18:06*	WG1056322

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) Dibromofluoromethane	*91.8*		*76.0-123*		*12/21/2017 18:06*	WG1056322
(S) 4-Bromofluorobenzene	*99.6*		*80.0-120*		*12/21/2017 18:06*	WG1056322

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	211		20.0	1	12/27/2017 15:55	WG1057430

Sample Narrative:
L959000-03 WG1057430: Endpoint pH 4.5

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Free Carbon Dioxide	ND	T8	20.0	1	12/27/2017 15:55	WG1057430

Sample Narrative:
L959000-03 WG1057430: 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	12/21/2017 18:11	WG1056248
Chloride	95.9		1.00	1	12/21/2017 18:11	WG1056248
Nitrate as (N)	5.12		0.100	1	12/21/2017 18:11	WG1056248
Nitrite as (N)	ND		0.100	1	12/21/2017 18:11	WG1056248
Sulfate	1370		100	20	12/22/2017 18:46	WG1056619

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	209		1.00	1	12/22/2017 10:31	WG1056298
Iron,Dissolved	ND		0.100	1	12/22/2017 10:31	WG1056298
Magnesium,Dissolved	173		1.00	1	12/22/2017 10:31	WG1056298
Potassium,Dissolved	11.5		1.00	1	12/22/2017 10:31	WG1056298
Sodium,Dissolved	255		1.00	1	12/22/2017 10:31	WG1056298
Strontium,Dissolved	2.76		0.0100	1	12/22/2017 10:31	WG1056298

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	0.0263		0.0100	1	12/22/2017 10:18	WG1056434
Ethane	ND		0.0130	1	12/22/2017 10:18	WG1056434
Ethene	ND		0.0130	1	12/22/2017 10:18	WG1056434

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	12/21/2017 18:26	WG1056322
Acrolein	ND		0.0500	1	12/21/2017 18:26	WG1056322
Acrylonitrile	ND		0.0100	1	12/21/2017 18:26	WG1056322
Benzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
Bromobenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
Bromodichloromethane	ND		0.00100	1	12/21/2017 18:26	WG1056322
Bromoform	ND		0.00100	1	12/21/2017 18:26	WG1056322
Bromomethane	ND		0.00500	1	12/21/2017 18:26	WG1056322
n-Butylbenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
sec-Butylbenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
tert-Butylbenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322

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	12/21/2017 18:26	WG1056322
Chlorobenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
Chlorodibromomethane	ND		0.00100	1	12/21/2017 18:26	WG1056322
Chloroethane	ND		0.00500	1	12/21/2017 18:26	WG1056322
Chloroform	ND		0.00500	1	12/21/2017 18:26	WG1056322
Chloromethane	ND		0.00250	1	12/21/2017 18:26	WG1056322
2-Chlorotoluene	ND		0.00100	1	12/21/2017 18:26	WG1056322
4-Chlorotoluene	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	12/21/2017 18:26	WG1056322
1,2-Dibromoethane	ND		0.00100	1	12/21/2017 18:26	WG1056322
Dibromomethane	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,2-Dichlorobenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,3-Dichlorobenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,4-Dichlorobenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
Dichlorodifluoromethane	ND		0.00500	1	12/21/2017 18:26	WG1056322
1,1-Dichloroethane	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,2-Dichloroethane	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,1-Dichloroethene	ND		0.00100	1	12/21/2017 18:26	WG1056322
cis-1,2-Dichloroethene	ND		0.00100	1	12/21/2017 18:26	WG1056322
trans-1,2-Dichloroethene	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,2-Dichloropropane	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,1-Dichloropropene	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,3-Dichloropropane	ND		0.00100	1	12/21/2017 18:26	WG1056322
cis-1,3-Dichloropropene	ND		0.00100	1	12/21/2017 18:26	WG1056322
trans-1,3-Dichloropropene	ND		0.00100	1	12/21/2017 18:26	WG1056322
2,2-Dichloropropane	ND		0.00100	1	12/21/2017 18:26	WG1056322
Di-isopropyl ether	ND		0.00100	1	12/21/2017 18:26	WG1056322
Ethylbenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
Hexachloro-1,3-butadiene	ND		0.00100	1	12/21/2017 18:26	WG1056322
Isopropylbenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
p-Isopropyltoluene	ND		0.00100	1	12/21/2017 18:26	WG1056322
2-Butanone (MEK)	ND		0.0100	1	12/21/2017 18:26	WG1056322
Methylene Chloride	ND		0.00500	1	12/21/2017 18:26	WG1056322
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	12/21/2017 18:26	WG1056322
Methyl tert-butyl ether	ND		0.00100	1	12/21/2017 18:26	WG1056322
Naphthalene	ND		0.00500	1	12/21/2017 18:26	WG1056322
n-Propylbenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
Styrene	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,1,1,2-Tetrachloroethane	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,1,2,2-Tetrachloroethane	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	12/21/2017 18:26	WG1056322
Tetrachloroethene	ND		0.00100	1	12/21/2017 18:26	WG1056322
Toluene	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,2,3-Trichlorobenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,2,4-Trichlorobenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,1,1-Trichloroethane	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,1,2-Trichloroethane	ND		0.00100	1	12/21/2017 18:26	WG1056322
Trichloroethene	ND		0.00100	1	12/21/2017 18:26	WG1056322
Trichlorofluoromethane	ND		0.00500	1	12/21/2017 18:26	WG1056322
1,2,3-Trichloropropane	ND		0.00250	1	12/21/2017 18:26	WG1056322
1,2,4-Trimethylbenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,2,3-Trimethylbenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
1,3,5-Trimethylbenzene	ND		0.00100	1	12/21/2017 18:26	WG1056322
Vinyl chloride	ND		0.00100	1	12/21/2017 18:26	WG1056322
Xylenes, Total	ND		0.00300	1	12/21/2017 18:26	WG1056322
(S) Toluene-d8	*107*		*80.0-120*		*12/21/2017 18:26*	WG1056322

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) Dibromofluoromethane	*96.3*		*76.0-123*		*12/21/2017 18:26*	WG1056322
(S) 4-Bromofluorobenzene	*104*		*80.0-120*		*12/21/2017 18:26*	WG1056322

L958816-02 Original Sample (OS) • Duplicate (DUP)

(OS) L958816-02 12/27/17 15:23 • (DUP) R3276093-1 12/27/17 15:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	199	204	1	2.41		20

Sample Narrative:
OS: Endpoint pH 4.5
DUP: Endpoint pH 4.5

L958946-05 Original Sample (OS) • Duplicate (DUP)

(OS) L958946-05 12/27/17 17:54 • (DUP) R3276093-8 12/27/17 18:01

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	16.8	15.2	1	9.71	J	20

Sample Narrative:
OS: Endpoint pH 4.5
DUP: Endpoint pH 4.5

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

(LCS) R3276093-3 12/27/17 16:27 • (LCSD) R3276093-7 12/27/17 17:46

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 %
Alkalinity	100	104	98.2	104	98.2	85.0-115			5.83	20

Sample Narrative:
LCS: Endpoint pH 4.5
LCSD: Endpoint pH 4.5

L958816-02 Original Sample (OS) • Duplicate (DUP)

(OS) L958816-02 12/27/17 15:23 • (DUP) R3276093-2 12/27/17 15:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Free Carbon Dioxide	U	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

L958946-05 Original Sample (OS) • Duplicate (DUP)

(OS) L958946-05 12/27/17 17:54 • (DUP) R3276093-9 12/27/17 18:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Free Carbon Dioxide	U	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

Method Blank (MB)

(MB) R3275080-1 12/21/17 06:38

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	U		0.079	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100

L958984-03 Original Sample (OS) • Duplicate (DUP)

(OS) L958984-03 12/21/17 14:50 • (DUP) R3275080-4 12/21/17 15:03

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	0.000	1	0		15
Chloride	4.07	3.02	1	29.7	P1	15
Nitrate	0.333	0.467	1	33.4	P1	15
Nitrite	ND	0.000	1	0		15

L959007-04 Original Sample (OS) • Duplicate (DUP)

(OS) L959007-04 12/21/17 19:58 • (DUP) R3275080-7 12/21/17 20:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	U	0.000	1	0		15
Nitrate	0.136	0.137	1	0.439		15
Nitrite	U	0.000	1	0		15

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

(LCS) R3275080-2 12/21/17 06:51 • (LCSD) R3275080-3 12/21/17 07:05

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 %
Bromide	40.0	40.1	40.0	100	100	80-120			0.249	15
Chloride	40.0	39.7	39.6	99.1	99.1	80-120			0.0308	15
Nitrate	8.00	8.13	8.12	102	102	80-120			0.0677	15
Nitrite	8.00	7.89	7.89	98.6	98.6	80-120			0.0634	15

L958984-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L958984-03 12/21/17 14:50 • (MS) R3275080-5 12/21/17 15:17 • (MSD) R3275080-6 12/21/17 15:30

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	48.6	49.7	97.2	99.4	1	80-120			2.18	15
Chloride	50.0	4.07	54.0	53.3	99.9	98.4	1	80-120			1.45	15
Nitrate	5.00	0.333	5.32	5.46	99.8	103	1	80-120			2.55	15
Nitrite	5.00	ND	5.06	5.10	101	102	1	80-120			0.711	15

L959007-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L959007-04 12/21/17 19:58 • (MS) R3275080-8 12/21/17 20:25

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	U	43.4	86.8	1	80-120	
Nitrate	5.00	0.136	5.03	97.9	1	80-120	
Nitrite	5.00	U	5.13	103	1	80-120	

Method Blank (MB)

(MB) R3275415-1 12/22/17 07:07

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Sulfate	U		0.0774	5.00

L959169-01 Original Sample (OS) • Duplicate (DUP)

(OS) L959169-01 12/22/17 22:04 • (DUP) R3275415-6 12/22/17 22:18

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Sulfate	28.6	28.7	1	0.302		15

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

(LCS) R3275415-2 12/22/17 07:20 • (LCSD) R3275415-3 12/22/17 07:33

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	%	%	%			%	%
Sulfate	40.0	39.8	39.8	99.5	99.5	80-120			0.00804	15

L959169-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L959169-01 12/22/17 22:04 • (MS) R3275415-7 12/22/17 22:31 • (MSD) R3275415-8 12/22/17 22:44

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	%	%		%			%	%
Sulfate	50.0	28.6	79.2	78.8	101	100	1	80-120			0.545	15

Method Blank (MB)

(MB) R3275260-1 12/22/17 09:57

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	0.0879	J	0.0111	1.00
Potassium,Dissolved	0.667	J	0.102	1.00
Sodium,Dissolved	0.123	J	0.0985	1.00
Strontium,Dissolved	U		0.0017	0.0100

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

(LCS) R3275260-2 12/22/17 09:59 • (LCSD) R3275260-3 12/22/17 10:02

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	9.68	9.58	96.8	95.8	80-120			1.07	20
Iron,Dissolved	10.0	9.69	9.57	96.9	95.7	80-120			1.18	20
Magnesium,Dissolved	10.0	10.0	9.93	100	99.3	80-120			0.921	20
Potassium,Dissolved	10.0	10.3	10.9	103	109	80-120			5.7	20
Sodium,Dissolved	10.0	9.85	9.84	98.5	98.4	80-120			0.102	20
Strontium,Dissolved	1.00	0.974	0.960	97.4	96	80-120			1.45	20

L959000-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L959000-01 12/22/17 10:04 • (MS) R3275260-5 12/22/17 10:09 • (MSD) R3275260-6 12/22/17 10:12

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	339	343	344	39.7	54.3	1	75-125	V	V	0.427	20
Iron,Dissolved	10.0	ND	9.41	9.62	94.1	96.2	1	75-125			2.13	20
Magnesium,Dissolved	10.0	120	128	128	73.5	74.5	1	75-125	V	V	0.0813	20
Potassium,Dissolved	10.0	22.7	32.6	32.0	98.6	93.1	1	75-125			1.71	20
Sodium,Dissolved	10.0	203	209	209	60.6	67.3	1	75-125	V	V	0.321	20
Strontium,Dissolved	1.00	2.68	3.58	3.59	89.4	90.1	1	75-125			0.218	20

Method Blank (MB)

(MB) R3275270-1 12/22/17 09:43

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

L959000-02 Original Sample (OS) • Duplicate (DUP)

(OS) L959000-02 12/22/17 10:15 • (DUP) R3275270-2 12/22/17 11:20

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

L959105-03 Original Sample (OS) • Duplicate (DUP)

(OS) L959105-03 12/22/17 11:35 • (DUP) R3275270-3 12/22/17 12:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Methane	0.0674	0.0681	1	1.01		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) R3275270-4 12/22/17 12:12 • (LCSD) R3275270-5 12/22/17 12:15

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 %
Methane	0.0678	0.0750	0.0716	111	106	85.0-115			4.60	20
Ethane	0.129	0.113	0.113	87.5	87.9	85.0-115			0.440	20
Ethene	0.127	0.116	0.116	91.4	91.4	85.0-115			0.0593	20

Method Blank (MB)

(MB) R3275027-3 12/21/17 14:12

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	U		0.000256	0.00100

Method Blank (MB)

(MB) R3275027-3 12/21/17 14:12

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	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	*105*			*80.0-120*
(S) Dibromofluoromethane	*92.6*			*76.0-123*
(S) 4-Bromofluorobenzene	*108*			*80.0-120*

Laboratory Control Sample (LCS)

(LCS) R3275027-1 12/21/17 12:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.125	0.0797	63.7	10.0-160	
Acrolein	0.125	0.0784	62.7	10.0-160	
Acrylonitrile	0.125	0.118	94.8	60.0-142	
Benzene	0.0250	0.0234	93.8	69.0-123	

Laboratory Control Sample (LCS)

(LCS) R3275027-1 12/21/17 12:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromobenzene	0.0250	0.0255	102	79.0-120	
Bromodichloromethane	0.0250	0.0245	98.2	76.0-120	
Bromoform	0.0250	0.0294	118	67.0-132	
Bromomethane	0.0250	0.0218	87.2	18.0-160	
n-Butylbenzene	0.0250	0.0273	109	72.0-126	
sec-Butylbenzene	0.0250	0.0279	112	74.0-121	
tert-Butylbenzene	0.0250	0.0286	114	75.0-122	
Carbon tetrachloride	0.0250	0.0242	96.8	63.0-122	
Chlorobenzene	0.0250	0.0271	109	79.0-121	
Chlorodibromomethane	0.0250	0.0271	108	75.0-125	
Chloroethane	0.0250	0.0224	89.5	47.0-152	
Chloroform	0.0250	0.0232	92.6	72.0-121	
Chloromethane	0.0250	0.0241	96.5	48.0-139	
2-Chlorotoluene	0.0250	0.0270	108	74.0-122	
4-Chlorotoluene	0.0250	0.0277	111	79.0-120	
1,2-Dibromo-3-Chloropropane	0.0250	0.0297	119	64.0-127	
1,2-Dibromoethane	0.0250	0.0264	106	77.0-123	
Dibromomethane	0.0250	0.0250	99.9	78.0-120	
1,2-Dichlorobenzene	0.0250	0.0262	105	80.0-120	
1,3-Dichlorobenzene	0.0250	0.0273	109	72.0-123	
1,4-Dichlorobenzene	0.0250	0.0262	105	77.0-120	
Dichlorodifluoromethane	0.0250	0.0236	94.2	49.0-155	
1,1-Dichloroethane	0.0250	0.0244	97.6	70.0-126	
1,2-Dichloroethane	0.0250	0.0222	88.9	67.0-126	
1,1-Dichloroethene	0.0250	0.0243	97.1	64.0-129	
cis-1,2-Dichloroethene	0.0250	0.0243	97.1	73.0-120	
trans-1,2-Dichloroethene	0.0250	0.0238	95.2	71.0-121	
1,2-Dichloropropane	0.0250	0.0256	102	75.0-125	
1,1-Dichloropropene	0.0250	0.0248	99.1	71.0-129	
1,3-Dichloropropane	0.0250	0.0260	104	80.0-121	
cis-1,3-Dichloropropene	0.0250	0.0272	109	79.0-123	
trans-1,3-Dichloropropene	0.0250	0.0264	106	74.0-127	
2,2-Dichloropropane	0.0250	0.0241	96.2	60.0-125	
Di-isopropyl ether	0.0250	0.0238	95.1	59.0-133	
Ethylbenzene	0.0250	0.0264	106	77.0-120	
Hexachloro-1,3-butadiene	0.0250	0.0274	110	64.0-131	
Isopropylbenzene	0.0250	0.0285	114	75.0-120	
p-Isopropyltoluene	0.0250	0.0278	111	74.0-126	
2-Butanone (MEK)	0.125	0.116	92.6	37.0-158	
Methylene Chloride	0.0250	0.0236	94.2	66.0-121	

Laboratory Control Sample (LCS)

(LCS) R3275027-1 12/21/17 12:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
4-Methyl-2-pentanone (MIBK)	0.125	0.129	104	59.0-143	
Methyl tert-butyl ether	0.0250	0.0237	94.9	64.0-123	
Naphthalene	0.0250	0.0284	114	62.0-128	
n-Propylbenzene	0.0250	0.0276	110	79.0-120	
Styrene	0.0250	0.0284	114	78.0-124	
1,1,1,2-Tetrachloroethane	0.0250	0.0282	113	75.0-122	
1,1,2,2-Tetrachloroethane	0.0250	0.0260	104	71.0-122	
Tetrachloroethene	0.0250	0.0291	117	70.0-127	
Toluene	0.0250	0.0251	100	77.0-120	
1,1,2-Trichlorotrifluoroethane	0.0250	0.0226	90.2	61.0-136	
1,2,3-Trichlorobenzene	0.0250	0.0286	114	61.0-133	
1,2,4-Trichlorobenzene	0.0250	0.0279	111	69.0-129	
1,1,1-Trichloroethane	0.0250	0.0252	101	68.0-122	
1,1,2-Trichloroethane	0.0250	0.0258	103	78.0-120	
Trichloroethene	0.0250	0.0282	113	78.0-120	
Trichlorofluoromethane	0.0250	0.0239	95.8	56.0-137	
1,2,3-Trichloropropane	0.0250	0.0268	107	72.0-124	
1,2,3-Trimethylbenzene	0.0250	0.0268	107	75.0-120	
1,2,4-Trimethylbenzene	0.0250	0.0267	107	75.0-120	
1,3,5-Trimethylbenzene	0.0250	0.0276	110	75.0-120	
Vinyl chloride	0.0250	0.0246	98.5	64.0-133	
Xylenes, Total	0.0750	0.0784	105	77.0-120	
(S) Toluene-d8			*103*	*80.0-120*	
(S) Dibromofluoromethane			*93.1*	*76.0-123*	
(S) 4-Bromofluorobenzene			*104*	*80.0-120*	

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, 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.
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.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ESC Lab Sciences 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.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

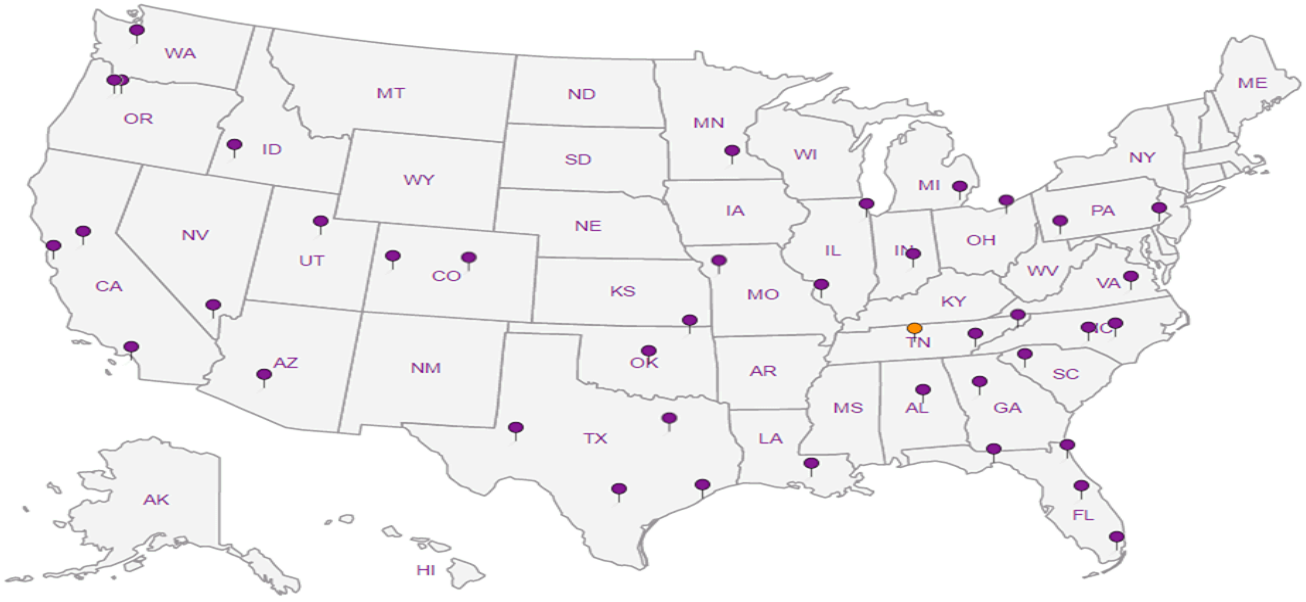
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

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

Our Locations

ESC Lab Sciences 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. **ESC Lab Sciences performs all testing at our central laboratory.**



Company Name/Address:
Terracon - Longmont
1242 Bramwood Pl.
Longmont, CO 80501

Billing Information:
SAME

Report to:
Michael Skridulis

Email To:
mjskridulis@terracon.com

Project Description: Longmont 8-10K

City/State Collected: Longmont, CO

Phone: **303-776-3921**
Fax: **303-776-4041**

Client Project #
22177046

Lab Project #

Collected by (print): M. Skridulis

Site/Facility ID #

P.O. #

Collected by (signature): M. Skr

Immediately Packed on Ice N___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed: STANDARD

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260 (3) 40ml Amber w/HCl	RSK175 Methatne,Ethane,Ethylene (2) 40ml Amber w/HCl	Ca,Mg,Na,Fe,K, Sr- 250ml HDPE No Pres	Br,Cl,S04,N02,N03 - 250ml HDPE No Pres	Alk - 125ml HDPENo PRes	CO2 - 250ml HDPE No Pres	Rem./Contaminant	Sample # (lab only)
MW-01	G	GW		12/20/17		9	X	X	X	X	X	X		01
MW-02	↓	GW		↓		9	X	X	X	X	X	X		02
MW-03	↓	GW		↓		9	X	X	X	X	X	X		03

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: FedEx: 4094 8309 9928

pH _____ Temp _____

Flow _____ Other _____

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
[signature]	12/20/17	1345	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) [signature] SB

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ _____

Temp: 2.2° °C Bottles Received: 26

Date: 12/21/17 Time: 0900

Hold #

Condition: (lab use only) 401

COC Seal Intact: ✓Y ___N ___NA

pH Checked: NCF: X

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 959000
B208
Acctnum: TERRALCO
Template:
Prelogin:
TSR:
PB:
Shipped Via:

ESC LAB SCIENCES
Cooler Receipt Form

Client: Terrallo	SDG#	959000	
Cooler Received/Opened On: 12/2/17	Temperature: 2.2		
Received by : Kate Moffitt			
Signature: Kate Moffitt			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?		✓	
Preservation Correct / Checked?			

ESC Lab Sciences
Non-Conformance Form

Login #959000	Client: TERRALCO	Date:12/21/17	Evaluated by:Matt S

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time	x	Login Clarification Needed		**If Broken Container:**
	Improper temperature		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	Improper preservation		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courie
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments:

1. **Received 1 40ml RSK175 vial broken. 1 still remains**
2. **Metals bottle received unpreserved. Does client want total or dissolved**

Client informed by:		Call		Email		Voice Mail		Date: 12/21/17	Time: 1026
TSR Initials: DR	Client Contact:								

Login Instructions:

1. Comment limited sample volume
2. Dissolved metals

ANALYTICAL REPORT

December 21, 2017

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L958122
Samples Received:	12/16/2017
Project Number:	22177046
Description:	Longmount 8-10K

Report To: Mike Skridulis
1242 Bramwood Place
Longmont, CO 80501

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
Technical Service Representative

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SVP-01 L958122-01 Air

Collected by	Collected date/time	Received date/time
M. Skridulis	12/15/17 11:30	12/16/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015M	WG1054713	1	12/18/17 09:32	12/18/17 09:32	BG
Volatile Organic Compounds (MS) by Method TO-15	WG1055132	1	12/19/17 18:39	12/19/17 18:39	AMC
Organic Compounds (GC) by Method D1946	WG1055074	1	12/19/17 09:07	12/19/17 09:07	BG

SVP-02 L958122-02 Air

Collected by	Collected date/time	Received date/time
M. Skridulis	12/15/17 12:20	12/16/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015M	WG1054713	1	12/18/17 09:35	12/18/17 09:35	BG
Volatile Organic Compounds (MS) by Method TO-15	WG1055132	1	12/19/17 19:37	12/19/17 19:37	AMC
Organic Compounds (GC) by Method D1946	WG1055074	1	12/19/17 09:14	12/19/17 09:14	BG

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. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. 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 R Richards

Daphne Richards
Technical Service Representative

Volatile Organic Compounds (GC) by Method 8015M

Analyte	CAS #	Mol. Wt.	RDL1 ppmv	RDL2 mg/m3	Result ppmv	Result mg/m3	Qualifier	Dilution	Batch
Methane	74-82-8	16	10.0	6.54	ND	ND		1	WG1054713
Ethane	74-84-0	30	10.0	12.3	ND	ND		1	WG1054713
Ethene	74-85-1	28	10.0	11.5	ND	ND		1	WG1054713

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	1.25	2.97	4.83	11.5		1	WG1055132
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1055132
Benzene	71-43-2	78.10	0.200	0.639	0.205	0.654		1	WG1055132
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1055132
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1055132
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1055132
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1055132
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1055132
Carbon disulfide	75-15-0	76.10	0.200	0.622	0.676	2.10		1	WG1055132
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1055132
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1055132
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1055132
Chloroform	67-66-3	119	0.200	0.973	0.691	3.36		1	WG1055132
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1055132
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1055132
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG1055132
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1055132
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1055132
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1055132
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG1055132
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1055132
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1055132
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1055132
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1055132
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1055132
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1055132
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1055132
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1055132
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1055132
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1055132
Ethanol	64-17-5	46.10	0.630	1.19	3.07	5.78		1	WG1055132
Ethylbenzene	100-41-4	106	0.200	0.867	0.405	1.76		1	WG1055132
4-Ethyltoluene	622-96-8	120	0.200	0.982	0.419	2.06		1	WG1055132
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	ND	ND		1	WG1055132
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.282	1.39		1	WG1055132
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1055132
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1055132
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG1055132
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1055132
n-Hexane	110-54-3	86.20	0.200	0.705	0.922	3.25		1	WG1055132
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1055132
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG1055132
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1055132
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1055132
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1055132
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1055132
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG1055132
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1055132

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

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
2-Propanol	67-63-0	60.10	1.25	3.07	2.42	5.94		1	WG1055132
Propene	115-07-1	42.10	0.400	0.689	0.912	1.57		1	WG1055132
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1055132
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1055132
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG1055132
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	1.57	4.64		1	WG1055132
Toluene	108-88-3	92.10	0.200	0.753	0.634	2.39		1	WG1055132
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1055132
1,1,1-Trichloroethane	71-55-6	133	0.200	1.09	ND	ND		1	WG1055132
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1055132
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1055132
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	0.876	4.30		1	WG1055132
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	0.629	3.09		1	WG1055132
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG1055132
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1055132
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1055132
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1055132
m&p-Xylene	1330-20-7	106	0.400	1.73	1.37	5.94		1	WG1055132
o-Xylene	95-47-6	106	0.200	0.867	0.662	2.87		1	WG1055132
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*93.8*				WG1055132

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	2.00	17.1		1	WG1055074
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1055074
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1055074
Methane	74-82-8	16	0.400	ND		1	WG1055074

Volatile Organic Compounds (GC) by Method 8015M

Analyte	CAS #	Mol. Wt.	RDL1 ppmv	RDL2 mg/m3	Result ppmv	Result mg/m3	Qualifier	Dilution	Batch
Methane	74-82-8	16	10.0	6.54	ND	ND		1	WG1054713
Ethane	74-84-0	30	10.0	12.3	ND	ND		1	WG1054713
Ethene	74-85-1	28	10.0	11.5	ND	ND		1	WG1054713

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	1.25	2.97	4.74	11.3		1	WG1055132
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1055132
Benzene	71-43-2	78.10	0.200	0.639	ND	ND		1	WG1055132
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1055132
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1055132
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1055132
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1055132
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1055132
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG1055132
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1055132
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1055132
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1055132
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG1055132
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1055132
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1055132
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG1055132
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1055132
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1055132
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1055132
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	ND	ND		1	WG1055132
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1055132
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1055132
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1055132
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1055132
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1055132
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1055132
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1055132
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1055132
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1055132
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1055132
Ethanol	64-17-5	46.10	0.630	1.19	2.43	4.58		1	WG1055132
Ethylbenzene	100-41-4	106	0.200	0.867	ND	ND		1	WG1055132
4-Ethyltoluene	622-96-8	120	0.200	0.982	ND	ND		1	WG1055132
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	ND	ND		1	WG1055132
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.240	1.19		1	WG1055132
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1055132
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1055132
Heptane	142-82-5	100	0.200	0.818	ND	ND		1	WG1055132
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1055132
n-Hexane	110-54-3	86.20	0.200	0.705	0.907	3.20		1	WG1055132
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1055132
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG1055132
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1055132
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1055132
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1055132
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1055132
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG1055132
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1055132

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

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
2-Propanol	67-63-0	60.10	1.25	3.07	3.48	8.56		1	WG1055132
Propene	115-07-1	42.10	0.400	0.689	ND	ND		1	WG1055132
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1055132
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1055132
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG1055132
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	ND	ND		1	WG1055132
Toluene	108-88-3	92.10	0.200	0.753	0.418	1.57		1	WG1055132
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1055132
1,1,1-Trichloroethane	71-55-6	133	0.200	1.09	ND	ND		1	WG1055132
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1055132
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1055132
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	ND	ND		1	WG1055132
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG1055132
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG1055132
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1055132
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1055132
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1055132
m&p-Xylene	1330-20-7	106	0.400	1.73	0.456	1.98		1	WG1055132
o-Xylene	95-47-6	106	0.200	0.867	ND	ND		1	WG1055132
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*94.1*				WG1055132

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	2.00	16.3		1	WG1055074
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1055074
Carbon Dioxide	124-38-9	44.01	0.500	0.828		1	WG1055074
Methane	74-82-8	16	0.400	ND		1	WG1055074

Method Blank (MB)

(MB) R3273736-3 12/18/17 08:56

Analyte	MB Result ppmv	MB Qualifier	MB MDL ppmv	MB RDL ppmv
Methane	U		1.85	10.0
Ethane	U		2.88	10.0
Ethene	U		2.47	10.0

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

(LCS) R3273736-1 12/18/17 08:42 • (LCSD) R3273736-2 12/18/17 08:46

Analyte	Spike Amount ppmv	LCS Result ppmv	LCSD Result ppmv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Methane	500	450	456	90.0	91.3	77.0-115			1.46	20
Ethane	500	484	496	96.9	99.1	85.0-115			2.32	20
Ethene	500	511	522	102	104	85.0-115			2.28	20

Method Blank (MB)

(MB) R3274142-3 12/19/17 09:24

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.0569	1.25
Allyl Chloride	U		0.0546	0.200
Benzene	U		0.0460	0.200
Benzyl Chloride	U		0.0598	0.200
Bromodichloromethane	U		0.0436	0.200
Bromoform	U		0.0786	0.600
Bromomethane	U		0.0609	0.200
1,3-Butadiene	U		0.0563	2.00
Carbon disulfide	U		0.0544	0.200
Carbon tetrachloride	U		0.0585	0.200
Chlorobenzene	U		0.0601	0.200
Chloroethane	U		0.0489	0.200
Chloroform	U		0.0574	0.200
Chloromethane	U		0.0544	0.200
2-Chlorotoluene	U		0.0605	0.200
Cyclohexane	U		0.0534	0.200
Dibromochloromethane	U		0.0494	0.200
1,2-Dibromoethane	U		0.0185	0.200
1,2-Dichlorobenzene	U		0.0603	0.200
1,3-Dichlorobenzene	U		0.0597	0.200
1,4-Dichlorobenzene	U		0.0557	0.200
1,2-Dichloroethane	U		0.0616	0.200
1,1-Dichloroethane	U		0.0514	0.200
1,1-Dichloroethene	U		0.0490	0.200
cis-1,2-Dichloroethene	U		0.0389	0.200
trans-1,2-Dichloroethene	U		0.0464	0.200
1,2-Dichloropropane	U		0.0599	0.200
cis-1,3-Dichloropropene	U		0.0588	0.200
trans-1,3-Dichloropropene	U		0.0435	0.200
1,4-Dioxane	U		0.0554	0.200
Ethylbenzene	U		0.0506	0.200
4-Ethyltoluene	U		0.0666	0.200
Trichlorofluoromethane	U		0.0673	0.200
Dichlorodifluoromethane	U		0.0601	0.200
1,1,2-Trichlorotrifluoroethane	U		0.0687	0.200
1,2-Dichlorotetrafluoroethane	U		0.0458	0.200
Heptane	U		0.0626	0.200
Hexachloro-1,3-butadiene	U		0.0656	0.630
n-Hexane	U		0.0457	0.200
Isopropylbenzene	U		0.0563	0.200

Method Blank (MB)

(MB) R3274142-3 12/19/17 09:24

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Methylene Chloride	0.0864	J	0.0465	0.200
Methyl Butyl Ketone	U		0.0682	1.25
2-Butanone (MEK)	U		0.0493	1.25
4-Methyl-2-pentanone (MIBK)	U		0.0650	1.25
Methyl Methacrylate	U		0.0773	0.200
MTBE	U		0.0505	0.200
Naphthalene	0.246	J	0.154	0.630
2-Propanol	U		0.0882	1.25
Propene	U		0.0932	0.400
Styrene	U		0.0465	0.200
1,1,2,2-Tetrachloroethane	U		0.0576	0.200
Tetrachloroethylene	U		0.0497	0.200
Tetrahydrofuran	U		0.0508	0.200
Toluene	U		0.0499	0.200
1,2,4-Trichlorobenzene	U		0.148	0.630
1,1,1-Trichloroethane	U		0.0665	0.200
1,1,2-Trichloroethane	U		0.0287	0.200
Trichloroethylene	U		0.0545	0.200
1,2,4-Trimethylbenzene	U		0.0483	0.200
1,3,5-Trimethylbenzene	U		0.0631	0.200
2,2,4-Trimethylpentane	U		0.0456	0.200
Vinyl chloride	U		0.0457	0.200
Vinyl Bromide	U		0.0727	0.200
Vinyl acetate	U		0.0639	0.200
m&p-Xylene	U		0.0946	0.400
o-Xylene	U		0.0633	0.200
Ethanol	U		0.0832	0.630
(S) 1,4-Bromofluorobenzene	*95.1*			*60.0-140*

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

(LCS) R3274142-1 12/19/17 07:56 • (LCSD) R3274142-2 12/19/17 08:39

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethanol	3.75	2.78	2.60	74.1	69.4	52.0-158			6.46	25
Propene	3.75	3.22	3.13	85.8	83.6	54.0-155			2.58	25
Dichlorodifluoromethane	3.75	3.33	3.07	88.7	82.0	69.0-143			7.89	25
1,2-Dichlorotetrafluoroethane	3.75	3.37	3.17	89.9	84.6	70.0-130			6.11	25
Chloromethane	3.75	3.31	3.19	88.2	85.0	70.0-130			3.79	25

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

(LCS) R3274142-1 12/19/17 07:56 • (LCSD) R3274142-2 12/19/17 08:39

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Vinyl chloride	3.75	3.30	3.27	87.9	87.2	70.0-130			0.813	25
1,3-Butadiene	3.75	3.40	3.38	90.8	90.3	70.0-130			0.573	25
Bromomethane	3.75	3.45	3.45	91.9	91.9	70.0-130			0.0252	25
Chloroethane	3.75	3.30	3.34	87.9	89.0	70.0-130			1.22	25
Trichlorofluoromethane	3.75	3.47	3.46	92.5	92.2	70.0-130			0.378	25
1,1,2-Trichlorotrifluoroethane	3.75	3.54	3.51	94.4	93.7	70.0-130			0.829	25
1,1-Dichloroethene	3.75	3.44	3.43	91.8	91.4	70.0-130			0.522	25
1,1-Dichloroethane	3.75	3.36	3.37	89.7	90.0	70.0-130			0.310	25
Acetone	3.75	3.23	3.26	86.2	87.0	70.0-130			0.853	25
2-Propanol	3.75	3.50	3.54	93.4	94.5	66.0-150			1.15	25
Carbon disulfide	3.75	3.33	3.34	88.7	89.2	70.0-130			0.517	25
Methylene Chloride	3.75	3.25	3.27	86.6	87.1	70.0-130			0.606	25
MTBE	3.75	3.43	3.51	91.6	93.6	70.0-130			2.16	25
trans-1,2-Dichloroethene	3.75	3.53	3.50	94.2	93.3	70.0-130			0.948	25
n-Hexane	3.75	3.39	3.43	90.5	91.5	70.0-130			1.10	25
Vinyl acetate	3.75	3.66	3.60	97.6	96.0	70.0-130			1.69	25
Methyl Ethyl Ketone	3.75	3.54	3.54	94.4	94.4	70.0-130			0.00469	25
cis-1,2-Dichloroethene	3.75	3.55	3.49	94.6	93.1	70.0-130			1.68	25
Chloroform	3.75	3.46	3.49	92.4	93.2	70.0-130			0.827	25
Cyclohexane	3.75	3.55	3.54	94.6	94.4	70.0-130			0.209	25
1,1,1-Trichloroethane	3.75	3.49	3.50	93.2	93.3	70.0-130			0.130	25
Carbon tetrachloride	3.75	3.47	3.51	92.6	93.6	70.0-130			1.05	25
Benzene	3.75	3.53	3.56	94.1	95.0	70.0-130			0.917	25
1,2-Dichloroethane	3.75	3.58	3.53	95.4	94.1	70.0-130			1.35	25
Heptane	3.75	3.51	3.47	93.6	92.5	70.0-130			1.13	25
Trichloroethylene	3.75	3.58	3.61	95.4	96.2	70.0-130			0.805	25
1,2-Dichloropropane	3.75	3.42	3.43	91.1	91.4	70.0-130			0.323	25
1,4-Dioxane	3.75	3.50	3.55	93.3	94.8	70.0-152			1.62	25
Bromodichloromethane	3.75	3.55	3.56	94.8	94.8	70.0-130			0.0659	25
cis-1,3-Dichloropropene	3.75	3.60	3.60	96.1	96.1	70.0-130			0.0186	25
4-Methyl-2-pentanone (MIBK)	3.75	3.48	3.54	92.8	94.4	70.0-142			1.66	25
Toluene	3.75	3.60	3.59	95.9	95.6	70.0-130			0.341	25
trans-1,3-Dichloropropene	3.75	3.59	3.58	95.7	95.5	70.0-130			0.233	25
1,1,2-Trichloroethane	3.75	3.60	3.61	96.1	96.2	70.0-130			0.0704	25
Tetrachloroethylene	3.75	3.88	3.89	104	104	70.0-130			0.120	25
Methyl Butyl Ketone	3.75	3.47	3.48	92.5	92.8	70.0-150			0.388	25
Dibromochloromethane	3.75	3.67	3.70	97.8	98.6	70.0-130			0.888	25
1,2-Dibromoethane	3.75	3.63	3.62	96.8	96.6	70.0-130			0.265	25
Chlorobenzene	3.75	3.63	3.65	96.8	97.3	70.0-130			0.564	25
Ethylbenzene	3.75	3.64	3.64	97.0	97.2	70.0-130			0.164	25

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

(LCS) R3274142-1 12/19/17 07:56 • (LCSD) R3274142-2 12/19/17 08:39

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
m&p-Xylene	7.50	7.51	7.46	100	99.4	70.0-130			0.775	25
o-Xylene	3.75	3.65	3.64	97.3	97.0	70.0-130			0.361	25
Styrene	3.75	3.90	3.79	104	101	70.0-130			2.85	25
Bromoform	3.75	4.10	4.05	109	108	70.0-130			1.21	25
1,1,2,2-Tetrachloroethane	3.75	3.56	3.52	94.8	93.7	70.0-130			1.16	25
4-Ethyltoluene	3.75	3.75	3.70	99.9	98.7	70.0-130			1.23	25
1,3,5-Trimethylbenzene	3.75	3.74	3.73	99.7	99.6	70.0-130			0.133	25
1,2,4-Trimethylbenzene	3.75	3.77	3.73	101	99.6	70.0-130			0.947	25
1,3-Dichlorobenzene	3.75	3.97	3.91	106	104	70.0-130			1.33	25
1,4-Dichlorobenzene	3.75	4.01	3.91	107	104	70.0-130			2.32	25
Benzyl Chloride	3.75	3.89	3.73	104	99.4	70.0-144			4.35	25
1,2-Dichlorobenzene	3.75	3.98	3.84	106	102	70.0-130			3.80	25
1,2,4-Trichlorobenzene	3.75	4.26	4.06	114	108	70.0-155			4.79	25
Hexachloro-1,3-butadiene	3.75	4.03	3.92	108	105	70.0-145			2.80	25
Naphthalene	3.75	3.92	3.63	105	96.8	70.0-155			7.73	25
Allyl Chloride	3.75	3.35	3.43	89.5	91.4	70.0-130			2.16	25
2-Chlorotoluene	3.75	3.79	3.83	101	102	70.0-130			1.06	25
Methyl Methacrylate	3.75	3.57	3.53	95.1	94.2	70.0-130			0.890	25
Tetrahydrofuran	3.75	3.38	3.43	90.1	91.5	70.0-140			1.54	25
2,2,4-Trimethylpentane	3.75	3.38	3.46	90.2	92.3	70.0-130			2.26	25
Vinyl Bromide	3.75	3.55	3.60	94.7	96.0	70.0-130			1.37	25
Isopropylbenzene	3.75	3.69	3.68	98.4	98.2	70.0-130			0.198	25
(S) 1,4-Bromofluorobenzene				*97.3*	*97.4*	*60.0-140*				

Method Blank (MB)

(MB) R3274049-3 12/19/17 08:18

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Oxygen	0.865	J	0.225	2.00
Carbon Monoxide	U		0.665	2.00
Carbon Dioxide	U		0.121	0.500
Methane	U		0.0584	0.400

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

(LCS) R3274049-1 12/19/17 08:04 • (LCSD) R3274049-2 12/19/17 08:10

Analyte	Spike Amount %	LCS Result %	LCSD Result %	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Oxygen	2.50	2.73	2.77	109	111	70.0-130			1.43	20
Carbon Monoxide	2.50	2.65	2.72	106	109	70.0-130			2.92	20
Carbon Dioxide	2.50	2.69	2.62	108	105	70.0-130			2.70	20
Methane	2.00	2.12	2.21	106	110	70.0-130			4.08	20

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, 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.
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.
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.

ESC Lab Sciences 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.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

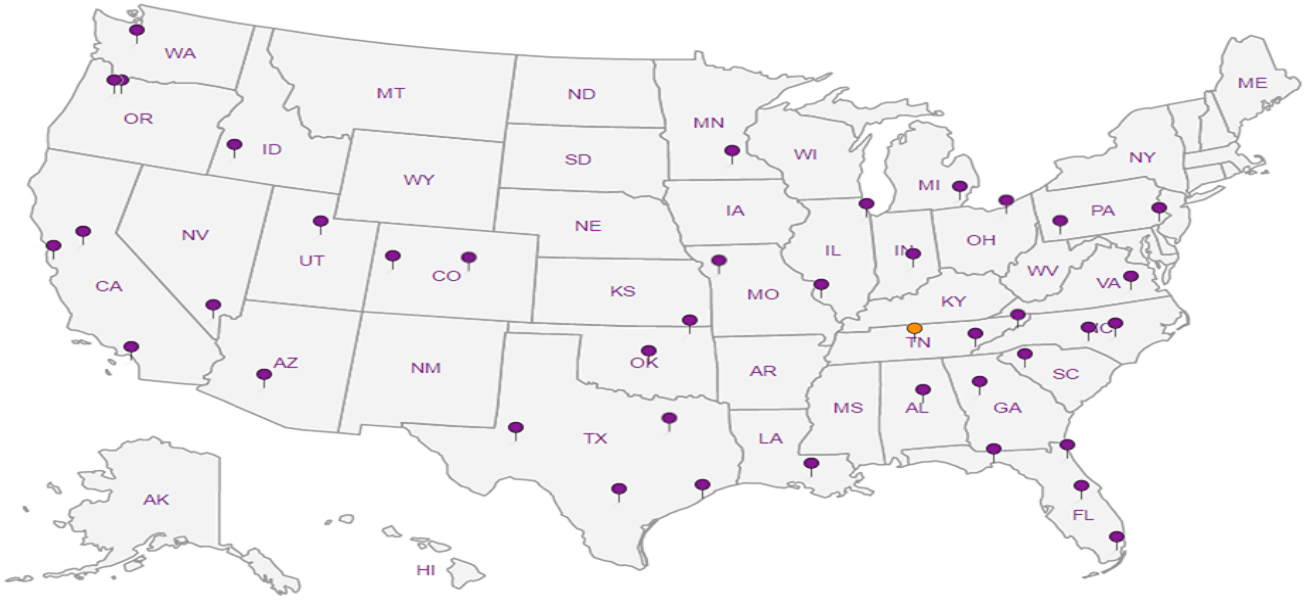
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

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

Our Locations

ESC Lab Sciences 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. **ESC Lab Sciences performs all testing at our central laboratory.**



Company Name/Address:
Terracon - Longmont
1242 Bramwood Pl.
Longmont, CO 80501

Billing Information: SAME

Report to: Michael Skridulis

Email To: mjskridilus@terracon.com

Project Description: **Longmont 8-10K**

City/State Collected: Longmont, CO

Phone: 303-776-3921
Fax: **303-776-4041**

Client Project # **22177046**

Lab Project #

Collected by (print): M. Skridulis

Site/Facility ID #

P.O. #

Collected by (signature): M. S

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed: STANDARD

Email? ___No X Yes
FAX? X No ___Yes

Canister Pressure/Vacuum

Analysis: VOC's TO-15 & Fixed Gasses-Methane, Ethane, Ethene

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 958122
M228
Tabl
Acctnum: TERRALCO
Template:
Prelogin:
TSR:
Cooler:
Shipped Via:

Sample ID	Sample Description	Can #	Date	Time	Initial	Final	VOC's TO-15 & Fixed Gasses-Methane	Ethane, Ethene			Rem./Contaminant	Sample # (lab only)
SVP-01	Soil Gas	8851	12/15/17	1130	26	8	X	X				01
SVP-02	↓	8769	↓	1220	26	9	X	X				02

Remarks: Fed ex: 4094 8307 4122

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
M. S	12/15/17	1330	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ____
Temp: AMB °C Bottles Received: 2
Date: 12/16/17 Time: 8:45

Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

ESC LAB SCIENCES
Cooler Receipt Form

Client:	TERRACO	SDG#	458122
Cooler Received/Opened On: 12/16/17		Temperature:	A.MB
Received by : Christian Kacar			
Signature:			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	/		
COC Signed / Accurate?		/	
Bottles arrive intact?		/	
Correct bottles used?		/	
Sufficient volume sent?		/	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			