Limited Soil, Groundwater, and Soil Gas Investigation

Mary #2 Oil and Gas Well Site
Longmont, Colorado

July 5, 2018
Terracon Project No. 22187008

Prepared for:
City of Longmont
Longmont, Colorado

Prepared by:
Terracon Consultants, Inc.
Longmont, Colorado

July 5, 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 Report
Mary #2 Oil and Gas Well Site
Longmont, Colorado
Terracon Project No. 22187011

Dear Mr. Elkins:

Terracon Consultants, Inc. (Terracon) is pleased to submit our report of Limited Soil, Groundwater, and Soil Gas Investigation activities completed at the site referenced above. Terracon conducted the Investigation in general accordance with our proposal (P22187008), dated January 29, 2018.

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. Skridulis
Environmental Department Manager

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

Terracon

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EXECUTIVE SUMMARY

This Limited Soil and Soil Gas Investigation was performed in accordance with the scope of services outlined in Terracon Proposal No. P22187008, dated January 29, 2018. A total of three soil borings (SB-01 through SB-03), which were converted to groundwater monitoring wells (MW-01 through MW-03), and two soil vapor points (SVP-01 through SVP-02) 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 silty clay and sandy silty from approximately 0 to 10 feet below ground surface (bgs), underlain by weathered claystone and claystone, sandstone, siltstone bedrock to soil boring termination. Groundwater was not observed during drilling activities. The depth to groundwater was later observed during well development activities and ranged from 17 to 20 feet bgs.

Volatile organic compound (VOC) constituents were not reported at concentrations above laboratory detection limits in any of the soil or groundwater samples collected.

Several inorganic parameters were reported above Colorado Department of Public Health and Environment (CDPHE) and Colorado Oil and Gas Conservation Commission (COGCC) Groundwater Standards. Dissolved iron was reported at a concentration above the allowed drinking water containment level from the CDPHE Groundwater Standards in MW-01 and MW-02. Chloride was reported at a concentration above COGCC Groundwater Standards in MW-01. Sulfate was reported at concentrations above COGCC Groundwater Standards in MW-01 and above CDPHE Groundwater Standards in MW-03. Nitrogen as nitrate was reported at a concentration above CDPHE Groundwater Standards in MW-01. Methane was reported at a concentration above the laboratory detection limit at MW-01 and MW-02.

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 2 of Appendix B and the laboratory report is provided in Appendix D of this report.

Ethylbenzene was reported above residential RSLs at SVP-01. After applying the 3% attenuation factor, the reported concentration of ethylbenzene does not represent a vapor intrusion concern for residential property.

Conclusions

Ethylbenzene was detected in soil gas at SVP-01, but is not considered a vapor intrusion concern for residential property. Although inorganics were detected above their respective regulatory values in site groundwater samples, based on the site history near former farming operations and the lack of other indicator chemicals of concern indicative of produced water spills, it is inconclusive whether historical O&G operations had any impact to the site groundwater. Based on the continued use of the site as a newly developed subdivision with city provided utilities and current depth to groundwater measurements, the groundwater at the site is not considered a risk to residential property. Sampling points are currently only installed on City of Longmont property. Due to the limited sampling points, it is currently unknown if any soil, groundwater, or soil gas is impacted off-site.

Recommendations

The objective of the investigation was to evaluate the presence of constituents of concern in the on-site soil, 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	Mary #2 O&G Well Site
Site Location	2227 Somerset Court, 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.

On May 2, 2017, the 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 provide information concerning the Mary #2 O&G well located within the City of Longmont and to assess the potential presence of surficial/subsurface soil, groundwater, or soil gas impacts and presence of methane and other gasses in the subsurface near the reported well location.

2.1 Background Evaluation

As outlined in Terracon's Research Summary Report, dated February 6, 2013, drilling of the Mary #2 well (API Number 05-013-06226) was reported as starting on December 6, 1985, and the well was reportedly drilled to 6362 feet bgs. Surface casing was set at 481 feet bgs.

Plugging and abandonment was reportedly started on August 9, 1989. A bridge plug with a cement cap was placed above the perforations. The cap is intended to isolate the perforations and prevent flow up the casing from the formation. The production casing was cut and the loose pipe recovered. A cement plug was placed above the casing cut. Cement plugs were also placed across the surface casing shoe and at the surface.

The water well search using the Colorado Department of Water Resources (DWR) online database indicated that no water wells were located within a 1,000 foot radius of the Mary #2 wellsite.

The land use of the wellsite during drilling and plugging activities was agricultural based on historical aerial photos. Currently, the wellsite is in open space within the Somerset Meadows Subdivision. There are new homes and townhomes built near the former well location with the closest residences approximately 50-feet to the south of the former Mary #2 wellhead location. Utilities located along the streets to the south, northeast, and northwest of the former wellhead service the residential housing.

A summary of sensitive receptors are outlined in the attached Table 4 in Appendix B.

2.2 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.

2.3 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.

2.4 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

A total of three soil borings (SB-01 through SB-03) and two soil vapor points (SVP-01 and SVP-02) were installed at the site using direct push drilling technology. Terracon was unable to complete the soil borings (SB-01 through SB-03) that were planned to be converted to groundwater monitoring wells (MW-01 through MW-03) on April 11, 2018 due to drilling refusal. Drilling refusal occurred in SB-01 at 23 feet below ground surface (bgs) and ground water was not observed during drilling. Therefore, Terracon returned to the site on April 16, 2018 to complete the soil borings as monitoring wells (MW-01 through MW-03) using hollow stem auger drilling methods. 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.

SAMPLING AND ANALYTICAL PROGRAM	
Area of Concern	**Mary #2 O&G Well Site**
Soil Borings (Total Depth)	SB-01 (41.5 feet) SB-02 and SB-03 (25 feet)
Groundwater	MW-01 through MW-03
Soil Vapor Points	SVP-01 through SVP-02

SAMPLING AND ANALYTICAL PROGRAM	
Area of Concern	**Mary #2 O&G Well Site**
Soil Analysis	VOCs/TPH-GRO – EPA 8260 TPH-DRO/ORO – EPA 8015
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

3.3 Field Procedures

3.3.1 Soil Boring Advancement

Drilling services were performed using a direct-push technology (DPT) Geoprobe® drilling rig on April 11, 2018 for facilitation of soil sample collection, and with a CME 55 drill rig using hollow stem on April 16, 2018 to install the monitoring wells. Oversight of the drilling activities was 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

Soil samples were taken on April 11, 2018. The soil borings were completed as groundwater monitoring wells on April 16, 2018. Monitoring wells were constructed to approximately 25 feet bgs using 2.0-inch diameter polyvinyl chloride (PVC) with 15 feet of factory slotted well screen and 10 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 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 soil boring logs presented in Appendix C.

On April 18, 2018 and April 25, 2018, 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 17.1 feet below top of monitoring well casing (TOC) in MW-01 to 19.55 feet below TOC in MW-02. 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 sampled after development and after they were allowed to recharge for a short time.

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

Terracon installed two SVPs at the site. SVP-01 and SVP-02 were installed on April 11, 2018 in the vicinity of the former O&G well head 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 8feet 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 April 25, 2018 (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 multi-gas meter, 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 1-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 silty clay and sandy silt from approximately 0 to 10 feet bgs, underlain by weathered claystone and claystone, sandstone, and/or siltstone bedrock to soil boring termination. Groundwater was not observed during drilling activities. The depth to groundwater was later observed during well development activities and ranged from approximately 17 to 20 feet bgs.

4.2 Field Screening

The field screening results are summarized on the boring logs contained in Appendix C. PID readings above 1 part per million (ppm) were only observed in soil boring SB-02 at a maximum concentration of 5.5 ppm at an approximate depth of 4 to 8 feet bgs.

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 Air Screening Concentrations (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

VOC, TPH-GRO, TPH-DRO, and TPH-ORO constituents were not reported at concentrations above laboratory detection limits in any of the soil samples collected during this investigation.

5.2 Groundwater Sample Results

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

VOC constituents were not reported at concentrations above laboratory detection limits in the groundwater samples collected from the monitoring wells 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 in micrograms per liter (µg/L):

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 well MW-01 (135,000 µg/L) exceeded the COGCC statistical regional background concentration standard of 52,160 µg/L but were below the CGWQS of 250,000 µg/L.

The sulfate concentration reported in groundwater samples collected from monitoring well MW-03 (570,000 µg/L) exceeded the CGWQS of 250,000 µg/L, but was below COGCC statistical regional background concentration standard of 832,400 µg/L. The sulfate concentration reported in groundwater samples collected from monitoring well MW-01 (2,070,000 µg/L) exceeded the CGWQS (250,000 µg/L) and the COGCC statistical regional background concentration standard of 832,400 µg/L.

Dissolved iron concentrations were reported in the groundwater samples collected from monitoring well MW-01 (13,500 µg/L) and MW-02 (152,000 µg/L) that exceeded the drinking water containment level CGWQS concentration of 300 to 5,000 µg/L.

Nitrogen as nitrate was reported in groundwater samples collected from monitoring well MW-01 (54,300 µg/L) above the CGWQS concentration of 10,000 µg/L.

Specific conductance was reported in the groundwater samples ranging from 1,023 to 4,209 micro Siemens per centimeter (µS/cm^3). 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 silts and clays.

Groundwater samples were reported to have a neutral pH (i.e. near 7.0), and within the CDPHE basic standard for groundwater range of 6.5 to 8.5; pH values in the monitoring wells measured during purging were reported in a range from 6.86 to 7.22.

Dissolved methane was reported at concentrations above laboratory detection limits in groundwater samples from MW-01 (12.8 µg/L) and MW-02 (25.5 µg/L). Although there is currently no regulatory limit established for dissolved methane in groundwater, based on general accepted environmental practices, 10,000 to 28,000 µg/L of dissolved methane in groundwater has been generally accepted as a threshold limit to warrant additional investigation. Concentrations of methane less than 10,000 µg/L are not considered an environmental risk, but should be monitored to observe if concentrations increase over time.

5.3 Soil Gas Sample Results

VOC constituents reported 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 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 laboratory detection limits and corresponding action levels are summarized in Table 2 (Appendix B).

Ethylbenzene was reported above residential RSLs at SVP-01. After applying the 3% attenuation factor, the reported concentration of ethylbenzene does not represent a vapor intrusion concern for residential property.

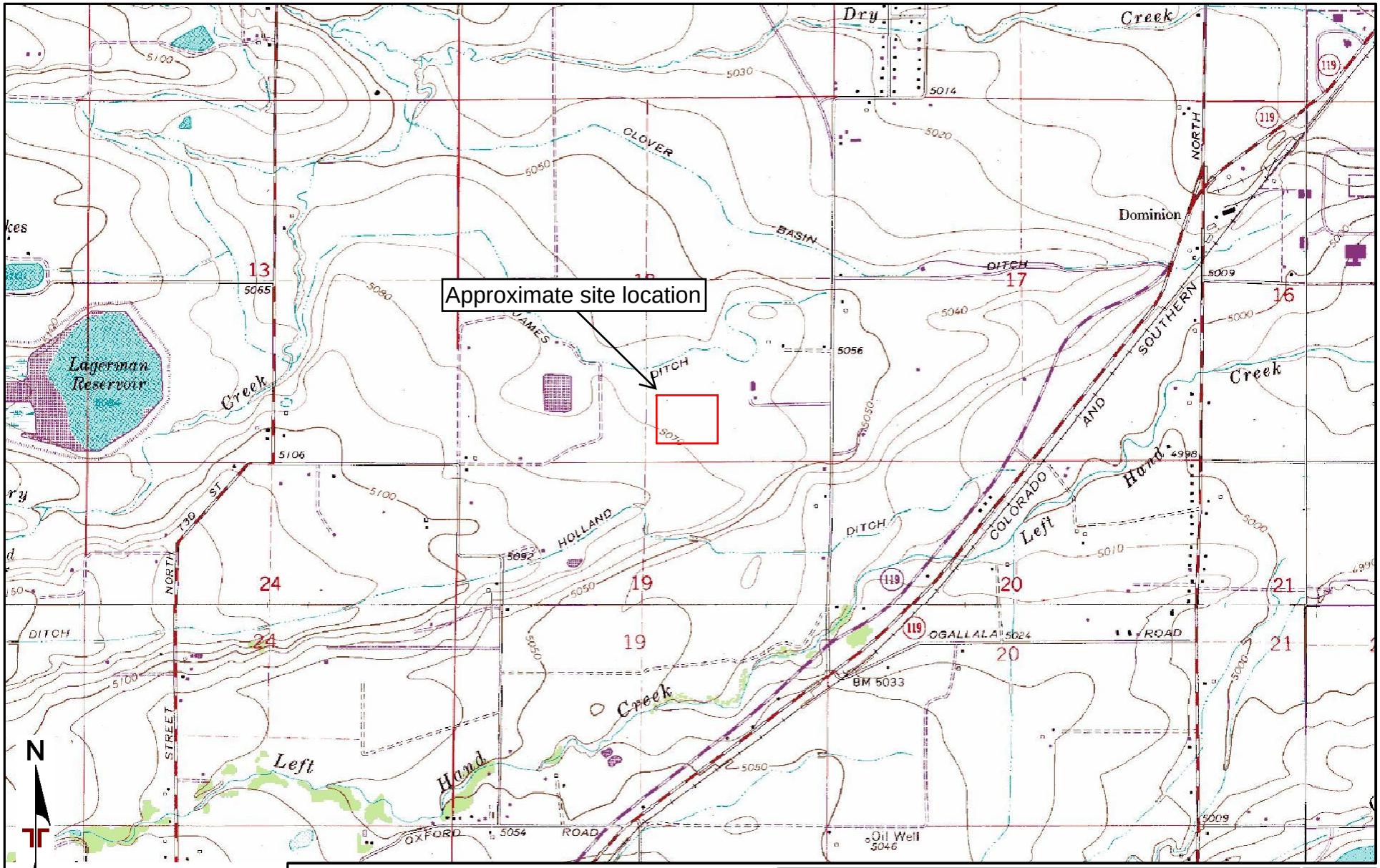
Methane was not reported in any of the soil gas samples collected as part of this investigation above its respective laboratory detection limit.

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: HYGIENE, CO (1/1/1979), LONGMONT, CO (1/1/1979), NIWOT, CO (1/1/1979) and ERIE, CO (1/1/1979).
DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	MJS
Drawn by:	ANS
Checked by:	JCG
Approved by:	JCG

Project No.	22187008
Scale:	1"=2,000'
File Name:	Figure
Date:	5/31/2018

Terracon
1242 Bramwood Pl
Longmont, CO 80501-6100

TOPOGRAPHIC MAP

Mary #2 PA O&G Well Site Investigation
Summerlin Drive & Glenneyre Drive
Longmont, CO

Exhibit
1

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	MJS
Drawn by:	ANS
Checked by:	JCG
Approved by:	JCG

Project No.	22187008
Scale:	AS SHOWN
File Name:	Figure
Date:	5/31/2018

Terracon
1242 Bramwood Pl
Longmont, CO 80501-6100

SITE DIAGRAM

Mary #2 PA O&G Well Site Investigation
Summerlin Drive & Glenneyre Drive
Longmont, CO

Exhibit

2

LEGEND:

MW-01 APPROXIMATE LOCATION OF MONITORING WELL

ESTIMATED GROUNDWATER FLOW DIRECTION

82.00 GROUNDWATER ELEVATION CONTOUR (0.5' INTERVAL)

0 25' 50' 100'

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

Project Mngr: MJS	Project No. 22187008
Drawn By: BMW	Scale: AS-SHOWN
Checked By: JCG	File No. 22187008.DWG
Approved By: JCG	Date: 06.20.2018

Terracon
Consulting Engineers and Scientists
1242 BRAMWOOD PLACE
LONGMONT, CO 80501-6100

GROUNDWATER ELEVATION MAP

Mary #2 PA O&G Well Site Investigation
Summerlin Drive & Glenneyre Drive
Longmont, Colorado

EXHIBIT No. 3

APPENDIX B – TABLES

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

Table 1
Groundwater Analytical Summary
Mary #2 Well Site
Longmont, Colorado
Terracon Project No. 22187008

Sample ID			MW-01	MW-02	MW-03
Collect Date			**4/18/18**	**4/18/18**	**4/25/18**
Parameter	**CDPHE Reg. 41 Groundwater Standard[1]**	**COGCC Concentration Levels[2]**	**µg/L**	**µg/L**	**µg/L**
VOC (8260B) - None Detected					
Other Organics					
Methane	**NE**	**NE**	**12.8**	**25.5**	<10
Ethane	**NE**	**NE**	<13	<13	<13
Ethene	**NE**	**NE**	<13	<13	<13
Inorganic Parameters					
Calcium, Dissolved	**NE**	**NE**	**388,000**	**342,000**	**112,000**
Iron, Dissolved	**300 to 5,000[M]**	**NE**	**13,500**	**152,000**	**2,310**
Magnesium, Dissolved	**NE**	**NE**	**286,000**	**210,000**	**79,300**
Potassium, Dissolved	**NE**	**NE**	**20,900**	**30,500**	**14,600**
Sodium, Dissolved	**NE**	**NE**	**50,300**	**196,000**	**242,000**
Strontium	**NE**	**NE**	**11,800**	**5,330**	**4,370**
Alkalinity, Total as CaCO3	**NE**	**NE**	**397,000**	**465,000**	**416,00**
Chloride	**250000**	**52,160***	**135,000**	**11,300**	**33,300**
Nitrogen as Nitrate	**10000**	**NE**	**54,300**	**485**	**5,610**
Nitrogen as Nitrite	**1000**	**NE**	**570**	<100	<100
Sulfate	**250000**	**832,400***	**2,070,000**	**148,000**	**570,000**
General Parameters					
Specific Conductance (mmhos)	**NE**	**NE**	4209.67	1023.5	1358.33
Temperature (°C)	**NE**	**NE**	14.68	13.87	15.39
Dissolved Oxygen (mg/L)	**NE**	**NE**	4.45	8.19	4.03
ORP	**NE**	**NE**	80.78	57.9	-63.3
pH	**6.5-8.5**	**NE**	6.87	7.22	6.86

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
VOC = Volatile Organic Compounds
NA = Not Analyzed
COGCC = Colorado Oil and Gas Conservation Comission
M = Drinking Water Maximum Contaminant Level

Table 2
Soil Gas Analytical Summary
Mary #2 Well Site
Longmont, Colorado
Terracon Project No. 22187008

Sample ID			SVP-01	SVP-02
Collect Date			**4/25/2018**	**4/25/2018**
Parameter	**Residential RSL**	**Residential VISL[1]**	**µg/m^3**	**µg/m^3**
VOC (TO-15)				
Acetone	**32,000**	**1,066,667**	**9.19**	**14.7**
1,3-Dichlorobenzene	**NE**	**NE**	**2.66**	<2.4
Ethanol	**NE**	**NE**	**6.21**	**24.5**
Ethylbenzene	**1.1**	**37**	**2.31**	<1.73
4-Ethyltoluene	**NE**	**NE**	**4.33**	<1.96
Dichlorodifluoromethane	**100**	**3,333**	**14.9**	<1.98
n-Hexane	**730**	**24,333**	**3.78**	**6.19**
Methylene Chloride	**100**	**3,333**	**1.59**	**30.3**
2-Propanol	**210**	**7,000**	**11.1**	<6.15
Tetrachloroethylene	**11**	**367**	**6.26**	<2.72
Toluene	**5,200**	**173,333**	**7.77**	**2.1**
1,2,4-Trimethylbenzene	**7.3**	**243**	**4.92**	<1.96
m&p-Xylene	**100**	**3,333**	**9.24**	<3.47
o-Xylene	**100**	**3,333**	**3.29**	<1.73
Methane by D1946 (%)				
Methane	**NE**	**NE**	<6,540	<6,540
Ethane	**NE**	**NE**	<12,300	<12,300
Ethene	**NE**	**NE**	<11,500	<11,500

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)
ASC = CDPHE Air Screening Concentrations, Remediation Goals (January 2016)
ND = Not Detected
NE = Not Established
NA = Not Applicable
Only detected analytes shown (detected concentrations are **bold**)

Receptor Worksheet
Maruyama #1 Oil and Gas Well

Lease:	Mary
Well Number:	#2
API Number:	05-013-06226
Operator	Universal Operating Company

Sensitive Receptor Detail

Receptor	Distance	Gradient[2]	Direction	Type of Receptor	Comments
Surface Water Body:	1.45 mile	Cross-Gradient	West	Reservoir	Lagerman Reservoir
Surface Water Body:	800 feet	Down-Gradient	North	Pond	Subdivision retentionpond.
Surface Water Body:	0.65 mile	Down-Gradient	Southeast	Creek	Left Hand Creek
Structure:	50 feet	Cross-Gradient	South	Residental Homes	Residential Neighborhood
Structure:	500 feet	Down-Gradient	East	Residental Homes	Residental Neighborhood
Structure:	700 feet	Down-Gradient	North	Residential Homes	Residential Neighborhood
Structure:	300 feet	Up-Gradient	Northwest	Residential Homes	Residential Neighborhood
Buried Utilities:	200 feet	Cross-Gradient	South	Public Utility	Utilities along street
Buried Utilities:	200 feet	Cross-Gradient	Northwest	Public Utility	Utilities along street
Buried Utilities:	200 feet	Down-Gradient	Northeast	Public Utility	Utilities along street
Water Well[1]:	>1,000 feet				

1) Water well information obtained from the Colorado Department of Water Resources online database.
2) Site specific gradient determined from Terracon's Limited Soil, Groundwater, and Soil Gas Investigation (December 14, 2017).
* Additional site and receptor information obtained from Colorado Oil and Gas Conservation Commission (COGCC) online database.

APPENDIX C – SOIL BORING LOGS

WELL LOG NO. SB-01 / MW-01

PROJECT: Mary # 2

CLIENT: City of Longmont
Longmont, Colorado

SITE:
Longmont, Colorado

LOCATION See Exhibit A-2

DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	SILTY CLAY (CL), tan, dry, grass at the surface	Well Completion:						
		2" diameter PVC riser					ND	
		bentonite (partially hydrated) seal around riseer	5				ND	
10.0							ND	SB-01 11-12'
	CLAYSTONE/SANDSTONE/SILTSTONE BEDROCK, tan, moist	2" diamerter PVC screen	10					
							ND	
		sand filter pack around screen	15					
				▽			ND	
			20				ND	
							ND	
			25			60	ND	

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:
Pnumatic drive

Abandonment Method:
Boring completed as groundwater monitoring

Notes:
Logged by MJS & DNS
ND indicates a photoionization (PID) reading of less than 1 parts per million (ppm)

WATER LEVEL OBSERVATIONS
Groundwater not observed during drilling
▽ *Observed 4/18/2018*

Terracon

Well Started: 04-16-2018 | Well Completed: 04-16-2018
Drill Rig: Geoprobe | Driller: DrillPro
Project No.: 22187008 | Exhibit: B-1

WELL LOG NO. SB-01 / MW-01

PROJECT: Mary # 2

CLIENT: City of Longmont
Longmont, Colorado

SITE:
Longmont, Colorado

LOCATION See Exhibit A-2

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	CLAYSTONE/SANDSTONE/SILTSTONE BEDROCK, tan, moist *(continued)*						
		30		X	50	ND	
		35		X	50	ND	
		40		X	50	ND	
41.5	***Boring Terminated at 41.5 Feet***						

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:
Pnumatic drive

Abandonment Method:
Boring completed as groundwater monitoring

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed during drilling

▽ *Observed 4/18/2018*

Terracon

Well Started: 04-16-2018 | Well Completed: 04-16-2018

Drill Rig: Geoprobe | Driller: DrillPro

Project No.: 22187008 | Exhibit: B-2

WELL LOG NO. SB-02 / MW-02

PROJECT: Mary # 2

CLIENT: City of Longmont
Longmont, Colorado

SITE:
Longmont, Colorado

LOCATION See Exhibit A-2

DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.0	**SANDY SILT (ML)**, tan, dry, grass at the surface	Well Completion: 2" diameter PVC riser	60	3.1	
		bentonite (partially hydrated) seal around riseer	60	5.5	
7.0	**CLAYSTONE BEDROCK**, tan, moist		60	0.8	
		2" diamerter PVC screen	95	ND	SB-02 12-13'
		sand filter pack around screen	100	ND	
25.0	***Boring Terminated at 25 Feet***			ND	

DEPTH (ft): 5, 10, 15, 20, 25

WATER LEVEL OBSERVATIONS

SAMPLE TYPE

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:
Pnumatic drive

Abandonment Method:
Boring completed as groundwater monitoring

Notes:
Logged by DNS
ND indicates a photoionization (PID) reading of less than 1 parts per million (ppm)

WATER LEVEL OBSERVATIONS
Groundwater not observed during drilling
Observed 4/18/2018

Terracon

Well Started: 04-16-2018
Well Completed: 04-16-2018
Drill Rig: Geoprobe
Driller: DrillPro
Project No.: 22187008
Exhibit: B-3

WELL LOG NO. SB-03 / MW-03

PROJECT: Mary # 2

CLIENT: City of Longmont
Longmont, Colorado

SITE:
Longmont, Colorado

LOCATION See Exhibit A-2

DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS (Well Completion:)	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	SILTY SAND (SM), tan, dry, grass at the surface	2" diameter PVC riser				60	ND	
		bentonite (partially hydrated) seal around riseer	5			60	ND	
6.0	**CLAYSTONE/SANDSTONE BEDROCK**, tan, moist					70	ND	SB-03 11-12'
		2" diamerter PVC screen	10			95	ND	
		sand filter pack around screen	15			95	ND	
			20	▽		95	ND	
25.0	***Boring Terminated at 25 Feet***		25					

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:
Hollow Stem Auger

Abandonment Method:
Boring completed as groundwater monitoring

Notes:
Logged by DNS
ND indicates a photoionization (PID) reading of less than 1 parts per million (ppm)

WATER LEVEL OBSERVATIONS
Groundwater not observed during drilling
▽ *Observed 4/25/2018*

Terracon

Well Started: 04-16-2018 | Well Completed: 04-16-2018
Drill Rig: CME 55 | Driller: DrillPro
Project No.: 22187008 | Exhibit: B-4

WELL LOG NO. SB-05 / SVP-01

PROJECT: Mary # 2

CLIENT: City of Longmont
Longmont, Colorado

SITE:
Longmont, Colorado

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH MATERIAL DESCRIPTION	INSTALLATION DETAILS Well Completion:	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	SILTY CLAY (CL-ML), trace gravel, tan, dry, grass at the surface	top cap bentonite seal screen pack in sand	5					
	10.0 ***Boring Terminated at 10 Feet***		10					

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:
Hollow Stem Auger

Abandonment Method:
Boring completed as soil vapor point

Notes:
Logged by MJS
ND indicates a photoionization (PID) reading of less than 1 parts per million (ppm)

WATER LEVEL OBSERVATIONS
Groundwater not observed during drilling

Terracon

Well Started: 04-11-2018 | Well Completed: 04-11-2018
Drill Rig: CME 55 | Driller: DrillPro
Project No.: 22187008 | Exhibit: B-5

WELL LOG NO. SB-06 / SVP-02

PROJECT: Mary # 2

CLIENT: City of Longmont
Longmont, Colorado

SITE:
Longmont, Colorado

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH MATERIAL DESCRIPTION	INSTALLATION DETAILS Well Completion:	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	SILTY CLAY (CL-ML), trace gravel, tan, dry, grass at the surface	top cap bentonite seal screen pack in sand	5					
	10.0 ***Boring Terminated at 10 Feet***		10					

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:
Hollow Stem Auger

Abandonment Method:
Boring completed as soil vapor point

Notes:
Logged by MJS
ND indicates a photoionization (PID) reading of less than 1 parts per million (ppm)

WATER LEVEL OBSERVATIONS
Groundwater not observed during drilling

Terracon

Well Started: 04-11-2018 | Well Completed: 04-11-2018
Drill Rig: CME 55 | Driller: DrillPro
Project No.: 22187008 | Exhibit: B-6

APPENDIX D – ANALYTICAL REPORTS AND CHAINS OF CUSTODY

ANALYTICAL REPORT

April 17, 2018

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L985167
Samples Received:	04/12/2018
Project Number:	22187008
Description:	Mary #2

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

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
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 (11-12) L985167-01 Solid

Collected by: M. Skridulis
Collected date/time: 04/11/18 11:15
Received date/time: 04/12/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1097707	1	04/12/18 15:34	04/13/18 19:54	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1097585	1	04/13/18 06:22	04/13/18 20:37	AAT

SB-02 (12-13) L985167-02 Solid

Collected by: M. Skridulis
Collected date/time: 04/11/18 12:15
Received date/time: 04/12/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1097707	1	04/12/18 15:34	04/13/18 20:16	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1097585	1	04/13/18 06:22	04/13/18 20:50	AAT

SB-03 (11-12) L985167-03 Solid

Collected by: M. Skridulis
Collected date/time: 04/11/18 12:40
Received date/time: 04/12/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1097707	1	04/12/18 15:34	04/13/18 20:37	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1097585	1	04/13/18 06:22	04/13/18 21:04	AAT

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All 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 Richards
Technical Service Representative

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/MS) Low Fraction	ND		0.500	1	04/13/2018 19:54	WG1097707
Benzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,2-Dichloroethane	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,2-Dibromoethane	ND		0.00100	1	04/13/2018 19:54	WG1097707
Ethylbenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
Methyl tert-butyl ether	ND		0.00100	1	04/13/2018 19:54	WG1097707
Naphthalene	ND		0.00500	1	04/13/2018 19:54	WG1097707
Toluene	ND		0.00500	1	04/13/2018 19:54	WG1097707
Xylenes, Total	ND		0.00300	1	04/13/2018 19:54	WG1097707
Acetone	ND		0.0500	1	04/13/2018 19:54	WG1097707
Acrylonitrile	ND		0.0100	1	04/13/2018 19:54	WG1097707
Bromobenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
Bromodichloromethane	ND		0.00100	1	04/13/2018 19:54	WG1097707
Bromoform	ND		0.00100	1	04/13/2018 19:54	WG1097707
Bromomethane	ND		0.00500	1	04/13/2018 19:54	WG1097707
n-Butylbenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
sec-Butylbenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
tert-Butylbenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
Carbon tetrachloride	ND		0.00100	1	04/13/2018 19:54	WG1097707
Chlorobenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
Chlorodibromomethane	ND		0.00100	1	04/13/2018 19:54	WG1097707
Chloroethane	ND		0.00500	1	04/13/2018 19:54	WG1097707
Chloroform	ND		0.00500	1	04/13/2018 19:54	WG1097707
Chloromethane	ND		0.00250	1	04/13/2018 19:54	WG1097707
2-Chlorotoluene	ND		0.00100	1	04/13/2018 19:54	WG1097707
4-Chlorotoluene	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	04/13/2018 19:54	WG1097707
Dibromomethane	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,2-Dichlorobenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,3-Dichlorobenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,4-Dichlorobenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
Dichlorodifluoromethane	ND		0.00500	1	04/13/2018 19:54	WG1097707
1,1-Dichloroethane	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,1-Dichloroethene	ND		0.00100	1	04/13/2018 19:54	WG1097707
cis-1,2-Dichloroethene	ND		0.00100	1	04/13/2018 19:54	WG1097707
trans-1,2-Dichloroethene	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,2-Dichloropropane	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,1-Dichloropropene	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,3-Dichloropropane	ND		0.00100	1	04/13/2018 19:54	WG1097707
cis-1,3-Dichloropropene	ND		0.00100	1	04/13/2018 19:54	WG1097707
trans-1,3-Dichloropropene	ND		0.00100	1	04/13/2018 19:54	WG1097707
2,2-Dichloropropane	ND		0.00100	1	04/13/2018 19:54	WG1097707
Di-isopropyl ether	ND		0.00100	1	04/13/2018 19:54	WG1097707
Hexachloro-1,3-butadiene	ND		0.00100	1	04/13/2018 19:54	WG1097707
Isopropylbenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
p-Isopropyltoluene	ND		0.00100	1	04/13/2018 19:54	WG1097707
2-Butanone (MEK)	ND		0.0100	1	04/13/2018 19:54	WG1097707
Methylene Chloride	ND		0.00500	1	04/13/2018 19:54	WG1097707
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	04/13/2018 19:54	WG1097707
n-Propylbenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
Styrene	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,1,1,2-Tetrachloroethane	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,1,2,2-Tetrachloroethane	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	04/13/2018 19:54	WG1097707
Tetrachloroethene	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,2,3-Trichlorobenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,1,1-Trichloroethane	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,1,2-Trichloroethane	ND		0.00100	1	04/13/2018 19:54	WG1097707
Trichloroethene	ND		0.00100	1	04/13/2018 19:54	WG1097707
Trichlorofluoromethane	ND		0.00500	1	04/13/2018 19:54	WG1097707
1,2,3-Trichloropropane	ND		0.00250	1	04/13/2018 19:54	WG1097707
1,2,4-Trimethylbenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,2,3-Trimethylbenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
1,3,5-Trimethylbenzene	ND		0.00100	1	04/13/2018 19:54	WG1097707
Vinyl chloride	ND		0.00100	1	04/13/2018 19:54	WG1097707
(S) Toluene-d8	*103*		*80.0-120*		*04/13/2018 19:54*	WG1097707
(S) Dibromofluoromethane	*99.3*		*74.0-131*		*04/13/2018 19:54*	WG1097707
(S) 4-Bromofluorobenzene	*94.0*		*64.0-132*		*04/13/2018 19:54*	WG1097707

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	04/13/2018 20:37	WG1097585
C28-C40 Oil Range	ND		4.00	1	04/13/2018 20:37	WG1097585
(S) o-Terphenyl	*46.4*		*18.0-148*		*04/13/2018 20:37*	WG1097585

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/MS) Low Fraction	ND		0.500	1	04/13/2018 20:16	WG1097707
Benzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,2-Dichloroethane	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,2-Dibromoethane	ND		0.00100	1	04/13/2018 20:16	WG1097707
Ethylbenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
Methyl tert-butyl ether	ND		0.00100	1	04/13/2018 20:16	WG1097707
Naphthalene	ND		0.00500	1	04/13/2018 20:16	WG1097707
Toluene	ND		0.00500	1	04/13/2018 20:16	WG1097707
Xylenes, Total	ND		0.00300	1	04/13/2018 20:16	WG1097707
Acetone	ND		0.0500	1	04/13/2018 20:16	WG1097707
Acrylonitrile	ND		0.0100	1	04/13/2018 20:16	WG1097707
Bromobenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
Bromodichloromethane	ND		0.00100	1	04/13/2018 20:16	WG1097707
Bromoform	ND		0.00100	1	04/13/2018 20:16	WG1097707
Bromomethane	ND		0.00500	1	04/13/2018 20:16	WG1097707
n-Butylbenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
sec-Butylbenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
tert-Butylbenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
Carbon tetrachloride	ND		0.00100	1	04/13/2018 20:16	WG1097707
Chlorobenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
Chlorodibromomethane	ND		0.00100	1	04/13/2018 20:16	WG1097707
Chloroethane	ND		0.00500	1	04/13/2018 20:16	WG1097707
Chloroform	ND		0.00500	1	04/13/2018 20:16	WG1097707
Chloromethane	ND		0.00250	1	04/13/2018 20:16	WG1097707
2-Chlorotoluene	ND		0.00100	1	04/13/2018 20:16	WG1097707
4-Chlorotoluene	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	04/13/2018 20:16	WG1097707
Dibromomethane	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,2-Dichlorobenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,3-Dichlorobenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,4-Dichlorobenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
Dichlorodifluoromethane	ND		0.00500	1	04/13/2018 20:16	WG1097707
1,1-Dichloroethane	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,1-Dichloroethene	ND		0.00100	1	04/13/2018 20:16	WG1097707
cis-1,2-Dichloroethene	ND		0.00100	1	04/13/2018 20:16	WG1097707
trans-1,2-Dichloroethene	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,2-Dichloropropane	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,1-Dichloropropene	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,3-Dichloropropane	ND		0.00100	1	04/13/2018 20:16	WG1097707
cis-1,3-Dichloropropene	ND		0.00100	1	04/13/2018 20:16	WG1097707
trans-1,3-Dichloropropene	ND		0.00100	1	04/13/2018 20:16	WG1097707
2,2-Dichloropropane	ND		0.00100	1	04/13/2018 20:16	WG1097707
Di-isopropyl ether	ND		0.00100	1	04/13/2018 20:16	WG1097707
Hexachloro-1,3-butadiene	ND		0.00100	1	04/13/2018 20:16	WG1097707
Isopropylbenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
p-Isopropyltoluene	ND		0.00100	1	04/13/2018 20:16	WG1097707
2-Butanone (MEK)	ND		0.0100	1	04/13/2018 20:16	WG1097707
Methylene Chloride	ND		0.00500	1	04/13/2018 20:16	WG1097707
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	04/13/2018 20:16	WG1097707
n-Propylbenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
Styrene	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,1,1,2-Tetrachloroethane	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,1,2,2-Tetrachloroethane	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	04/13/2018 20:16	WG1097707
Tetrachloroethene	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,2,3-Trichlorobenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,1,1-Trichloroethane	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,1,2-Trichloroethane	ND		0.00100	1	04/13/2018 20:16	WG1097707
Trichloroethene	ND		0.00100	1	04/13/2018 20:16	WG1097707
Trichlorofluoromethane	ND		0.00500	1	04/13/2018 20:16	WG1097707
1,2,3-Trichloropropane	ND		0.00250	1	04/13/2018 20:16	WG1097707
1,2,4-Trimethylbenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,2,3-Trimethylbenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
1,3,5-Trimethylbenzene	ND		0.00100	1	04/13/2018 20:16	WG1097707
Vinyl chloride	ND		0.00100	1	04/13/2018 20:16	WG1097707
(S) Toluene-d8	*103*		*80.0-120*		*04/13/2018 20:16*	WG1097707
(S) Dibromofluoromethane	*98.3*		*74.0-131*		*04/13/2018 20:16*	WG1097707
(S) 4-Bromofluorobenzene	*96.5*		*64.0-132*		*04/13/2018 20:16*	WG1097707

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	04/13/2018 20:50	WG1097585
C28-C40 Oil Range	ND		4.00	1	04/13/2018 20:50	WG1097585
(S) o-Terphenyl	*88.6*		*18.0-148*		*04/13/2018 20:50*	WG1097585

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/MS) Low Fraction	ND		0.500	1	04/13/2018 20:37	WG1097707
Benzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,2-Dichloroethane	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,2-Dibromoethane	ND		0.00100	1	04/13/2018 20:37	WG1097707
Ethylbenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
Methyl tert-butyl ether	ND		0.00100	1	04/13/2018 20:37	WG1097707
Naphthalene	ND		0.00500	1	04/13/2018 20:37	WG1097707
Toluene	ND		0.00500	1	04/13/2018 20:37	WG1097707
Xylenes, Total	ND		0.00300	1	04/13/2018 20:37	WG1097707
Acetone	ND		0.0500	1	04/13/2018 20:37	WG1097707
Acrylonitrile	ND		0.0100	1	04/13/2018 20:37	WG1097707
Bromobenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
Bromodichloromethane	ND		0.00100	1	04/13/2018 20:37	WG1097707
Bromoform	ND		0.00100	1	04/13/2018 20:37	WG1097707
Bromomethane	ND		0.00500	1	04/13/2018 20:37	WG1097707
n-Butylbenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
sec-Butylbenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
tert-Butylbenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
Carbon tetrachloride	ND		0.00100	1	04/13/2018 20:37	WG1097707
Chlorobenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
Chlorodibromomethane	ND		0.00100	1	04/13/2018 20:37	WG1097707
Chloroethane	ND		0.00500	1	04/13/2018 20:37	WG1097707
Chloroform	ND		0.00500	1	04/13/2018 20:37	WG1097707
Chloromethane	ND		0.00250	1	04/13/2018 20:37	WG1097707
2-Chlorotoluene	ND		0.00100	1	04/13/2018 20:37	WG1097707
4-Chlorotoluene	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	04/13/2018 20:37	WG1097707
Dibromomethane	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,2-Dichlorobenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,3-Dichlorobenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,4-Dichlorobenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
Dichlorodifluoromethane	ND		0.00500	1	04/13/2018 20:37	WG1097707
1,1-Dichloroethane	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,1-Dichloroethene	ND		0.00100	1	04/13/2018 20:37	WG1097707
cis-1,2-Dichloroethene	ND		0.00100	1	04/13/2018 20:37	WG1097707
trans-1,2-Dichloroethene	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,2-Dichloropropane	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,1-Dichloropropene	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,3-Dichloropropane	ND		0.00100	1	04/13/2018 20:37	WG1097707
cis-1,3-Dichloropropene	ND		0.00100	1	04/13/2018 20:37	WG1097707
trans-1,3-Dichloropropene	ND		0.00100	1	04/13/2018 20:37	WG1097707
2,2-Dichloropropane	ND		0.00100	1	04/13/2018 20:37	WG1097707
Di-isopropyl ether	ND		0.00100	1	04/13/2018 20:37	WG1097707
Hexachloro-1,3-butadiene	ND		0.00100	1	04/13/2018 20:37	WG1097707
Isopropylbenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
p-Isopropyltoluene	ND		0.00100	1	04/13/2018 20:37	WG1097707
2-Butanone (MEK)	ND		0.0100	1	04/13/2018 20:37	WG1097707
Methylene Chloride	ND		0.00500	1	04/13/2018 20:37	WG1097707
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	04/13/2018 20:37	WG1097707
n-Propylbenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
Styrene	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,1,1,2-Tetrachloroethane	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,1,2,2-Tetrachloroethane	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	04/13/2018 20:37	WG1097707
Tetrachloroethene	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,2,3-Trichlorobenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,1,1-Trichloroethane	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,1,2-Trichloroethane	ND		0.00100	1	04/13/2018 20:37	WG1097707
Trichloroethene	ND		0.00100	1	04/13/2018 20:37	WG1097707
Trichlorofluoromethane	ND		0.00500	1	04/13/2018 20:37	WG1097707
1,2,3-Trichloropropane	ND		0.00250	1	04/13/2018 20:37	WG1097707
1,2,4-Trimethylbenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,2,3-Trimethylbenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
1,3,5-Trimethylbenzene	ND		0.00100	1	04/13/2018 20:37	WG1097707
Vinyl chloride	ND		0.00100	1	04/13/2018 20:37	WG1097707
(S) Toluene-d8	*100*		*80.0-120*		*04/13/2018 20:37*	WG1097707
(S) Dibromofluoromethane	*103*		*74.0-131*		*04/13/2018 20:37*	WG1097707
(S) 4-Bromofluorobenzene	*94.5*		*64.0-132*		*04/13/2018 20:37*	WG1097707

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	04/13/2018 21:04	WG1097585
C28-C40 Oil Range	ND		4.00	1	04/13/2018 21:04	WG1097585
(S) o-Terphenyl	*67.3*		*18.0-148*		*04/13/2018 21:04*	WG1097585

Method Blank (MB)

(MB) R3301875-4 04/13/18 18:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/MS) Low Fraction	U		0.183	0.500
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

Method Blank (MB)

(MB) R3301875-4 04/13/18 18:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Isopropylbenzene	U		0.000243	0.00100
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	*110*			*80.0-120*
(S) Dibromofluoromethane	*92.5*			*74.0-131*
(S) 4-Bromofluorobenzene	*98.0*			*64.0-132*

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

(LCS) R3301875-1 04/13/18 16:40 • (LCSD) R3301875-2 04/13/18 17:01

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	0.146	0.145	117	116	11.0-160			0.803	23
Acrylonitrile	0.125	0.136	0.140	109	112	61.0-143			2.61	20
Benzene	0.0250	0.0245	0.0245	98.0	97.9	71.0-124			0.150	20
Bromobenzene	0.0250	0.0230	0.0235	91.9	93.9	78.0-120			2.14	20

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

(LCS) R3301875-1 04/13/18 16:40 • (LCSD) R3301875-2 04/13/18 17:01

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 %
Bromodichloromethane	0.0250	0.0248	0.0254	99.3	102	75.0-120			2.28	20
Bromoform	0.0250	0.0255	0.0261	102	105	65.0-133			2.50	20
Bromomethane	0.0250	0.0232	0.0233	92.7	93.3	26.0-160			0.625	20
n-Butylbenzene	0.0250	0.0232	0.0233	92.7	93.3	73.0-126			0.671	20
sec-Butylbenzene	0.0250	0.0243	0.0248	97.2	99.3	75.0-121			2.16	20
tert-Butylbenzene	0.0250	0.0247	0.0251	98.6	100	74.0-122			1.62	20
Carbon tetrachloride	0.0250	0.0244	0.0243	97.6	97.4	66.0-123			0.265	20
Chlorobenzene	0.0250	0.0257	0.0259	103	104	79.0-121			0.982	20
Chlorodibromomethane	0.0250	0.0263	0.0266	105	106	74.0-128			1.14	20
Chloroethane	0.0250	0.0224	0.0223	89.5	89.3	51.0-147			0.185	20
Chloroform	0.0250	0.0248	0.0249	99.1	99.8	73.0-123			0.718	20
Chloromethane	0.0250	0.0224	0.0223	89.6	89.0	51.0-138			0.680	20
2-Chlorotoluene	0.0250	0.0240	0.0243	96.1	97.1	72.0-124			1.09	20
4-Chlorotoluene	0.0250	0.0226	0.0230	90.4	92.1	78.0-120			1.83	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0251	0.0256	101	102	65.0-126			1.77	20
1,2-Dibromoethane	0.0250	0.0265	0.0263	106	105	78.0-122			0.605	20
Dibromomethane	0.0250	0.0254	0.0258	102	103	79.0-120			1.80	20
1,2-Dichlorobenzene	0.0250	0.0246	0.0255	98.5	102	80.0-120			3.37	20
1,3-Dichlorobenzene	0.0250	0.0240	0.0247	96.2	98.7	72.0-123			2.55	20
1,4-Dichlorobenzene	0.0250	0.0229	0.0234	91.6	93.6	77.0-120			2.16	20
Dichlorodifluoromethane	0.0250	0.0197	0.0195	78.9	77.8	49.0-155			1.42	20
1,1-Dichloroethane	0.0250	0.0254	0.0258	102	103	70.0-128			1.39	20
1,2-Dichloroethane	0.0250	0.0252	0.0257	101	103	69.0-128			1.91	20
1,1-Dichloroethene	0.0250	0.0249	0.0242	99.5	96.7	63.0-131			2.89	20
cis-1,2-Dichloroethene	0.0250	0.0245	0.0251	98.2	100	74.0-123			2.15	20
trans-1,2-Dichloroethene	0.0250	0.0250	0.0254	100	101	72.0-122			1.43	20
1,2-Dichloropropane	0.0250	0.0265	0.0264	106	106	75.0-126			0.0455	20
1,1-Dichloropropene	0.0250	0.0245	0.0248	98.2	99.0	72.0-130			0.878	20
1,3-Dichloropropane	0.0250	0.0254	0.0256	102	102	80.0-121			0.707	20
cis-1,3-Dichloropropene	0.0250	0.0257	0.0262	103	105	80.0-125			2.09	20
trans-1,3-Dichloropropene	0.0250	0.0258	0.0268	103	107	75.0-129			3.61	20
2,2-Dichloropropane	0.0250	0.0244	0.0251	97.6	101	60.0-129			3.04	20
Di-isopropyl ether	0.0250	0.0260	0.0263	104	105	62.0-133			1.17	20
Ethylbenzene	0.0250	0.0258	0.0258	103	103	77.0-120			0.0922	20
Hexachloro-1,3-butadiene	0.0250	0.0268	0.0278	107	111	68.0-128			3.76	20
Isopropylbenzene	0.0250	0.0243	0.0246	97.2	98.4	75.0-120			1.25	20
p-Isopropyltoluene	0.0250	0.0251	0.0254	100	102	74.0-125			1.42	20
2-Butanone (MEK)	0.125	0.143	0.146	114	117	37.0-159			2.35	20
Methylene Chloride	0.0250	0.0243	0.0244	97.2	97.7	67.0-123			0.526	20
4-Methyl-2-pentanone (MIBK)	0.125	0.143	0.144	114	115	60.0-144			0.756	20

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

(LCS) R3301875-1 04/13/18 16:40 • (LCSD) R3301875-2 04/13/18 17:01

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 %
Methyl tert-butyl ether	0.0250	0.0264	0.0267	106	107	66.0-125			1.08	20
Naphthalene	0.0250	0.0247	0.0255	98.6	102	64.0-125			3.23	20
n-Propylbenzene	0.0250	0.0238	0.0240	95.2	96.1	78.0-120			0.917	20
Styrene	0.0250	0.0241	0.0245	96.5	98.1	78.0-124			1.67	20
1,1,1,2-Tetrachloroethane	0.0250	0.0267	0.0269	107	108	74.0-124			0.617	20
1,1,2,2-Tetrachloroethane	0.0250	0.0249	0.0251	99.5	100	73.0-120			1.01	20
Tetrachloroethene	0.0250	0.0267	0.0267	107	107	70.0-127			0.110	20
Toluene	0.0250	0.0251	0.0248	101	99.0	77.0-120			1.50	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0262	0.0258	105	103	64.0-135			1.40	20
1,2,3-Trichlorobenzene	0.0250	0.0248	0.0260	99.1	104	68.0-126			4.88	20
1,2,4-Trichlorobenzene	0.0250	0.0229	0.0240	91.4	96.0	70.0-127			4.92	20
1,1,1-Trichloroethane	0.0250	0.0253	0.0259	101	104	69.0-125			2.51	20
1,1,2-Trichloroethane	0.0250	0.0254	0.0255	102	102	78.0-120			0.336	20
Trichloroethene	0.0250	0.0269	0.0269	108	108	79.0-120			0.0169	20
Trichlorofluoromethane	0.0250	0.0246	0.0245	98.3	98.1	59.0-136			0.203	20
1,2,3-Trichloropropane	0.0250	0.0245	0.0253	97.9	101	73.0-124			3.45	20
1,2,3-Trimethylbenzene	0.0250	0.0240	0.0244	96.0	97.7	76.0-120			1.74	20
1,2,4-Trimethylbenzene	0.0250	0.0243	0.0243	97.2	97.3	75.0-120			0.0471	20
1,3,5-Trimethylbenzene	0.0250	0.0246	0.0246	98.3	98.2	75.0-120			0.133	20
Vinyl chloride	0.0250	0.0239	0.0238	95.6	95.3	63.0-134			0.279	20
Xylenes, Total	0.0750	0.0792	0.0786	106	105	77.0-120			0.760	20
(S) Toluene-d8				*107*	*105*	*80.0-120*				
(S) Dibromofluoromethane				*91.1*	*94.8*	*74.0-131*				
(S) 4-Bromofluorobenzene				*90.1*	*91.7*	*64.0-132*				

Laboratory Control Sample (LCS)

(LCS) R3301875-3 04/13/18 17:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/MS) Low Fraction	5.00	5.30	106	59.0-157	
(S) Toluene-d8			*107*	*80.0-120*	
(S) Dibromofluoromethane			*88.3*	*74.0-131*	
(S) 4-Bromofluorobenzene			*94.8*	*64.0-132*	

Method Blank (MB)

(MB) R3301906-1 04/13/18 18:06

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*102*			*18.0-148*

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

(LCS) R3301906-2 04/13/18 18:20 • (LCSD) R3301906-3 04/13/18 18:34

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 %
C10-C28 Diesel Range	50.0	45.5	47.6	91.0	95.3	50.0-150			4.66	20
(S) o-Terphenyl				*96.8*	*106*	*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.
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

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

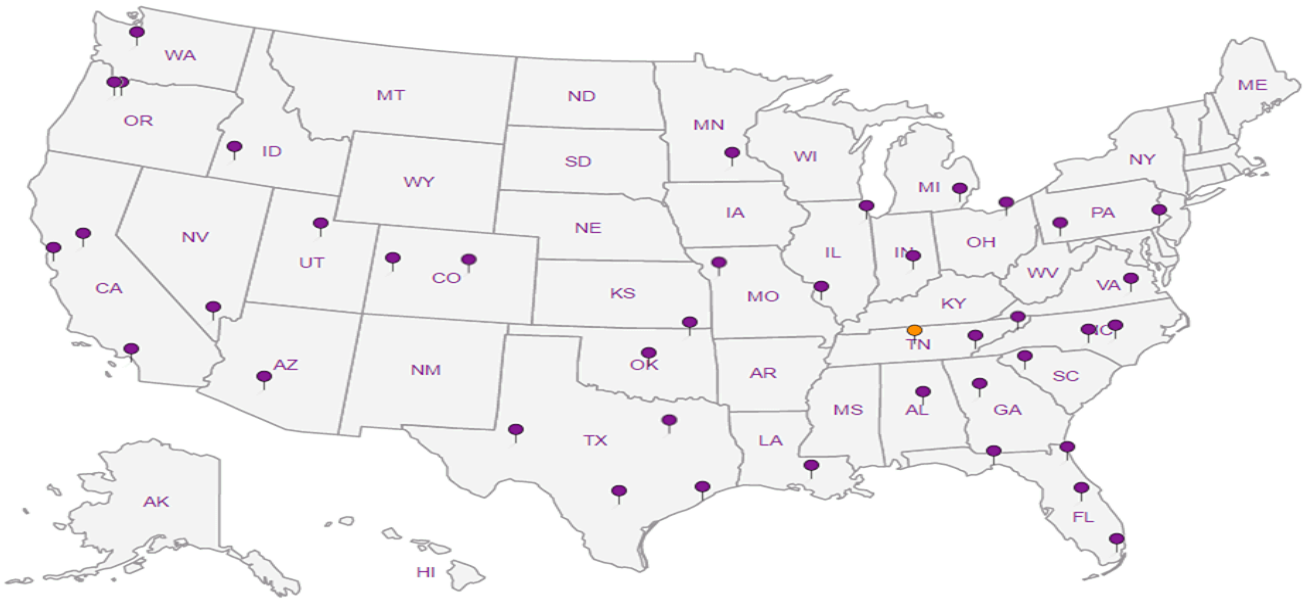
Third Party Federal Accreditations

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

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

Our Locations

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.



Terracon Consultants, Inc
1242 Bramwood Place
Longmont, CO 80501

Billing Information: SAME

Pres Chk

Report to: Mike Skridulis

Email To: Mike.Skridulis@terracon.com

Project Description: Mary #2

City/State Collected: Longmont CO

Phone: 303-454-5249
Fax:

Client Project # 22187008

Lab Project #

Collected by (print): M. Skridulis

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: STANDARD

Analysis / Container / Preservative

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# 985167

G091

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

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC's/TPH-GRO by 8260	TPH-DRO/ORO by 8015	Remarks	Sample # (lab only)
SB-01 (11-12)	G	SS		4/11/18	1115	2	X	X		-01
SB-02 (12-13)	↓	↓		↓	1215	2	X	X		-02
SB-03 (11-12)	↓	↓		↓	1240	2	X	X		-03

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

Remarks: Fedex: 4094 8307 3869

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking #

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	4/11/18	1430	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: 0.3 °C Bottles Received: 6

Date: 4/12/18 Time: 845

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

April 25, 2018

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L986951
Samples Received:	04/19/2018
Project Number:	22187008
Description:	Mary #2
Site:	MARY #2
Report To:	Michael Skridulis 1242 Bramwood Place Longmont, CO 80501

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
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.

TABLE OF CONTENTS

MW-01 L986951-01 GW

Collected by: Drew Stephens
Collected date/time: 04/18/18 13:30
Received date/time: 04/19/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1101239	1	04/23/18 06:19	04/23/18 06:19	MCG
Wet Chemistry by Method 4500CO2 D-2011	WG1101239	1	04/23/18 06:19	04/23/18 06:19	MCG
Wet Chemistry by Method 9056A	WG1100335	1	04/19/18 16:14	04/19/18 16:14	MCG
Wet Chemistry by Method 9056A	WG1100335	5	04/19/18 16:26	04/19/18 16:26	MCG
Wet Chemistry by Method 9056A	WG1100335	50	04/19/18 22:56	04/19/18 22:56	MCG
Metals (ICP) by Method 6010B	WG1100433	1	04/20/18 13:10	04/24/18 12:13	TRB
Metals (ICP) by Method 6010B	WG1100433	1	04/20/18 13:10	04/25/18 02:02	TRB
Volatile Organic Compounds (GC) by Method RSK175	WG1100789	1	04/20/18 10:49	04/20/18 10:49	AMC
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1100684	1	04/19/18 20:57	04/19/18 20:57	RAS

MW-02 L986951-02 GW

Collected by: Drew Stephens
Collected date/time: 04/18/18 13:45
Received date/time: 04/19/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1101239	1	04/23/18 06:26	04/23/18 06:26	MCG
Wet Chemistry by Method 4500CO2 D-2011	WG1101239	1	04/23/18 06:26	04/23/18 06:26	MCG
Wet Chemistry by Method 9056A	WG1100335	1	04/19/18 17:03	04/19/18 17:03	MCG
Wet Chemistry by Method 9056A	WG1100335	5	04/19/18 23:08	04/19/18 23:08	MCG
Metals (ICP) by Method 6010B	WG1100433	1	04/20/18 13:10	04/24/18 12:16	TRB
Metals (ICP) by Method 6010B	WG1100433	1	04/20/18 13:10	04/25/18 02:10	TRB
Volatile Organic Compounds (GC) by Method RSK175	WG1100789	1	04/20/18 10:51	04/20/18 10:51	AMC
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1100684	1	04/19/18 21:17	04/19/18 21:17	RAS

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All 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 Richards
Technical Service Representative

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	397		20.0	1	04/23/2018 06:19	WG1101239

Sample Narrative:
L986951-01 WG1101239: Endpoint pH 4.5 Headspace

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	04/23/2018 06:19	WG1101239

Sample Narrative:
L986951-01 WG1101239: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		5.00	5	04/19/2018 16:26	WG1100335
Chloride	135		5.00	5	04/19/2018 16:26	WG1100335
Nitrate as (N)	54.3		5.00	50	04/19/2018 22:56	WG1100335
Nitrite as (N)	0.570		0.100	1	04/19/2018 16:14	WG1100335
Sulfate	2070		250	50	04/19/2018 22:56	WG1100335

Sample Narrative:
L986951-01 WG1100335: REPORTING BR BDL AT DILUTION DUE TO SULFATE MASKING

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium	388		1.00	1	04/24/2018 12:13	WG1100433
Iron	13.5		0.100	1	04/24/2018 12:13	WG1100433
Magnesium	286		1.00	1	04/24/2018 12:13	WG1100433
Potassium	20.9		1.00	1	04/24/2018 12:13	WG1100433
Sodium	503		1.00	1	04/25/2018 02:02	WG1100433
Strontium	11.8		0.0100	1	04/24/2018 12:13	WG1100433

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	0.0128		0.0100	1	04/20/2018 10:49	WG1100789
Ethane	ND		0.0130	1	04/20/2018 10:49	WG1100789
Ethene	ND		0.0130	1	04/20/2018 10:49	WG1100789

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	04/19/2018 20:57	WG1100684
Acrolein	ND		0.0500	1	04/19/2018 20:57	WG1100684
Acrylonitrile	ND		0.0100	1	04/19/2018 20:57	WG1100684
Benzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
Bromobenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
Bromodichloromethane	ND		0.00100	1	04/19/2018 20:57	WG1100684
Bromoform	ND		0.00100	1	04/19/2018 20:57	WG1100684
Bromomethane	ND		0.00500	1	04/19/2018 20:57	WG1100684

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
n-Butylbenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
sec-Butylbenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
tert-Butylbenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
Carbon tetrachloride	ND		0.00100	1	04/19/2018 20:57	WG1100684
Chlorobenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
Chlorodibromomethane	ND		0.00100	1	04/19/2018 20:57	WG1100684
Chloroethane	ND		0.00500	1	04/19/2018 20:57	WG1100684
Chloroform	ND		0.00500	1	04/19/2018 20:57	WG1100684
Chloromethane	ND		0.00250	1	04/19/2018 20:57	WG1100684
2-Chlorotoluene	ND		0.00100	1	04/19/2018 20:57	WG1100684
4-Chlorotoluene	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	04/19/2018 20:57	WG1100684
1,2-Dibromoethane	ND		0.00100	1	04/19/2018 20:57	WG1100684
Dibromomethane	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,2-Dichlorobenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,3-Dichlorobenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,4-Dichlorobenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
Dichlorodifluoromethane	ND		0.00500	1	04/19/2018 20:57	WG1100684
1,1-Dichloroethane	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,2-Dichloroethane	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,1-Dichloroethene	ND		0.00100	1	04/19/2018 20:57	WG1100684
cis-1,2-Dichloroethene	ND		0.00100	1	04/19/2018 20:57	WG1100684
trans-1,2-Dichloroethene	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,2-Dichloropropane	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,1-Dichloropropene	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,3-Dichloropropane	ND		0.00100	1	04/19/2018 20:57	WG1100684
cis-1,3-Dichloropropene	ND		0.00100	1	04/19/2018 20:57	WG1100684
trans-1,3-Dichloropropene	ND		0.00100	1	04/19/2018 20:57	WG1100684
2,2-Dichloropropane	ND		0.00100	1	04/19/2018 20:57	WG1100684
Di-isopropyl ether	ND		0.00100	1	04/19/2018 20:57	WG1100684
Ethylbenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
Hexachloro-1,3-butadiene	ND		0.00100	1	04/19/2018 20:57	WG1100684
Isopropylbenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
p-Isopropyltoluene	ND		0.00100	1	04/19/2018 20:57	WG1100684
2-Butanone (MEK)	ND		0.0100	1	04/19/2018 20:57	WG1100684
Methylene Chloride	ND		0.00500	1	04/19/2018 20:57	WG1100684
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	04/19/2018 20:57	WG1100684
Methyl tert-butyl ether	ND		0.00100	1	04/19/2018 20:57	WG1100684
Naphthalene	ND		0.00500	1	04/19/2018 20:57	WG1100684
n-Propylbenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
Styrene	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,1,1,2-Tetrachloroethane	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,1,2,2-Tetrachloroethane	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	04/19/2018 20:57	WG1100684
Tetrachloroethene	ND		0.00100	1	04/19/2018 20:57	WG1100684
Toluene	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,2,3-Trichlorobenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,2,4-Trichlorobenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,1,1-Trichloroethane	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,1,2-Trichloroethane	ND		0.00100	1	04/19/2018 20:57	WG1100684
Trichloroethene	ND		0.00100	1	04/19/2018 20:57	WG1100684
Trichlorofluoromethane	ND		0.00500	1	04/19/2018 20:57	WG1100684
1,2,3-Trichloropropane	ND		0.00250	1	04/19/2018 20:57	WG1100684
1,2,4-Trimethylbenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,2,3-Trimethylbenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684
1,3,5-Trimethylbenzene	ND		0.00100	1	04/19/2018 20:57	WG1100684

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Vinyl chloride	ND		0.00100	1	04/19/2018 20:57	WG1100684
Xylenes, Total	ND		0.00300	1	04/19/2018 20:57	WG1100684
(S) Toluene-d8	*108*		*80.0-120*		*04/19/2018 20:57*	WG1100684
(S) Dibromofluoromethane	*87.1*		*76.0-123*		*04/19/2018 20:57*	WG1100684
(S) 4-Bromofluorobenzene	*104*		*80.0-120*		*04/19/2018 20:57*	WG1100684

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	465		20.0	1	04/23/2018 06:26	WG1101239

Sample Narrative:
L986951-02 WG1101239: Endpoint pH 4.5 Headspace

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	04/23/2018 06:26	WG1101239

Sample Narrative:
L986951-02 WG1101239: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	04/19/2018 17:03	WG1100335
Chloride	11.3		1.00	1	04/19/2018 17:03	WG1100335
Nitrate as (N)	0.485		0.100	1	04/19/2018 17:03	WG1100335
Nitrite as (N)	ND		0.100	1	04/19/2018 17:03	WG1100335
Sulfate	148		25.0	5	04/19/2018 23:08	WG1100335

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium	342		1.00	1	04/24/2018 12:16	WG1100433
Iron	152		0.100	1	04/24/2018 12:16	WG1100433
Magnesium	210		1.00	1	04/24/2018 12:16	WG1100433
Potassium	30.5		1.00	1	04/24/2018 12:16	WG1100433
Sodium	196		1.00	1	04/25/2018 02:10	WG1100433
Strontium	5.33		0.0100	1	04/24/2018 12:16	WG1100433

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	0.0255		0.0100	1	04/20/2018 10:51	WG1100789
Ethane	ND		0.0130	1	04/20/2018 10:51	WG1100789
Ethene	ND		0.0130	1	04/20/2018 10:51	WG1100789

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	04/19/2018 21:17	WG1100684
Acrolein	ND		0.0500	1	04/19/2018 21:17	WG1100684
Acrylonitrile	ND		0.0100	1	04/19/2018 21:17	WG1100684
Benzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
Bromobenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
Bromodichloromethane	ND		0.00100	1	04/19/2018 21:17	WG1100684
Bromoform	ND		0.00100	1	04/19/2018 21:17	WG1100684
Bromomethane	ND		0.00500	1	04/19/2018 21:17	WG1100684
n-Butylbenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
sec-Butylbenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
tert-Butylbenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684

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	04/19/2018 21:17	WG1100684
Chlorobenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
Chlorodibromomethane	ND		0.00100	1	04/19/2018 21:17	WG1100684
Chloroethane	ND		0.00500	1	04/19/2018 21:17	WG1100684
Chloroform	ND		0.00500	1	04/19/2018 21:17	WG1100684
Chloromethane	ND		0.00250	1	04/19/2018 21:17	WG1100684
2-Chlorotoluene	ND		0.00100	1	04/19/2018 21:17	WG1100684
4-Chlorotoluene	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	04/19/2018 21:17	WG1100684
1,2-Dibromoethane	ND		0.00100	1	04/19/2018 21:17	WG1100684
Dibromomethane	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,2-Dichlorobenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,3-Dichlorobenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,4-Dichlorobenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
Dichlorodifluoromethane	ND		0.00500	1	04/19/2018 21:17	WG1100684
1,1-Dichloroethane	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,2-Dichloroethane	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,1-Dichloroethene	ND		0.00100	1	04/19/2018 21:17	WG1100684
cis-1,2-Dichloroethene	ND		0.00100	1	04/19/2018 21:17	WG1100684
trans-1,2-Dichloroethene	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,2-Dichloropropane	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,1-Dichloropropene	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,3-Dichloropropane	ND		0.00100	1	04/19/2018 21:17	WG1100684
cis-1,3-Dichloropropene	ND		0.00100	1	04/19/2018 21:17	WG1100684
trans-1,3-Dichloropropene	ND		0.00100	1	04/19/2018 21:17	WG1100684
2,2-Dichloropropane	ND		0.00100	1	04/19/2018 21:17	WG1100684
Di-isopropyl ether	ND		0.00100	1	04/19/2018 21:17	WG1100684
Ethylbenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
Hexachloro-1,3-butadiene	ND		0.00100	1	04/19/2018 21:17	WG1100684
Isopropylbenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
p-Isopropyltoluene	ND		0.00100	1	04/19/2018 21:17	WG1100684
2-Butanone (MEK)	ND		0.0100	1	04/19/2018 21:17	WG1100684
Methylene Chloride	ND		0.00500	1	04/19/2018 21:17	WG1100684
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	04/19/2018 21:17	WG1100684
Methyl tert-butyl ether	ND		0.00100	1	04/19/2018 21:17	WG1100684
Naphthalene	ND		0.00500	1	04/19/2018 21:17	WG1100684
n-Propylbenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
Styrene	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,1,1,2-Tetrachloroethane	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,1,2,2-Tetrachloroethane	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	04/19/2018 21:17	WG1100684
Tetrachloroethene	ND		0.00100	1	04/19/2018 21:17	WG1100684
Toluene	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,2,3-Trichlorobenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,2,4-Trichlorobenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,1,1-Trichloroethane	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,1,2-Trichloroethane	ND		0.00100	1	04/19/2018 21:17	WG1100684
Trichloroethene	ND		0.00100	1	04/19/2018 21:17	WG1100684
Trichlorofluoromethane	ND		0.00500	1	04/19/2018 21:17	WG1100684
1,2,3-Trichloropropane	ND		0.00250	1	04/19/2018 21:17	WG1100684
1,2,4-Trimethylbenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,2,3-Trimethylbenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
1,3,5-Trimethylbenzene	ND		0.00100	1	04/19/2018 21:17	WG1100684
Vinyl chloride	ND		0.00100	1	04/19/2018 21:17	WG1100684
Xylenes, Total	ND		0.00300	1	04/19/2018 21:17	WG1100684
(S) Toluene-d8	*107*		*80.0-120*		*04/19/2018 21:17*	WG1100684

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
(S) Dibromofluoromethane	*88.4*		*76.0-123*		*04/19/2018 21:17*	WG1100684
(S) 4-Bromofluorobenzene	*105*		*80.0-120*		*04/19/2018 21:17*	WG1100684

L986259-02 Original Sample (OS) • Duplicate (DUP)

(OS) L986259-02 04/23/18 03:48 • (DUP) R3303780-1 04/23/18 03:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	109	110	1	1.47		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L987192-01 Original Sample (OS) • Duplicate (DUP)

(OS) L987192-01 04/23/18 06:51 • (DUP) R3303780-5 04/23/18 06:59

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	144	145	1	0.630		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

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

(LCS) R3303780-3 04/23/18 05:03 • (LCSD) R3303780-4 04/23/18 06:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Alkalinity	100	98.3	101	98.3	101	85.0-115			3.10	20

Sample Narrative:

LCS: Endpoint pH 4.5

LCSD: Endpoint pH 4.5

L986259-02 Original Sample (OS) • Duplicate (DUP)

(OS) L986259-02 04/23/18 03:48 • (DUP) R3303780-2 04/23/18 03:56

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

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L987192-01 Original Sample (OS) • Duplicate (DUP)

(OS) L987192-01 04/23/18 06:51 • (DUP) R3303780-6 04/23/18 06:59

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

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

Method Blank (MB)

(MB) R3303269-1 04/19/18 12:02

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

L986943-01 Original Sample (OS) • Duplicate (DUP)

(OS) L986943-01 04/19/18 15:24 • (DUP) R3303269-4 04/19/18 15:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	0.000	1	0.000		15
Chloride	ND	0.801	1	1.92	J	15
Nitrate	ND	0.0889	1	29.3	J P1	15
Nitrite	ND	0.000	1	0.000		15
Sulfate	10.2	10.5	1	3.11		15

L987004-01 Original Sample (OS) • Duplicate (DUP)

(OS) L987004-01 04/19/18 17:16 • (DUP) R3303269-7 04/19/18 17:28

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	0.122	0.128	1	4.73	J	15
Chloride	14.0	14.1	1	1.07		15
Nitrate	3.96	4.32	1	8.68		15
Nitrite	U	0.000	1	0.000		15
Sulfate	14.0	14.0	1	0.0869		15

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

(LCS) R3303269-2 04/19/18 12:14 • (LCSD) R3303269-3 04/19/18 12:26

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	40.2	100	100	80.0-120			0.177	15
Chloride	40.0	39.5	39.5	98.8	98.7	80.0-120			0.171	15
Nitrate	8.00	8.10	8.10	101	101	80.0-120			0.0272	15
Nitrite	8.00	7.95	7.95	99.4	99.4	80.0-120			0.0629	15

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

(LCS) R3303269-2 04/19/18 12:14 • (LCSD) R3303269-3 04/19/18 12:26

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 %
Sulfate	40.0	40.4	40.3	101	101	80.0-120			0.0652	15

L986943-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L986943-01 04/19/18 15:24 • (MS) R3303269-5 04/19/18 15:49 • (MSD) R3303269-6 04/19/18 16:01

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	ND	48.8	50.2	97.6	100	1	80.0-120			2.71	15
Chloride	50.0	ND	51.1	51.4	101	101	1	80.0-120			0.509	15
Nitrate	5.00	ND	4.93	5.12	97.3	101	1	80.0-120			3.68	15
Nitrite	5.00	ND	5.09	5.14	102	103	1	80.0-120			0.921	15
Sulfate	50.0	10.2	60.8	60.5	101	100	1	80.0-120			0.536	15

L987004-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L987004-01 04/19/18 17:16 • (MS) R3303269-8 04/19/18 17:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	0.122	47.9	95.5	1	80.0-120	
Chloride	50.0	14.0	63.0	98.0	1	80.0-120	
Nitrate	5.00	3.96	8.80	96.8	1	80.0-120	
Nitrite	5.00	U	5.00	100	1	80.0-120	
Sulfate	50.0	14.0	63.7	99.3	1	80.0-120	

Method Blank (MB)

(MB) R3304437-1 04/24/18 11:21

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0463	1.00
Iron	U		0.0141	0.100
Magnesium	0.0121	J	0.0111	1.00
Potassium	0.224	J	0.102	1.00
Strontium	U		0.00170	0.0100

Method Blank (MB)

(MB) R3304437-7 04/25/18 01:42

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0463	1.00
Iron	U		0.0141	0.100
Magnesium	U		0.0111	1.00
Potassium	0.141	J	0.102	1.00
Sodium	0.147	J	0.0985	1.00
Strontium	U		0.00170	0.0100

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

(LCS) R3304437-2 04/24/18 11:24 • (LCSD) R3304437-3 04/24/18 11:26

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	10.0	10.3	10.1	103	101	80.0-120			1.90	20
Iron	10.0	10.2	10.0	102	100	80.0-120			1.73	20
Magnesium	10.0	10.7	10.4	107	104	80.0-120			2.19	20
Potassium	10.0	10.7	10.5	107	105	80.0-120			2.38	20
Strontium	1.00	1.03	1.01	103	101	80.0-120			1.93	20

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

(LCS) R3304437-8 04/25/18 01:44 • (LCSD) R3304437-9 04/25/18 01:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium	10.0	10.5	10.4	105	104	80.0-120			1.11	20
Iron	10.0	10.4	10.3	104	103	80.0-120			1.37	20
Magnesium	10.0	11.0	10.9	110	109	80.0-120			1.10	20
Potassium	10.0	10.9	10.8	109	108	80.0-120			1.08	20
Sodium	10.0	10.5	10.4	105	104	80.0-120			1.20	20

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

(LCS) R3304437-8 04/25/18 01:44 • (LCSD) R3304437-9 04/25/18 01:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Strontium	1.00	1.04	1.03	104	103	80.0-120			1.08	20

L987021-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L987021-02 04/24/18 11:29 • (MS) R3304437-5 04/24/18 11:34 • (MSD) R3304437-6 04/24/18 11:36

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	10.0	124	132	131	80.3	73.5	1	75.0-125		V	0.523	20
Iron	10.0	ND	10.4	10.1	103	101	1	75.0-125			2.50	20
Magnesium	10.0	17.3	27.2	27.1	99.3	98.2	1	75.0-125			0.432	20
Potassium	10.0	5.58	16.0	15.8	104	102	1	75.0-125			1.37	20
Strontium	1.00	1.12	2.14	2.11	102	98.7	1	75.0-125			1.51	20

L987021-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L987021-02 04/25/18 01:49 • (MS) R3304437-11 04/25/18 01:54 • (MSD) R3304437-12 04/25/18 01:57

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 %
Sodium	10.0	112	121	120	86.8	78.0	1	75.0-125			0.739	20

Method Blank (MB)

(MB) R3303435-1 04/20/18 10:41

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

L986943-01 Original Sample (OS) • Duplicate (DUP)

(OS) L986943-01 04/20/18 10:44 • (DUP) R3303435-2 04/20/18 10:53

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

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

(LCS) R3303435-3 04/20/18 10:55 • (LCSD) R3303435-4 04/20/18 10:58

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	0.0743	0.0766	110	113	85.0-115			3.02	20
Ethane	0.129	0.120	0.121	92.7	93.8	85.0-115			1.22	20
Ethene	0.127	0.123	0.124	96.8	97.9	85.0-115			1.10	20

Method Blank (MB)

(MB) R3303987-1 04/19/18 18:30

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) R3303987-1 04/19/18 18:30

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	*106*			*80.0-120*
(S) Dibromofluoromethane	*87.6*			*76.0-123*
(S) 4-Bromofluorobenzene	*104*			*80.0-120*

Laboratory Control Sample (LCS)

(LCS) R3303987-2 04/19/18 18:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.125	0.0952	76.2	10.0-160	
Acrolein	0.125	0.102	81.4	10.0-160	
Acrylonitrile	0.125	0.135	108	60.0-142	
Benzene	0.0250	0.0229	91.7	69.0-123	

Laboratory Control Sample (LCS)

(LCS) R3303987-2 04/19/18 18:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromobenzene	0.0250	0.0248	99.1	79.0-120	
Bromodichloromethane	0.0250	0.0241	96.3	76.0-120	
Bromoform	0.0250	0.0249	99.8	67.0-132	
Bromomethane	0.0250	0.0135	53.9	18.0-160	
n-Butylbenzene	0.0250	0.0254	102	72.0-126	
sec-Butylbenzene	0.0250	0.0259	103	74.0-121	
tert-Butylbenzene	0.0250	0.0259	104	75.0-122	
Carbon tetrachloride	0.0250	0.0229	91.5	63.0-122	
Chlorobenzene	0.0250	0.0247	98.8	79.0-121	
Chlorodibromomethane	0.0250	0.0247	98.8	75.0-125	
Chloroethane	0.0250	0.0220	88.1	47.0-152	
Chloroform	0.0250	0.0225	90.0	72.0-121	
Chloromethane	0.0250	0.0183	73.3	48.0-139	
2-Chlorotoluene	0.0250	0.0255	102	74.0-122	
4-Chlorotoluene	0.0250	0.0257	103	79.0-120	
1,2-Dibromo-3-Chloropropane	0.0250	0.0285	114	64.0-127	
1,2-Dibromoethane	0.0250	0.0251	100	77.0-123	
Dibromomethane	0.0250	0.0237	94.7	78.0-120	
1,2-Dichlorobenzene	0.0250	0.0240	96.0	80.0-120	
1,3-Dichlorobenzene	0.0250	0.0245	98.1	72.0-123	
1,4-Dichlorobenzene	0.0250	0.0234	93.5	77.0-120	
Dichlorodifluoromethane	0.0250	0.0190	76.0	49.0-155	
1,1-Dichloroethane	0.0250	0.0229	91.8	70.0-126	
1,2-Dichloroethane	0.0250	0.0220	87.9	67.0-126	
1,1-Dichloroethene	0.0250	0.0227	90.7	64.0-129	
cis-1,2-Dichloroethene	0.0250	0.0218	87.2	73.0-120	
trans-1,2-Dichloroethene	0.0250	0.0236	94.3	71.0-121	
1,2-Dichloropropane	0.0250	0.0251	101	75.0-125	
1,1-Dichloropropene	0.0250	0.0239	95.8	71.0-129	
1,3-Dichloropropane	0.0250	0.0244	97.5	80.0-121	
cis-1,3-Dichloropropene	0.0250	0.0256	102	79.0-123	
trans-1,3-Dichloropropene	0.0250	0.0250	100	74.0-127	
2,2-Dichloropropane	0.0250	0.0227	90.9	60.0-125	
Di-isopropyl ether	0.0250	0.0227	90.9	59.0-133	
Ethylbenzene	0.0250	0.0258	103	77.0-120	
Hexachloro-1,3-butadiene	0.0250	0.0230	91.9	64.0-131	
Isopropylbenzene	0.0250	0.0266	106	75.0-120	
p-Isopropyltoluene	0.0250	0.0258	103	74.0-126	
2-Butanone (MEK)	0.125	0.122	97.4	37.0-158	
Methylene Chloride	0.0250	0.0208	83.4	66.0-121	

Laboratory Control Sample (LCS)

(LCS) R3303987-2 04/19/18 18:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
4-Methyl-2-pentanone (MIBK)	0.125	0.139	112	59.0-143	
Methyl tert-butyl ether	0.0250	0.0220	88.1	64.0-123	
Naphthalene	0.0250	0.0259	103	62.0-128	
n-Propylbenzene	0.0250	0.0260	104	79.0-120	
Styrene	0.0250	0.0271	108	78.0-124	
1,1,1,2-Tetrachloroethane	0.0250	0.0257	103	75.0-122	
1,1,2,2-Tetrachloroethane	0.0250	0.0259	103	71.0-122	
Tetrachloroethene	0.0250	0.0250	99.8	70.0-127	
Toluene	0.0250	0.0249	99.6	77.0-120	
1,1,2-Trichlorotrifluoroethane	0.0250	0.0231	92.3	61.0-136	
1,2,3-Trichlorobenzene	0.0250	0.0235	94.0	61.0-133	
1,2,4-Trichlorobenzene	0.0250	0.0239	95.7	69.0-129	
1,1,1-Trichloroethane	0.0250	0.0233	93.1	68.0-122	
1,1,2-Trichloroethane	0.0250	0.0242	97.0	78.0-120	
Trichloroethene	0.0250	0.0236	94.5	78.0-120	
Trichlorofluoromethane	0.0250	0.0213	85.4	56.0-137	
1,2,3-Trichloropropane	0.0250	0.0268	107	72.0-124	
1,2,3-Trimethylbenzene	0.0250	0.0252	101	75.0-120	
1,2,4-Trimethylbenzene	0.0250	0.0254	102	75.0-120	
1,3,5-Trimethylbenzene	0.0250	0.0257	103	75.0-120	
Vinyl chloride	0.0250	0.0212	84.8	64.0-133	
Xylenes, Total	0.0750	0.0788	105	77.0-120	
(S) Toluene-d8			*102*	*80.0-120*	
(S) Dibromofluoromethane			*90.1*	*76.0-123*	
(S) 4-Bromofluorobenzene			*103*	*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.
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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

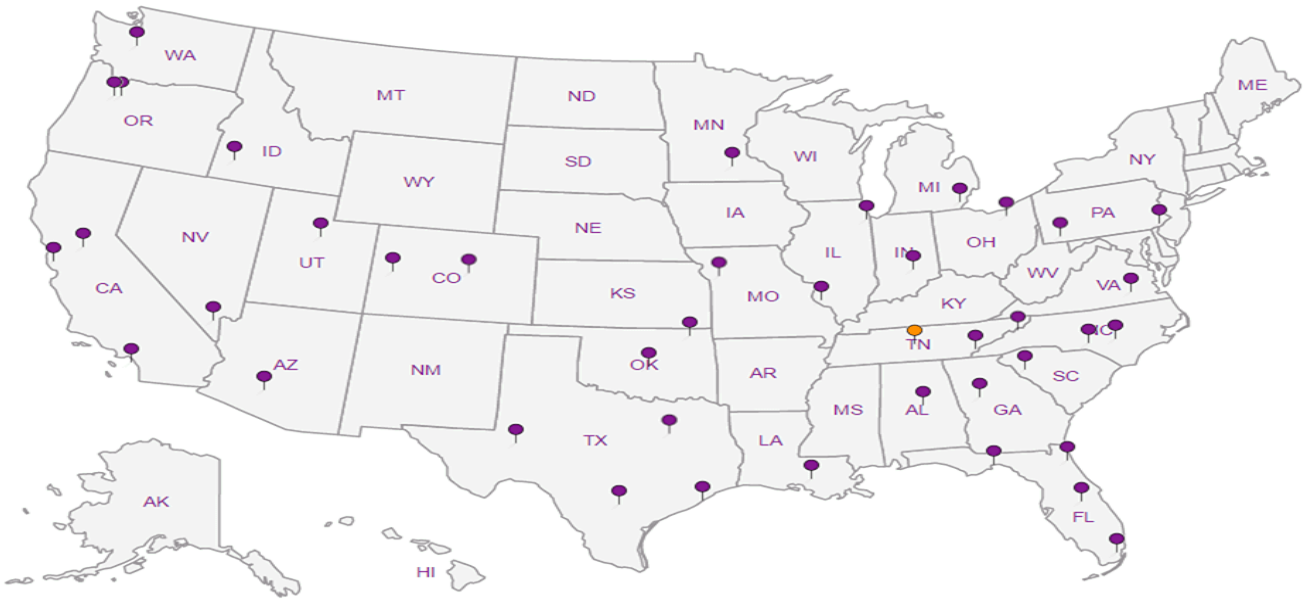
Third Party Federal Accreditations

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

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

Our Locations

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:

Report to:
Michael Skridulis

Email To:
mjskridulis@terracon.com

Project Description: Mary #2

City/State Collected: Longmont Colorado

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

Client Project #
22187008

Lab Project #

Collected by (print):
Drew Stephens

Site/Facility ID #
Mary #2

P.O. #

Collected by (signature):
Drew

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

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260 (2) 40ml Amber w/HCl	RSK-175 (2) 40ml Amber w/HCl	Carbon Dioxide - 250ml HDPE No PRes	Ca,Mg,Na,Fe,K,Sr - 250ml HDPE w/HN03	N02,N03,Cl,S04,Br,Alk - 500ml HDPE No Pres						Rem./Contaminant	Sample # (lab only)
MW-01		GW	25'	4/18/18	1330	7	X	X	X	X	X							-01
MW-02		GW	25'	4/18/18	1345	7	X	X	X	X	X							02
		GW																

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

Remarks: 7466 1468 2710

pH _____ Temp _____
Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Drew	4/18/18	1500	
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: 1.6 °C Bottles Received: 14

Date: 4/19/18 Time: 845

Condition: (lab use only) OK

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: NCF:

Chain of Custody Page ___ of ___

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

L# L986951

G010

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

ESC LAB SCIENCES
Cooler Receipt Form

Client: TERRACO	SDG#	L986951	
Cooler Received/Opened On: 04/19/18	Temperature:	1.6	
Received By: Kelsey Stephenson			
Signature: [signature] 861			

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

May 04, 2018

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L989163
Samples Received:	04/27/2018
Project Number:	22187008
Description:	Mary #2

Report To: Michael 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.

TABLE OF CONTENTS

MW-03 L989163-01 GW

Collected by	Collected date/time	Received date/time
M. Skridulis	04/25/18 14:30	04/27/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1105464	1	05/02/18 12:32	05/02/18 12:32	MCG
Wet Chemistry by Method 4500CO2 D-2011	WG1105464	1	05/02/18 12:32	05/02/18 12:32	MCG
Wet Chemistry by Method 9056A	WG1103989	1	04/27/18 14:03	04/27/18 14:03	MAJ
Wet Chemistry by Method 9056A	WG1105302	10	05/01/18 19:40	05/01/18 19:40	DR
Metals (ICP) by Method 6010B	WG1104003	1	04/27/18 16:13	04/28/18 16:29	ST
Volatile Organic Compounds (GC) by Method RSK175	WG1106095	1	05/03/18 14:03	05/03/18 14:03	MEL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1104211	1	04/28/18 03:55	04/28/18 03:55	CAH

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All 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

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	416		20.0	1	05/02/2018 12:32	WG1105464

Sample Narrative:

L989163-01 WG1105464: Endpoint pH 4.5 Headspace

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	05/02/2018 12:32	WG1105464

Sample Narrative:

L989163-01 WG1105464: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	04/27/2018 14:03	WG1103989
Chloride	33.3		1.00	1	04/27/2018 14:03	WG1103989
Nitrate as (N)	5.61		0.100	1	04/27/2018 14:03	WG1103989
Nitrite as (N)	ND		0.100	1	04/27/2018 14:03	WG1103989
Sulfate	570		50.0	10	05/01/2018 19:40	WG1105302

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium	112		1.00	1	04/28/2018 16:29	WG1104003
Iron	2.31		0.100	1	04/28/2018 16:29	WG1104003
Magnesium	79.3		1.00	1	04/28/2018 16:29	WG1104003
Potassium	14.6		1.00	1	04/28/2018 16:29	WG1104003
Sodium	242		1.00	1	04/28/2018 16:29	WG1104003
Strontium	4.37		0.0100	1	04/28/2018 16:29	WG1104003

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	05/03/2018 14:03	WG1106095
Ethane	ND		0.0130	1	05/03/2018 14:03	WG1106095
Ethene	ND		0.0130	1	05/03/2018 14:03	WG1106095

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	04/28/2018 03:55	WG1104211
Acrolein	ND		0.0500	1	04/28/2018 03:55	WG1104211
Acrylonitrile	ND		0.0100	1	04/28/2018 03:55	WG1104211
Benzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
Bromobenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
Bromodichloromethane	ND		0.00100	1	04/28/2018 03:55	WG1104211
Bromoform	ND		0.00100	1	04/28/2018 03:55	WG1104211
Bromomethane	ND		0.00500	1	04/28/2018 03:55	WG1104211
n-Butylbenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
sec-Butylbenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
tert-Butylbenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211

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	04/28/2018 03:55	WG1104211
Chlorobenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
Chlorodibromomethane	ND		0.00100	1	04/28/2018 03:55	WG1104211
Chloroethane	ND		0.00500	1	04/28/2018 03:55	WG1104211
Chloroform	ND		0.00500	1	04/28/2018 03:55	WG1104211
Chloromethane	ND		0.00250	1	04/28/2018 03:55	WG1104211
2-Chlorotoluene	ND		0.00100	1	04/28/2018 03:55	WG1104211
4-Chlorotoluene	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	04/28/2018 03:55	WG1104211
1,2-Dibromoethane	ND		0.00100	1	04/28/2018 03:55	WG1104211
Dibromomethane	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,2-Dichlorobenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,3-Dichlorobenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,4-Dichlorobenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
Dichlorodifluoromethane	ND		0.00500	1	04/28/2018 03:55	WG1104211
1,1-Dichloroethane	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,2-Dichloroethane	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,1-Dichloroethene	ND		0.00100	1	04/28/2018 03:55	WG1104211
cis-1,2-Dichloroethene	ND		0.00100	1	04/28/2018 03:55	WG1104211
trans-1,2-Dichloroethene	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,2-Dichloropropane	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,1-Dichloropropene	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,3-Dichloropropane	ND		0.00100	1	04/28/2018 03:55	WG1104211
cis-1,3-Dichloropropene	ND		0.00100	1	04/28/2018 03:55	WG1104211
trans-1,3-Dichloropropene	ND		0.00100	1	04/28/2018 03:55	WG1104211
2,2-Dichloropropane	ND		0.00100	1	04/28/2018 03:55	WG1104211
Di-isopropyl ether	ND		0.00100	1	04/28/2018 03:55	WG1104211
Ethylbenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
Hexachloro-1,3-butadiene	ND		0.00100	1	04/28/2018 03:55	WG1104211
Isopropylbenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
p-Isopropyltoluene	ND		0.00100	1	04/28/2018 03:55	WG1104211
2-Butanone (MEK)	ND		0.0100	1	04/28/2018 03:55	WG1104211
Methylene Chloride	ND		0.00500	1	04/28/2018 03:55	WG1104211
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	04/28/2018 03:55	WG1104211
Methyl tert-butyl ether	ND		0.00100	1	04/28/2018 03:55	WG1104211
Naphthalene	ND		0.00500	1	04/28/2018 03:55	WG1104211
n-Propylbenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
Styrene	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,1,1,2-Tetrachloroethane	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,1,2,2-Tetrachloroethane	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	04/28/2018 03:55	WG1104211
Tetrachloroethene	ND		0.00100	1	04/28/2018 03:55	WG1104211
Toluene	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,2,3-Trichlorobenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,2,4-Trichlorobenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,1,1-Trichloroethane	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,1,2-Trichloroethane	ND		0.00100	1	04/28/2018 03:55	WG1104211
Trichloroethene	ND		0.00100	1	04/28/2018 03:55	WG1104211
Trichlorofluoromethane	ND		0.00500	1	04/28/2018 03:55	WG1104211
1,2,3-Trichloropropane	ND		0.00250	1	04/28/2018 03:55	WG1104211
1,2,4-Trimethylbenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,2,3-Trimethylbenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
1,3,5-Trimethylbenzene	ND		0.00100	1	04/28/2018 03:55	WG1104211
Vinyl chloride	ND		0.00100	1	04/28/2018 03:55	WG1104211
Xylenes, Total	ND		0.00300	1	04/28/2018 03:55	WG1104211
(S) Toluene-d8	*107*		*80.0-120*		*04/28/2018 03:55*	WG1104211

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) Dibromofluoromethane	*107*		*76.0-123*		*04/28/2018 03:55*	WG1104211
(S) 4-Bromofluorobenzene	*100*		*80.0-120*		*04/28/2018 03:55*	WG1104211

L988847-01 Original Sample (OS) • Duplicate (DUP)

(OS) L988847-01 05/02/18 09:58 • (DUP) R3306538-1 05/02/18 10:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	270	281	1	4.22		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L989163-01 Original Sample (OS) • Duplicate (DUP)

(OS) L989163-01 05/02/18 12:32 • (DUP) R3306538-4 05/02/18 12:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	416	423	1	1.45		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

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

(LCS) R3306538-3 05/02/18 11:08 • (LCSD) R3306538-6 05/02/18 12:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Alkalinity	100	104	104	104	104	85.0-115			0.150	20

Sample Narrative:

LCS: Endpoint pH 4.5

LCSD: Endpoint pH 4.5

L988847-01 Original Sample (OS) • Duplicate (DUP)

(OS) L988847-01 05/02/18 09:58 • (DUP) R3306538-2 05/02/18 10:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Free Carbon Dioxide	U	ND	1	200	J P1	20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L989163-01 Original Sample (OS) • Duplicate (DUP)

(OS) L989163-01 05/02/18 12:32 • (DUP) R3306538-5 05/02/18 12:39

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Free Carbon Dioxide	ND	ND	1	5.54		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Method Blank (MB)

(MB) R3305504-1 04/27/18 07:12

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

L988506-09 Original Sample (OS) • Duplicate (DUP)

(OS) L988506-09 04/27/18 21:40 • (DUP) R3305504-4 04/27/18 21:52

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	0.000	1	0.000		15
Chloride	ND	0.000	1	0.000		15
Nitrate	ND	0.000	1	0.000		15
Nitrite	ND	0.000	1	0.000		15

L989199-01 Original Sample (OS) • Duplicate (DUP)

(OS) L989199-01 04/28/18 02:01 • (DUP) R3305504-7 04/28/18 02:13

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	0.168	0.166	1	0.778	J	15
Nitrate	4.72	4.77	1	1.05		15
Nitrite	0.0400	0.0359	1	10.8	J	15

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

(LCS) R3305504-2 04/27/18 07:24 • (LCSD) R3305504-3 04/27/18 07:37

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	40.0	39.9	99.9	99.6	80.0-120			0.289	15
Chloride	40.0	39.7	39.6	99.1	99.0	80.0-120			0.101	15
Nitrate	8.00	8.64	8.63	108	108	80.0-120			0.136	15
Nitrite	8.00	8.02	8.01	100	100	80.0-120			0.0649	15

L988506-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L988506-09 04/27/18 21:40 • (MS) R3305504-5 04/27/18 22:05 • (MSD) R3305504-6 04/27/18 22:17

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	ND	62.1	54.7	124	109	1	80.0-120	J5		12.7	15
Chloride	50.0	ND	62.8	55.0	126	110	1	80.0-120	J5		13.2	15
Nitrate	5.00	ND	6.53	5.72	131	114	1	80.0-120	J5		13.1	15
Nitrite	5.00	ND	6.37	5.62	127	112	1	80.0-120	J5		12.6	15

L989199-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L989199-01 04/28/18 02:01 • (MS) R3305504-8 04/28/18 02:25

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	0.168	41.3	82.2	1	80.0-120	
Nitrate	5.00	4.72	9.97	105	1	80.0-120	
Nitrite	5.00	0.0400	5.19	103	1	80.0-120	

Method Blank (MB)

(MB) R3306046-1 05/01/18 06:55

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

L988850-06 Original Sample (OS) • Duplicate (DUP)

(OS) L988850-06 05/01/18 18:26 • (DUP) R3306046-7 05/01/18 18:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfate	ND	0.000	1	0.000		15

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

(LCS) R3306046-2 05/01/18 07:07 • (LCSD) R3306046-3 05/01/18 07:20

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 %
Sulfate	40.0	39.7	39.7	99.3	99.3	80.0-120			0.00906	15

L988850-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L988850-06 05/01/18 18:26 • (MS) R3306046-8 05/01/18 18:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Sulfate	50.0	ND	51.0	102	1	80.0-120	

Method Blank (MB)

(MB) R3305577-1 04/28/18 15:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0463	1.00
Iron	U		0.0141	0.100
Magnesium	U		0.0111	1.00
Potassium	0.246	J	0.102	1.00
Sodium	0.586	J	0.0985	1.00
Strontium	U		0.00170	0.0100

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

(LCS) R3305577-2 04/28/18 15:05 • (LCSD) R3305577-3 04/28/18 15:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium	10.0	10.0	10.1	100	101	80.0-120			0.873	20
Iron	10.0	9.93	10.0	99.3	100	80.0-120			0.860	20
Magnesium	10.0	10.2	10.2	102	102	80.0-120			0.180	20
Potassium	10.0	10.0	10.2	100	102	80.0-120			1.67	20
Sodium	10.0	10.2	10.2	102	102	80.0-120			0.532	20
Strontium	1.00	1.02	1.02	102	102	80.0-120			0.181	20

L988578-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L988578-02 04/28/18 15:11 • (MS) R3305577-5 04/28/18 15:18 • (MSD) R3305577-6 04/28/18 15:21

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	10.0	220	226	225	57.8	46.6	1	75.0-125	V	V	0.500	20
Iron	10.0	12.4	22.1	21.9	96.6	94.7	1	75.0-125			0.853	20
Magnesium	10.0	45.1	54.3	53.7	91.9	86.3	1	75.0-125			1.03	20
Potassium	10.0	10.1	20.3	20.2	103	101	1	75.0-125			0.534	20
Sodium	10.0	1960	1950	1940	0.000	0.000	1	75.0-125	E V	E V	0.963	20
Strontium	1.00	0.762	1.76	1.75	99.6	98.5	1	75.0-125			0.627	20

Method Blank (MB)

(MB) R3306879-1 05/03/18 14:00

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

L989163-01 Original Sample (OS) • Duplicate (DUP)

(OS) L989163-01 05/03/18 14:03 • (DUP) R3306879-2 05/03/18 14:45

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

L989388-07 Original Sample (OS) • Duplicate (DUP)

(OS) L989388-07 05/03/18 14:55 • (DUP) R3306879-3 05/03/18 15:43

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

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

(LCS) R3306879-4 05/03/18 15:47 • (LCSD) R3306879-5 05/03/18 15:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Methane	0.0678	0.0748	0.0720	110	106	85.0-115			3.80	20
Ethane	0.129	0.116	0.119	89.6	92.1	85.0-115			2.73	20
Ethene	0.127	0.117	0.121	92.2	95.1	85.0-115			3.07	20

Method Blank (MB)

(MB) R3305902-3 04/28/18 01:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	0.000337	J	0.000256	0.00100

Method Blank (MB)

(MB) R3305902-3 04/28/18 01:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	0.000236	J	0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	*102*			*80.0-120*
(S) Dibromofluoromethane	*107*			*76.0-123*
(S) 4-Bromofluorobenzene	*102*			*80.0-120*

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

(LCS) R3305902-1 04/28/18 00:57 • (LCSD) R3305902-2 04/28/18 01:17

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.125	0.160	0.160	128	128	10.0-160			0.249	23
Acrolein	0.125	0.0696	0.0711	55.7	56.9	10.0-160			2.11	20
Acrylonitrile	0.125	0.136	0.136	109	109	60.0-142			0.228	20
Benzene	0.0250	0.0243	0.0241	97.4	96.5	69.0-123			0.942	20

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

(LCS) R3305902-1 04/28/18 00:57 • (LCSD) R3305902-2 04/28/18 01:17

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 %
Bromobenzene	0.0250	0.0230	0.0229	92.0	91.7	79.0-120			0.272	20
Bromodichloromethane	0.0250	0.0233	0.0239	93.3	95.5	76.0-120			2.29	20
Bromoform	0.0250	0.0257	0.0259	103	104	67.0-132			0.899	20
Bromomethane	0.0250	0.0296	0.0290	119	116	18.0-160			2.03	20
n-Butylbenzene	0.0250	0.0229	0.0235	91.7	94.2	72.0-126			2.64	20
sec-Butylbenzene	0.0250	0.0249	0.0250	99.4	99.9	74.0-121			0.495	20
tert-Butylbenzene	0.0250	0.0241	0.0244	96.3	97.6	75.0-122			1.34	20
Carbon tetrachloride	0.0250	0.0234	0.0233	93.7	93.2	63.0-122			0.532	20
Chlorobenzene	0.0250	0.0223	0.0227	89.3	91.0	79.0-121			1.90	20
Chlorodibromomethane	0.0250	0.0232	0.0239	93.0	95.5	75.0-125			2.65	20
Chloroethane	0.0250	0.0292	0.0289	117	116	47.0-152			0.988	20
Chloroform	0.0250	0.0236	0.0233	94.2	93.2	72.0-121			1.08	20
Chloromethane	0.0250	0.0251	0.0254	100	102	48.0-139			1.34	20
2-Chlorotoluene	0.0250	0.0226	0.0238	90.5	95.2	74.0-122			5.10	20
4-Chlorotoluene	0.0250	0.0239	0.0237	95.5	95.0	79.0-120			0.585	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0236	0.0237	94.3	94.9	64.0-127			0.615	20
1,2-Dibromoethane	0.0250	0.0231	0.0237	92.4	94.7	77.0-123			2.44	20
Dibromomethane	0.0250	0.0232	0.0239	92.8	95.7	78.0-120			3.11	20
1,2-Dichlorobenzene	0.0250	0.0231	0.0230	92.5	92.1	80.0-120			0.398	20
1,3-Dichlorobenzene	0.0250	0.0236	0.0235	94.3	94.1	72.0-123			0.180	20
1,4-Dichlorobenzene	0.0250	0.0229	0.0232	91.8	92.7	77.0-120			1.04	20
Dichlorodifluoromethane	0.0250	0.0226	0.0233	90.4	93.3	49.0-155			3.14	20
1,1-Dichloroethane	0.0250	0.0245	0.0243	97.8	97.3	70.0-126			0.497	20
1,2-Dichloroethane	0.0250	0.0239	0.0238	95.5	95.2	67.0-126			0.361	20
1,1-Dichloroethene	0.0250	0.0240	0.0236	95.9	94.6	64.0-129			1.33	20
cis-1,2-Dichloroethene	0.0250	0.0241	0.0236	96.3	94.2	73.0-120			2.21	20
trans-1,2-Dichloroethene	0.0250	0.0236	0.0234	94.4	93.8	71.0-121			0.688	20
1,2-Dichloropropane	0.0250	0.0228	0.0234	91.4	93.4	75.0-125			2.22	20
1,1-Dichloropropene	0.0250	0.0240	0.0243	96.0	97.4	71.0-129			1.39	20
1,3-Dichloropropane	0.0250	0.0229	0.0235	91.8	94.2	80.0-121			2.60	20
cis-1,3-Dichloropropene	0.0250	0.0235	0.0237	93.9	94.8	79.0-123			0.921	20
trans-1,3-Dichloropropene	0.0250	0.0228	0.0239	91.3	95.4	74.0-127			4.39	20
2,2-Dichloropropane	0.0250	0.0235	0.0225	93.9	90.1	60.0-125			4.11	20
Di-isopropyl ether	0.0250	0.0262	0.0262	105	105	59.0-133			0.141	20
Ethylbenzene	0.0250	0.0221	0.0227	88.5	90.7	77.0-120			2.46	20
Hexachloro-1,3-butadiene	0.0250	0.0196	0.0205	78.4	81.9	64.0-131			4.47	20
Isopropylbenzene	0.0250	0.0248	0.0252	99.3	101	75.0-120			1.36	20
p-Isopropyltoluene	0.0250	0.0249	0.0249	99.4	99.6	74.0-126			0.155	20
2-Butanone (MEK)	0.125	0.145	0.149	116	119	37.0-158			2.50	20
Methylene Chloride	0.0250	0.0257	0.0246	103	98.4	66.0-121			4.51	20

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

(LCS) R3305902-1 04/28/18 00:57 • (LCSD) R3305902-2 04/28/18 01:17

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	0.125	0.135	0.141	108	112	59.0-143			3.83	20
Methyl tert-butyl ether	0.0250	0.0243	0.0243	97.0	97.3	64.0-123			0.288	20
Naphthalene	0.0250	0.0196	0.0201	78.3	80.4	62.0-128			2.64	20
n-Propylbenzene	0.0250	0.0246	0.0249	98.4	99.6	79.0-120			1.20	20
Styrene	0.0250	0.0248	0.0252	99.1	101	78.0-124			1.77	20
1,1,1,2-Tetrachloroethane	0.0250	0.0228	0.0231	91.4	92.3	75.0-122			1.04	20
1,1,2,2-Tetrachloroethane	0.0250	0.0236	0.0240	94.2	96.0	71.0-122			1.85	20
Tetrachloroethene	0.0250	0.0224	0.0232	89.7	92.6	70.0-127			3.24	20
Toluene	0.0250	0.0234	0.0238	93.4	95.2	77.0-120			1.91	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0235	0.0232	94.2	92.6	61.0-136			1.65	20
1,2,3-Trichlorobenzene	0.0250	0.0187	0.0194	74.9	77.6	61.0-133			3.47	20
1,2,4-Trichlorobenzene	0.0250	0.0188	0.0199	75.3	79.6	69.0-129			5.57	20
1,1,1-Trichloroethane	0.0250	0.0239	0.0237	95.6	94.7	68.0-122			1.02	20
1,1,2-Trichloroethane	0.0250	0.0231	0.0235	92.4	94.1	78.0-120			1.84	20
Trichloroethene	0.0250	0.0227	0.0234	90.8	93.7	78.0-120			3.20	20
Trichlorofluoromethane	0.0250	0.0253	0.0249	101	99.7	56.0-137			1.50	20
1,2,3-Trichloropropane	0.0250	0.0240	0.0238	95.8	95.3	72.0-124			0.552	20
1,2,3-Trimethylbenzene	0.0250	0.0232	0.0240	92.8	96.1	75.0-120			3.55	20
1,2,4-Trimethylbenzene	0.0250	0.0242	0.0247	96.8	99.0	75.0-120			2.21	20
1,3,5-Trimethylbenzene	0.0250	0.0244	0.0247	97.5	98.7	75.0-120			1.20	20
Vinyl chloride	0.0250	0.0243	0.0240	97.1	96.2	64.0-133			1.01	20
Xylenes, Total	0.0750	0.0690	0.0706	92.0	94.1	77.0-120			2.29	20
(S) Toluene-d8				*100*	*103*	*80.0-120*				
(S) Dibromofluoromethane				*102*	*102*	*76.0-123*				
(S) 4-Bromofluorobenzene				*98.4*	*101*	*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, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

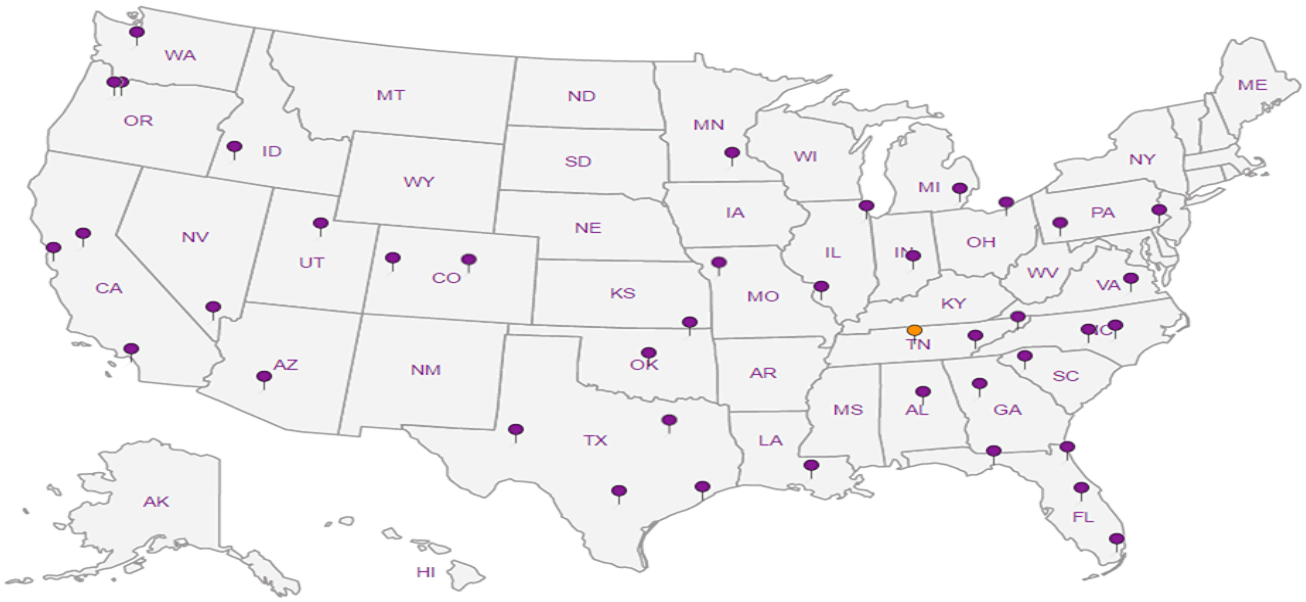
Third Party Federal Accreditations

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

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

Our Locations

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.



Terracon Consultants, Inc
1242 Bramwood Place
Longmont, CO 80501

Billing Information: SAME

Pres Chk

Report to: Mike Skridulis

Email To: Mike.Skridulis@terracon.com

Project Description: Mary #2

City/State Collected: Longmont CO

Phone: 303-454-5249
Fax: ~

Client Project # 22187008

Lab Project #

Collected by (print): M. Skridulis

Site/Facility ID #

P.O. #

Collected by (signature): M. Skridulis

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: STANDARD

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260 - Amb 40mL w/HCl (2)	RSK-175 - Amb 40mL w/HCl (2)	Carbon Dioxide - 250 mL No Pres.	02	Ca, Mg, Na, Fe, K, SS - 250mL HNO3	NO2, NO3, Cl, SO4, Br, Alk - 500mL Nonpres						Remarks	Sample # (lab only)
MW-03	G	GW	-	4/25/18	1430	7	X	X	X	X	X								-01

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 # L981163

Table # C211

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

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

Remarks: Fedex: 7215 4514 9662

pH _____ Temp _____
Flow _____ Other _____

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

Samples returned via: __ UPS X FedEx __ Courier __ _____

Tracking #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
M. Skridulis / TT	4/26/18	1600			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.2 °C Bottles Received: 7	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 4/27/18 Time: 0845	Hold: Conditions NCF / OK

ANALYTICAL REPORT

May 07, 2018

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L989230
Samples Received:	04/27/2018
Project Number:	22187008
Description:	Mary #2

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

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
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.

TABLE OF CONTENTS

SVP-01 L989230-01 Air

Collected by	Collected date/time	Received date/time
M. Skridulis	04/25/18 13:10	04/27/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015M	WG1107794	1	05/07/18 09:13	05/07/18 09:13	BG
Volatile Organic Compounds (MS) by Method TO-15	WG1103966	2	04/27/18 19:47	04/27/18 19:47	AMC
Organic Compounds (GC) by Method D1946	WG1106370	1	05/03/18 10:56	05/03/18 10:56	MEL
Organic Compounds (GC) by Method D1946	WG1106879	1	05/04/18 10:27	05/04/18 10:27	MEL

SVP-02 L989230-02 Air

Collected by	Collected date/time	Received date/time
M. Skridulis	04/25/18 14:00	04/27/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015M	WG1107794	1	05/07/18 09:15	05/07/18 09:15	BG
Volatile Organic Compounds (MS) by Method TO-15	WG1103966	2	04/27/18 20:29	04/27/18 20:29	AMC
Organic Compounds (GC) by Method D1946	WG1106370	1	05/03/18 11:04	05/03/18 11:04	MEL
Organic Compounds (GC) by Method D1946	WG1106879	1	05/04/18 10:34	05/04/18 10:34	MEL

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All 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 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	WG1107794
Ethane	74-84-0	30	10.0	12.3	ND	ND		1	WG1107794
Ethene	74-85-1	28	10.0	11.5	ND	ND		1	WG1107794

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	2.50	5.94	3.87	9.19		2	WG1103966
Allyl chloride	107-05-1	76.53	0.400	1.25	ND	ND		2	WG1103966
Benzene	71-43-2	78.10	0.400	1.28	ND	ND		2	WG1103966
Benzyl Chloride	100-44-7	127	0.400	2.08	ND	ND		2	WG1103966
Bromodichloromethane	75-27-4	164	0.400	2.68	ND	ND		2	WG1103966
Bromoform	75-25-2	253	1.20	12.4	ND	ND		2	WG1103966
Bromomethane	74-83-9	94.90	0.400	1.55	ND	ND		2	WG1103966
1,3-Butadiene	106-99-0	54.10	4.00	8.85	ND	ND		2	WG1103966
Carbon disulfide	75-15-0	76.10	0.400	1.24	ND	ND		2	WG1103966
Carbon tetrachloride	56-23-5	154	0.400	2.52	ND	ND		2	WG1103966
Chlorobenzene	108-90-7	113	0.400	1.85	ND	ND		2	WG1103966
Chloroethane	75-00-3	64.50	0.400	1.06	ND	ND		2	WG1103966
Chloroform	67-66-3	119	0.400	1.95	ND	ND		2	WG1103966
Chloromethane	74-87-3	50.50	0.400	0.826	ND	ND		2	WG1103966
2-Chlorotoluene	95-49-8	126	0.400	2.06	ND	ND		2	WG1103966
Cyclohexane	110-82-7	84.20	0.400	1.38	ND	ND		2	WG1103966
Dibromochloromethane	124-48-1	208	0.400	3.40	ND	ND		2	WG1103966
1,2-Dibromoethane	106-93-4	188	0.400	3.08	ND	ND		2	WG1103966
1,2-Dichlorobenzene	95-50-1	147	0.400	2.40	ND	ND		2	WG1103966
1,3-Dichlorobenzene	541-73-1	147	0.400	2.40	0.442	2.66		2	WG1103966
1,4-Dichlorobenzene	106-46-7	147	0.400	2.40	ND	ND		2	WG1103966
1,2-Dichloroethane	107-06-2	99	0.400	1.62	ND	ND		2	WG1103966
1,1-Dichloroethane	75-34-3	98	0.400	1.60	ND	ND		2	WG1103966
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1103966
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1103966
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1103966
1,2-Dichloropropane	78-87-5	113	0.400	1.85	ND	ND		2	WG1103966
cis-1,3-Dichloropropene	10061-01-5	111	0.400	1.82	ND	ND		2	WG1103966
trans-1,3-Dichloropropene	10061-02-6	111	0.400	1.82	ND	ND		2	WG1103966
1,4-Dioxane	123-91-1	88.10	0.400	1.44	ND	ND		2	WG1103966
Ethanol	64-17-5	46.10	1.26	2.38	3.29	6.21		2	WG1103966
Ethylbenzene	100-41-4	106	0.400	1.73	0.532	2.31		2	WG1103966
4-Ethyltoluene	622-96-8	120	0.400	1.96	0.882	4.33		2	WG1103966
Trichlorofluoromethane	75-69-4	137.40	0.400	2.25	ND	ND		2	WG1103966
Dichlorodifluoromethane	75-71-8	120.92	0.400	1.98	3.02	14.9		2	WG1103966
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.400	3.07	ND	ND		2	WG1103966
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.400	2.80	ND	ND		2	WG1103966
Heptane	142-82-5	100	0.400	1.64	ND	ND		2	WG1103966
Hexachloro-1,3-butadiene	87-68-3	261	1.26	13.5	ND	ND		2	WG1103966
n-Hexane	110-54-3	86.20	0.400	1.41	1.07	3.78		2	WG1103966
Isopropylbenzene	98-82-8	120.20	0.400	1.97	ND	ND		2	WG1103966
Methylene Chloride	75-09-2	84.90	0.400	1.39	0.459	1.59		2	WG1103966
Methyl Butyl Ketone	591-78-6	100	2.50	10.2	ND	ND		2	WG1103966
2-Butanone (MEK)	78-93-3	72.10	2.50	7.37	ND	ND		2	WG1103966
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	2.50	10.2	ND	ND		2	WG1103966
Methyl methacrylate	80-62-6	100.12	0.400	1.64	ND	ND		2	WG1103966
MTBE	1634-04-4	88.10	0.400	1.44	ND	ND		2	WG1103966
Naphthalene	91-20-3	128	1.26	6.60	ND	ND		2	WG1103966

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	2.50	6.15	4.50	11.1		2	WG1103966
Propene	115-07-1	42.10	0.800	1.38	ND	ND		2	WG1103966
Styrene	100-42-5	104	0.400	1.70	ND	ND		2	WG1103966
1,1,2,2-Tetrachloroethane	79-34-5	168	0.400	2.75	ND	ND		2	WG1103966
Tetrachloroethylene	127-18-4	166	0.400	2.72	0.921	6.26		2	WG1103966
Tetrahydrofuran	109-99-9	72.10	0.400	1.18	ND	ND		2	WG1103966
Toluene	108-88-3	92.10	0.400	1.51	2.06	7.77		2	WG1103966
1,2,4-Trichlorobenzene	120-82-1	181	1.26	9.33	ND	ND		2	WG1103966
1,1,1-Trichloroethane	71-55-6	133	0.400	2.18	ND	ND		2	WG1103966
1,1,2-Trichloroethane	79-00-5	133	0.400	2.18	ND	ND		2	WG1103966
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1103966
1,2,4-Trimethylbenzene	95-63-6	120	0.400	1.96	1.00	4.92		2	WG1103966
1,3,5-Trimethylbenzene	108-67-8	120	0.400	1.96	ND	ND		2	WG1103966
2,2,4-Trimethylpentane	540-84-1	114.22	0.400	1.87	ND	ND		2	WG1103966
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1103966
Vinyl Bromide	593-60-2	106.95	0.400	1.75	ND	ND		2	WG1103966
Vinyl acetate	108-05-4	86.10	0.400	1.41	ND	ND		2	WG1103966
m&p-Xylene	1330-20-7	106	0.800	3.47	2.13	9.24		2	WG1103966
o-Xylene	95-47-6	106	0.400	1.73	0.759	3.29		2	WG1103966
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*96.6*				WG1103966

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	2.00	17.4		1	WG1106879
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1106370
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1106370

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	WG1107794
Ethane	74-84-0	30	10.0	12.3	ND	ND		1	WG1107794
Ethene	74-85-1	28	10.0	11.5	ND	ND		1	WG1107794

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	2.50	5.94	6.19	14.7		2	WG1103966
Allyl chloride	107-05-1	76.53	0.400	1.25	ND	ND		2	WG1103966
Benzene	71-43-2	78.10	0.400	1.28	ND	ND		2	WG1103966
Benzyl Chloride	100-44-7	127	0.400	2.08	ND	ND		2	WG1103966
Bromodichloromethane	75-27-4	164	0.400	2.68	ND	ND		2	WG1103966
Bromoform	75-25-2	253	1.20	12.4	ND	ND		2	WG1103966
Bromomethane	74-83-9	94.90	0.400	1.55	ND	ND		2	WG1103966
1,3-Butadiene	106-99-0	54.10	4.00	8.85	ND	ND		2	WG1103966
Carbon disulfide	75-15-0	76.10	0.400	1.24	ND	ND		2	WG1103966
Carbon tetrachloride	56-23-5	154	0.400	2.52	ND	ND		2	WG1103966
Chlorobenzene	108-90-7	113	0.400	1.85	ND	ND		2	WG1103966
Chloroethane	75-00-3	64.50	0.400	1.06	ND	ND		2	WG1103966
Chloroform	67-66-3	119	0.400	1.95	ND	ND		2	WG1103966
Chloromethane	74-87-3	50.50	0.400	0.826	ND	ND		2	WG1103966
2-Chlorotoluene	95-49-8	126	0.400	2.06	ND	ND		2	WG1103966
Cyclohexane	110-82-7	84.20	0.400	1.38	ND	ND		2	WG1103966
Dibromochloromethane	124-48-1	208	0.400	3.40	ND	ND		2	WG1103966
1,2-Dibromoethane	106-93-4	188	0.400	3.08	ND	ND		2	WG1103966
1,2-Dichlorobenzene	95-50-1	147	0.400	2.40	ND	ND		2	WG1103966
1,3-Dichlorobenzene	541-73-1	147	0.400	2.40	ND	ND		2	WG1103966
1,4-Dichlorobenzene	106-46-7	147	0.400	2.40	ND	ND		2	WG1103966
1,2-Dichloroethane	107-06-2	99	0.400	1.62	ND	ND		2	WG1103966
1,1-Dichloroethane	75-34-3	98	0.400	1.60	ND	ND		2	WG1103966
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1103966
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1103966
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1103966
1,2-Dichloropropane	78-87-5	113	0.400	1.85	ND	ND		2	WG1103966
cis-1,3-Dichloropropene	10061-01-5	111	0.400	1.82	ND	ND		2	WG1103966
trans-1,3-Dichloropropene	10061-02-6	111	0.400	1.82	ND	ND		2	WG1103966
1,4-Dioxane	123-91-1	88.10	0.400	1.44	ND	ND		2	WG1103966
Ethanol	64-17-5	46.10	1.26	2.38	13.0	24.5		2	WG1103966
Ethylbenzene	100-41-4	106	0.400	1.73	ND	ND		2	WG1103966
4-Ethyltoluene	622-96-8	120	0.400	1.96	ND	ND		2	WG1103966
Trichlorofluoromethane	75-69-4	137.40	0.400	2.25	ND	ND		2	WG1103966
Dichlorodifluoromethane	75-71-8	120.92	0.400	1.98	ND	ND		2	WG1103966
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.400	3.07	ND	ND		2	WG1103966
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.400	2.80	ND	ND		2	WG1103966
Heptane	142-82-5	100	0.400	1.64	ND	ND		2	WG1103966
Hexachloro-1,3-butadiene	87-68-3	261	1.26	13.5	ND	ND		2	WG1103966
n-Hexane	110-54-3	86.20	0.400	1.41	1.76	6.19		2	WG1103966
Isopropylbenzene	98-82-8	120.20	0.400	1.97	ND	ND		2	WG1103966
Methylene Chloride	75-09-2	84.90	0.400	1.39	8.72	30.3		2	WG1103966
Methyl Butyl Ketone	591-78-6	100	2.50	10.2	ND	ND		2	WG1103966
2-Butanone (MEK)	78-93-3	72.10	2.50	7.37	ND	ND		2	WG1103966
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	2.50	10.2	ND	ND		2	WG1103966
Methyl methacrylate	80-62-6	100.12	0.400	1.64	ND	ND		2	WG1103966
MTBE	1634-04-4	88.10	0.400	1.44	ND	ND		2	WG1103966
Naphthalene	91-20-3	128	1.26	6.60	ND	ND		2	WG1103966

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	2.50	6.15	ND	ND		2	WG1103966
Propene	115-07-1	42.10	0.800	1.38	ND	ND		2	WG1103966
Styrene	100-42-5	104	0.400	1.70	ND	ND		2	WG1103966
1,1,2,2-Tetrachloroethane	79-34-5	168	0.400	2.75	ND	ND		2	WG1103966
Tetrachloroethylene	127-18-4	166	0.400	2.72	ND	ND		2	WG1103966
Tetrahydrofuran	109-99-9	72.10	0.400	1.18	ND	ND		2	WG1103966
Toluene	108-88-3	92.10	0.400	1.51	0.557	2.10		2	WG1103966
1,2,4-Trichlorobenzene	120-82-1	181	1.26	9.33	ND	ND		2	WG1103966
1,1,1-Trichloroethane	71-55-6	133	0.400	2.18	ND	ND		2	WG1103966
1,1,2-Trichloroethane	79-00-5	133	0.400	2.18	ND	ND		2	WG1103966
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1103966
1,2,4-Trimethylbenzene	95-63-6	120	0.400	1.96	ND	ND		2	WG1103966
1,3,5-Trimethylbenzene	108-67-8	120	0.400	1.96	ND	ND		2	WG1103966
2,2,4-Trimethylpentane	540-84-1	114.22	0.400	1.87	ND	ND		2	WG1103966
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1103966
Vinyl Bromide	593-60-2	106.95	0.400	1.75	ND	ND		2	WG1103966
Vinyl acetate	108-05-4	86.10	0.400	1.41	ND	ND		2	WG1103966
m&p-Xylene	1330-20-7	106	0.800	3.47	ND	ND		2	WG1103966
o-Xylene	95-47-6	106	0.400	1.73	ND	ND		2	WG1103966
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*96.7*				WG1103966

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	2.00	16.9		1	WG1106879
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1106370
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1106370

Method Blank (MB)

(MB) R3307496-3 05/07/18 09:10

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) R3307496-1 05/07/18 08:57 • (LCSD) R3307496-2 05/07/18 09:01

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	472	451	94.5	90.2	77.0-115			4.60	20
Ethane	500	505	486	101	97.3	85.0-115			3.68	20
Ethene	500	531	514	106	103	85.0-115			3.39	20

Method Blank (MB)

(MB) R3305484-3 04/27/18 10:43

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	0.426	J	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) R3305484-3 04/27/18 10:43

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Methylene Chloride	U		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	U		0.154	0.630
2-Propanol	U		0.0882	1.25
Propene	0.125	J	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	*92.7*			*60.0-140*

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

(LCS) R3305484-1 04/27/18 09:13 • (LCSD) R3305484-2 04/27/18 09:57

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	3.17	2.89	84.6	77.0	52.0-158			9.50	25
Propene	3.75	4.35	3.89	116	104	54.0-155			11.1	25
Dichlorodifluoromethane	3.75	3.47	3.30	92.5	88.0	69.0-143			4.95	25
1,2-Dichlorotetrafluoroethane	3.75	3.72	3.63	99.3	96.9	70.0-130			2.44	25
Chloromethane	3.75	3.33	3.35	88.9	89.3	70.0-130			0.475	25

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

(LCS) R3305484-1 04/27/18 09:13 • (LCSD) R3305484-2 04/27/18 09:57

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	3.46	3.50	92.3	93.3	70.0-130			1.04	25
1,3-Butadiene	3.75	3.27	3.24	87.1	86.4	70.0-130			0.864	25
Bromomethane	3.75	3.68	3.71	98.1	98.8	70.0-130			0.782	25
Chloroethane	3.75	3.51	3.55	93.6	94.7	70.0-130			1.18	25
Trichlorofluoromethane	3.75	3.63	3.66	96.7	97.5	70.0-130			0.830	25
1,1,2-Trichlorotrifluoroethane	3.75	3.70	3.70	98.6	98.5	70.0-130			0.0839	25
1,1-Dichloroethene	3.75	3.45	3.49	92.0	93.0	70.0-130			1.13	25
1,1-Dichloroethane	3.75	3.36	3.50	89.7	93.3	70.0-130			3.91	25
Acetone	3.75	3.50	3.49	93.3	93.2	70.0-130			0.105	25
2-Propanol	3.75	3.53	3.54	94.1	94.5	66.0-150			0.408	25
Carbon disulfide	3.75	3.49	3.50	93.2	93.4	70.0-130			0.242	25
Methylene Chloride	3.75	3.12	3.19	83.2	85.0	70.0-130			2.15	25
MTBE	3.75	3.63	3.61	96.8	96.3	70.0-130			0.429	25
trans-1,2-Dichloroethene	3.75	3.52	3.52	93.9	93.8	70.0-130			0.0859	25
n-Hexane	3.75	3.46	3.51	92.4	93.7	70.0-130			1.38	25
Vinyl acetate	3.75	3.65	3.67	97.4	97.9	70.0-130			0.464	25
Methyl Ethyl Ketone	3.75	3.97	3.98	106	106	70.0-130			0.269	25
cis-1,2-Dichloroethene	3.75	3.59	3.62	95.8	96.5	70.0-130			0.678	25
Chloroform	3.75	3.61	3.58	96.2	95.5	70.0-130			0.722	25
Cyclohexane	3.75	3.72	3.68	99.1	98.2	70.0-130			0.979	25
1,1,1-Trichloroethane	3.75	3.62	3.62	96.6	96.5	70.0-130			0.0572	25
Carbon tetrachloride	3.75	3.72	3.69	99.1	98.3	70.0-130			0.877	25
Benzene	3.75	3.71	3.69	99.0	98.5	70.0-130			0.467	25
1,2-Dichloroethane	3.75	3.48	3.45	92.9	92.1	70.0-130			0.900	25
Heptane	3.75	3.34	3.31	89.0	88.2	70.0-130			0.843	25
Trichloroethylene	3.75	3.70	3.74	98.6	99.7	70.0-130			1.15	25
1,2-Dichloropropane	3.75	3.53	3.57	94.0	95.3	70.0-130			1.33	25
1,4-Dioxane	3.75	3.87	3.95	103	105	70.0-152			1.99	25
Bromodichloromethane	3.75	3.61	3.67	96.2	97.9	70.0-130			1.83	25
cis-1,3-Dichloropropene	3.75	3.78	3.78	101	101	70.0-130			0.0246	25
4-Methyl-2-pentanone (MIBK)	3.75	3.38	3.43	90.2	91.4	70.0-142			1.36	25
Toluene	3.75	3.70	3.72	98.6	99.1	70.0-130			0.483	25
trans-1,3-Dichloropropene	3.75	3.67	3.57	97.8	95.2	70.0-130			2.65	25
1,1,2-Trichloroethane	3.75	3.53	3.47	94.3	92.7	70.0-130			1.73	25
Tetrachloroethylene	3.75	3.74	3.70	99.7	98.8	70.0-130			0.899	25
Methyl Butyl Ketone	3.75	3.40	3.40	90.8	90.7	70.0-150			0.0444	25
Dibromochloromethane	3.75	3.62	3.70	96.5	98.8	70.0-130			2.36	25
1,2-Dibromoethane	3.75	3.72	3.68	99.2	98.1	70.0-130			1.15	25
Chlorobenzene	3.75	3.65	3.61	97.2	96.4	70.0-130			0.854	25
Ethylbenzene	3.75	3.92	3.88	105	103	70.0-130			1.01	25

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

(LCS) R3305484-1 04/27/18 09:13 • (LCSD) R3305484-2 04/27/18 09:57

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	7.64	7.68	102	102	70.0-130			0.413	25
o-Xylene	3.75	3.79	3.77	101	100	70.0-130			0.547	25
Styrene	3.75	4.11	3.93	110	105	70.0-130			4.58	25
Bromoform	3.75	4.18	4.19	111	112	70.0-130			0.263	25
1,1,2,2-Tetrachloroethane	3.75	3.69	3.74	98.4	99.7	70.0-130			1.29	25
4-Ethyltoluene	3.75	3.99	3.96	106	106	70.0-130			0.750	25
1,3,5-Trimethylbenzene	3.75	3.92	3.88	105	103	70.0-130			0.993	25
1,2,4-Trimethylbenzene	3.75	4.01	4.02	107	107	70.0-130			0.356	25
1,3-Dichlorobenzene	3.75	4.26	4.23	114	113	70.0-130			0.536	25
1,4-Dichlorobenzene	3.75	4.37	4.33	117	116	70.0-130			0.852	25
Benzyl Chloride	3.75	4.56	4.42	121	118	70.0-144			3.04	25
1,2-Dichlorobenzene	3.75	4.14	4.16	110	111	70.0-130			0.695	25
1,2,4-Trichlorobenzene	3.75	5.47	5.38	146	143	70.0-155			1.64	25
Hexachloro-1,3-butadiene	3.75	4.37	4.24	116	113	70.0-145			2.93	25
Naphthalene	3.75	4.98	4.91	133	131	70.0-155			1.31	25
Allyl Chloride	3.75	3.28	3.30	87.4	87.9	70.0-130			0.562	25
2-Chlorotoluene	3.75	3.98	3.95	106	105	70.0-130			0.673	25
Methyl Methacrylate	3.75	3.49	3.47	93.1	92.5	70.0-130			0.668	25
Tetrahydrofuran	3.75	3.40	3.38	90.6	90.1	70.0-140			0.500	25
2,2,4-Trimethylpentane	3.75	3.49	3.52	93.1	93.8	70.0-130			0.793	25
Vinyl Bromide	3.75	3.71	3.77	99.0	100	70.0-130			1.52	25
Isopropylbenzene	3.75	3.84	3.84	102	102	70.0-130			0.139	25
(S) 1,4-Bromofluorobenzene				*98.5*	*98.6*	*60.0-140*				

Method Blank (MB)

(MB) R3306743-3 05/03/18 10:50

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Carbon Monoxide	U		0.665	2.00
Carbon Dioxide	U		0.121	0.500

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

(LCS) R3306743-1 05/03/18 10:31 • (LCSD) R3306743-2 05/03/18 10:40

Analyte	Spike Amount %	LCS Result %	LCSD Result %	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Carbon Monoxide	2.50	2.69	2.68	108	107	70.0-130			0.492	20
Carbon Dioxide	2.50	2.48	2.50	99.2	100	70.0-130			0.760	20

Method Blank (MB)

(MB) R3307082-3 05/04/18 10:20

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Oxygen	0.616	J	0.225	2.00

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

(LCS) R3307082-1 05/04/18 09:40 • (LCSD) R3307082-2 05/04/18 09:58

Analyte	Spike Amount %	LCS Result %	LCSD Result %	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Oxygen	2.50	2.65	2.59	106	103	70.0-130			2.35	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, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

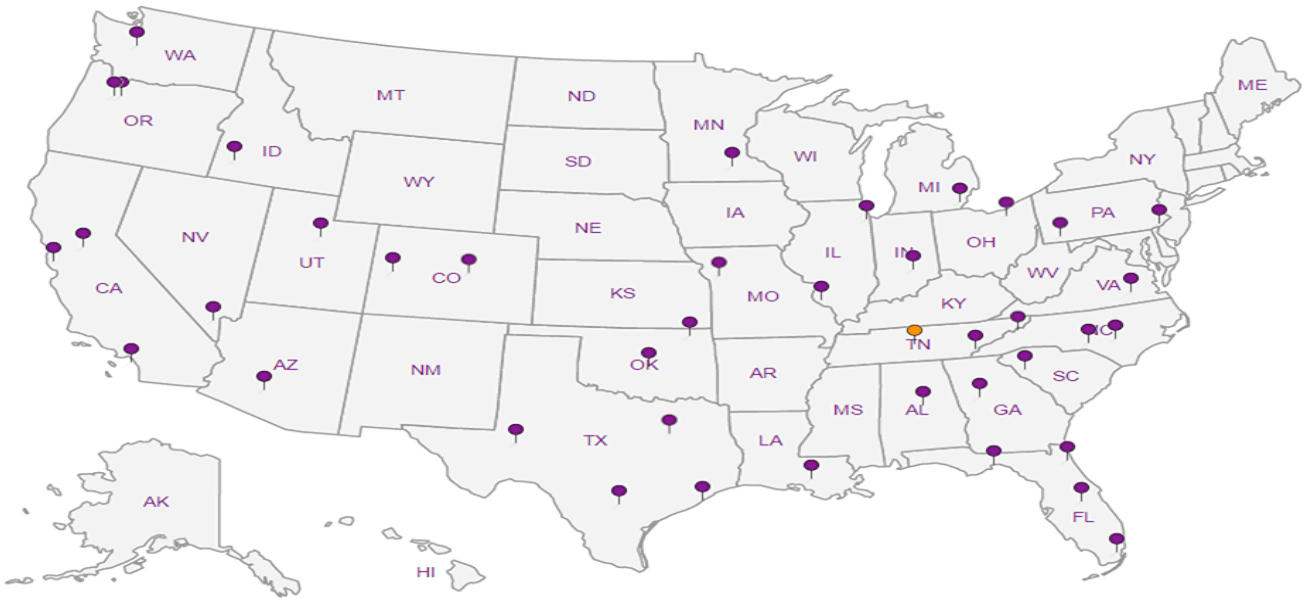
Third Party Federal Accreditations

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

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

Our Locations

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.



Chain of Custody Page 1 of 1

ESC LAB SCIENCES
a subsidiary of Pace Analytical

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

L# L989239

M216

Acctnum: TERRALCO
Template: T134618
Prelogin: P647436
TSR: Daphne Richards
PB: BF 4/3/18
Shipped Via: Saver

Company Name/Address:
Terracon Consultants, Inc
1242 Bramwood Place
Longmont, CO 80501

Billing Information:
SAME

Report to:
mike.skridulis@terracon.com

Email To:
SAME

Project Description: Mary #2

City/State Collected: Longmont, CO

Phone: 303-454-5249
Fax: -

Client Project #
22187008

Lab Project #

Collected by (print):
M. Skridulis

Site/Facility ID #

P.O. #

Collected by (signature):

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 gases (Methane, ethane, ethene)

Sample ID	Sample Description	Can #	Date	Time	Initial	Final	VOC's - TO-15	Fixed gases (Methane, ethane, ethene)			Rem./Contaminant	Sample # (lab only)
SVP-01	Soil Vapor	5502	4/25/18	1310	24	8	X	X				-01
SVP-02	Soil Vapor	5321	4/25/18	1400	24	8	X	X				-02

Remarks: Fedex: 4361 6929 4886

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	4/26/18	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: °C Bottles Received: 2

Date: 4/27/18 Time: 0845

Condition: (lab use only) OK

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

ESC LAB SCIENCES
Cooler Receipt Form

Client: TERRALOO	SDG#	L989230
Cooler Received/Opened On: 04/27/18	Temperature:	Ian
Received By: Ian White		
Signature: Ian		

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?			