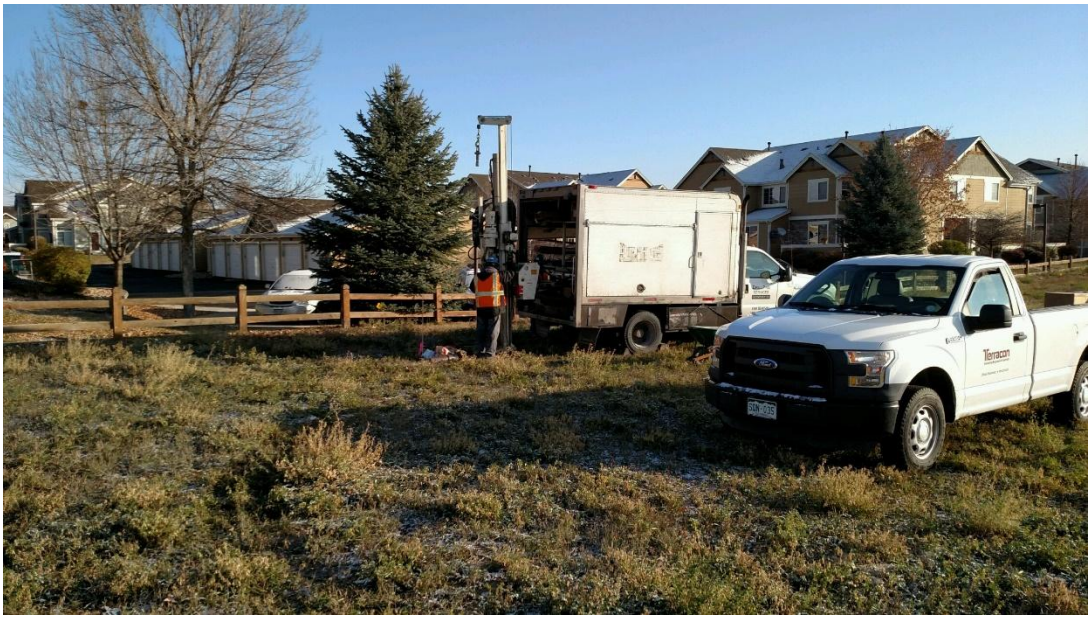
Limited Soil, Groundwater, and Soil Gas Investigation

Maruyama #1 Oil and Gas Well Site
Longmont, Colorado

December 14, 2017
Terracon Project No. 22177045



Prepared for:
City of Longmont
Longmont, Colorado

Prepared by:
Terracon Consultants, Inc.
Longmont, Colorado

December 14, 2017

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
Maruyama #1 Oil and Gas Well Site
Longmont, Colorado
Terracon Project No. 22177045

Dear Mr. Elkins:

Terracon Consultants, Inc. (Terracon) is pleased to submit our report of Limited Soil and Soil Gas Investigation activities completed at the site referenced above. Terracon conducted the Investigation in general accordance with our proposal (P22177045), dated October 26, 2017.

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

Sincerely,
Terracon Consultants, Inc.

Michael J. Skridulis
Project Manager

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

Megan G. Sears
Staff Geologist

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EXECUTIVE SUMMARY

This Limited Soil, Groundwater, and Soil Gas Investigation was performed in accordance with the scope of services outlined in Terracon Proposal No. P22177045, dated October 26, 2017. 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 and 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 soft silt from approximately 0 to 15 feet below grade surface (bgs), underlain by well graded sand and gravel to termination of the soil borings at approximately 25 feet bgs. The depth to groundwater ranged from 19 to 20 feet bgs observed during drilling activities.

Benzene was detected at concentrations above the laboratory detection limits in the soil samples submitted for laboratory analysis in soil borings SB-01 and SB-02. 1,2,4-trimethylbenzene was detected above laboratory detection limits in the soil sample submitted for laboratory analysis in soil boring SB-02. The reported concentrations of these contaminants did not exceed their respective action levels for soil.

Total petroleum hydrocarbons as gasoline range organics (TPH-GRO) was detected above laboratory detection limits in the soil samples submitted for laboratory analysis in soil borings SB-01 and SB-02. The detected concentrations of TPH-GRO did not exceed the respective action levels for soil.

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

The chloride concentration detected in groundwater samples collected from monitoring wells MW-01, MW-02 and MW-03 exceeded the laboratory detection limit. The reported concentrations of chloride did not exceed the respective regulatory action levels for groundwater.

The nitrate concentration detected in groundwater samples collected from monitoring wells MW-01 and MW-02 exceeded the laboratory detection limit. The reported concentrations of nitrate did not exceed the respective regulatory action levels for groundwater.

The sulfate concentration detected in groundwater samples collected from monitoring wells MW-01, MW-02 and MW-03 exceeded the laboratory detection limits and the Colorado Department of Public Health and Environment (CDPHE) Regulation 41 Standard.

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

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

Conclusions

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

Recommendations

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

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

1.0 SITE DESCRIPTION

Site Name	Maruyama #1 O&G Well Site
Site Location	500 Deerwood Drive, 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 Colorado Oil and Gas Conservation Commission (COGCC) issued a statewide Notice to Operators (NTO) directing operators to inspect their inventory of existing flowlines and verify that any existing flowline not in active use, regardless of when it was installed or taken out of service, is abandoned pursuant to COGCC Rule 1103. Terracon understands that the City of Longmont would like to expand the scope of work from the 2012 project to include assessing the condition of soil, groundwater, and soil gas at select locations.

The objective of the environmental services was to provide information concerning the Maruyama #1 O&G well located within the City of Longmont and to assess the potential presence of surficial/subsurface soil and groundwater impacts and presence of methane and other gasses in the subsurface near the reported well location.

2.1 Standard of Care

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

2.2 Additional Scope Limitations

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

2.3 Reliance

This report has been prepared for the exclusive use of the City of Longmont, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of the City of Longmont and Terracon. Any unauthorized distribution or reuse is at the City of Longmont's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal, Investigation report, and Terracon's Master Services Agreement (MSA) with the City of Longmont. The limitation of liability defined in the terms and conditions of the MSA is the aggregate limit of Terracon's liability to the City of Longmont and all relying parties unless otherwise agreed in writing.

3.0 FIELD INVESTIGATION

3.1 Safety and Subsurface Utilities

Terracon is committed to the safety of all its employees. As such, and in accordance with our Incident and Injury Free® safety goals, Terracon conducted the fieldwork under a site-specific health and safety plan. The plan identified site-specific job hazards and proper pre-task planning procedures. Work was performed using Occupational Safety & Health Administration (OSHA) Level D work attire consisting of hard hats, high-visibility attire, safety glasses, protective gloves, and protective boots. Terracon contacted Colorado 811 and requested location and markings for subsurface utilities that the service was responsible for before commencing intrusive activities at the site.

3.2 Sampling and Analytical Program Summary

On October 31, 2017, 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 and SVP-02) were installed at the site. The sample locations were selected to generally represent the area with the highest potential for detecting constituents of concern based on the historical locations of equipment used in previous oil and gas production at the site. Refer to the attached Site Diagram (Exhibit 2, Appendix A) for a depiction of the sample locations and pertinent site features. The sampling and analytical program is outlined below.

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

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

SAMPLING AND ANALYTICAL PROGRAM	
Area of Concern	**Maruyama #1 O&G Well Site**
Soil Borings (Total Depth)	SB-01 through SB-03 (25 feet)
Groundwater	MW-01 through MW-03
Soil Vapor Points	SVP-01 and SVP-02
Soil Analysis	VOCs/TPH-GRO – EPA 8260 TPH-DRO/ORO – EPA 8015
Groundwater Analysis	VOCs – EPA 8260 Dissolved Gasses – RSK 175 Major Cations, Dissolved – EPA 6010B Nitrite, Nitrate, Bromide, Chloride, Sulfate – EPA 300.0 Alkalinity – SM 2320B Strontium – EPA 6020
Soil Gas Analysis	VOCs – EPA TO-15 Methane – EPA D1946

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

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

3.3 Field Procedures

3.3.1 Soil Boring Advancement

Drilling services were performed using a direct-push technology (DPT) Geoprobe® drilling rig. 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

After soil borings were completed to depth and soil samples were collected, the soil borings were completed as groundwater monitoring wells. The wells were constructed to approximately 25 feet bgs using 2.0-inch diameter polyvinyl chloride (PVC) with 10 feet of factory slotted well screen and approximately 15 feet of blank PVC casing to surface. A silica sand filter pack was placed around the well screen to approximately one foot above the top of well screen, followed by a 3.5-foot thick hydrated bentonite seal, and approximately 0.5 feet of sand to the surface. The monitoring wells were fitted with J-plug well caps and bolt-down, flush-mounted well covers set in

concrete. The well construction details are provided on the soil boring logs presented in Appendix C.

On November 2, 2017, Terracon personnel visited the site to collect static groundwater levels, develop the monitoring wells, and collect groundwater samples for laboratory analysis. Depth to groundwater ranged from 18.00 feet below top of monitoring well casing (TOC) in MW-02 to 18.75 feet below TOC in MW-03. Monitoring wells MW-01 through MW-03 were developed by repeatedly surging the wells with a 2-inch diameter PVC surge block and purging the groundwater from the wells with a single-use PVC bailer in accordance with the Terracon SOP 10 – *Monitor Well Development.* Monitoring wells MW-01 through MW-03 were immediately sampled after development.

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

3.3.3 Soil Vapor Point Installation

Terracon installed two SVPs in the vicinity of the former site 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 5 feet bgs and backfilled with silica sand to approximately 6 inches above the top of the screen, followed by hydrated bentonite to near surface. Locations are depicted on Exhibit 2 in Appendix A.

Sampling of the soil gas points was performed by an environmental professional on November 3, 2017 (SVP-01 and SVP-02), allowing the soil gas points time to equilibrate. Soil gas sampling was conducted within a polyethylene shroud placed over the sample point. Extracted soil gas was screened in the field utilizing a Multi-Rae gas detection monitor, which was calibrated prior to use in accordance with the manufacturer's specifications. The Multi-Rae was used to assess potential explosive gas (methane) and VOCs. Sample tubing was connected to the sampling point and routed to the exterior of the shroud. Leak detection was conducted by introducing helium tracer gas into the sampling shroud through a separate port prior to sampling and using a portable helium gas detector to monitor for potential leaks in the sampling train. A peristaltic pump was utilized to purge the sample train tubing prior to collecting the laboratory sample within laboratory supplied 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 soft silt from approximately 0 to 15 feet bgs, underlain by well graded sand and gravel to the termination of soil borings at approximately 25 feet bgs. The observed depth to groundwater ranged from approximately 19 to 20 feet bgs during drilling activities.

4.2 Field Screening

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

5.0 ANALYTICAL RESULTS

The laboratory analytical reports and chain-of-custody records are attached in Appendix D. The following sections describe the results of the analytical testing performed as part of this limited site investigation. The constituents of concern concentrations were compared to the May 2016, USEPA, Residential and Industrial RSLs, and USEPA May 2016 Residential and Industrial Indoor Air RSLs, January 2015 COGCC Table 910-1 (Concentration Levels) for soil. Groundwater analytical results were compared to June 30, 2016 CDPHE Groundwater Quality Standards (GWQSs) and January 2015 COGCC Table 910-1 Groundwater Concentration Levels (910-1 Levels). CDPHE January 2016 Residential and Industrial ASCs and the June 2017 USEPA Residential and Industrial Indoor Air RSLs, after applying a 3% attenuation factor for subslab soil gas per the USEPA OSWER Technical Guide for Assessing and Mitigating the Gas Intrusion Pathway from Subsurface Gas Sources to Indoor Air (OSWER Guidance, June 2015) were used for soil gas comparison.

5.1 Soil Sample Results

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

Benzene was reported at concentrations above the laboratory detection limits in the soil samples submitted for laboratory analysis collected from soil borings SB-01 and SB-02. 1,2,4-trimethylbenzene was reported above laboratory detection limits in the soil sample submitted for laboratory analysis in soil boring SB-02; however, the reported concentrations did not exceed their respective regulatory action levels for soil.

TPH-GRO was reported above laboratory detection limits in the soil samples submitted for laboratory analysis collected from soil borings SB-01 and SB-02; however, the reported concentrations did not exceed the respective regulatory action levels for soil.

5.2 Groundwater Sample Results

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

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

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

The COGCC has defined the groundwater standard exceedance concentrations for chloride and sulfate to be a regional background concentration with a multiplier of 1.25. Terracon utilized 2017 analytical data for chloride and sulfate from the sites sampled during the City of Longmont 2017 Annual Groundwater Quality Monitoring sampling event (Terracon Project No. 22177002) to calculate respective regional background concentrations.

Terracon used the USEPA's statistical software (ProUCL), Version 5.1, to determine if the dataset used to calculate the mean was statistically normal. The ProUCL software can be downloaded at https://www.epa.gov/land-research/proucl-software. After eliminating monitoring well analytical data that was not representative of normal conditions, the data was inputted into ProUCL. Analysis was conducted to evaluate if there are additional outlying data points and if the data set adhered to a normal distribution. Several sulfate analytical results were removed from the data set based on the results of the initial outlier test. The outlier test does state that there is a potential outlier. However, based on a 1% and 5% significance level, there were no potential outliers; therefore, no additional analytical results were removed from the data set. A normal Q-Q plot was then generated to evaluate if the data set for chloride and sulfate adhered to a normal distribution.

The normal Q-Q plot illustrates that both data sets are normal. The mean and standard deviation were also calculated using ProUCL.

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

Statistical Analysis	Chloride (µg/L)	Sulfate (µg/L)
Mean (from background well data)	41.73	665.9
COGCC cleanup goal (1.25 x background)	52.16	832.4
Standard Deviation	6.24	148.6
Sample Size	44	21

The chloride concentration reported in groundwater samples collected from monitoring wells MW-01, MW-02 and MW-03 exceeded the laboratory detection limit; however, the reported concentrations did not exceed the respective regulatory action levels for groundwater.

The nitrate concentration reported in groundwater samples collected from monitoring wells MW-01 and MW-02 exceeded the laboratory detection limit; however, the reported concentrations did not exceed the respective regulatory action levels for groundwater.

The sulfate concentration reported in groundwater samples collected from monitoring wells MW-01, MW-02 and MW-03 exceeded the laboratory detection limits and the CDPHE Regulation 41 Standard.

Specific conductance was reported in the groundwater samples ranging from 1,319 to 1,341 micro Siemens per centimeter (µmhos/cm). Generally, relatively higher concentrations of specific conductance were reported in groundwater samples with higher concentrations of alkalinity, bromide, chloride, nitrate, nitrite, sulfate and sulfide. Higher concentrations of specific conductance generally correspond to more turbid samples which have more sediment and subsequently more inorganics from the sediment. This occurs when monitoring wells do not recharge sufficiently during purging and the formation contains clays.

Groundwater samples were reported to have a neutral pH (i.e. near 7.0). The pH values in all of the other wells measured during purging were reported in a range from 7.90 to 7.98, which is within the range of CDPHE's basic standard for groundwater for pH of 6.5 to 8.5.

5.3 Soil Gas Sample Results

VOC constituents reported in the soil gas samples were compared to the 2016 CDPHE Indoor ASC – Residential and Worker Remediation Goals, and the June 2017 USEPA Residential and Industrial Indoor Air RSLs, after applying a 3% attenuation factor for subslab soil gas per the USEPA OSWER Technical Guide for Assessing and Mitigating the Gas Intrusion Pathway from Subsurface Gas Sources to Indoor Air (OSWER Guidance, June 2015). Reference to the OSWER guidance is not meant to imply that the scope of this soil gas investigation was designed to include the guidance's subsurface characterization criteria or that Terracon conducted a detailed vapor intrusion risk assessment. A summary of the analytical results is provided below. The soil gas analytical data reported above regulatory detection limits and corresponding action levels are summarized in Table 2 (Appendix B).

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

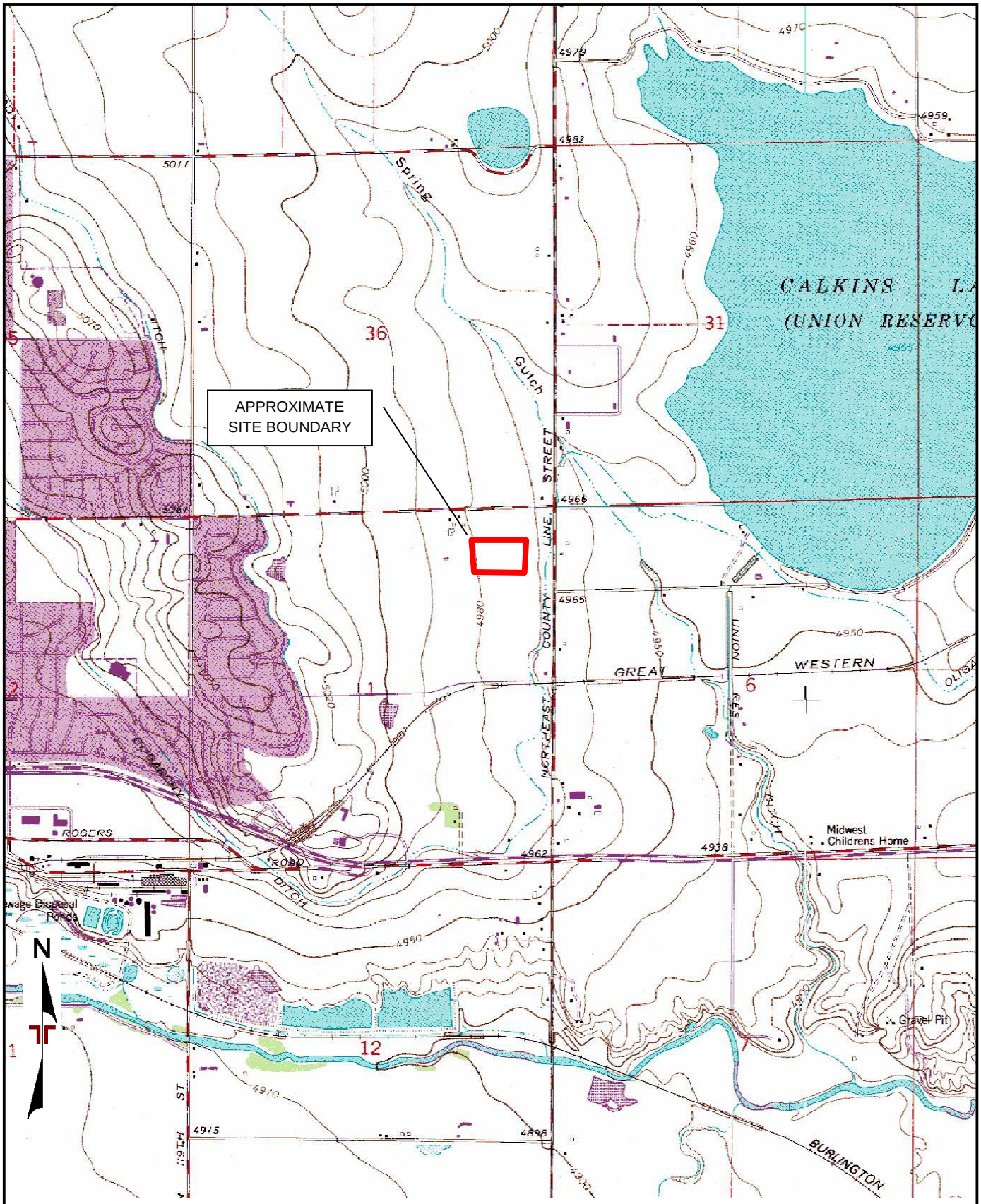
Methane was not reported in any of the soil gas samples collected as part of this investigation above its respective laboratory detection limit.

APPENDIX A – EXHIBITS

Exhibit 1 – Topographic Map

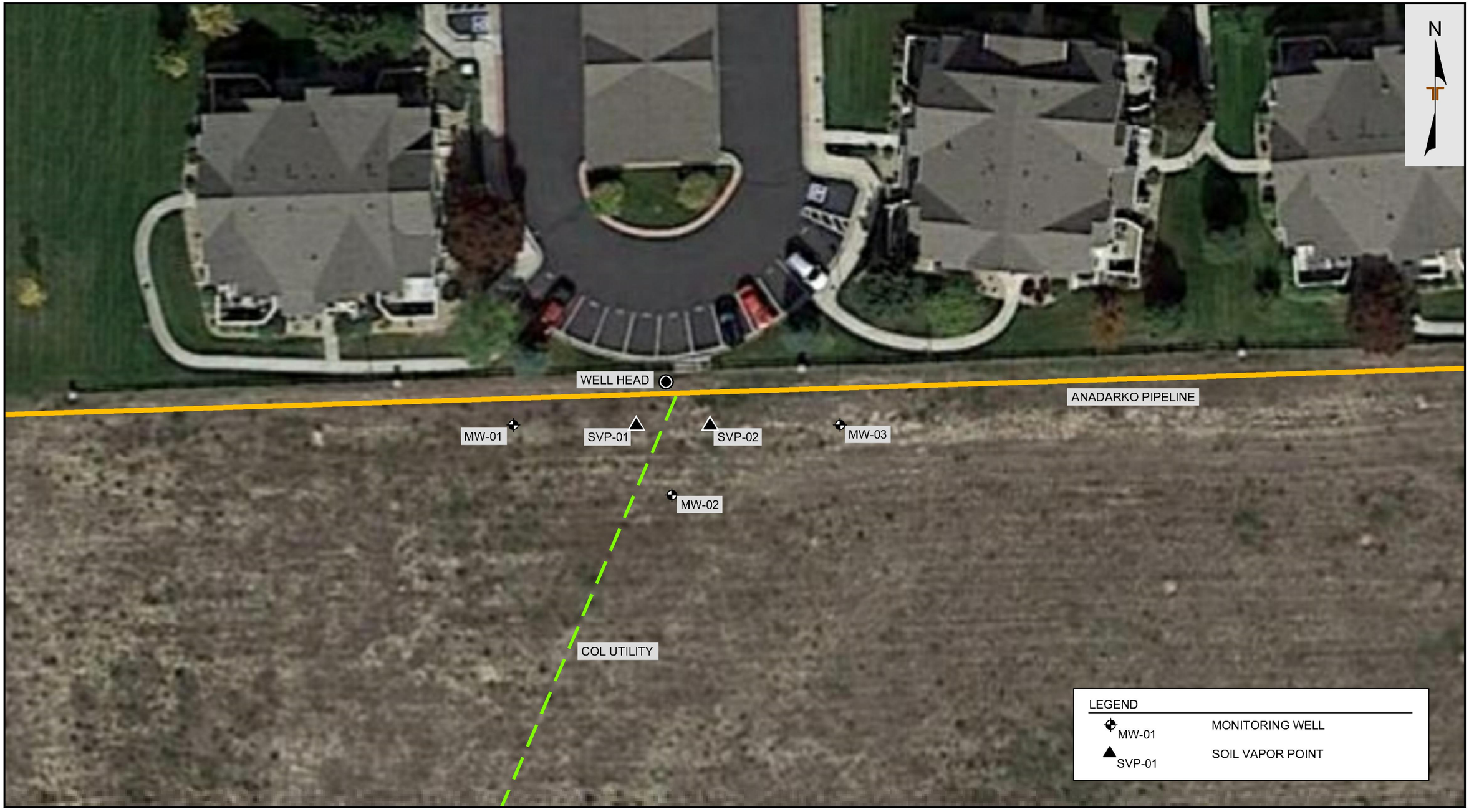
Exhibit 2 – Site Diagram

Exhibit 3 – Groundwater Contour Map



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

Project Manager: MJS	Project No. 22177045	Terracon 1242 Bramwood Pl Longmont, CO 80501-6100	TOPOGRAPHIC MAP	Exhibit
Drawn by: MJS	Scale: 1"=2,000'		Maruyama #1 O&G Well Site Investigation City of Longmont Longmont, CO	1
Checked by: DAB	File Name: 22177045			
Approved by: JCG	Date: 12/14/2017			



0 15' 30' 60'

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

Project Mngr:	MJS
Drawn By:	CPD
Checked By:	MJS
Approved By:	DAB

Project No.	22177045
Scale:	AS-SHOWN
File No.	22177045.DWG
Date:	12.11.2017

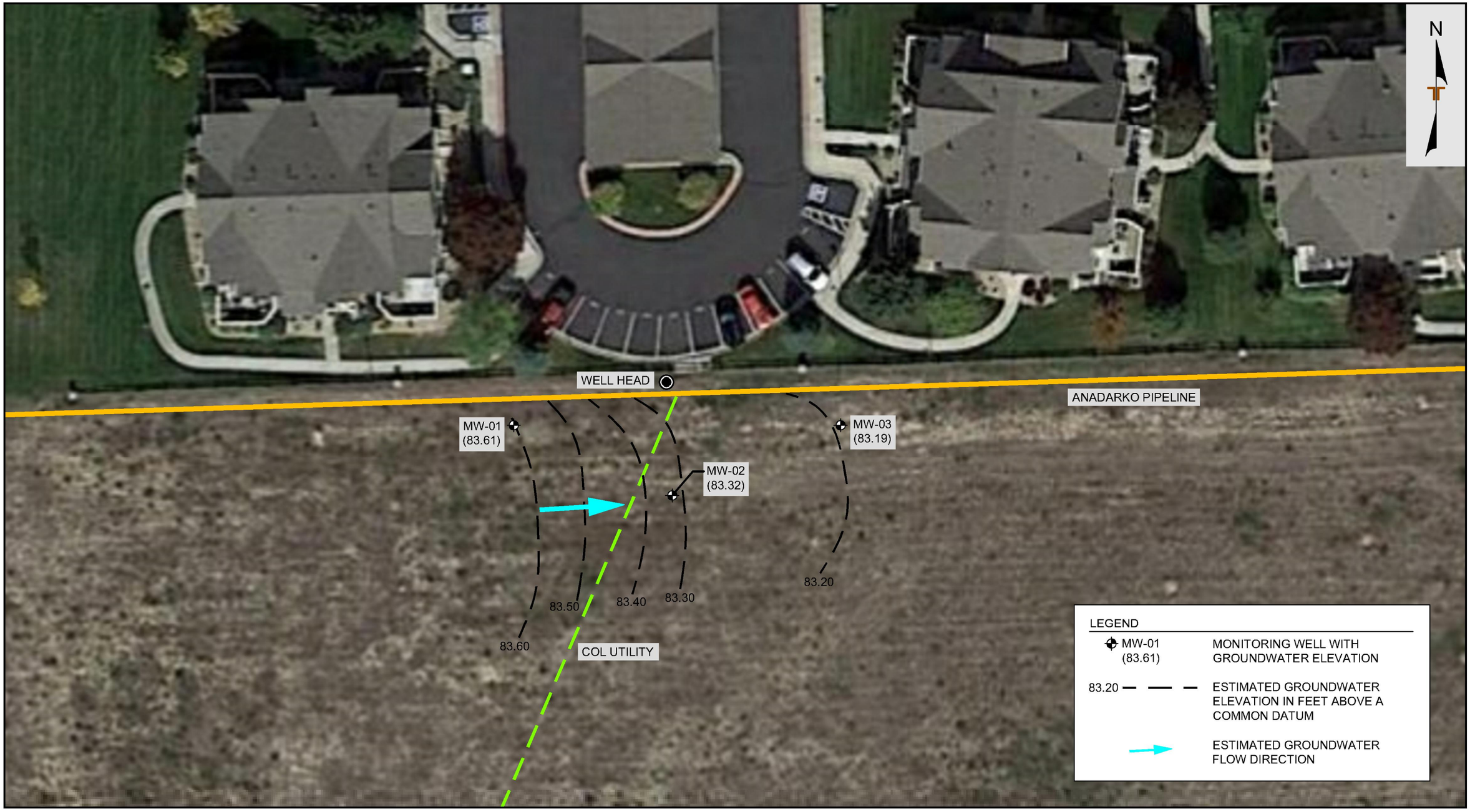
Terracon
Consulting Engineers and Scientists
1242 BRAMWOOD PLACE LONGMONT, CO 80501
PH. (303) 776-3921 FAX. (303) 776-4041

SITE DIAGRAM

MARUYAMA #1
CITY OF LONGMONT
LONGMONT, COLORADO

EXHIBIT No.

2



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POTENTIOMETRIC SURFACE MAP (4Q 2017)

MARUYAMA #1
CITY OF LONGMONT
LONGMONT, COLORADO

EXHIBIT No.
3

APPENDIX B – TABLES

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

Table 1
Soil Analytical Summary
Maruyama #1 Oil and Gas Well Site
Longmont, Colorado
Terracon Project No. 22177045

Sample ID and Depth					SB-01 (12-14)	SB-02 (13-15)	SB-03 (13-15)
Collection Date					10/31/17	10/31/17	10/31/17
Parameter	Residential RSL	Industrial RSL	COGCC Concentration Levels	CDPHE GPV	mg/kg	mg/kg	mg/kg
VOC (8260B)							
Benzene	**1.2**	**5.1**	**0.17**	**0.17**	**0.00114**	**0.00119**	<0.001
1,2,4-Trimethylbenzene	**58**	**240**	**NE**	**NE**	**0.00118**	<0.001	<0.001
TPH - 500 mg/kg (COGCC Regulatory Guidance Threshold)							
TPH-GRO	**NE**	**NE**	**500**	**NE**	**0.17**	**0.148**	<0.1

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

Table 2
Groundwater Analytical Summary
Maruyama #1 Oil and Gas Well Site
Longmont, Colorado
Terracon Project No. 22177045

Sample ID			MW-01	MW-02	MW-03
Collect Date			11/2/17	11/2/17	11/2/17
Parameter	CDPHE Reg. 41 Groundwater Standard[1]	COGCC Concentration Levels[2]	µg/L	µg/L	µg/L
Inorganic Parameters					
Calcium, Dissolved	NE	NE	110,000	114,000	113,000
Magnesium, Dissolved	NE	NE	76,300	77,100	80,200
Potassium, Dissolved	NE	NE	3,340	3,630	4,490
Sodium, Dissolved	NE	NE	88,200	91,100	89,300
Strontium	NE	NE	3,940	4,010	3,900
Alkalinity, Carbonate (CaCO3)	NE	NE	401,000	385,000	389,000
Chloride	250,000	52,160*	39,500	37,300	37,000
Nitrogen as Nitrate	10,000	NE	3,280	3,240	<100
Sulfate	250,000	832,400*	292,000	315,000	331,000
General Parameters					
Specific Conductance (mmhos)	NE	NE	1.319	1.341	1.334
Temperature (°C)	NE	NE	14.58	14.44	14.86
Dissolved Oxygen (mg/L)	NE	NE	8.4	9.2	5.78
ORP	NE	NE	45	24.3	-61.2
pH	6.5-8.5	NE	7.9	7.92	7.98

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
Only detected analytes shown (detected concentrations are **bold**)
NE = Not Established
COGCC = Colorado Oil and Gas Conservation Comission

Table 3
Soil Vapor Analytical Summary
Maruyama #1 Oil and Gas Well Site
Longmont, Colorado
Terracon Project No. 22177045

Sample ID			SVP-01	SVP-02
Collect Date			11/3/2017	11/3/2017
Parameter	Residential RSL	Residential VISL[1]	µg/m^3	µg/m^3
VOC (TO-15)				
Acetone	**32,000**	**1,066,667**	**33.6**	**24.9**
Benzene	**0.36**	**12**	**1.63**	**1.47**
Chloroform	**0.12**	**4**	**7.3**	**9.06**
1,3-Dichlorobenzene	**NE**	**NE**	**2.53**	**2.66**
Ethanol	**NE**	**NE**	**5.49**	**5.73**
Ethylbenzene	**1.1**	**37**	**1.94**	**3.03**
4-Ethyltoluene	**NE**	**NE**	**1.33**	**2.56**
Trichlorofluoromethane	**NE**	**NE**	**1.29**	**1.36**
Dichlorodifluoromethane	**100**	**3,333**	**1.85**	**1.89**
Heptane	**NE**	**NE**	**1.16**	**0.935**
n-Hexane	**730**	**24,333**	**5.93**	**3.5**
2-Butanone (MEK)	**5,200**	**173,333**	**4.78**	<3.07
2-Propanol	**210**	**7,000**	**22.6**	**15.4**
Tetrahydrofuran	**2,100**	**70,000**	**0.64**	**0.707**
Toluene	**5,200**	**173,333**	**10.6**	**13.9**
1,2,4-Trimethylbenzene	**7.3**	**243**	**1.49**	**3.28**
1,3,5-Trimethylbenzene	**NE**	**NE**	<0.982	**1.13**
2,2,4-Trimethylpentane	**NE**	**NE**	**1.22**	<0.934
m&p-Xylene	**100**	**3,333**	**6.72**	**11.5**
o-Xylene	**100**	**3,333**	**2.25**	**3.51**
Methane by D1946 (%)				
Methane	**NE**	**NE**	<0.4	<0.4

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

APPENDIX C – SOIL BORING LOGS

WELL LOG NO. SB-01/MW-01

PROJECT: Maruyama #1 O&G Well Site

CLIENT: City of Longmont
Longmont, CO

SITE:
Longmont, Colorado

LOCATION See Exhibit A-2

Latitude: 40.17153° Longitude: -105.0595°

DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS	PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	ELASTIC SILT (MH), tan, dry, soft	Flushmount	<1	
		Bentonite chips with riser pipe	<1	
8.0	**SILTY CLAY (CL-ML)**, tan, dry, soft		<1	
14.0	**WELL GRADED SAND (SW)**, coarse to medium grained, tan, dry	Solid pipe in sand	<1	SB-01 (12-14)
16.0	**WELL GRADED SAND (SW)**, gravelly, fine to coarse grained, tan to brown, dry		<1	
20.0	**WELL GRADED SAND (SW)**, gravelly, fine to coarse grained, tan to brown, wet	Screen pack in sand		
25.0	***Boring Terminated at 25 Feet***			

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

WATER LEVEL OBSERVATIONS: ▽ 20.0, during exploration; ▽ 18.27 during well development

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:
Direct Push

Abandonment Method:
Boring completed as a monitoring well

Notes:

WATER LEVEL OBSERVATIONS

▽ *20.0, during exploration*

▽ *18.27 during well development*

Terracon
1901 Sharp Point Dr Ste C
Fort Collins, CO

Well Started: 10-31-2017 | Well Completed: 10-31-2017

Drill Rig: Geoprobe | Driller: Drill Pro

Project No.: 22177045 | Exhibit: B-1

WELL LOG NO. SB-02/MW-02

PROJECT: Maruyama #1 O&G Well Site

CLIENT: City of Longmont
Longmont, CO

SITE:
Longmont, Colorado

LOCATION See Exhibit A-2

Latitude: 40.17149° Longitude: -105.05932°

DEPTH	MATERIAL DESCRIPTION
	ELASTIC SILT (MH), tan, dry, soft
11.0	**ELASTIC SILT (MH)**, gravelly, tan, dry, firm
15.0	**WELL GRADED SAND (SW)**, fine to coarse grained, tan, dry
16.0	**WELL GRADED SAND (SW)**, gravelly, fine to coarse grained, tan to brown, dry
19.0	**WELL GRADED SAND (SW)**, gravelly, fine to coarse grained, tan to brown, wet
25.0	***Boring Terminated at 25 Feet***

INSTALLATION DETAILS

Well Completion:

Top cap

Bentonite chips with riser pipe

Solid pipe in sand

Screen pack in sand

DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
			<1	
5			<1	
			<1	
10				
			<1	SB-02 (13-15)
15				
			<1	
20				
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:
Direct Push

Abandonment Method:
Boring completed as a monitoring well

Notes:

WATER LEVEL OBSERVATIONS

19.0, during exploration

18 during well development

Terracon
1901 Sharp Point Dr Ste C
Fort Collins, CO

Well Started: 10-31-2017

Well Completed: 10-31-2017

Drill Rig: Geoprobe

Driller: Drill Pro

Project No.: 22177045

Exhibit: B-2

WELL LOG NO. SB-03/MW-03

PROJECT: Maruyama #1 O&G Well Site

CLIENT: City of Longmont
Longmont, CO

SITE:
Longmont, Colorado

LOCATION See Exhibit A-2

Latitude: 40.17155° Longitude: -105.05913°

DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS (Well Completion)	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	ELASTIC SILT (MH), tan, dry, soft	Top cap				<1	
		Bentonite chips with riser pipe	5			<1	
11.0			10			<1	
	ELASTIC SILT (MH), gravelly, tan, dry, firm	Solid pipe in sand				<1	SB-03 (13-15)
15.0			15				
16.0	**WELL GRADED SAND (SW)**, fine to coarse grained, tan, dry						
	WELL GRADED SAND (SW), gravelly, fine to coarse grained, brown, dry			▽		<1	
20.0		Screen pack in sand	20	▽			
	WELL GRADED SAND (SW), gravelly, fine to coarse grained, brown, wet						
25.0			25				
	Boring Terminated at 25 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:
Direct Push

Abandonment Method:
Boring completed as a monitoring well

Notes:

WATER LEVEL OBSERVATIONS

▽ *20.0, during exploration*

▽ *18.75 during well development*

Terracon
1901 Sharp Point Dr Ste C
Fort Collins, CO

Well Started: 10-31-2017 | Well Completed: 10-31-2017

Drill Rig: Geoprobe | Driller: Drill Pro

Project No.: 22177045 | Exhibit: B-3

WELL LOG NO. SVP-01

PROJECT: Maruyama #1 O&G Well Site

CLIENT: City of Longmont
Longmont, CO

SITE:
Longmont, Colorado

LOCATION See Exhibit A-2

Latitude: 40.17155° Longitude: -105.05936°

GRAPHIC LOG	DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
		ELASTIC SILT (MH), tan, dry, soft	Well Completion: Top cap; Screen pack in sand					
	5.0	***Boring Terminated at 5 Feet***		5				

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

Hammer Type: Automatic

Advancement Method:
Direct Push

Abandonment Method:
Boring completed as soil vapor point

Notes:

WATER LEVEL OBSERVATIONS

Terracon
1901 Sharp Point Dr Ste C
Fort Collins, CO

Well Started: 10-31-2017 | Well Completed: 10-31-2017

Drill Rig: Geoprobe | Driller: Drill Pro

Project No.: 22177045 | Exhibit: B-4

WELL LOG NO. SVP-02

PROJECT: Maruyama #1 O&G Well Site

CLIENT: City of Longmont
Longmont, CO

SITE:
Longmont, Colorado

LOCATION See Exhibit A-2

Latitude: 40.17155° Longitude: -105.05928°

GRAPHIC LOG	DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
		ELASTIC SILT (MH), tan, dry, soft	Well Completion: Top cap; Screen pack in sand					
	5.0	***Boring Terminated at 5 Feet***		5				

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

Hammer Type: Automatic

Advancement Method:
Direct Push

Abandonment Method:
Boring completed as soil vapor point

Notes:

WATER LEVEL OBSERVATIONS

Terracon
1901 Sharp Point Dr Ste C
Fort Collins, CO

Well Started: 10-31-2017 | Well Completed: 10-31-2017

Drill Rig: Geoprobe | Driller: Drill Pro

Project No.: 22177045 | Exhibit: B-5

APPENDIX D – ANALYTICAL REPORTS AND CHAINS OF CUSTODY

ANALYTICAL REPORT

November 09, 2017

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L947764
Samples Received:	11/01/2017
Project Number:	22177045
Description:	Maruyama

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

SB-01(12-14) L947764-01 Solid

Collected by	Collected date/time	Received date/time
M. Skridulis	10/31/17 09:15	11/01/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1038032	1	11/01/17 18:38	11/02/17 04:14	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1038308	1	11/01/17 18:38	11/02/17 12:30	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1039664	1	11/08/17 00:16	11/08/17 17:46	MTJ

SB-02(13-15) L947764-02 Solid

Collected by	Collected date/time	Received date/time
M. Skridulis	10/31/17 10:00	11/01/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1038032	1	11/01/17 18:38	11/02/17 04:37	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1038308	1	11/01/17 18:38	11/02/17 12:52	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1039664	1	11/08/17 00:16	11/08/17 18:03	MTJ

SB-03(13-15) L947764-03 Solid

Collected by	Collected date/time	Received date/time
M. Skridulis	10/31/17 10:45	11/01/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1038032	1	11/01/17 18:38	11/02/17 05:00	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1038308	1	11/01/17 18:38	11/02/17 13:13	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1039664	1	11/08/17 00:16	11/08/17 18:20	ACM

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Technical Service Representative

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.170		0.100	1	11/02/2017 04:14	WG1038032
(S) a,a,a-Trifluorotoluene(FID)	*97.3*		*77.0-120*		*11/02/2017 04:14*	WG1038032

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/02/2017 12:30	WG1038308
Acrylonitrile	ND		0.0100	1	11/02/2017 12:30	WG1038308
Benzene	0.00114		0.00100	1	11/02/2017 12:30	WG1038308
Bromobenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
Bromodichloromethane	ND		0.00100	1	11/02/2017 12:30	WG1038308
Bromoform	ND		0.00100	1	11/02/2017 12:30	WG1038308
Bromomethane	ND		0.00500	1	11/02/2017 12:30	WG1038308
n-Butylbenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
sec-Butylbenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
tert-Butylbenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
Carbon tetrachloride	ND		0.00100	1	11/02/2017 12:30	WG1038308
Chlorobenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
Chlorodibromomethane	ND		0.00100	1	11/02/2017 12:30	WG1038308
Chloroethane	ND		0.00500	1	11/02/2017 12:30	WG1038308
Chloroform	ND		0.00500	1	11/02/2017 12:30	WG1038308
Chloromethane	ND		0.00250	1	11/02/2017 12:30	WG1038308
2-Chlorotoluene	ND		0.00100	1	11/02/2017 12:30	WG1038308
4-Chlorotoluene	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/02/2017 12:30	WG1038308
1,2-Dibromoethane	ND		0.00100	1	11/02/2017 12:30	WG1038308
Dibromomethane	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,2-Dichlorobenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,3-Dichlorobenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,4-Dichlorobenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
Dichlorodifluoromethane	ND		0.00500	1	11/02/2017 12:30	WG1038308
1,1-Dichloroethane	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,2-Dichloroethane	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,1-Dichloroethene	ND		0.00100	1	11/02/2017 12:30	WG1038308
cis-1,2-Dichloroethene	ND		0.00100	1	11/02/2017 12:30	WG1038308
trans-1,2-Dichloroethene	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,2-Dichloropropane	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,1-Dichloropropene	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,3-Dichloropropane	ND		0.00100	1	11/02/2017 12:30	WG1038308
cis-1,3-Dichloropropene	ND		0.00100	1	11/02/2017 12:30	WG1038308
trans-1,3-Dichloropropene	ND		0.00100	1	11/02/2017 12:30	WG1038308
2,2-Dichloropropane	ND		0.00100	1	11/02/2017 12:30	WG1038308
Di-isopropyl ether	ND		0.00100	1	11/02/2017 12:30	WG1038308
Ethylbenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
Hexachloro-1,3-butadiene	ND		0.00100	1	11/02/2017 12:30	WG1038308
Isopropylbenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
p-Isopropyltoluene	ND		0.00100	1	11/02/2017 12:30	WG1038308
2-Butanone (MEK)	ND		0.0100	1	11/02/2017 12:30	WG1038308
Methylene Chloride	ND		0.00500	1	11/02/2017 12:30	WG1038308
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/02/2017 12:30	WG1038308
Methyl tert-butyl ether	ND		0.00100	1	11/02/2017 12:30	WG1038308
Naphthalene	ND		0.00500	1	11/02/2017 12:30	WG1038308
n-Propylbenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
Styrene	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/02/2017 12:30	WG1038308

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	11/02/2017 12:30	WG1038308
Tetrachloroethene	ND		0.00100	1	11/02/2017 12:30	WG1038308
Toluene	ND		0.00500	1	11/02/2017 12:30	WG1038308
1,2,3-Trichlorobenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,2,4-Trichlorobenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,1,1-Trichloroethane	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,1,2-Trichloroethane	ND		0.00100	1	11/02/2017 12:30	WG1038308
Trichloroethene	ND		0.00100	1	11/02/2017 12:30	WG1038308
Trichlorofluoromethane	ND		0.00500	1	11/02/2017 12:30	WG1038308
1,2,3-Trichloropropane	ND		0.00250	1	11/02/2017 12:30	WG1038308
1,2,4-Trimethylbenzene	0.00118		0.00100	1	11/02/2017 12:30	WG1038308
1,2,3-Trimethylbenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
1,3,5-Trimethylbenzene	ND		0.00100	1	11/02/2017 12:30	WG1038308
Vinyl chloride	ND		0.00100	1	11/02/2017 12:30	WG1038308
Xylenes, Total	ND		0.00300	1	11/02/2017 12:30	WG1038308
(S) Toluene-d8	*98.1*		*80.0-120*		*11/02/2017 12:30*	WG1038308
(S) Dibromofluoromethane	*110*		*74.0-131*		*11/02/2017 12:30*	WG1038308
(S) 4-Bromofluorobenzene	*101*		*64.0-132*		*11/02/2017 12:30*	WG1038308

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	J3	4.00	1	11/08/2017 17:46	WG1039664
C28-C40 Oil Range	ND		4.00	1	11/08/2017 17:46	WG1039664
(S) o-Terphenyl	*71.5*		*18.0-148*		*11/08/2017 17:46*	WG1039664

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.148		0.100	1	11/02/2017 04:37	WG1038032
(S) a,a,a-Trifluorotoluene(FID)	*97.3*		*77.0-120*		*11/02/2017 04:37*	WG1038032

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/02/2017 12:52	WG1038308
Acrylonitrile	ND		0.0100	1	11/02/2017 12:52	WG1038308
Benzene	0.00119		0.00100	1	11/02/2017 12:52	WG1038308
Bromobenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
Bromodichloromethane	ND		0.00100	1	11/02/2017 12:52	WG1038308
Bromoform	ND		0.00100	1	11/02/2017 12:52	WG1038308
Bromomethane	ND		0.00500	1	11/02/2017 12:52	WG1038308
n-Butylbenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
sec-Butylbenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
tert-Butylbenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
Carbon tetrachloride	ND		0.00100	1	11/02/2017 12:52	WG1038308
Chlorobenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
Chlorodibromomethane	ND		0.00100	1	11/02/2017 12:52	WG1038308
Chloroethane	ND		0.00500	1	11/02/2017 12:52	WG1038308
Chloroform	ND		0.00500	1	11/02/2017 12:52	WG1038308
Chloromethane	ND		0.00250	1	11/02/2017 12:52	WG1038308
2-Chlorotoluene	ND		0.00100	1	11/02/2017 12:52	WG1038308
4-Chlorotoluene	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/02/2017 12:52	WG1038308
1,2-Dibromoethane	ND		0.00100	1	11/02/2017 12:52	WG1038308
Dibromomethane	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,2-Dichlorobenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,3-Dichlorobenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,4-Dichlorobenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
Dichlorodifluoromethane	ND		0.00500	1	11/02/2017 12:52	WG1038308
1,1-Dichloroethane	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,2-Dichloroethane	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,1-Dichloroethene	ND		0.00100	1	11/02/2017 12:52	WG1038308
cis-1,2-Dichloroethene	ND		0.00100	1	11/02/2017 12:52	WG1038308
trans-1,2-Dichloroethene	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,2-Dichloropropane	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,1-Dichloropropene	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,3-Dichloropropane	ND		0.00100	1	11/02/2017 12:52	WG1038308
cis-1,3-Dichloropropene	ND		0.00100	1	11/02/2017 12:52	WG1038308
trans-1,3-Dichloropropene	ND		0.00100	1	11/02/2017 12:52	WG1038308
2,2-Dichloropropane	ND		0.00100	1	11/02/2017 12:52	WG1038308
Di-isopropyl ether	ND		0.00100	1	11/02/2017 12:52	WG1038308
Ethylbenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
Hexachloro-1,3-butadiene	ND		0.00100	1	11/02/2017 12:52	WG1038308
Isopropylbenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
p-Isopropyltoluene	ND		0.00100	1	11/02/2017 12:52	WG1038308
2-Butanone (MEK)	ND		0.0100	1	11/02/2017 12:52	WG1038308
Methylene Chloride	ND		0.00500	1	11/02/2017 12:52	WG1038308
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/02/2017 12:52	WG1038308
Methyl tert-butyl ether	ND		0.00100	1	11/02/2017 12:52	WG1038308
Naphthalene	ND		0.00500	1	11/02/2017 12:52	WG1038308
n-Propylbenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
Styrene	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/02/2017 12:52	WG1038308

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	11/02/2017 12:52	WG1038308
Tetrachloroethene	ND		0.00100	1	11/02/2017 12:52	WG1038308
Toluene	ND		0.00500	1	11/02/2017 12:52	WG1038308
1,2,3-Trichlorobenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,2,4-Trichlorobenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,1,1-Trichloroethane	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,1,2-Trichloroethane	ND		0.00100	1	11/02/2017 12:52	WG1038308
Trichloroethene	ND		0.00100	1	11/02/2017 12:52	WG1038308
Trichlorofluoromethane	ND		0.00500	1	11/02/2017 12:52	WG1038308
1,2,3-Trichloropropane	ND		0.00250	1	11/02/2017 12:52	WG1038308
1,2,4-Trimethylbenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,2,3-Trimethylbenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
1,3,5-Trimethylbenzene	ND		0.00100	1	11/02/2017 12:52	WG1038308
Vinyl chloride	ND		0.00100	1	11/02/2017 12:52	WG1038308
Xylenes, Total	ND		0.00300	1	11/02/2017 12:52	WG1038308
(S) Toluene-d8	*100*		*80.0-120*		*11/02/2017 12:52*	WG1038308
(S) Dibromofluoromethane	*109*		*74.0-131*		*11/02/2017 12:52*	WG1038308
(S) 4-Bromofluorobenzene	*97.8*		*64.0-132*		*11/02/2017 12:52*	WG1038308

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	J3	4.00	1	11/08/2017 18:03	WG1039664
C28-C40 Oil Range	ND		4.00	1	11/08/2017 18:03	WG1039664
(S) o-Terphenyl	*69.5*		*18.0-148*		*11/08/2017 18:03*	WG1039664

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	11/02/2017 05:00	WG1038032
(S) a,a,a-Trifluorotoluene(FID)	*98.6*		*77.0-120*		*11/02/2017 05:00*	WG1038032

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/02/2017 13:13	WG1038308
Acrylonitrile	ND		0.0100	1	11/02/2017 13:13	WG1038308
Benzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
Bromobenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
Bromodichloromethane	ND		0.00100	1	11/02/2017 13:13	WG1038308
Bromoform	ND		0.00100	1	11/02/2017 13:13	WG1038308
Bromomethane	ND		0.00500	1	11/02/2017 13:13	WG1038308
n-Butylbenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
sec-Butylbenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
tert-Butylbenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
Carbon tetrachloride	ND		0.00100	1	11/02/2017 13:13	WG1038308
Chlorobenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
Chlorodibromomethane	ND		0.00100	1	11/02/2017 13:13	WG1038308
Chloroethane	ND		0.00500	1	11/02/2017 13:13	WG1038308
Chloroform	ND		0.00500	1	11/02/2017 13:13	WG1038308
Chloromethane	ND		0.00250	1	11/02/2017 13:13	WG1038308
2-Chlorotoluene	ND		0.00100	1	11/02/2017 13:13	WG1038308
4-Chlorotoluene	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/02/2017 13:13	WG1038308
1,2-Dibromoethane	ND		0.00100	1	11/02/2017 13:13	WG1038308
Dibromomethane	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,2-Dichlorobenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,3-Dichlorobenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,4-Dichlorobenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
Dichlorodifluoromethane	ND		0.00500	1	11/02/2017 13:13	WG1038308
1,1-Dichloroethane	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,2-Dichloroethane	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,1-Dichloroethene	ND		0.00100	1	11/02/2017 13:13	WG1038308
cis-1,2-Dichloroethene	ND		0.00100	1	11/02/2017 13:13	WG1038308
trans-1,2-Dichloroethene	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,2-Dichloropropane	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,1-Dichloropropene	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,3-Dichloropropane	ND		0.00100	1	11/02/2017 13:13	WG1038308
cis-1,3-Dichloropropene	ND		0.00100	1	11/02/2017 13:13	WG1038308
trans-1,3-Dichloropropene	ND		0.00100	1	11/02/2017 13:13	WG1038308
2,2-Dichloropropane	ND		0.00100	1	11/02/2017 13:13	WG1038308
Di-isopropyl ether	ND		0.00100	1	11/02/2017 13:13	WG1038308
Ethylbenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
Hexachloro-1,3-butadiene	ND		0.00100	1	11/02/2017 13:13	WG1038308
Isopropylbenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
p-Isopropyltoluene	ND		0.00100	1	11/02/2017 13:13	WG1038308
2-Butanone (MEK)	ND		0.0100	1	11/02/2017 13:13	WG1038308
Methylene Chloride	ND		0.00500	1	11/02/2017 13:13	WG1038308
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/02/2017 13:13	WG1038308
Methyl tert-butyl ether	ND		0.00100	1	11/02/2017 13:13	WG1038308
Naphthalene	ND		0.00500	1	11/02/2017 13:13	WG1038308
n-Propylbenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
Styrene	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/02/2017 13:13	WG1038308

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	11/02/2017 13:13	WG1038308
Tetrachloroethene	ND		0.00100	1	11/02/2017 13:13	WG1038308
Toluene	ND		0.00500	1	11/02/2017 13:13	WG1038308
1,2,3-Trichlorobenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,2,4-Trichlorobenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,1,1-Trichloroethane	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,1,2-Trichloroethane	ND		0.00100	1	11/02/2017 13:13	WG1038308
Trichloroethene	ND		0.00100	1	11/02/2017 13:13	WG1038308
Trichlorofluoromethane	ND		0.00500	1	11/02/2017 13:13	WG1038308
1,2,3-Trichloropropane	ND		0.00250	1	11/02/2017 13:13	WG1038308
1,2,4-Trimethylbenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,2,3-Trimethylbenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
1,3,5-Trimethylbenzene	ND		0.00100	1	11/02/2017 13:13	WG1038308
Vinyl chloride	ND		0.00100	1	11/02/2017 13:13	WG1038308
Xylenes, Total	ND		0.00300	1	11/02/2017 13:13	WG1038308
(S) Toluene-d8	*99.2*		*80.0-120*		*11/02/2017 13:13*	WG1038308
(S) Dibromofluoromethane	*109*		*74.0-131*		*11/02/2017 13:13*	WG1038308
(S) 4-Bromofluorobenzene	*96.4*		*64.0-132*		*11/02/2017 13:13*	WG1038308

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	11/08/2017 18:20	WG1039664
C28-C40 Oil Range	ND		4.00	1	11/08/2017 18:20	WG1039664
(S) o-Terphenyl	*59.8*		*18.0-148*		*11/08/2017 18:20*	WG1039664

Method Blank (MB)

(MB) R3262602-3 11/01/17 15:48

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*101*			*77.0-120*

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

(LCS) R3262602-1 11/01/17 14:39 • (LCSD) R3262602-2 11/01/17 15:02

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	4.91	4.85	89.3	88.2	70.0-136			1.16	20
(S) a,a,a-Trifluorotoluene(FID)				*100*	*100*	*77.0-120*				

L945555-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L945555-01 11/02/17 05:47 • (MS) R3262602-4 11/02/17 06:10 • (MSD) R3262602-5 11/02/17 06:33

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	72.3	70.8	51.4	50.3	25	10.0-147			2.12	30
(S) a,a,a-Trifluorotoluene(FID)					*99.8*	*99.7*		*77.0-120*				

Method Blank (MB)

(MB) R3263476-3 11/02/17 10:39

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

Method Blank (MB)

(MB) R3263476-3 11/02/17 10:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
p-Isopropyltoluene	U		0.000204	0.00100
2-Butanone (MEK)	U		0.00468	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00188	0.0100
Methyl tert-butyl ether	U		0.000212	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000206	0.00100
Styrene	U		0.000234	0.00100
1,1,1,2-Tetrachloroethane	U		0.000264	0.00100
1,1,2,2-Tetrachloroethane	U		0.000365	0.00100
Tetrachloroethene	U		0.000276	0.00100
Toluene	U		0.000434	0.00500
1,1,2-Trichlorotrifluoroethane	U		0.000365	0.00100
1,2,3-Trichlorobenzene	U		0.000306	0.00100
1,2,4-Trichlorobenzene	U		0.000388	0.00100
1,1,1-Trichloroethane	U		0.000286	0.00100
1,1,2-Trichloroethane	U		0.000277	0.00100
Trichloroethene	U		0.000279	0.00100
Trichlorofluoromethane	U		0.000382	0.00500
1,2,3-Trichloropropane	U		0.000741	0.00250
1,2,3-Trimethylbenzene	U		0.000287	0.00100
1,2,4-Trimethylbenzene	U		0.000211	0.00100
1,3,5-Trimethylbenzene	U		0.000266	0.00100
Vinyl chloride	U		0.000291	0.00100
Xylenes, Total	U		0.000698	0.00300
(S) Toluene-d8	*107*			*80.0-120*
(S) Dibromofluoromethane	*103*			*74.0-131*
(S) 4-Bromofluorobenzene	*92.8*			*64.0-132*

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

(LCS) R3263476-1 11/02/17 09:35 • (LCSD) R3263476-2 11/02/17 09:56

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	0.163	0.169	130	135	11.0-160			3.53	23
Acrylonitrile	0.125	0.139	0.141	111	113	61.0-143			1.45	20
Benzene	0.0250	0.0252	0.0247	101	98.8	71.0-124			1.96	20
Bromobenzene	0.0250	0.0232	0.0227	92.9	90.8	78.0-120			2.32	20
Bromodichloromethane	0.0250	0.0258	0.0250	103	100	75.0-120			3.11	20

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

(LCS) R3263476-1 11/02/17 09:35 • (LCSD) R3263476-2 11/02/17 09:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromoform	0.0250	0.0256	0.0266	102	106	65.0-133			3.72	20
Bromomethane	0.0250	0.0302	0.0291	121	116	26.0-160			3.77	20
n-Butylbenzene	0.0250	0.0296	0.0298	118	119	73.0-126			0.900	20
sec-Butylbenzene	0.0250	0.0275	0.0278	110	111	75.0-121			1.00	20
tert-Butylbenzene	0.0250	0.0275	0.0271	110	109	74.0-122			1.54	20
Carbon tetrachloride	0.0250	0.0203	0.0202	81.1	80.9	66.0-123			0.300	20
Chlorobenzene	0.0250	0.0247	0.0250	98.7	100	79.0-121			1.38	20
Chlorodibromomethane	0.0250	0.0262	0.0271	105	108	74.0-128			3.61	20
Chloroethane	0.0250	0.0285	0.0270	114	108	51.0-147			5.42	20
Chloroform	0.0250	0.0248	0.0243	99.2	97.4	73.0-123			1.83	20
Chloromethane	0.0250	0.0242	0.0237	96.8	94.8	51.0-138			2.11	20
2-Chlorotoluene	0.0250	0.0251	0.0250	101	100	72.0-124			0.430	20
4-Chlorotoluene	0.0250	0.0250	0.0244	99.9	97.4	78.0-120			2.52	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0210	0.0218	84.0	87.0	65.0-126			3.49	20
1,2-Dibromoethane	0.0250	0.0238	0.0241	95.3	96.3	78.0-122			1.09	20
Dibromomethane	0.0250	0.0250	0.0244	100	97.5	79.0-120			2.55	20
1,2-Dichlorobenzene	0.0250	0.0252	0.0256	101	102	80.0-120			1.46	20
1,3-Dichlorobenzene	0.0250	0.0251	0.0252	100	101	72.0-123			0.480	20
1,4-Dichlorobenzene	0.0250	0.0259	0.0262	104	105	77.0-120			0.960	20
Dichlorodifluoromethane	0.0250	0.0253	0.0274	101	110	49.0-155			8.08	20
1,1-Dichloroethane	0.0250	0.0259	0.0255	104	102	70.0-128			1.55	20
1,2-Dichloroethane	0.0250	0.0246	0.0251	98.3	100	69.0-128			1.99	20
1,1-Dichloroethene	0.0250	0.0234	0.0223	93.7	89.1	63.0-131			4.97	20
cis-1,2-Dichloroethene	0.0250	0.0250	0.0246	100	98.5	74.0-123			1.60	20
trans-1,2-Dichloroethene	0.0250	0.0245	0.0237	98.0	94.6	72.0-122			3.57	20
1,2-Dichloropropane	0.0250	0.0260	0.0254	104	102	75.0-126			2.18	20
1,1-Dichloropropene	0.0250	0.0258	0.0257	103	103	72.0-130			0.460	20
1,3-Dichloropropane	0.0250	0.0239	0.0248	95.5	99.2	80.0-121			3.82	20
cis-1,3-Dichloropropene	0.0250	0.0251	0.0258	100	103	80.0-125			2.84	20
trans-1,3-Dichloropropene	0.0250	0.0237	0.0248	94.7	99.2	75.0-129			4.66	20
2,2-Dichloropropane	0.0250	0.0172	0.0175	68.9	69.9	60.0-129			1.47	20
Di-isopropyl ether	0.0250	0.0259	0.0252	103	101	62.0-133			2.45	20
Ethylbenzene	0.0250	0.0247	0.0253	98.7	101	77.0-120			2.48	20
Hexachloro-1,3-butadiene	0.0250	0.0295	0.0307	118	123	68.0-128			3.69	20
Isopropylbenzene	0.0250	0.0268	0.0261	107	104	75.0-120			2.52	20
p-Isopropyltoluene	0.0250	0.0280	0.0283	112	113	74.0-125			0.780	20
2-Butanone (MEK)	0.125	0.154	0.156	123	124	37.0-159			0.840	20
Methylene Chloride	0.0250	0.0237	0.0220	94.7	88.1	67.0-123			7.20	20
4-Methyl-2-pentanone (MIBK)	0.125	0.127	0.133	102	106	60.0-144			4.06	20
Methyl tert-butyl ether	0.0250	0.0229	0.0226	91.7	90.5	66.0-125			1.36	20

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

(LCS) R3263476-1 11/02/17 09:35 • (LCSD) R3263476-2 11/02/17 09:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Naphthalene	0.0250	0.0252	0.0266	101	106	64.0-125			5.23	20
n-Propylbenzene	0.0250	0.0275	0.0270	110	108	78.0-120			1.54	20
Styrene	0.0250	0.0268	0.0265	107	106	78.0-124			1.31	20
1,1,1,2-Tetrachloroethane	0.0250	0.0236	0.0230	94.4	91.9	74.0-124			2.75	20
1,1,2,2-Tetrachloroethane	0.0250	0.0238	0.0235	95.3	93.9	73.0-120			1.55	20
Tetrachloroethene	0.0250	0.0249	0.0246	99.8	98.5	70.0-127			1.36	20
Toluene	0.0250	0.0243	0.0249	97.1	99.6	77.0-120			2.49	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0184	0.0189	73.7	75.4	64.0-135			2.28	20
1,2,3-Trichlorobenzene	0.0250	0.0259	0.0271	104	108	68.0-126			4.38	20
1,2,4-Trichlorobenzene	0.0250	0.0268	0.0279	107	112	70.0-127			3.97	20
1,1,1-Trichloroethane	0.0250	0.0219	0.0212	87.4	84.8	69.0-125			3.03	20
1,1,2-Trichloroethane	0.0250	0.0233	0.0232	93.0	92.8	78.0-120			0.270	20
Trichloroethene	0.0250	0.0245	0.0242	98.0	96.9	79.0-120			1.12	20
Trichlorofluoromethane	0.0250	0.0257	0.0283	103	113	59.0-136			9.60	20
1,2,3-Trichloropropane	0.0250	0.0247	0.0245	98.8	98.0	73.0-124			0.810	20
1,2,3-Trimethylbenzene	0.0250	0.0257	0.0254	103	102	76.0-120			1.24	20
1,2,4-Trimethylbenzene	0.0250	0.0265	0.0269	106	108	75.0-120			1.46	20
1,3,5-Trimethylbenzene	0.0250	0.0264	0.0262	105	105	75.0-120			0.490	20
Vinyl chloride	0.0250	0.0281	0.0275	112	110	63.0-134			2.27	20
Xylenes, Total	0.0750	0.0777	0.0788	104	105	77.0-120			1.41	20
(S) Toluene-d8				*100*	*102*	*80.0-120*				
(S) Dibromofluoromethane				*103*	*102*	*74.0-131*				
(S) 4-Bromofluorobenzene				*94.8*	*94.9*	*64.0-132*				

L947788-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L947788-01 11/02/17 17:32 • (MS) R3263476-4 11/02/17 19:18 • (MSD) R3263476-5 11/02/17 19:39

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	0.146	U	10.1	11.0	137	149	50.5	10.0-160			8.76	36
Acrylonitrile	0.146	U	8.17	8.54	111	116	50.5	14.0-160			4.52	33
Benzene	0.0291	U	1.19	1.22	80.7	82.9	50.5	13.0-146			2.76	27
Bromobenzene	0.0291	U	1.26	1.38	85.9	93.5	50.5	10.0-149			8.45	33
Bromodichloromethane	0.0291	U	1.28	1.38	86.8	93.8	50.5	15.0-142			7.74	28
Bromoform	0.0291	U	1.29	1.40	87.8	94.9	50.5	10.0-147			7.67	31
Bromomethane	0.0291	U	0.965	0.979	65.6	66.5	50.5	10.0-160			1.47	32
n-Butylbenzene	0.0291	U	1.55	1.68	105	114	50.5	10.0-154			8.08	37
sec-Butylbenzene	0.0291	U	1.50	1.63	102	111	50.5	10.0-151			8.58	36
tert-Butylbenzene	0.0291	U	1.44	1.55	98.1	106	50.5	10.0-152			7.30	35

L947788-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L947788-01 11/02/17 17:32 • (MS) R3263476-4 11/02/17 19:18 • (MSD) R3263476-5 11/02/17 19:39

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Carbon tetrachloride	0.0291	U	0.782	0.860	53.1	58.4	50.5	13.0-140			9.43	30
Chlorobenzene	0.0291	U	1.19	1.30	81.2	88.1	50.5	10.0-149			8.21	31
Chlorodibromomethane	0.0291	U	1.25	1.36	85.1	92.1	50.5	12.0-147			7.91	29
Chloroethane	0.0291	U	0.258	0.234	17.6	15.9	50.5	10.0-159			9.99	33
Chloroform	0.0291	U	1.31	1.38	88.7	93.5	50.5	18.0-148			5.30	28
Chloromethane	0.0291	U	0.729	0.780	49.5	53.0	50.5	10.0-146			6.75	29
2-Chlorotoluene	0.0291	U	1.36	1.46	92.6	99.4	50.5	10.0-151			7.08	35
4-Chlorotoluene	0.0291	U	1.35	1.47	91.9	99.7	50.5	10.0-150			8.11	35
1,2-Dibromo-3-Chloropropane	0.0291	U	1.02	1.15	69.4	78.1	50.5	10.0-149			11.8	34
1,2-Dibromoethane	0.0291	U	1.19	1.29	80.7	87.3	50.5	14.0-145			7.86	28
Dibromomethane	0.0291	U	1.29	1.43	88.0	97.1	50.5	18.0-144			9.82	27
1,2-Dichlorobenzene	0.0291	U	1.38	1.51	94.0	103	50.5	10.0-153			9.02	34
1,3-Dichlorobenzene	0.0291	U	1.35	1.46	91.5	99.3	50.5	10.0-150			8.21	35
1,4-Dichlorobenzene	0.0291	U	1.41	1.55	96.0	105	50.5	10.0-148			8.96	34
Dichlorodifluoromethane	0.0291	U	0.816	0.846	55.4	57.5	50.5	10.0-160			3.67	30
1,1-Dichloroethane	0.0291	U	1.26	1.32	85.9	89.4	50.5	19.0-148			4.03	28
1,2-Dichloroethane	0.0291	U	1.31	1.34	89.2	91.3	50.5	17.0-147			2.33	27
1,1-Dichloroethene	0.0291	U	0.957	0.973	65.0	66.1	50.5	10.0-150			1.68	31
cis-1,2-Dichloroethene	0.0291	U	1.27	1.29	86.2	87.5	50.5	16.0-145			1.48	28
trans-1,2-Dichloroethene	0.0291	U	0.931	0.952	63.2	64.7	50.5	11.0-142			2.20	29
1,2-Dichloropropane	0.0291	U	1.35	1.44	91.6	97.6	50.5	17.0-148			6.33	28
1,1-Dichloropropene	0.0291	U	1.14	1.18	77.6	80.0	50.5	10.0-150			3.10	30
1,3-Dichloropropane	0.0291	U	1.24	1.35	84.2	91.9	50.5	16.0-148			8.76	27
cis-1,3-Dichloropropene	0.0291	U	1.20	1.33	81.4	90.3	50.5	13.0-150			10.4	28
trans-1,3-Dichloropropene	0.0291	U	1.22	1.35	82.6	91.4	50.5	10.0-152			10.2	29
2,2-Dichloropropane	0.0291	U	0.757	0.847	51.5	57.5	50.5	16.0-143			11.1	30
Di-isopropyl ether	0.0291	U	1.30	1.35	88.1	91.5	50.5	16.0-149			3.75	28
Ethylbenzene	0.0291	U	1.20	1.29	81.7	87.9	50.5	10.0-147			7.27	31
Hexachloro-1,3-butadiene	0.0291	U	1.63	1.70	110	116	50.5	10.0-154			4.64	40
Isopropylbenzene	0.0291	U	1.36	1.47	92.4	99.8	50.5	10.0-147			7.77	33
p-Isopropyltoluene	0.0291	0.0169	1.51	1.62	102	109	50.5	10.0-156			7.14	37
2-Butanone (MEK)	0.146	U	9.99	10.9	136	148	50.5	10.0-160			8.93	33
Methylene Chloride	0.0291	U	0.912	1.00	62.0	68.0	50.5	16.0-139			9.32	29
4-Methyl-2-pentanone (MIBK)	0.146	U	6.97	7.68	94.8	104	50.5	12.0-160			9.60	32
Methyl tert-butyl ether	0.0291	U	0.965	1.08	65.6	73.5	50.5	21.0-145			11.4	29
Naphthalene	0.0291	U	1.30	1.43	88.4	97.1	50.5	10.0-153			9.41	36
n-Propylbenzene	0.0291	U	1.43	1.51	96.9	103	50.5	10.0-151			6.00	34
Styrene	0.0291	U	1.38	1.55	93.5	105	50.5	10.0-155			11.8	34
1,1,1,2-Tetrachloroethane	0.0291	U	1.07	1.16	72.7	78.7	50.5	10.0-147			7.99	30

L947788-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L947788-01 11/02/17 17:32 • (MS) R3263476-4 11/02/17 19:18 • (MSD) R3263476-5 11/02/17 19:39

Analyte	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
1,1,2,2-Tetrachloroethane	0.0291	U	1.24	1.32	84.2	89.9	50.5	10.0-155			6.54	31
Tetrachloroethene	0.0291	U	1.03	1.12	70.1	76.3	50.5	10.0-144			8.51	32
Toluene	0.0291	U	1.13	1.20	76.5	81.3	50.5	10.0-144			6.18	28
1,1,2-Trichlorotrifluoroethane	0.0291	U	0.945	1.01	64.2	68.5	50.5	10.0-153			6.37	33
1,2,3-Trichlorobenzene	0.0291	U	1.39	1.55	94.2	105	50.5	10.0-153			11.1	40
1,2,4-Trichlorobenzene	0.0291	U	1.42	1.54	96.5	104	50.5	10.0-156			7.82	40
1,1,1-Trichloroethane	0.0291	U	0.958	1.02	65.1	69.0	50.5	18.0-145			5.89	29
1,1,2-Trichloroethane	0.0291	U	1.23	1.29	83.8	87.8	50.5	12.0-151			4.72	28
Trichloroethene	0.0291	U	1.17	1.25	79.2	85.2	50.5	11.0-148			7.34	29
Trichlorofluoromethane	0.0291	U	0.961	0.830	65.3	56.4	50.5	10.0-157			14.7	34
1,2,3-Trichloropropane	0.0291	U	1.35	1.47	92.0	100	50.5	10.0-154			8.34	32
1,2,3-Trimethylbenzene	0.0291	U	1.47	1.59	99.9	108	50.5	10.0-150			7.72	33
1,2,4-Trimethylbenzene	0.0291	U	1.43	1.52	97.3	103	50.5	10.0-151			5.97	34
1,3,5-Trimethylbenzene	0.0291	U	1.41	1.52	95.7	103	50.5	10.0-150			7.62	33
Vinyl chloride	0.0291	U	0.795	0.807	54.0	54.9	50.5	10.0-150			1.61	29
Xylenes, Total	0.0874	U	3.70	3.91	83.7	88.4	50.5	10.0-150			5.52	31
(S) Toluene-d8					*95.8*	*97.2*		*80.0-120*				
(S) Dibromofluoromethane					*105*	*102*		*74.0-131*				
(S) 4-Bromofluorobenzene					*99.2*	*98.5*		*64.0-132*				

Method Blank (MB)

(MB) R3264170-1 11/08/17 14:38

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*70.6*			*18.0-148*

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

(LCS) R3264170-2 11/08/17 14:55 • (LCSD) R3264170-3 11/08/17 15:13

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
C10-C28 Diesel Range	60.0	40.2	49.7	66.9	82.9	50.0-150		J3	21.3	20
(S) o-Terphenyl				*60.2*	*75.2*	*18.0-148*				

L947764-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L947764-03 11/08/17 18:20 • (MS) R3264170-4 11/08/17 18:38 • (MSD) R3264170-5 11/08/17 18:54

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
C10-C28 Diesel Range	60.0	ND	39.7	45.0	63.3	72.1	1	50.0-150			12.5	20
(S) o-Terphenyl					*57.5*	*69.6*		*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

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

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

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

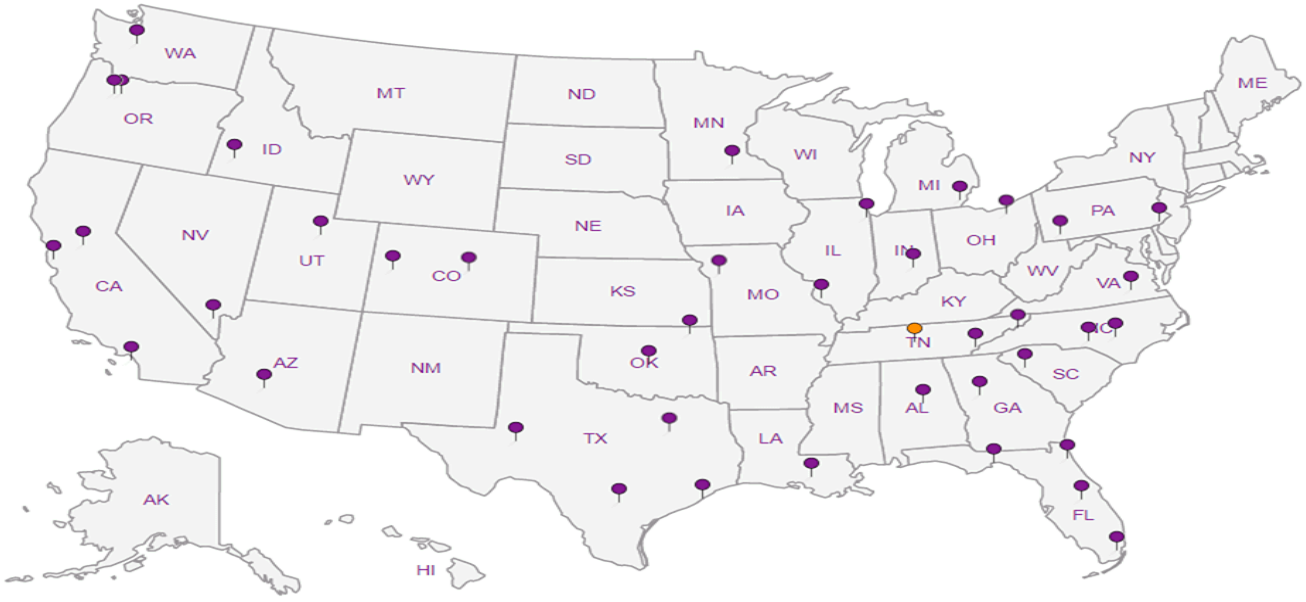
Third Party & Federal Accreditations

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

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

Our Locations

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



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

Billing Information:
SAME

Report to:
Michael Skridulis

Email To:
mjskridulis@terracon.com

Project Description: Maruyama

City/State Collected:

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

Client Project #
22177045

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 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	VOC8260 - 4oz Soil Jar	TPH-GRO - 4oz Soil Jar	TPH-DRO - 4oz Soil Jar	TPH-ORO - 4oz Soil Jar	Rem./Contaminant	Sample # (lab only)
SB-01(12-14)	G	SS		10/31/17	0915	4	X	X	X	X		-01
SB-02(13-15)	↓	SS		↓	1000	4	X	X	X	X		-02
SB-03(13-15)	↓	SS		↓	1045	4	X	X	X	X		-03
												-04 KD

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

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

L# 947764
Table C193

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

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

Remarks: Fed ex: 4094 8307 3825 Tracking #: 7422 5604 0626

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
M.S.	10/31/17	1500	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Kelly Mann 841

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ _____
Temp: 1.1 °C Bottles Received: 12 x 4oz cl
Date: 11/1/17 Time: 0845

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

ESC LAB SCIENCES
Cooler Receipt Form

Client: TERRALCO	SDG#	477764
Cooler Received/Opened On: 11/ /17	Temperature:	1.1
Received by : Kelly Mercer		
Signature: Kelly Mercer 841		

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

November 09, 2017

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L948383
Samples Received:	11/04/2017
Project Number:	22177045
Description:	Maruyama

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

MW-01 L948383-01 GW

Collected by: M. Skridulis
Collected date/time: 11/02/17 15:10
Received date/time: 11/04/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1039591	1	11/07/17 14:29	11/07/17 14:29	MCG
Wet Chemistry by Method 4500CO2 D-2011	WG1039591	1	11/07/17 14:29	11/07/17 14:29	MCG
Wet Chemistry by Method 9056A	WG1039151	1	11/04/17 11:22	11/04/17 11:22	KCF
Wet Chemistry by Method 9056A	WG1039151	5	11/04/17 18:20	11/04/17 18:20	KCF
Metals (ICP) by Method 6010B	WG1040425	1	11/08/17 14:29	11/08/17 22:45	ST
Volatile Organic Compounds (GC) by Method RSK175	WG1039788	1	11/07/17 09:52	11/07/17 09:52	BG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1039177	1	11/04/17 18:34	11/04/17 18:34	JAH

MW-02 L948383-02 GW

Collected by: M. Skridulis
Collected date/time: 11/02/17 15:20
Received date/time: 11/04/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1039591	1	11/07/17 14:36	11/07/17 14:36	MCG
Wet Chemistry by Method 4500CO2 D-2011	WG1039591	1	11/07/17 14:36	11/07/17 14:36	MCG
Wet Chemistry by Method 9056A	WG1039151	1	11/04/17 11:35	11/04/17 11:35	KCF
Wet Chemistry by Method 9056A	WG1039151	5	11/04/17 18:33	11/04/17 18:33	KCF
Metals (ICP) by Method 6010B	WG1040425	1	11/08/17 14:29	11/08/17 22:48	ST
Volatile Organic Compounds (GC) by Method RSK175	WG1039788	1	11/07/17 09:56	11/07/17 09:56	BG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1039177	1	11/04/17 18:51	11/04/17 18:51	JAH

MW-03 L948383-03 GW

Collected by: M. Skridulis
Collected date/time: 11/02/17 15:30
Received date/time: 11/04/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1039591	1	11/07/17 14:42	11/07/17 14:42	MCG
Wet Chemistry by Method 4500CO2 D-2011	WG1039591	1	11/07/17 14:42	11/07/17 14:42	MCG
Wet Chemistry by Method 9056A	WG1039151	1	11/04/17 11:48	11/04/17 11:48	KCF
Wet Chemistry by Method 9056A	WG1039151	5	11/04/17 18:47	11/04/17 18:47	KCF
Metals (ICP) by Method 6010B	WG1040425	1	11/08/17 14:29	11/08/17 22:52	ST
Volatile Organic Compounds (GC) by Method RSK175	WG1039788	1	11/07/17 10:00	11/07/17 10:00	BG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1039177	1	11/04/17 19:08	11/04/17 19:08	JAH

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Technical Service Representative

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	401		20.0	1	11/07/2017 14:29	WG1039591

Sample Narrative:
L948383-01 WG1039591: Endpoint pH 4.5

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Free Carbon Dioxide	ND	T8	20.0	1	11/07/2017 14:29	WG1039591

Sample Narrative:
L948383-01 WG1039591: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	11/04/2017 11:22	WG1039151
Chloride	39.5		1.00	1	11/04/2017 11:22	WG1039151
Nitrate as (N)	3.28		0.100	1	11/04/2017 11:22	WG1039151
Nitrite as (N)	ND		0.100	1	11/04/2017 11:22	WG1039151
Sulfate	292		25.0	5	11/04/2017 18:20	WG1039151

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	110		1.00	1	11/08/2017 22:45	WG1040425
Iron,Dissolved	ND		0.100	1	11/08/2017 22:45	WG1040425
Magnesium,Dissolved	76.3		1.00	1	11/08/2017 22:45	WG1040425
Potassium,Dissolved	3.34		1.00	1	11/08/2017 22:45	WG1040425
Sodium,Dissolved	88.2		1.00	1	11/08/2017 22:45	WG1040425
Strontium,Dissolved	3.94		0.0100	1	11/08/2017 22:45	WG1040425

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	11/07/2017 09:52	WG1039788
Ethane	ND		0.0130	1	11/07/2017 09:52	WG1039788
Ethene	ND		0.0130	1	11/07/2017 09:52	WG1039788

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	11/04/2017 18:34	WG1039177
Acrolein	ND		0.0500	1	11/04/2017 18:34	WG1039177
Acrylonitrile	ND		0.0100	1	11/04/2017 18:34	WG1039177
Benzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
Bromobenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
Bromodichloromethane	ND		0.00100	1	11/04/2017 18:34	WG1039177
Bromoform	ND		0.00100	1	11/04/2017 18:34	WG1039177
Bromomethane	ND		0.00500	1	11/04/2017 18:34	WG1039177
n-Butylbenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
sec-Butylbenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
tert-Butylbenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177

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	11/04/2017 18:34	WG1039177
Chlorobenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
Chlorodibromomethane	ND		0.00100	1	11/04/2017 18:34	WG1039177
Chloroethane	ND		0.00500	1	11/04/2017 18:34	WG1039177
Chloroform	ND		0.00500	1	11/04/2017 18:34	WG1039177
Chloromethane	ND		0.00250	1	11/04/2017 18:34	WG1039177
2-Chlorotoluene	ND		0.00100	1	11/04/2017 18:34	WG1039177
4-Chlorotoluene	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/04/2017 18:34	WG1039177
1,2-Dibromoethane	ND		0.00100	1	11/04/2017 18:34	WG1039177
Dibromomethane	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,2-Dichlorobenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,3-Dichlorobenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,4-Dichlorobenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
Dichlorodifluoromethane	ND		0.00500	1	11/04/2017 18:34	WG1039177
1,1-Dichloroethane	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,2-Dichloroethane	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,1-Dichloroethene	ND		0.00100	1	11/04/2017 18:34	WG1039177
cis-1,2-Dichloroethene	ND		0.00100	1	11/04/2017 18:34	WG1039177
trans-1,2-Dichloroethene	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,2-Dichloropropane	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,1-Dichloropropene	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,3-Dichloropropane	ND		0.00100	1	11/04/2017 18:34	WG1039177
cis-1,3-Dichloropropene	ND		0.00100	1	11/04/2017 18:34	WG1039177
trans-1,3-Dichloropropene	ND		0.00100	1	11/04/2017 18:34	WG1039177
2,2-Dichloropropane	ND		0.00100	1	11/04/2017 18:34	WG1039177
Di-isopropyl ether	ND		0.00100	1	11/04/2017 18:34	WG1039177
Ethylbenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
Hexachloro-1,3-butadiene	ND		0.00100	1	11/04/2017 18:34	WG1039177
Isopropylbenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
p-Isopropyltoluene	ND		0.00100	1	11/04/2017 18:34	WG1039177
2-Butanone (MEK)	ND		0.0100	1	11/04/2017 18:34	WG1039177
Methylene Chloride	ND		0.00500	1	11/04/2017 18:34	WG1039177
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/04/2017 18:34	WG1039177
Methyl tert-butyl ether	ND		0.00100	1	11/04/2017 18:34	WG1039177
Naphthalene	ND		0.00500	1	11/04/2017 18:34	WG1039177
n-Propylbenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
Styrene	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	11/04/2017 18:34	WG1039177
Tetrachloroethene	ND		0.00100	1	11/04/2017 18:34	WG1039177
Toluene	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,2,3-Trichlorobenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,2,4-Trichlorobenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,1,1-Trichloroethane	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,1,2-Trichloroethane	ND		0.00100	1	11/04/2017 18:34	WG1039177
Trichloroethene	ND		0.00100	1	11/04/2017 18:34	WG1039177
Trichlorofluoromethane	ND		0.00500	1	11/04/2017 18:34	WG1039177
1,2,3-Trichloropropane	ND		0.00250	1	11/04/2017 18:34	WG1039177
1,2,4-Trimethylbenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,2,3-Trimethylbenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
1,3,5-Trimethylbenzene	ND		0.00100	1	11/04/2017 18:34	WG1039177
Vinyl chloride	ND		0.00100	1	11/04/2017 18:34	WG1039177
Xylenes, Total	ND		0.00300	1	11/04/2017 18:34	WG1039177
(S) Toluene-d8	*110*		*80.0-120*		*11/04/2017 18:34*	WG1039177

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) Dibromofluoromethane	*90.6*		*76.0-123*		*11/04/2017 18:34*	WG1039177
(S) 4-Bromofluorobenzene	*106*		*80.0-120*		*11/04/2017 18:34*	WG1039177

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	385		20.0	1	11/07/2017 14:36	WG1039591

Sample Narrative:
L948383-02 WG1039591: Endpoint pH 4.5

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND	T8	20.0	1	11/07/2017 14:36	WG1039591

Sample Narrative:
L948383-02 WG1039591: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/04/2017 11:35	WG1039151
Chloride	37.3		1.00	1	11/04/2017 11:35	WG1039151
Nitrate as (N)	3.24		0.100	1	11/04/2017 11:35	WG1039151
Nitrite as (N)	ND		0.100	1	11/04/2017 11:35	WG1039151
Sulfate	315		25.0	5	11/04/2017 18:33	WG1039151

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium,Dissolved	114		1.00	1	11/08/2017 22:48	WG1040425
Iron,Dissolved	ND		0.100	1	11/08/2017 22:48	WG1040425
Magnesium,Dissolved	77.1		1.00	1	11/08/2017 22:48	WG1040425
Potassium,Dissolved	3.63		1.00	1	11/08/2017 22:48	WG1040425
Sodium,Dissolved	91.1		1.00	1	11/08/2017 22:48	WG1040425
Strontium,Dissolved	4.01		0.0100	1	11/08/2017 22:48	WG1040425

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	11/07/2017 09:56	WG1039788
Ethane	ND		0.0130	1	11/07/2017 09:56	WG1039788
Ethene	ND		0.0130	1	11/07/2017 09:56	WG1039788

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/04/2017 18:51	WG1039177
Acrolein	ND		0.0500	1	11/04/2017 18:51	WG1039177
Acrylonitrile	ND		0.0100	1	11/04/2017 18:51	WG1039177
Benzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
Bromobenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
Bromodichloromethane	ND		0.00100	1	11/04/2017 18:51	WG1039177
Bromoform	ND		0.00100	1	11/04/2017 18:51	WG1039177
Bromomethane	ND		0.00500	1	11/04/2017 18:51	WG1039177
n-Butylbenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
sec-Butylbenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
tert-Butylbenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177

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	11/04/2017 18:51	WG1039177
Chlorobenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
Chlorodibromomethane	ND		0.00100	1	11/04/2017 18:51	WG1039177
Chloroethane	ND		0.00500	1	11/04/2017 18:51	WG1039177
Chloroform	ND		0.00500	1	11/04/2017 18:51	WG1039177
Chloromethane	ND		0.00250	1	11/04/2017 18:51	WG1039177
2-Chlorotoluene	ND		0.00100	1	11/04/2017 18:51	WG1039177
4-Chlorotoluene	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/04/2017 18:51	WG1039177
1,2-Dibromoethane	ND		0.00100	1	11/04/2017 18:51	WG1039177
Dibromomethane	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,2-Dichlorobenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,3-Dichlorobenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,4-Dichlorobenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
Dichlorodifluoromethane	ND		0.00500	1	11/04/2017 18:51	WG1039177
1,1-Dichloroethane	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,2-Dichloroethane	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,1-Dichloroethene	ND		0.00100	1	11/04/2017 18:51	WG1039177
cis-1,2-Dichloroethene	ND		0.00100	1	11/04/2017 18:51	WG1039177
trans-1,2-Dichloroethene	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,2-Dichloropropane	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,1-Dichloropropene	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,3-Dichloropropane	ND		0.00100	1	11/04/2017 18:51	WG1039177
cis-1,3-Dichloropropene	ND		0.00100	1	11/04/2017 18:51	WG1039177
trans-1,3-Dichloropropene	ND		0.00100	1	11/04/2017 18:51	WG1039177
2,2-Dichloropropane	ND		0.00100	1	11/04/2017 18:51	WG1039177
Di-isopropyl ether	ND		0.00100	1	11/04/2017 18:51	WG1039177
Ethylbenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
Hexachloro-1,3-butadiene	ND		0.00100	1	11/04/2017 18:51	WG1039177
Isopropylbenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
p-Isopropyltoluene	ND		0.00100	1	11/04/2017 18:51	WG1039177
2-Butanone (MEK)	ND		0.0100	1	11/04/2017 18:51	WG1039177
Methylene Chloride	ND		0.00500	1	11/04/2017 18:51	WG1039177
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/04/2017 18:51	WG1039177
Methyl tert-butyl ether	ND		0.00100	1	11/04/2017 18:51	WG1039177
Naphthalene	ND		0.00500	1	11/04/2017 18:51	WG1039177
n-Propylbenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
Styrene	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	11/04/2017 18:51	WG1039177
Tetrachloroethene	ND		0.00100	1	11/04/2017 18:51	WG1039177
Toluene	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,2,3-Trichlorobenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,2,4-Trichlorobenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,1,1-Trichloroethane	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,1,2-Trichloroethane	ND		0.00100	1	11/04/2017 18:51	WG1039177
Trichloroethene	ND		0.00100	1	11/04/2017 18:51	WG1039177
Trichlorofluoromethane	ND		0.00500	1	11/04/2017 18:51	WG1039177
1,2,3-Trichloropropane	ND		0.00250	1	11/04/2017 18:51	WG1039177
1,2,4-Trimethylbenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,2,3-Trimethylbenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
1,3,5-Trimethylbenzene	ND		0.00100	1	11/04/2017 18:51	WG1039177
Vinyl chloride	ND		0.00100	1	11/04/2017 18:51	WG1039177
Xylenes, Total	ND		0.00300	1	11/04/2017 18:51	WG1039177
(S) Toluene-d8	*112*		*80.0-120*		*11/04/2017 18:51*	WG1039177

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) Dibromofluoromethane	*90.6*		*76.0-123*		*11/04/2017 18:51*	WG1039177
(S) 4-Bromofluorobenzene	*104*		*80.0-120*		*11/04/2017 18:51*	WG1039177

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	389		20.0	1	11/07/2017 14:42	WG1039591

Sample Narrative:
L948383-03 WG1039591: Endpoint pH 4.5

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Free Carbon Dioxide	ND	T8	20.0	1	11/07/2017 14:42	WG1039591

Sample Narrative:
L948383-03 WG1039591: Endpoint pH 4.5

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	11/04/2017 11:48	WG1039151
Chloride	37.0		1.00	1	11/04/2017 11:48	WG1039151
Nitrate as (N)	2.68		0.100	1	11/04/2017 11:48	WG1039151
Nitrite as (N)	ND		0.100	1	11/04/2017 11:48	WG1039151
Sulfate	331		25.0	5	11/04/2017 18:47	WG1039151

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium,Dissolved	113		1.00	1	11/08/2017 22:52	WG1040425
Iron,Dissolved	ND		0.100	1	11/08/2017 22:52	WG1040425
Magnesium,Dissolved	80.2		1.00	1	11/08/2017 22:52	WG1040425
Potassium,Dissolved	4.49		1.00	1	11/08/2017 22:52	WG1040425
Sodium,Dissolved	89.3		1.00	1	11/08/2017 22:52	WG1040425
Strontium,Dissolved	3.90		0.0100	1	11/08/2017 22:52	WG1040425

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	11/07/2017 10:00	WG1039788
Ethane	ND		0.0130	1	11/07/2017 10:00	WG1039788
Ethene	ND		0.0130	1	11/07/2017 10:00	WG1039788

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	11/04/2017 19:08	WG1039177
Acrolein	ND		0.0500	1	11/04/2017 19:08	WG1039177
Acrylonitrile	ND		0.0100	1	11/04/2017 19:08	WG1039177
Benzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
Bromobenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
Bromodichloromethane	ND		0.00100	1	11/04/2017 19:08	WG1039177
Bromoform	ND		0.00100	1	11/04/2017 19:08	WG1039177
Bromomethane	ND		0.00500	1	11/04/2017 19:08	WG1039177
n-Butylbenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
sec-Butylbenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
tert-Butylbenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177

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	11/04/2017 19:08	WG1039177
Chlorobenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
Chlorodibromomethane	ND		0.00100	1	11/04/2017 19:08	WG1039177
Chloroethane	ND		0.00500	1	11/04/2017 19:08	WG1039177
Chloroform	ND		0.00500	1	11/04/2017 19:08	WG1039177
Chloromethane	ND		0.00250	1	11/04/2017 19:08	WG1039177
2-Chlorotoluene	ND		0.00100	1	11/04/2017 19:08	WG1039177
4-Chlorotoluene	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/04/2017 19:08	WG1039177
1,2-Dibromoethane	ND		0.00100	1	11/04/2017 19:08	WG1039177
Dibromomethane	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,2-Dichlorobenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,3-Dichlorobenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,4-Dichlorobenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
Dichlorodifluoromethane	ND		0.00500	1	11/04/2017 19:08	WG1039177
1,1-Dichloroethane	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,2-Dichloroethane	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,1-Dichloroethene	ND		0.00100	1	11/04/2017 19:08	WG1039177
cis-1,2-Dichloroethene	ND		0.00100	1	11/04/2017 19:08	WG1039177
trans-1,2-Dichloroethene	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,2-Dichloropropane	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,1-Dichloropropene	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,3-Dichloropropane	ND		0.00100	1	11/04/2017 19:08	WG1039177
cis-1,3-Dichloropropene	ND		0.00100	1	11/04/2017 19:08	WG1039177
trans-1,3-Dichloropropene	ND		0.00100	1	11/04/2017 19:08	WG1039177
2,2-Dichloropropane	ND		0.00100	1	11/04/2017 19:08	WG1039177
Di-isopropyl ether	ND		0.00100	1	11/04/2017 19:08	WG1039177
Ethylbenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
Hexachloro-1,3-butadiene	ND		0.00100	1	11/04/2017 19:08	WG1039177
Isopropylbenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
p-Isopropyltoluene	ND		0.00100	1	11/04/2017 19:08	WG1039177
2-Butanone (MEK)	ND		0.0100	1	11/04/2017 19:08	WG1039177
Methylene Chloride	ND		0.00500	1	11/04/2017 19:08	WG1039177
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/04/2017 19:08	WG1039177
Methyl tert-butyl ether	ND		0.00100	1	11/04/2017 19:08	WG1039177
Naphthalene	ND		0.00500	1	11/04/2017 19:08	WG1039177
n-Propylbenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
Styrene	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	11/04/2017 19:08	WG1039177
Tetrachloroethene	ND		0.00100	1	11/04/2017 19:08	WG1039177
Toluene	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,2,3-Trichlorobenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,2,4-Trichlorobenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,1,1-Trichloroethane	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,1,2-Trichloroethane	ND		0.00100	1	11/04/2017 19:08	WG1039177
Trichloroethene	ND		0.00100	1	11/04/2017 19:08	WG1039177
Trichlorofluoromethane	ND		0.00500	1	11/04/2017 19:08	WG1039177
1,2,3-Trichloropropane	ND		0.00250	1	11/04/2017 19:08	WG1039177
1,2,4-Trimethylbenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,2,3-Trimethylbenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
1,3,5-Trimethylbenzene	ND		0.00100	1	11/04/2017 19:08	WG1039177
Vinyl chloride	ND		0.00100	1	11/04/2017 19:08	WG1039177
Xylenes, Total	ND		0.00300	1	11/04/2017 19:08	WG1039177
(S) Toluene-d8	*110*		*80.0-120*		*11/04/2017 19:08*	WG1039177

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) Dibromofluoromethane	*88.9*		*76.0-123*		*11/04/2017 19:08*	WG1039177
(S) 4-Bromofluorobenzene	*106*		*80.0-120*		*11/04/2017 19:08*	WG1039177

L948327-01 Original Sample (OS) • Duplicate (DUP)

(OS) L948327-01 11/07/17 12:56 • (DUP) R3263785-1 11/07/17 13:03

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	28.8	28.7	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

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

(LCS) R3263785-2 11/07/17 13:52 • (LCSD) R3263785-5 11/07/17 15:47

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 %
Alkalinity	100	106	102	106	102	85.0-115			3.00	20

Sample Narrative:

LCS: Endpoint pH 4.5

LCSD: Endpoint pH 4.5

Method Blank (MB)

(MB) R3263237-1 11/04/17 07:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	U		0.079	1.00
Chloride	U		0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

L948414-01 Original Sample (OS) • Duplicate (DUP)

(OS) L948414-01 11/04/17 14:59 • (DUP) R3263237-4 11/04/17 15:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	0.000	1	0		15
Nitrate	ND	0.000	1	0		15
Nitrite	ND	0.000	1	0		15
Sulfate	61.5	61.6	1	0		15

L948414-07 Original Sample (OS) • Duplicate (DUP)

(OS) L948414-07 11/04/17 16:46 • (DUP) R3263237-6 11/04/17 17:26

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	0.000	1	0		15
Chloride	4.98	4.81	1	4		15
Nitrate	ND	0.000	1	0		15
Nitrite	ND	0.000	1	0		15
Sulfate	ND	2.61	1	0	J	15

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

(LCS) R3263237-2 11/04/17 07:27 • (LCSD) R3263237-3 11/04/17 07:40

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	39.7	39.9	99	100	80-120			0	15
Chloride	40.0	39.2	39.3	98	98	80-120			0	15
Nitrate	8.00	8.48	8.54	106	107	80-120			1	15
Nitrite	8.00	8.03	8.03	100	100	80-120			0	15
Sulfate	40.0	39.9	40.0	100	100	80-120			0	15

L948414-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L948414-01 11/04/17 14:59 • (MS) R3263237-5 11/04/17 15:26

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	ND	45.2	90	1	80-120	
Nitrate	5.00	ND	4.58	92	1	80-120	
Nitrite	5.00	ND	4.81	96	1	80-120	
Sulfate	50.0	61.5	105	87	1	80-120	E

L948414-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L948414-08 11/04/17 17:40 • (MS) R3263237-7 11/04/17 17:53 • (MSD) R3263237-8 11/04/17 18:06

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	ND	46.6	49.4	93	99	1	80-120			6	15
Chloride	50.0	20.5	67.0	70.4	93	100	1	80-120			5	15
Nitrate	5.00	ND	4.81	5.05	96	101	1	80-120			5	15
Nitrite	5.00	ND	4.85	5.12	97	102	1	80-120			5	15
Sulfate	50.0	ND	50.2	53.4	96	103	1	80-120			6	15

Method Blank (MB)

(MB) R3264208-1 11/08/17 21:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium,Dissolved	U		0.0463	1.00
Iron,Dissolved	U		0.0141	0.100
Magnesium,Dissolved	U		0.0111	1.00
Potassium,Dissolved	U		0.102	1.00
Sodium,Dissolved	U		0.0985	1.00
Strontium,Dissolved	U		0.0017	0.0100

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

(LCS) R3264208-2 11/08/17 21:59 • (LCSD) R3264208-3 11/08/17 22:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	9.82	9.73	98	97	80-120			1	20
Iron,Dissolved	10.0	9.83	9.77	98	98	80-120			1	20
Magnesium,Dissolved	10.0	10.3	10.2	103	102	80-120			1	20
Potassium,Dissolved	10.0	9.73	9.66	97	97	80-120			1	20
Sodium,Dissolved	10.0	9.87	9.76	99	98	80-120			1	20
Strontium,Dissolved	1.00	0.995	0.990	100	99	80-120			1	20

L949063-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L949063-01 11/08/17 22:05 • (MS) R3264208-5 11/08/17 22:12 • (MSD) R3264208-6 11/08/17 22:15

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10.0	10.0	19.8	19.9	98	99	1	75-125			0	20
Iron,Dissolved	10.0	ND	10.1	10.1	100	101	1	75-125			1	20
Magnesium,Dissolved	10.0	ND	11.0	11.0	105	105	1	75-125			0	20
Potassium,Dissolved	10.0	ND	10.8	10.8	98	99	1	75-125			1	20
Sodium,Dissolved	10.0	1.21	11.1	11.3	99	101	1	75-125			1	20
Strontium,Dissolved	1.00	0.0167	1.03	1.03	101	102	1	75-125			0	20

Method Blank (MB)

(MB) R3263707-1 11/07/17 08:20

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

L948386-01 Original Sample (OS) • Duplicate (DUP)

(OS) L948386-01 11/07/17 10:03 • (DUP) R3263707-2 11/07/17 12:09

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

L948413-01 Original Sample (OS) • Duplicate (DUP)

(OS) L948413-01 11/07/17 13:04 • (DUP) R3263707-3 11/07/17 14:05

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Methane	0.315	0.330	1	4.61		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) R3263707-4 11/07/17 14:09 • (LCSD) R3263707-5 11/07/17 14:14

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	0.0744	0.0713	110	105	85.0-115			4.33	20
Ethane	0.129	0.117	0.117	91.1	90.9	85.0-115			0.160	20
Ethene	0.127	0.112	0.113	87.9	88.7	85.0-115			0.990	20

Method Blank (MB)

(MB) R3263368-3 11/04/17 12:57

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) R3263368-3 11/04/17 12:57

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	*112*			*80.0-120*
(S) Dibromofluoromethane	*88.4*			*76.0-123*
(S) 4-Bromofluorobenzene	*104*			*80.0-120*

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

(LCS) R3263368-1 11/04/17 11:49 • (LCSD) R3263368-2 11/04/17 12:06

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	0.0738	0.0840	59.0	67.2	10.0-160			13.0	23
Acrolein	0.125	0.0880	0.0907	70.4	72.6	10.0-160			2.97	20
Acrylonitrile	0.125	0.0847	0.0869	67.8	69.5	60.0-142			2.55	20
Benzene	0.0250	0.0210	0.0215	84.2	86.0	69.0-123			2.19	20

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

(LCS) R3263368-1 11/04/17 11:49 • (LCSD) R3263368-2 11/04/17 12:06

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	0.0253	0.0259	101	104	79.0-120			2.34	20
Bromodichloromethane	0.0250	0.0232	0.0234	92.9	93.8	76.0-120			0.990	20
Bromoform	0.0250	0.0256	0.0257	102	103	67.0-132			0.580	20
Bromomethane	0.0250	0.0186	0.0217	74.4	86.9	18.0-160			15.6	20
n-Butylbenzene	0.0250	0.0262	0.0271	105	108	72.0-126			3.30	20
sec-Butylbenzene	0.0250	0.0258	0.0269	103	108	74.0-121			4.36	20
tert-Butylbenzene	0.0250	0.0258	0.0265	103	106	75.0-122			2.68	20
Carbon tetrachloride	0.0250	0.0213	0.0225	85.2	90.1	63.0-122			5.60	20
Chlorobenzene	0.0250	0.0252	0.0260	101	104	79.0-121			3.24	20
Chlorodibromomethane	0.0250	0.0264	0.0272	105	109	75.0-125			3.04	20
Chloroethane	0.0250	0.0264	0.0265	106	106	47.0-152			0.530	20
Chloroform	0.0250	0.0211	0.0219	84.3	87.8	72.0-121			4.01	20
Chloromethane	0.0250	0.0177	0.0192	70.8	77.0	48.0-139			8.28	20
2-Chlorotoluene	0.0250	0.0245	0.0253	98.0	101	74.0-122			3.25	20
4-Chlorotoluene	0.0250	0.0247	0.0252	98.9	101	79.0-120			2.05	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0206	0.0217	82.6	86.9	64.0-127			5.10	20
1,2-Dibromoethane	0.0250	0.0243	0.0251	97.3	100	77.0-123			3.13	20
Dibromomethane	0.0250	0.0232	0.0239	92.7	95.5	78.0-120			3.00	20
1,2-Dichlorobenzene	0.0250	0.0253	0.0262	101	105	80.0-120			3.48	20
1,3-Dichlorobenzene	0.0250	0.0246	0.0255	98.6	102	72.0-123			3.36	20
1,4-Dichlorobenzene	0.0250	0.0253	0.0261	101	104	77.0-120			2.95	20
Dichlorodifluoromethane	0.0250	0.0235	0.0240	94.0	95.8	49.0-155			1.96	20
1,1-Dichloroethane	0.0250	0.0210	0.0218	83.8	87.0	70.0-126			3.72	20
1,2-Dichloroethane	0.0250	0.0203	0.0206	81.0	82.5	67.0-126			1.80	20
1,1-Dichloroethene	0.0250	0.0214	0.0217	85.7	87.0	64.0-129			1.52	20
cis-1,2-Dichloroethene	0.0250	0.0211	0.0216	84.5	86.4	73.0-120			2.21	20
trans-1,2-Dichloroethene	0.0250	0.0209	0.0215	83.5	85.9	71.0-121			2.91	20
1,2-Dichloropropane	0.0250	0.0243	0.0247	97.2	99.0	75.0-125			1.82	20
1,1-Dichloropropene	0.0250	0.0217	0.0224	86.9	89.5	71.0-129			2.98	20
1,3-Dichloropropane	0.0250	0.0256	0.0256	102	102	80.0-121			0.100	20
cis-1,3-Dichloropropene	0.0250	0.0264	0.0268	106	107	79.0-123			1.52	20
trans-1,3-Dichloropropene	0.0250	0.0271	0.0274	108	110	74.0-127			0.990	20
2,2-Dichloropropane	0.0250	0.0219	0.0225	87.5	90.0	60.0-125			2.87	20
Di-isopropyl ether	0.0250	0.0206	0.0204	82.2	81.8	59.0-133			0.610	20
Ethylbenzene	0.0250	0.0260	0.0268	104	107	77.0-120			3.27	20
Hexachloro-1,3-butadiene	0.0250	0.0246	0.0258	98.4	103	64.0-131			4.78	20
Isopropylbenzene	0.0250	0.0255	0.0262	102	105	75.0-120			2.96	20
p-Isopropyltoluene	0.0250	0.0268	0.0279	107	112	74.0-126			4.11	20
2-Butanone (MEK)	0.125	0.0788	0.0843	63.1	67.4	37.0-158			6.67	20
Methylene Chloride	0.0250	0.0204	0.0211	81.4	84.4	66.0-121			3.60	20

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

(LCS) R3263368-1 11/04/17 11:49 • (LCSD) R3263368-2 11/04/17 12:06

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	0.104	0.107	83.2	85.5	59.0-143			2.75	20
Methyl tert-butyl ether	0.0250	0.0208	0.0213	83.3	85.2	64.0-123			2.34	20
Naphthalene	0.0250	0.0230	0.0235	92.0	94.1	62.0-128			2.24	20
n-Propylbenzene	0.0250	0.0251	0.0257	100	103	79.0-120			2.34	20
Styrene	0.0250	0.0258	0.0266	103	106	78.0-124			2.84	20
1,1,1,2-Tetrachloroethane	0.0250	0.0266	0.0273	106	109	75.0-122			2.62	20
1,1,2,2-Tetrachloroethane	0.0250	0.0223	0.0227	89.1	90.7	71.0-122			1.80	20
Tetrachloroethene	0.0250	0.0263	0.0271	105	108	70.0-127			3.13	20
Toluene	0.0250	0.0252	0.0259	101	104	77.0-120			2.91	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0231	0.0239	92.3	95.7	61.0-136			3.58	20
1,2,3-Trichlorobenzene	0.0250	0.0254	0.0265	101	106	61.0-133			4.32	20
1,2,4-Trichlorobenzene	0.0250	0.0262	0.0264	105	105	69.0-129			0.600	20
1,1,1-Trichloroethane	0.0250	0.0212	0.0219	84.9	87.5	68.0-122			3.05	20
1,1,2-Trichloroethane	0.0250	0.0249	0.0253	99.6	101	78.0-120			1.51	20
Trichloroethene	0.0250	0.0241	0.0246	96.3	98.5	78.0-120			2.20	20
Trichlorofluoromethane	0.0250	0.0231	0.0241	92.6	96.2	56.0-137			3.86	20
1,2,3-Trichloropropane	0.0250	0.0227	0.0225	91.0	89.9	72.0-124			1.18	20
1,2,3-Trimethylbenzene	0.0250	0.0249	0.0256	99.7	103	75.0-120			2.84	20
1,2,4-Trimethylbenzene	0.0250	0.0250	0.0257	100	103	75.0-120			2.41	20
1,3,5-Trimethylbenzene	0.0250	0.0251	0.0258	100	103	75.0-120			2.72	20
Vinyl chloride	0.0250	0.0211	0.0218	84.3	87.1	64.0-133			3.26	20
Xylenes, Total	0.0750	0.0770	0.0787	103	105	77.0-120			2.18	20
(S) Toluene-d8				*109*	*109*	*80.0-120*				
(S) Dibromofluoromethane				*86.9*	*87.7*	*76.0-123*				
(S) 4-Bromofluorobenzene				*104*	*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
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.
T8	Sample(s) received past/too close to holding time expiration.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

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

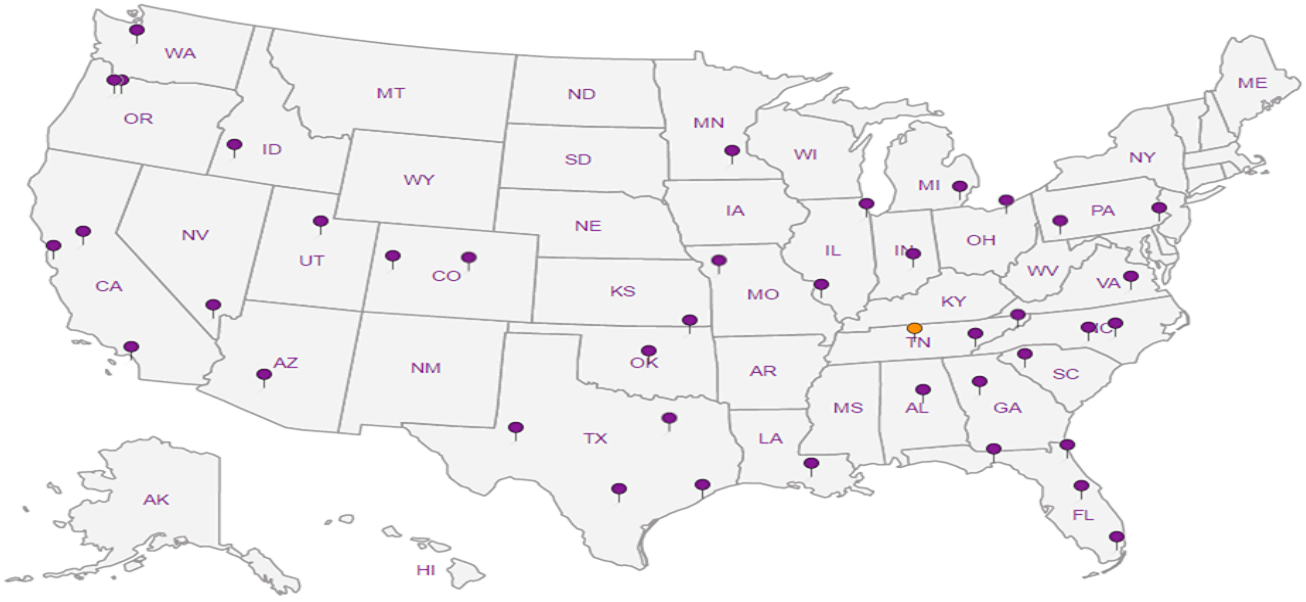
Third Party & Federal Accreditations

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

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

Our Locations

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



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

Billing Information:
SAME

Report to:
Michael Skridulis

Email To:
mjskridulis@terracon.com

Project Description: Maruyama

City/State Collected: Longmont CO

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

Client Project #
22177045

Lab Project #

Collected by (print):
M.Skridulis

Site/Facility ID #

P.O. #

Collected by (signature):
M.S

Immediately Packed on Ice N ___ Y X

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

Date Results Needed
STANDARD

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

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# L948383
H167

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

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260 (3) 40ml Amber w/HCl	RSK175 Methatne,Ethane,Ethylene (2) 40ml Amber w/HCl	Ca,Mg,Na,Fe,K Sr- 250ml HDPE No Pres	Br,Cl,S04,N02,N03 - 250ml HDPE No Pres	Alk - 125ml HDPENo PRes	CO2 - 250ml HDPE No Pres					Rem./Contaminant	Sample # (lab only)
MW-01	G	GW		11/2/17	1510	9	X	X	X	X	X	X						-01
MW-02	↓	GW			1520	9	X	X	X	X	X	X						02
MW-03	↓	GW		↓	1530	9	X	X	X	X	X	X						03

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

pH _____ Temp _____

Flow _____ Other _____

Remarks: Fed ex: 7466 1468 3246

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
M.S / TR	11/3/17	0900	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Jennifer Royal 836

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

Temp: 3.6°C Bottles Received: 27

Date: 11-4-17 Time: 8:45

Condition: (lab use only) OK

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: NCF:

ESC LAB SCIENCES
Cooler Receipt Form

Client: TERRALCO	SDG#	L948383	
Cooler Received/Opened On: 11/4/17	Temperature:	3.6	
Received by : Jennifer Royal			
Signature: Jennifer Royal			

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?			

Andy Vann

ESC Lab Sciences
Non-Conformance Form

Login #: L948383	Client: TERRALCO	Date: 11/04/17	Evaluated by: Jeremy

Non-Conformance (check applicable items)

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

Login Comments: Received Metals unpreserved. Total or Dissolved?

Client informed by:		Call		Email		Voice Mail		Date:11/06/17	Time:1014
TSR Initials:DR	Client Contact:								

Login Instructions:

Dissolved Metals

ANALYTICAL REPORT

November 20, 2017

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L948444
Samples Received:	11/04/2017
Project Number:	22177045
Description:	Maruyama

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 L948444-01 Air

Collected by	Collected date/time	Received date/time
M. Skridulis	11/03/17 11:00	11/04/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1039318	1	11/05/17 20:49	11/05/17 20:49	MBF
Organic Compounds (GC) by Method D1946	WG1043917	1	11/17/17 14:29	11/17/17 14:29	AMC

SVP-02 L948444-02 Air

Collected by	Collected date/time	Received date/time
M. Skridulis	11/03/17 11:30	11/04/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1039318	1	11/05/17 21:43	11/05/17 21:43	MBF
Organic Compounds (GC) by Method D1946	WG1043917	1	11/17/17 14:34	11/17/17 14:34	AMC

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Technical Service Representative

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	1.25	2.97	14.1	33.6		1	WG1039318
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1039318
Benzene	71-43-2	78.10	0.200	0.639	0.510	1.63		1	WG1039318
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1039318
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1039318
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1039318
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1039318
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1039318
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG1039318
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1039318
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1039318
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1039318
Chloroform	67-66-3	119	0.200	0.973	1.50	7.30		1	WG1039318
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1039318
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1039318
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG1039318
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1039318
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1039318
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1039318
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	0.422	2.53		1	WG1039318
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1039318
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1039318
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1039318
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1039318
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1039318
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1039318
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1039318
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1039318
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1039318
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1039318
Ethanol	64-17-5	46.10	0.630	1.19	2.91	5.49		1	WG1039318
Ethylbenzene	100-41-4	106	0.200	0.867	0.448	1.94		1	WG1039318
4-Ethyltoluene	622-96-8	120	0.200	0.982	0.271	1.33		1	WG1039318
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	0.229	1.29		1	WG1039318
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.375	1.85		1	WG1039318
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1039318
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1039318
Heptane	142-82-5	100	0.200	0.818	0.283	1.16		1	WG1039318
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1039318
n-Hexane	110-54-3	86.20	0.200	0.705	1.68	5.93		1	WG1039318
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1039318
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG1039318
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1039318
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	1.62	4.78		1	WG1039318
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1039318
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1039318
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG1039318
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1039318
2-Propanol	67-63-0	60.10	1.25	3.07	9.21	22.6		1	WG1039318
Propene	115-07-1	42.10	0.400	0.689	ND	ND		1	WG1039318
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1039318
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1039318
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG1039318
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	0.217	0.640		1	WG1039318
Toluene	108-88-3	92.10	0.200	0.753	2.82	10.6		1	WG1039318
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1039318

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
1,1,1-Trichloroethane	71-55-6	133	0.200	1.09	ND	ND		1	WG1039318
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1039318
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1039318
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	0.303	1.49		1	WG1039318
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	ND	ND		1	WG1039318
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	0.262	1.22		1	WG1039318
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1039318
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1039318
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1039318
m&p-Xylene	1330-20-7	106	0.400	1.73	1.55	6.72		1	WG1039318
o-Xylene	95-47-6	106	0.200	0.867	0.518	2.25		1	WG1039318
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*82.1*				WG1039318

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	2.00	20.4		1	WG1043917
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1043917
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1043917
Methane	74-82-8	16	0.400	ND		1	WG1043917

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	1.25	2.97	10.5	24.9		1	WG1039318
Allyl chloride	107-05-1	76.53	0.200	0.626	ND	ND		1	WG1039318
Benzene	71-43-2	78.10	0.200	0.639	0.459	1.47		1	WG1039318
Benzyl Chloride	100-44-7	127	0.200	1.04	ND	ND		1	WG1039318
Bromodichloromethane	75-27-4	164	0.200	1.34	ND	ND		1	WG1039318
Bromoform	75-25-2	253	0.600	6.21	ND	ND		1	WG1039318
Bromomethane	74-83-9	94.90	0.200	0.776	ND	ND		1	WG1039318
1,3-Butadiene	106-99-0	54.10	2.00	4.43	ND	ND		1	WG1039318
Carbon disulfide	75-15-0	76.10	0.200	0.622	ND	ND		1	WG1039318
Carbon tetrachloride	56-23-5	154	0.200	1.26	ND	ND		1	WG1039318
Chlorobenzene	108-90-7	113	0.200	0.924	ND	ND		1	WG1039318
Chloroethane	75-00-3	64.50	0.200	0.528	ND	ND		1	WG1039318
Chloroform	67-66-3	119	0.200	0.973	1.86	9.06		1	WG1039318
Chloromethane	74-87-3	50.50	0.200	0.413	ND	ND		1	WG1039318
2-Chlorotoluene	95-49-8	126	0.200	1.03	ND	ND		1	WG1039318
Cyclohexane	110-82-7	84.20	0.200	0.689	ND	ND		1	WG1039318
Dibromochloromethane	124-48-1	208	0.200	1.70	ND	ND		1	WG1039318
1,2-Dibromoethane	106-93-4	188	0.200	1.54	ND	ND		1	WG1039318
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	ND	ND		1	WG1039318
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	0.442	2.66		1	WG1039318
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	ND	ND		1	WG1039318
1,2-Dichloroethane	107-06-2	99	0.200	0.810	ND	ND		1	WG1039318
1,1-Dichloroethane	75-34-3	98	0.200	0.802	ND	ND		1	WG1039318
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1039318
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1039318
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1039318
1,2-Dichloropropane	78-87-5	113	0.200	0.924	ND	ND		1	WG1039318
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.908	ND	ND		1	WG1039318
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.908	ND	ND		1	WG1039318
1,4-Dioxane	123-91-1	88.10	0.200	0.721	ND	ND		1	WG1039318
Ethanol	64-17-5	46.10	0.630	1.19	3.04	5.73		1	WG1039318
Ethylbenzene	100-41-4	106	0.200	0.867	0.700	3.03		1	WG1039318
4-Ethyltoluene	622-96-8	120	0.200	0.982	0.521	2.56		1	WG1039318
Trichlorofluoromethane	75-69-4	137.40	0.200	1.12	0.242	1.36		1	WG1039318
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.989	0.382	1.89		1	WG1039318
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.200	1.53	ND	ND		1	WG1039318
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	ND	ND		1	WG1039318
Heptane	142-82-5	100	0.200	0.818	0.229	0.935		1	WG1039318
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.73	ND	ND		1	WG1039318
n-Hexane	110-54-3	86.20	0.200	0.705	0.993	3.50		1	WG1039318
Isopropylbenzene	98-82-8	120.20	0.200	0.983	ND	ND		1	WG1039318
Methylene Chloride	75-09-2	84.90	0.200	0.694	ND	ND		1	WG1039318
Methyl Butyl Ketone	591-78-6	100	1.25	5.11	ND	ND		1	WG1039318
2-Butanone (MEK)	78-93-3	72.10	1.25	3.69	ND	ND		1	WG1039318
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	1.25	5.12	ND	ND		1	WG1039318
Methyl methacrylate	80-62-6	100.12	0.200	0.819	ND	ND		1	WG1039318
MTBE	1634-04-4	88.10	0.200	0.721	ND	ND		1	WG1039318
Naphthalene	91-20-3	128	0.630	3.30	ND	ND		1	WG1039318
2-Propanol	67-63-0	60.10	1.25	3.07	6.26	15.4		1	WG1039318
Propene	115-07-1	42.10	0.400	0.689	ND	ND		1	WG1039318
Styrene	100-42-5	104	0.200	0.851	ND	ND		1	WG1039318
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.37	ND	ND		1	WG1039318
Tetrachloroethylene	127-18-4	166	0.200	1.36	ND	ND		1	WG1039318
Tetrahydrofuran	109-99-9	72.10	0.200	0.590	0.240	0.707		1	WG1039318
Toluene	108-88-3	92.10	0.200	0.753	3.69	13.9		1	WG1039318
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.66	ND	ND		1	WG1039318

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
1,1,1-Trichloroethane	71-55-6	133	0.200	1.09	ND	ND		1	WG1039318
1,1,2-Trichloroethane	79-00-5	133	0.200	1.09	ND	ND		1	WG1039318
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1039318
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.982	0.669	3.28		1	WG1039318
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.982	0.230	1.13		1	WG1039318
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.934	ND	ND		1	WG1039318
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1039318
Vinyl Bromide	593-60-2	106.95	0.200	0.875	ND	ND		1	WG1039318
Vinyl acetate	108-05-4	86.10	0.200	0.704	ND	ND		1	WG1039318
m&p-Xylene	1330-20-7	106	0.400	1.73	2.66	11.5		1	WG1039318
o-Xylene	95-47-6	106	0.200	0.867	0.809	3.51		1	WG1039318
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*86.4*				WG1039318

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	2.00	20.6		1	WG1043917
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1043917
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1043917
Methane	74-82-8	16	0.400	ND		1	WG1043917

Method Blank (MB)

(MB) R3263263-3 11/05/17 08:59

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

Method Blank (MB)

(MB) R3263263-3 11/05/17 08:59

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	U		0.0932	0.400
Styrene	U		0.0465	0.200
1,1,2,2-Tetrachloroethane	U		0.0576	0.200
Tetrachloroethylene	U		0.0497	0.200
Tetrahydrofuran	U		0.0508	0.200
Toluene	U		0.0499	0.200
1,2,4-Trichlorobenzene	U		0.148	0.630
1,1,1-Trichloroethane	U		0.0665	0.200
1,1,2-Trichloroethane	U		0.0287	0.200
Trichloroethylene	U		0.0545	0.200
1,2,4-Trimethylbenzene	U		0.0483	0.200
1,3,5-Trimethylbenzene	U		0.0631	0.200
2,2,4-Trimethylpentane	U		0.0456	0.200
Vinyl chloride	U		0.0457	0.200
Vinyl Bromide	U		0.0727	0.200
Vinyl acetate	U		0.0639	0.200
m&p-Xylene	U		0.0946	0.400
o-Xylene	U		0.0633	0.200
Ethanol	U		0.0832	0.630
(S) 1,4-Bromofluorobenzene	*98.4*			*60.0-140*

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

(LCS) R3263263-1 11/05/17 07:37 • (LCSD) R3263263-2 11/05/17 08:17

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	4.33	4.35	115	116	52.0-158			0.490	25
Propene	3.75	3.59	3.65	95.9	97.4	54.0-155			1.61	25
Dichlorodifluoromethane	3.75	3.96	4.06	106	108	69.0-143			2.53	25
1,2-Dichlorotetrafluoroethane	3.75	3.89	3.87	104	103	70.0-130			0.670	25
Chloromethane	3.75	3.89	3.92	104	105	70.0-130			0.790	25

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

(LCS) R3263263-1 11/05/17 07:37 • (LCSD) R3263263-2 11/05/17 08:17

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	3.89	3.85	104	103	70.0-130			1.04	25
1,3-Butadiene	3.75	3.71	3.74	98.9	99.7	70.0-130			0.890	25
Bromomethane	3.75	3.72	3.81	99.2	102	70.0-130			2.44	25
Chloroethane	3.75	3.62	3.64	96.6	97.2	70.0-130			0.570	25
Trichlorofluoromethane	3.75	3.84	3.83	102	102	70.0-130			0.230	25
1,1,2-Trichlorotrifluoroethane	3.75	3.92	3.91	105	104	70.0-130			0.140	25
1,1-Dichloroethene	3.75	3.82	3.82	102	102	70.0-130			0.0900	25
1,1-Dichloroethane	3.75	3.84	3.78	102	101	70.0-130			1.50	25
Acetone	3.75	3.87	3.88	103	103	70.0-130			0.200	25
2-Propanol	3.75	3.87	3.90	103	104	66.0-150			0.770	25
Carbon disulfide	3.75	3.85	3.80	103	101	70.0-130			1.21	25
Methylene Chloride	3.75	3.73	3.71	99.4	99.0	70.0-130			0.420	25
MTBE	3.75	3.76	3.76	100	100	70.0-130			0.100	25
trans-1,2-Dichloroethene	3.75	3.85	3.81	103	102	70.0-130			0.920	25
n-Hexane	3.75	3.86	3.82	103	102	70.0-130			1.13	25
Vinyl acetate	3.75	3.87	3.85	103	103	70.0-130			0.620	25
Methyl Ethyl Ketone	3.75	3.93	3.90	105	104	70.0-130			0.690	25
cis-1,2-Dichloroethene	3.75	3.81	3.83	102	102	70.0-130			0.410	25
Chloroform	3.75	3.81	3.84	102	102	70.0-130			0.580	25
Cyclohexane	3.75	3.87	3.86	103	103	70.0-130			0.260	25
1,1,1-Trichloroethane	3.75	3.88	3.91	103	104	70.0-130			0.890	25
Carbon tetrachloride	3.75	3.93	3.93	105	105	70.0-130			0.0800	25
Benzene	3.75	3.81	3.83	102	102	70.0-130			0.660	25
1,2-Dichloroethane	3.75	3.84	3.91	102	104	70.0-130			1.84	25
Heptane	3.75	3.82	3.87	102	103	70.0-130			1.41	25
Trichloroethylene	3.75	3.85	3.87	103	103	70.0-130			0.430	25
1,2-Dichloropropane	3.75	3.80	3.83	101	102	70.0-130			0.990	25
1,4-Dioxane	3.75	4.06	4.08	108	109	70.0-152			0.520	25
Bromodichloromethane	3.75	3.87	3.89	103	104	70.0-130			0.770	25
cis-1,3-Dichloropropene	3.75	3.90	3.93	104	105	70.0-130			0.800	25
4-Methyl-2-pentanone (MIBK)	3.75	3.84	3.85	102	103	70.0-142			0.280	25
Toluene	3.75	3.91	3.93	104	105	70.0-130			0.450	25
trans-1,3-Dichloropropene	3.75	3.94	3.97	105	106	70.0-130			0.750	25
1,1,2-Trichloroethane	3.75	3.93	3.94	105	105	70.0-130			0.180	25
Tetrachloroethylene	3.75	3.96	4.00	106	107	70.0-130			0.940	25
Methyl Butyl Ketone	3.75	3.98	4.01	106	107	70.0-150			0.910	25
Dibromochloromethane	3.75	3.97	4.03	106	107	70.0-130			1.38	25
1,2-Dibromoethane	3.75	3.94	4.01	105	107	70.0-130			1.56	25
Chlorobenzene	3.75	4.00	4.07	107	109	70.0-130			1.72	25
Ethylbenzene	3.75	4.10	4.12	109	110	70.0-130			0.520	25

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

(LCS) R3263263-1 11/05/17 07:37 • (LCSD) R3263263-2 11/05/17 08:17

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	8.20	8.28	109	110	70.0-130			0.950	25
o-Xylene	3.75	4.03	4.05	108	108	70.0-130			0.350	25
Styrene	3.75	4.07	4.10	109	109	70.0-130			0.760	25
Bromoform	3.75	4.13	4.16	110	111	70.0-130			0.700	25
1,1,2,2-Tetrachloroethane	3.75	3.91	3.97	104	106	70.0-130			1.42	25
4-Ethyltoluene	3.75	4.04	4.10	108	109	70.0-130			1.48	25
1,3,5-Trimethylbenzene	3.75	4.05	4.08	108	109	70.0-130			0.920	25
1,2,4-Trimethylbenzene	3.75	4.03	4.08	107	109	70.0-130			1.36	25
1,3-Dichlorobenzene	3.75	4.10	4.17	109	111	70.0-130			1.77	25
1,4-Dichlorobenzene	3.75	4.33	4.38	115	117	70.0-130			1.22	25
Benzyl Chloride	3.75	4.17	4.22	111	112	70.0-144			1.06	25
1,2-Dichlorobenzene	3.75	4.06	4.12	108	110	70.0-130			1.63	25
1,2,4-Trichlorobenzene	3.75	4.21	4.25	112	113	70.0-155			0.970	25
Hexachloro-1,3-butadiene	3.75	4.08	4.12	109	110	70.0-145			0.980	25
Naphthalene	3.75	4.12	4.12	110	110	70.0-155			0.0500	25
Allyl Chloride	3.75	3.72	3.67	99.3	97.8	70.0-130			1.51	25
2-Chlorotoluene	3.75	4.17	4.25	111	113	70.0-130			1.87	25
Methyl Methacrylate	3.75	3.83	3.83	102	102	70.0-130			0.180	25
Tetrahydrofuran	3.75	3.67	3.66	97.9	97.6	70.0-140			0.320	25
2,2,4-Trimethylpentane	3.75	3.93	3.93	105	105	70.0-130			0.150	25
Vinyl Bromide	3.75	3.76	3.81	100	101	70.0-130			1.11	25
Isopropylbenzene	3.75	4.06	4.10	108	109	70.0-130			1.08	25
(S) 1,4-Bromofluorobenzene				*99.8*	*101*	*60.0-140*				

Method Blank (MB)

(MB) R3266652-3 11/17/17 14:01

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Oxygen	1.17	J	0.225	2.00
Carbon Monoxide	U		0.665	2.00
Carbon Dioxide	U		0.121	0.500
Methane	U		0.0584	0.400

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

(LCS) R3266652-1 11/17/17 13:48 • (LCSD) R3266652-2 11/17/17 13:55

Analyte	Spike Amount %	LCS Result %	LCSD Result %	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Oxygen	2.50	2.66	2.50	107	99.8	70.0-130			6.49	20
Carbon Monoxide	2.50	2.59	2.62	104	105	70.0-130			1.19	20
Carbon Dioxide	2.50	2.71	2.59	109	104	70.0-130			4.63	20
Methane	2.00	2.11	2.14	106	107	70.0-130			1.44	20

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

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

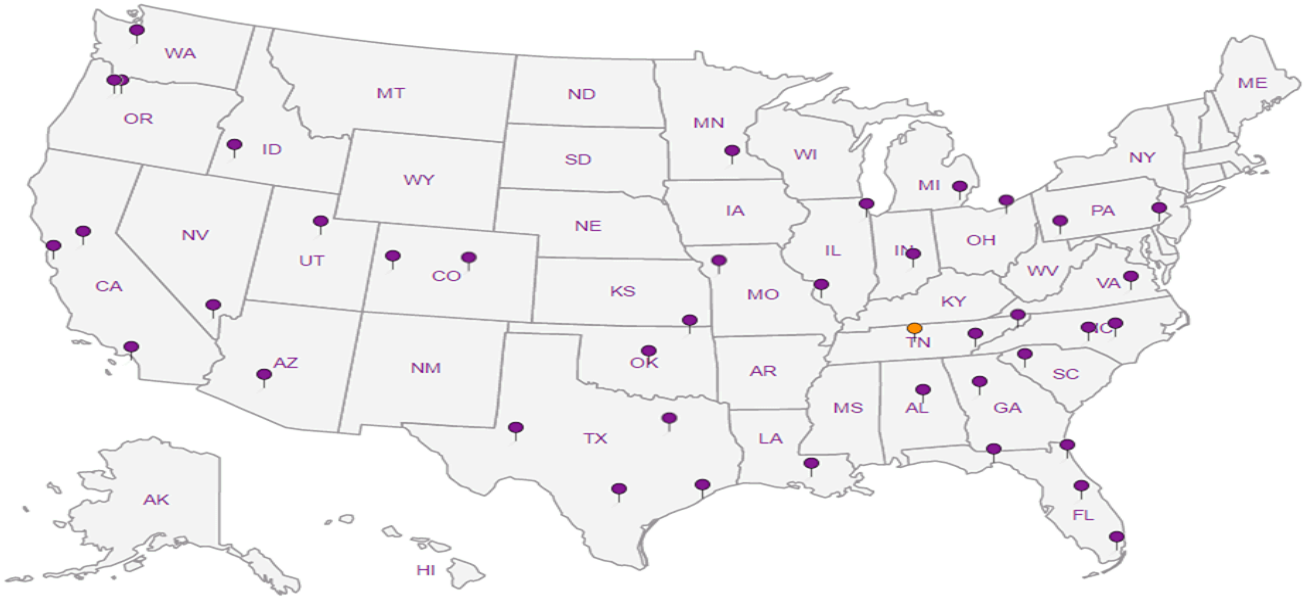
Third Party & Federal Accreditations

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

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

Our Locations

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



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

Billing Information: SAME

Report to: Michael Skridulis

Email To: mjskridilus@terracon.com

Project Description: Maruyama

City/State Collected: Longmont, CO

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

Client Project # 22177045

Lab Project #

Collected by (print): M. Skridulis

Site/Facility ID #

P.O. #

Collected by (signature): M. Sk

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

Date Results Needed: STANDARD

Email? ___No X Yes
FAX? X No ___Yes

Canister Pressure/Vacuum

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

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# L948444
M038
Acctnum: TERRALCO
Template:
Prelogin:
TSR:
Cooler:
Shipped Via:

Sample ID	Sample Description	Can #	Date	Time	Initial	Final	VOC's TO-15 & Fixed Gasses-Methane				Item /Contaminant	Sample # (lab only)
SVP-01	Soil Gas	5594	11/3/17	1100	22	6	X					-01
SVP-02	↓	6278	↓	1130	26	8	X					02

Remarks: FedEx: 4094 8307 7338

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ____	Condition: (lab use only)
M.Sk / TT	11/3/17	1300			OK
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: A °C B Bottles Received: 2	COC Seal Intact: ___Y ___N ___NA
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11/4/17 Time: 8:45	pH Checked: NCF:

ESC LAB SCIENCES
Cooler Receipt Form

Client:	TERRACO	SDG#	L948444
Cooler Received/Opened On: 11/4/17		Temperature:	AMB
Received by : Christian Kacar			
Signature:			

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

eurofins | QC

CHAIN OF CUSTODY

Page ____ of ____

H166

702 Electronic Drive
Horsham, PA 19044-0962
Phone: 215-355-3900
Fax: 215-355-7231

Bill to/Report to (if different)

Lab LIMS No: L966910

Client/Acct. No. Cinnaminson SA
Address
City/State/Zip
Phone/Fax
Client Contact:
PROJECT

Sampling Site Address (if different) Include State: C00156

P.O. No.
PWSID #:
Quote #
e-mail:

LAB USE ONLY:

- # ___ Ascorbic/HCL Vials # ___ HCl Vials
- # ___ $Na_2S_2O_3$
- # ___ Na OH/Zn acetate pH
- # ___ HNO_3 pH
- # ___ H_2SO_4 pH
- # ___ NaOH pH
- # ___ Unpreserved
- # ___ HCl # ___ NH4Cl # ___ MeOH
- # ___ DI Water

MATRIX CODES

- DW: DRINKING WATER
- GW: GROUND WATER
- WW: WASTEWATER
- SO: SOIL
- SL: SLUDGE
- OIL: OIL
- SOL: NON SOIL SOLID
- MI: MISCELLANEOUS
- X: OTHER

FIELD ID	Collection Date	Collection Military Time	GRAB	COMP	Matrix Code	Total	H2SO4	HCl	Vials	HNO3	NaOH	ZnAc	UNPRE	BACT	ANALYSIS REQUESTED	Field pH, Temp (°C), DO, Cl2, Cond. etc.
Effluent 24 hrs	11.1.17 11.2.17	800 700		✓									✓		FHA	L947277-04

SAMPLED BY: (Name/Company) RKM/EQC.

TAT: ☐ STANDARD (10 DAY)
or DUE DATE ___/___/___

Report Format: ☐ Standard ☐ NJ-RDD ☐ SRP-RDD ☐ Standard + QC ☐ Forms ☐ EDD

Please call for pricing and availability for rush (<10 day) turnaround and for all but standard reporting format.

Field Parameters Analyzed By:
Initials
Date/Time:

SAMPLE CUSTODY EXCHANGES MUST BE DOCUMENTED BELOW. USE FULL LEGAL SIGNATURE, DATE AND MILITARY TIME (24 HOUR CLOCK, I.E. 8AM IS 0800, 4 PM IS 1600)

	DATE	TIME		DATE	TIME
RELINQUISHED BY SAMPLER 1. [signature]	11.2.17	1305	RECEIVED BY 1. [signature]	11/2/17	1305
RELINQUISHED BY 2. [signature]	11/2/17	1315	RECEIVED BY 2. Walk-in	11/2/17	1315
RELINQUISHED BY 3. Walk-in	11/2/17	1430	RECEIVED BY 3. [signature]	11/2/17	1430
RELINQUISHED BY 4. [signature]	11/2/17	1445	RECEIVED BY 4. FedEx	11/2/17	1445
RELINQUISHED BY 5.			RECEIVED BY 5. [signature] 836	11.4.17	8:45

DELIVERY: ☐ EQC COURIER ☐ CLIENT ☐ UPS ☒ FEDEX ☐ OTHER

CustodySeal Number

Rec'd Temp.: 5.6 Initials: KLD Ice Y / N Location:

COMMENTS: COCSI
Subbed to ESC (NCF)
6723 0218 4149 Samplecount: 1

Hazardous: yes / no

ESC LAB SCIENCES
Cooler Receipt Form

Client: QCLABSPA	SDG#	L94727	
Cooler Received/Opened On: 11/4/17	Temperature:	5.6	
Received by : Jennifer Royal			
Signature: Jennifer Royal			

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