Limited Soil, Groundwater, and Soil Gas Investigation

Wertman #1 Oil and Gas Well Site
Longmont, Colorado

July 2, 2018
Terracon Project No. 22177047

Prepared for:
City of Longmont
Longmont, Colorado

Prepared by:
Terracon Consultants, Inc.
Longmont, Colorado

July 2, 2018

City of Longmont
385 Kimbark Street
Longmont, Colorado 80501

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

Re: Limited Soil, Groundwater, and Soil Gas Investigation Report
Wertman #1 Oil and Gas Well Site
Longmont, Colorado
Terracon Project No. 22177047

Dear Mr. Elkins:

Terracon Consultants, Inc. (Terracon) is pleased to submit our report of Limited Soil, Groundwater, and Soil Gas Investigation activities completed at the site referenced above. Terracon conducted the Investigation in general accordance with our proposal (P22177047), dated November 29, 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
Environmental Department Manager

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

Terracon

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EXECUTIVE SUMMARY

This Limited Soil and Soil Gas Investigation was performed in accordance with the scope of services outlined in Terracon Proposal No. P22177047, dated November 29, 2017. A total of four soil borings (SB-01 through SB-04), which were converted to groundwater monitoring wells (MW-01 through MW-04), and three soil vapor points (SVP-01 through SVP-03) were installed at the site to evaluate potential petroleum impacted soil, groundwater, and soil gas based on historical oil and gas (O&G) extraction operations at the site. Soil, groundwater, and soil vapor samples were collected and analyzed in accordance with the procedures outlined in Section 3 of this report.

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

Findings

The lithology encountered at the site consists of silty sand and sandy clay from approximately 0 to 11 feet below ground surface (bgs), underlain by poorly graded sand and gravel to boring termination. The depth to groundwater ranged from 11 to 12 feet bgs observed during drilling activities.

Volatile organic compounds (VOCs) were not reported at concentrations above United States Environmental Protection Agency (EPA) Residential or Industrial Regional Screening Levels (RSLs) for soil or groundwater samples collected during this investigation.

Inorganic constituents were reported at concentrations above laboratory detection limits for all groundwater samples. Chloride was reported above Colorado Oil and Gas Conservation Commission (COGCC) regulatory action levels (1.25x the background levels of chloride) in all water samples (MW-01, MW-02, MW-03, MW-04). Sulfate was reported above Colorado Department of Health and Environment (CDPHE) groundwater standards in all water samples (MW-01, MW-02, MW-03, MW-04).

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 USEPA Residential and Industrial Indoor Air RSLs, after applying a 3% attenuation factor for subslab soil gas per the EPA 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 reported in the soil gas sample collected from SVP-03 above residential RSLs including benzene, bromomethane, carbon disulfide, and ethylbenzene. After applying the 3% attenuation factor no VOCs were reported in soil gas at concentrations exceeding EPA residential RSLs. Methane was not reported in any of the soil gas samples collected as part of this investigation above its respective laboratory detection limit.

Conclusions

Benzene, bromomethane, carbon disulfide, and ethylbenzene were detected in SVP-03, but are not a considered a vapor intrusion concern for residential property. Although inorganics were detected above their respective regulatory values in site groundwater samples, based on the site history near former farming operations and the lack of other indicator chemicals of concern indicative of produced water spills, it is inconclusive whether historical O&G operations had any impact to the site groundwater. Based on the continued use of the site as a newly developed subdivision with city provided utilities and current depth to groundwater measurements, the groundwater at the site is not considered an environmental risk to residential property.

Recommendations

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

Based on the scope of services, limitations, and conclusions of this assessment, additional investigation does not appear warranted at this time. However, Terracon will resume the completion of the original scope of services to install one additional soil boring/monitoring well at the site once development operations allow access.

1.0 SITE DESCRIPTION

Site Name	Wertman #1 O&G Well Site
Site Location	1239 Hummingbird Circle, 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 (PA) oil and gas (O&G) wells located within the City of Longmont limits. The objective of the 2012 assessment was to provide information concerning the plugging and abandoning of 17 O&G wellheads located within the City of Longmont and to assess the potential presence of surficial soil impacts, methane and other gasses in the subsurface near the surveyed well locations.

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

The objective of the environmental services was to provide information concerning the Wertman #1 PA 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 Background Evaluation

As outlined in Terracon's Research Summary Report, dated February 6, 2013, Drilling of the Wertman #1 well (API Number 05-013-06195) started on January 8, 1985, and the well was drilled to 6,612 feet below ground surface (bgs). Surface casing was set at 522 feet bgs.

Plugging and abandonment started in October 1994. A bridge plug with a cement cap was placed above the perforations. The cap is intended to isolate the perforations and prevent flow up the casing from the formation. The production casing was cut and the loose pipe recovered. There was no record found that cement plugs were placed at the stub or in the open borehole section

above the cut to prevent flow of fluids up the casing annulus from reaching the surface. Cement plugs were placed across the surface casing shoe and at the surface, which is intended to prevent fluids moving to the surface.

The water well search findings indicate one temporary groundwater monitoring well (within 1,000 feet of the wellsite) was drilled, installed and abandoned within one year. The well was abandoned by removing a 1 inch diameter PVC casing and plugging from 0.3 to 13 feet bgs with granular bentonite and from 0 to 0.3 feet bgs with cement.

The land use of the wellsite during drilling and plugging activities was agricultural. The aerial photograph taken on March 26, 1986 has an access road with a turn around, wellhead equipment, tanks and supporting equipment visible within an agricultural field.

The current land use is a vacant parcel zoned as residential, based on the May 4, 2011 aerial photograph and City of Longmont zoning map. The location of the former production equipment may be within developed residential parcels. The wellsite is located in the Blue Vista Subdivision and is zoned by the City of Longmont as Residential Planned Unit Development.

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

2.2 Standard of Care

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

2.3 Additional Scope Limitations

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

2.4 Reliance

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

3.0 FIELD INVESTIGATION

3.1 Safety and Subsurface Utilities

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

3.2 Sampling and Analytical Program Summary

On May 2, 2018, a total of four soil borings (SB-01 through SB-04), which were converted to groundwater monitoring wells (MW-01 through MW-04), and three soil vapor points (SVP-01 through SVP-03) 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 and locations to confirm the completion of former remedial activities. 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.

The proposed scope of work included the advancement of one additional soil boring to be converted into a monitoring well. Due to ongoing construction activities, Terracon was unable to perform this work at this time. Once construction and grading activities allow, Terracon will re-mobilize to the site to complete the scope of services. Information pertaining to the additional scope will be included as an addendum to this report.

SAMPLING AND ANALYTICAL PROGRAM	
Area of Concern	**Wertman #1 O&G Well Site**
Soil Borings (Total Depth)	SB-01 through SB-04 (16 feet)
Groundwater	MW-01 through MW-04 (15 feet)
Soil Vapor Points	SVP-01 through SVP-03
Soil Analysis	VOCs/TPH-GRO – EPA 8260 TPH-DRO/ORO – EPA 8015
Groundwater Analysis	VOCs – EPA 8260 Dissolved Gasses – RSK 175 Major Cations, Dissolved – EPA 6010B Nitrite, Nitrate, Bromide, Chloride, Sulfate – EPA 300.0 Alkalinity – SM 2320B Strontium – EPA 6020
Soil Gas Analysis	VOCs – EPA TO-15 Methane – EPA D1946

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

3.3 Field Procedures

3.3.1 Soil Boring Advancement

Drilling services were performed using a direct-push technology (DPT) Geoprobe® drilling rig. 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 15 feet bgs using 2.0-inch diameter polyvinyl chloride (PVC) with 10 feet of factory slotted well screen and 5 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 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 May 15, 2018, Terracon personnel visited the site to collect static groundwater levels, develop the monitoring wells, and collect groundwater samples for laboratory analysis. Depth to groundwater ranged from 9.8 feet below top of monitoring well casing (TOC) in MW-01 to 10.65 feet below TOC in MW-02. Monitoring wells 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-04 were sampled after development and after they were allowed to recharge for a short time.

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

3.3.3 Soil Vapor Point Installation

Three SVPs (SVP-01 through SVP-03) were installed on May 2, 2018. SVP-01 through SVP-03 were installed in the vicinity of the former O&G well head and downgradient location of former remedial activities 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 May 15, 2018 (SVP-01 through SVP-03), allowing the soil gas points time to equilibrate. Soil gas sampling was

conducted within a polyethylene shroud placed over the sample point. Extracted soil gas was screened in the field utilizing a Multi-Rae multi-gas meter, which was calibrated prior to use in accordance with the manufacturer's specifications. The Multi-Rae was used to assess potential explosive gas (methane) and VOCs. Sample tubing was connected to the sampling point and routed to the exterior of the shroud. Leak detection was conducted by introducing helium tracer gas into the sampling shroud through a separate port prior to sampling and using a portable helium gas detector to monitor for potential leaks in the sampling train. A peristaltic pump was utilized to purge the sample train tubing prior to collecting the laboratory sample within laboratory supplied 1-liter summa canisters.

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

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

4.0 FIELD INVESTIGATION RESULTS

4.1 Geology/Hydrogeology

The boring logs contained in Appendix C detail the observed soil stratigraphy. In general, Terracon encountered silty sand and sandy clay from approximately 0 to 11 feet bgs, underlain by poorly graded sand and gravel to boring termination at approximately 15 feet bgs. The depth to groundwater ranged from 11 to 12 feet bgs observed during drilling activities.

4.2 Field Screening

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

5.0 ANALYTICAL RESULTS

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

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

5.1 Soil Sample Results

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

VOCs were not reported at concentrations above laboratory detection limits for soil samples SB-01 and SB-02. 2-butanone (MEK) was reported above laboratory detection limits in soil samples SB-03 (0.0307 milligrams per kilogram [mg/kg]) and SB-04 (0.0289 mg/kg), but both values are below residential and industrial RSLs. Tetrachloroethene (PCE) was reported above laboratory detection limits but below residential and industrial RSLs in soil sample SB-03 (0.00295 mg/kg).

5.2 Groundwater Sample Results

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

Acetone was reported at a concentration above its laboratory detection limit in the groundwater sample collected from monitoring well MW-01 at a concentration of 128 micrograms per liter (µg/L). The reported concentrations did not exceed its regulatory action levels for groundwater of 6,300 µg/L. VOC constituents were not reported above their respective laboratory detection limits for any of the other groundwater samples submitted for laboratory analysis during this investigation.

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

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

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

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

Statistical Analysis	Chloride (µg/L)	Sulfate (µg/L)
Mean (from background well data)	41,730	665,900
COGCC cleanup goal (1.25 x background)	52,160	832,400
Standard Deviation	6,240	148,600
Sample Size	44	21

The sulfate concentration reported in groundwater samples collected from monitoring wells MW-01 (529,000 µg/L), MW-02 (492,000 µg/L), MW-03 (509,000 µg/L), and MW-04 (449,000 µg/L) all exceeded the CGWQS of 250,000 µg/L, but were below the calculated COGCC statistical regional background concentration standard of 832,400 µg/L.

The chloride concentration reported in groundwater samples collected from monitoring wells MW-01 (97,200 µg/L), MW-02 (83,800 µg/L), MW-03 (96,400 µg/L), and MW-04 (86,500 µg/L) were all below the CGWQS of 250,000 µg/L, but above the calculated COGCC statistical regional background concentration standard of 52,160 µg/L.

Specific conductance was reported in the groundwater samples ranging from 1,437 to 1,873 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 silts and clays.

Groundwater samples were reported to have a neutral pH (i.e. near 7.0), and within the CDPHE basic standard for groundwater range of 6.5 to 8.5; pH values in the monitoring wells measured during purging were reported in a range from 7.36 to 7.8.

Dissolved methane was reported in the groundwater sample collected from monitoring well MW-01 at a concentration of 10.1 µg/L. Although there is currently no regulatory limit established for dissolved methane in groundwater, based on general accepted environmental practices, 10,000 to 28,000 µg/L of dissolved methane in groundwater has been generally accepted as a threshold limit to warrant additional investigation. Concentrations of methane less than 10,000 µg/L are not considered an environmental risk, but should be monitored to observe if concentrations increase over time.

5.3 Soil Gas Sample Results

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

A number of VOCs were reported across the site above Residential RSLs including benzene bromomethane, carbon disulfide, and ethylbenzene. After applying the 3% attenuation factor, none of the VOCs in soil gas were reported at reported concentrations that represent a vapor intrusion concern for residential 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.

APPENDIX A – EXHIBITS

Exhibit 1 – Topographic Map

Exhibit 2 – Site Diagram

Exhibit 3 – Groundwater Contour Map

APPENDIX B – TABLES

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

APPENDIX C – SOIL BORING LOGS

APPENDIX D – ANALYTICAL REPORTS AND CHAINS OF CUSTODY

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Exhibit 1 – Topographic Map

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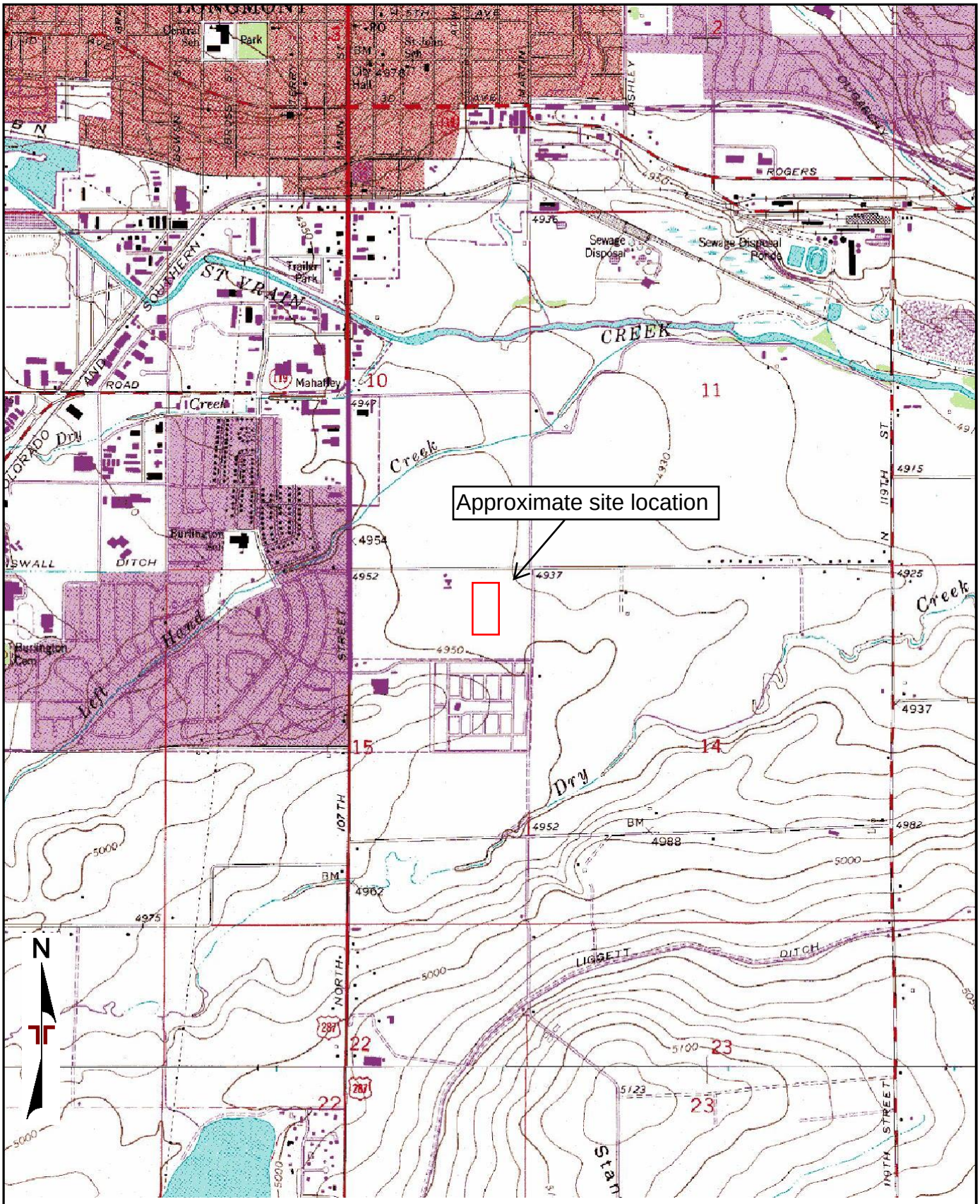
Exhibit 3 – Groundwater Contour Map



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

Project Manager: MJS	Project No. 22177047	Terracon 1242 Bramwood Pl Longmont, CO 80501-6100	TOPOGRAPHIC MAP	Exhibit
Drawn by: ANS	Scale: 1"=2,000'		Wertman #1 PA Well Site Investigation Hummingbird Circle Longmont, CO	1
Checked by: JCG	File Name: 22177047			
Approved by: JCG	Date: 6/19/2018			

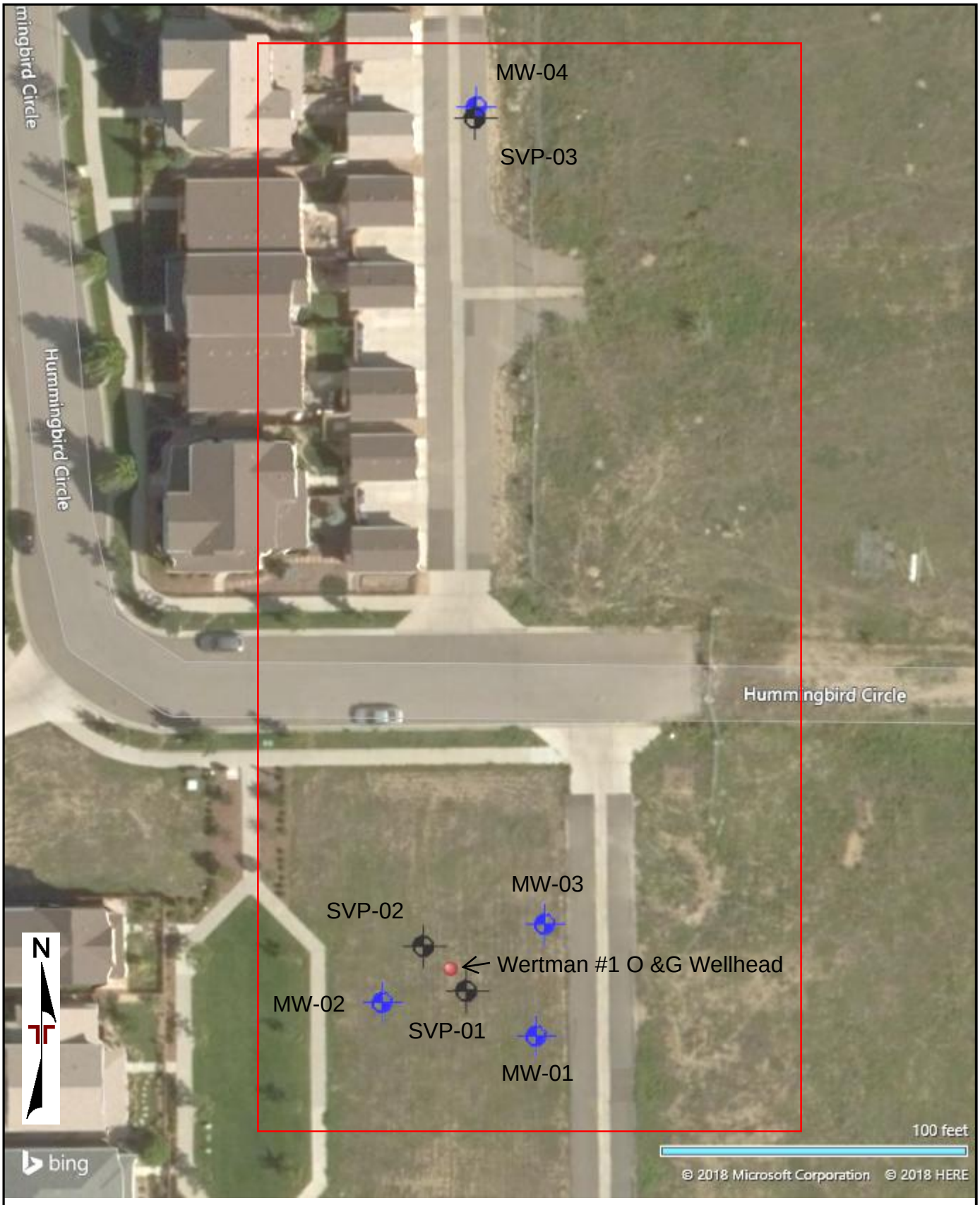
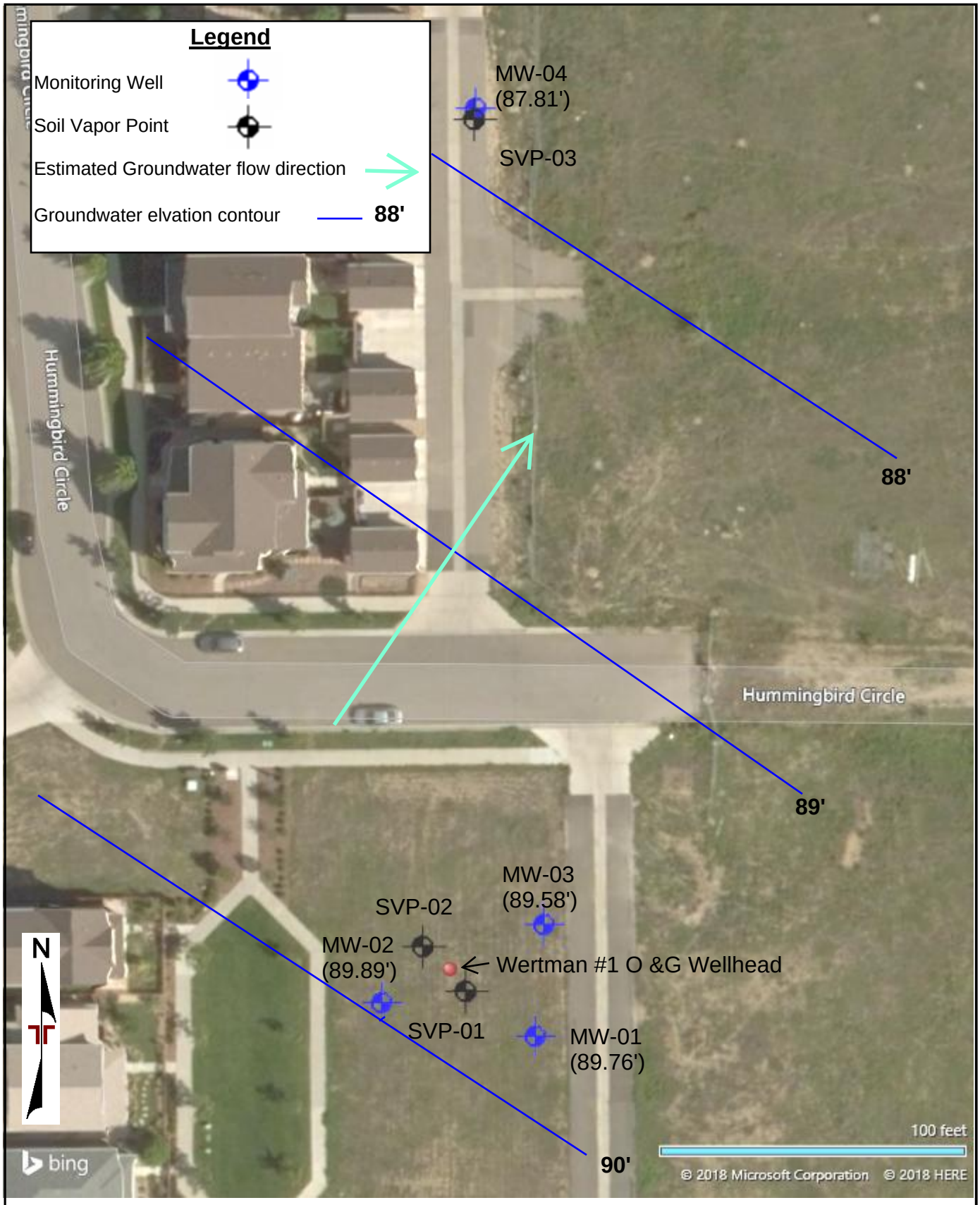


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

Project Manager: MJS Drawn by: ANS Checked by: JCG Approved by: JCG	Project No. 22177047 Scale: AS SHOWN File Name: 22177047 Date: 6/19/2018	Terracon 1242 Bramwood Pl Longmont, CO 80501-6100	SITE DIAGRAM Wertman #1 PA Well Site Investigation Hummingbird Circle Longmont, CO	Exhibit 2



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AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

Project Manager: MJS Drawn by: ANS Checked by: JCG Approved by: JCG	Project No. 22177047 Scale: AS SHOWN File Name: 22177047 Date: 6/19/2018	Terracon 1242 Bramwood Pl Longmont, CO 80501-6100	SITE DIAGRAM Wertman #1 PA Well Site Investigation Hummingbird Circle Longmont, CO	Exhibit 3

APPENDIX B – TABLES

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

Table 1
Summary of Soil Analytical Results
Wertman #1 O&G Well Site
Longmont, Colorado
Terracon Project No. 22177047

Sample ID and Depth					SB-01	SB-02	SB-03	SB-04
Collection Date					4/11/18	4/11/18	4/11/18	4/11/18
Parameter	Residential RSL	Industrial RSL	COGCC Concentration Levels	CDPHE GPV	mg/kg	mg/kg	mg/kg	mg/kg
VOC (8260B)								
2-Butanone (MEK)	**27,000**	**190,000**	**NE**	**18**	<0.025	<0.025	**0.0307**	**0.0289**
Tetrachloroethene	**24**	**100**	**NE**	**1.9**	<0.001	<0.001	**0.00295**	<0.001

1) The CDPHE Background concentration is 11 mg/kg, per the Risk Management Guidance for Evaluating Arsenic Concentrations in Soil, reviewed/revised July 2014.
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
DRO = Diesel Range Organics
COGCC = Colorado Oil and Gas Conservation Comission
COGCC Concentration Levels = COGCC Table 910-1 (January 2015)

Table 2
Groundwater Analytical Summary
Wertman #1 O&G Well Site
Longmont, Colorado
Terracon Project No. 22177047

Sample ID			MW-01	MW-02	MW-03	MW-04
Collect Date						
Parameter	**CDPHE Reg. 41 Groundwater Standard[1]**	**COGCC Concentration Levels[2]**	**µg/L**	**µg/L**	**µg/L**	**µg/L**
VOC (8260B)			**5/15/2018**	**5/15/2018**	**5/15/2018**	**5/15/2018**
Acetone	**6,300**	**NE**	**128**	<50	<50	<50
Other Organics						
Methane	**NE**	**NE**	**10.1**	<10	<10	<10
Ethane	**NE**	**NE**	<13	<13	<13	<13
Ethene	**NE**	**NE**	<13	<13	<13	<13
Inorganic Parameters						
Calcium, Total	**NE**	**NE**	**270,000**	**161,000**	**304,000**	**156,000**
Iron, Total	**NE**	**NE**	**222,000**	**42,700**	**615,000**	**80,400**
Magnesium, Total	**NE**	**NE**	**159,000**	**119,000**	**242,000**	**136,000**
Potassium, Total	**NE**	**NE**	**39,800**	**11,900**	**90,300**	**12,600**
Sodium, Total	**NE**	**NE**	**134,000**	**136,000**	**122,00**	**116,000**
Strontium	**NE**	**NE**	**4,220**	**3,020**	**5,530**	**3,420**
Alkalinity, Total as CaCO3	**NE**	**NE**	**401,000**	**423,000**	**409,000**	**418,000**
Bromide	**NE**	**NE**	<1000	<1000	<1000	<1000
Chloride	**250,000**	**52,160***	**97,200**	**83,800**	**96,400**	**86,500**
Nitrogen as Nitrate	**10,000**	**NE**	**3,920**	**4,110**	**5,460**	**4,220**
Nitrogen as Nitrite	**1,000**	**NE**	**218**	<100	<100	<100
Sulfate	**250,000**	**832,400***	**529,000**	**492,000**	**509,000**	**449,000**
General Parameters						
Specific Conductance (mmhos)	**NE**	**NE**	1,873	1,437	1,667	1,627
Temperature (°C)	**NE**	**NE**	13.62	12.97	13.1	13
Dissolved Oxygen (mg/L)	**NE**	**NE**	3.37	4.3	4.13	5.1
ORP	**NE**	**NE**	-67.8	-5.7	43.5	85.75
pH	**6.5-8.5**	**NE**	7.8	7.58	7.36	7.71

1) CDPHE GW Quality Standards – Regulation 41 Table A, Ground Water Organic Chemical Standards (June 30, 2016)
2) COGCC Concentration Levels = COGCC Table 910-1 (January 2015)

*) The COGCC cleanup standard for chloride and sulfate is 1.25 x background. Background concentrations from unimpacted wells were used to average and calculate an appropriate background concentration for this area.

Only detected analytes shown (detected concentrations are **bold**)
NE = Not Established
VOC = Volatile Organic Compounds
NA = Not Analyzed
COGCC = Colorado Oil and Gas Conservation Comission
M = Drinking Water Maximum Contaminant Level

Table 3
Soil Gas Analytical Summary
Wertmen #1 O&G Well Site
Longmont, Colorado
Terracon Project No. 22177047

Sample ID			SVP-01	SVP-02	SVP-03
Collect Date			5/15/2018	5/15/2018	5/15/2018
Parameter	Residential RSL	Residential VISL[1]	µg/m^3	µg/m^3	µg/m^3
VOC (TO-15)					
Acetone	**32,000**	**1,066,667**	**8.37**	**14.1**	**10.6**
Benzene	**0.36**	**12**	<1.28	<1.28	**3.3**
Bromomethane	**0.52**	**17**	<1.55	<1.55	**9.54**
Carbon disulfide	**73**	**2,433**	**4.49**	<1.24	**140**
Chloromethane	**94**	**3,133**	<0.826	**1.29**	**4.73**
Cyclohexane	**630**	**21,000**	<1.38	<1.38	**16.3**
Ethanol	**NE**	**NE**	**7.98**	**9.6**	**9.69**
Ethylbenzene	**1.1**	**37**	<1.72	<1.72	**4.33**
Dichlorodifluoromethane	**100**	**3,333**	**2.07**	**2.13**	<3.40
Heptane	**NE**	**NE**	<1.64	<1.64	**5.99**
n-Hexane	**730**	**24,333**	<1.41	**2.77**	**7.95**
Methylene Chloride	**100**	**3,333**	**2.15**	**5.46**	**4.1**
Propene	**3,100**	**103,333**	<1.38	<1.38	**54.8**
Toluene	**5,200**	**173,333**	**2.36**	**1.62**	**9.4**
1,2,4-Trimethylbenzene	**7.3**	**243**	<1.26	<1.26	**2.88**
2,2,4-Trimethylpentane	**NE**	**NE**	<1.87	<1.87	**3.09**
o-Xylene	**100**	**3,333**	<1.73	<1.73	**4.44**
Methane by D1946 (%)					
Methane	**NE**	**NE**	<0.4	<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)
ASC = CDPHE Air Screening Concentrations, Remediation Goals (January 2016)
ND = Not Detected
NE = Not Established
NA = Not Applicable
Only detected analytes shown (detected concentrations are **bold**)

Table 3 - Receptor Worksheet
George Mayeda #1 Oil and Gas Well

Lease:	Wertman
Well Number:	#1
API Number:	05-013-06097
Operator	Meyer Oil Company

Sensitive Receptor Detail

Receptor	Distance	Gradient[2]	Direction	Type of Receptor	Comments
Surface Water Body:	1,250 feet	Cross-Gradient	Northwest	Pond	Unnamed
Surface Water Body:	2,000 feet	Cross-Gradient	North	Creek	Left Hand Creek
Structure:	100 feet	up-Gradient	West	Residential	Residential Townhomes
Structure:	100 feet	Cross-Gradient	North	Residential	Residential Townhomes
Buried Utilities:	70 feet	Cross-Gradient	North	Electrical	Electrical along Cardinal Way
Sewer/Water	130 feet	Cross-Gradient	South	Sewer	Sewer Manhole on Hummingbird Circle
Water Well[1]:	1,000 feet	Down-Gradient	Southeast	Temparary well (36 feet)	Well 8318 registered to Sisters of St. Fran

1) Water well information obtained from the Colorado Department of Water Resources online database.
2) Site specific gradient determined from Terracon's Limited Soil, Groundwater, and Soil Gas Investigation (December 19, 2017).
* Additional site and receptor information obtained from Colorado Oil and Gas Conservation Commission (COGCC) online database.

APPENDIX C – SOIL BORING LOGS

WELL LOG NO. SB-01/ MW-01

PROJECT: Wertman #1 O&G Well

CLIENT: City of Longmont
Longmont, Colorado

SITE: Wertman #1 O&G Well
Longmont, Colorado

LOCATION See Exhibit A-2

DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS (Well Completion:)	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	POORY GRADED SAND (SP-SC), tan, dry, grass at the surface	2" diameter PVC riser; bentonite (partially hydrated) seal around riseer				100	ND	
4.0	**SANDY CLAY (CL)**, tan to brown, moist		5			100	ND	
		2" diamerter PVC screen	10	▽		80	ND	SB-01 10-11'
11.0	**POORLY GRADED SAND WITH GRAVEL (SP)**, tan, wet	sand filter pack around screen				100	ND	
16.0	***Refusal at 16 Feet***		15					

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

Hammer Type: Automatic

Advancement Method:
Pnumatic drive

Abandonment Method:
Boring completed as groundwater monitoring

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

WATER LEVEL OBSERVATIONS

▽ *observed during drilling*

Terracon

Well Started: 05-02-2018 | Well Completed: 05-02-2018

Drill Rig: Geoprobe | Driller: DrillPro

Project No.: 22177047 | Exhibit: B-1

WELL LOG NO. SB-02/ MW-02

PROJECT: Wertman #1 O&G Well

CLIENT: City of Longmont
Longmont, Colorado

SITE: Wertman #1 O&G Well
Longmont, Colorado

LOCATION See Exhibit A-2

DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS (Well Completion)	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	SANDY SILTY CLAY (CL-ML), tan, dry, grass at the surface	2" diameter PVC riser; bentonite (partially hydrated) seal around riseer				90	ND	
4.0	**SANDY CLAY (CL)**, tan to brown, moist		5			50	ND	
		2" diamerter PVC screen	10	▽		70	ND	SB-02 8-11'
11.0	**POORLY GRADED SAND WITH GRAVEL (SP)**, tan, wet	sand filter pack around screen				100	ND	
16.0	***Boring Terminated at 16 Feet***		15					

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

Hammer Type: Automatic

Advancement Method:
Pnumatic drive

Abandonment Method:
Boring completed as groundwater monitoring

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

WATER LEVEL OBSERVATIONS

▽ *observed during drilling*

Terracon

Well Started: 05-02-2018 | Well Completed: 05-02-2018

Drill Rig: Geoprobe | Driller: DrillPro

Project No.: 22177047 | Exhibit: B-2

WELL LOG NO. SB-03/ MW-03

PROJECT: Wertman #1 O&G Well

CLIENT: City of Longmont
Longmont, Colorado

SITE: Wertman #1 O&G Well
Longmont, Colorado

LOCATION See Exhibit A-2

DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS (Well Completion:)	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	SANDY SILTY CLAY (CL-ML), tan, dry, grass at the surface	2" diameter PVC riser; bentonite (partially hydrated) seal around riseer				100	ND	
4.0	**SANDY CLAY (CL)**, tan to brown, moist		5			100	ND	
		2" diamerter PVC screen	10			100	ND	SB-03 9-10'
12.0	**POORLY GRADED SAND WITH GRAVEL (SP)**, tan, wet	sand filter pack around screen				100	ND	
16.0	***Boring Terminated at 16 Feet***		15					

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

Hammer Type: Automatic

Advancement Method:
Pnumatic drive

Abandonment Method:
Boring completed as groundwater monitoring

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

WATER LEVEL OBSERVATIONS
▽ *observed during drilling*

Terracon

Well Started: 05-02-2018 | Well Completed: 05-02-2018
Drill Rig: Geoprobe | Driller: DrillPro
Project No.: 22177047 | Exhibit: B-3

WELL LOG NO. SB-04/ MW-04

PROJECT: Wertman #1 O&G Well

CLIENT: City of Longmont
Longmont, Colorado

SITE: Wertman #1 O&G Well
Longmont, Colorado

LOCATION See Exhibit A-2

DEPTH	MATERIAL DESCRIPTION	INSTALLATION DETAILS (Well Completion)	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0	**SANDY SILT (CL-ML)**, tan, dry, grass at the surface	2" diameter PVC riser; bentonite (partially hydrated) seal around riseer				100	ND	
4.0	**SANDY LEAN CLAY (CL)**, tan to brown, moist		5			100	ND	
		2" diamerter PVC screen	10	▽		100	ND	SB-04 8-10'
11.0	**POORLY GRADED SAND (SP)**, tan, wet	sand filter pack around screen				100	ND	
16.0	***Boring Terminated at 16 Feet***		15					

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

Hammer Type: Automatic

Advancement Method:
Pnumatic drive

Abandonment Method:
Boring completed as groundwater monitoring

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

WATER LEVEL OBSERVATIONS

▽ *observed during drilling*

Terracon

Well Started: 05-02-2018 | Well Completed: 05-02-2018

Drill Rig: Geoprobe | Driller: DrillPro

Project No.: 22177047 | Exhibit: B-4

WELL LOG NO. SVP-01

PROJECT: Wertman #1 O&G Well

CLIENT: City of Longmont
Longmont, Colorado

SITE: Wertman #1 O&G Well
Longmont, Colorado

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH MATERIAL DESCRIPTION	INSTALLATION DETAILS Well Completion:	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	POORLY GRADED SAND WITH CLAY (SP-SC), tan, dry, grass at the surface	top cap bentonite seal screen pack in sand	5					
	6.0 ***Boring Terminated at 6 Feet***							

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

Hammer Type: Automatic

Advancement Method:
Pnumatic drive

Abandonment Method:
Boring completed as soil vapor point

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

WATER LEVEL OBSERVATIONS
Groundwater not observed during drilling

Terracon

Well Started: 05-02-2018 | Well Completed: 05-02-2018
Drill Rig: Geoprobe | Driller: DrillPro
Project No.: 22177047 | Exhibit: B-5

WELL LOG NO. SVP-02

PROJECT: Wertman #1 O&G Well

CLIENT: City of Longmont
Longmont, Colorado

SITE: Wertman #1 O&G Well
Longmont, Colorado

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH MATERIAL DESCRIPTION	INSTALLATION DETAILS Well Completion:	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	POORLY GRADED SAND WITH CLAY (SP-SC), tan, dry, grass at the surface	top cap bentonite seal screen pack in sand	5					
	5.5 ***Boring Terminated at 5.5 Feet***							

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

Hammer Type: Automatic

Advancement Method:
Pnumatic drive

Abandonment Method:
Boring completed as soil vapor point

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

WATER LEVEL OBSERVATIONS
Groundwater not observed during drilling

Terracon

Well Started: 05-02-2018 | Well Completed: 05-02-2018
Drill Rig: Geoprobe | Driller: DrillPro
Project No.: 22177047 | Exhibit: B-6

WELL LOG NO. SVP-03

PROJECT: Wertman #1 O&G Well

CLIENT: City of Longmont
Longmont, Colorado

SITE: Wertman #1 O&G Well
Longmont, Colorado

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH — MATERIAL DESCRIPTION	INSTALLATION DETAILS Well Completion:	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	POORLY GRADED SAND WITH CLAY (SP-SC), tan to brown, dry, grass at the surface	top cap bentonite seal screen pack in sand	5					
	6.0 ***Boring Terminated at 6 Feet***							

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

Hammer Type: Automatic

Advancement Method:
Pnumatic drive

Abandonment Method:
Boring completed as soil vapor point

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

WATER LEVEL OBSERVATIONS
Groundwater not observed during drilling

Terracon

Well Started: 05-02-2018 | Well Completed: 05-02-2018
Drill Rig: Geoprobe | Driller: DrillPro
Project No.: 22177047 | Exhibit: B-7

APPENDIX D – ANALYTICAL REPORTS AND CHAINS OF CUSTODY

ANALYTICAL REPORT

May 11, 2018

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L991462
Samples Received:	05/05/2018
Project Number:	22177047
Description:	Wertman #1

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

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
Technical Service Representative

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

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SB-01 L991462-01 Solid

Collected by: Drew Stephens
Collected date/time: 05/01/18 08:30
Received date/time: 05/05/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1107979	1	05/07/18 07:53	05/08/18 01:59	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1108851	1	05/07/18 07:53	05/09/18 17:55	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1109163	1	05/09/18 16:28	05/11/18 06:43	DMW

SB-02 L991462-02 Solid

Collected by: Drew Stephens
Collected date/time: 05/01/18 09:50
Received date/time: 05/05/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1107979	1	05/07/18 07:53	05/08/18 02:21	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1108851	1	05/07/18 07:53	05/09/18 18:14	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1109163	1	05/09/18 16:28	05/11/18 06:56	DMW

SB-03 L991462-03 Solid

Collected by: Drew Stephens
Collected date/time: 05/01/18 09:10
Received date/time: 05/05/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1107979	1	05/07/18 07:53	05/08/18 02:43	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1108851	1	05/07/18 07:53	05/09/18 18:32	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1109163	1	05/09/18 16:28	05/11/18 07:10	DMW

SB-04 L991462-04 Solid

Collected by: Drew Stephens
Collected date/time: 05/01/18 11:20
Received date/time: 05/05/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1107979	1	05/07/18 07:53	05/08/18 03:05	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1108851	1	05/07/18 07:53	05/09/18 18:51	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1109163	1	05/09/18 16:28	05/11/18 07:23	DMW

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

Daphne Richards
Technical Service Representative

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/08/2018 01:59	WG1107979
(S) a,a,a-Trifluorotoluene(FID)	*92.6*		*77.0-120*		*05/08/2018 01:59*	WG1107979

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		0.0250	1	05/09/2018 17:55	WG1108851
Acrylonitrile	ND		0.0125	1	05/09/2018 17:55	WG1108851
Benzene	ND		0.00100	1	05/09/2018 17:55	WG1108851
Bromobenzene	ND		0.0125	1	05/09/2018 17:55	WG1108851
Bromodichloromethane	ND		0.00250	1	05/09/2018 17:55	WG1108851
Bromoform	ND		0.0250	1	05/09/2018 17:55	WG1108851
Bromomethane	ND		0.0125	1	05/09/2018 17:55	WG1108851
n-Butylbenzene	ND		0.0125	1	05/09/2018 17:55	WG1108851
sec-Butylbenzene	ND		0.0125	1	05/09/2018 17:55	WG1108851
tert-Butylbenzene	ND		0.00500	1	05/09/2018 17:55	WG1108851
Carbon tetrachloride	ND		0.00500	1	05/09/2018 17:55	WG1108851
Chlorobenzene	ND		0.00250	1	05/09/2018 17:55	WG1108851
Chlorodibromomethane	ND		0.00250	1	05/09/2018 17:55	WG1108851
Chloroethane	ND		0.00500	1	05/09/2018 17:55	WG1108851
Chloroform	ND		0.00250	1	05/09/2018 17:55	WG1108851
Chloromethane	ND		0.0125	1	05/09/2018 17:55	WG1108851
2-Chlorotoluene	ND		0.00250	1	05/09/2018 17:55	WG1108851
4-Chlorotoluene	ND		0.00500	1	05/09/2018 17:55	WG1108851
1,2-Dibromo-3-Chloropropane	ND		0.0250	1	05/09/2018 17:55	WG1108851
1,2-Dibromoethane	ND		0.00250	1	05/09/2018 17:55	WG1108851
Dibromomethane	ND		0.00500	1	05/09/2018 17:55	WG1108851
1,2-Dichlorobenzene	ND		0.00500	1	05/09/2018 17:55	WG1108851
1,3-Dichlorobenzene	ND		0.00500	1	05/09/2018 17:55	WG1108851
1,4-Dichlorobenzene	ND		0.00500	1	05/09/2018 17:55	WG1108851
Dichlorodifluoromethane	ND		0.00250	1	05/09/2018 17:55	WG1108851
1,1-Dichloroethane	ND		0.00250	1	05/09/2018 17:55	WG1108851
1,2-Dichloroethane	ND		0.00250	1	05/09/2018 17:55	WG1108851
1,1-Dichloroethene	ND		0.00250	1	05/09/2018 17:55	WG1108851
cis-1,2-Dichloroethene	ND		0.00250	1	05/09/2018 17:55	WG1108851
trans-1,2-Dichloroethene	ND		0.00500	1	05/09/2018 17:55	WG1108851
1,2-Dichloropropane	ND		0.00500	1	05/09/2018 17:55	WG1108851
1,1-Dichloropropene	ND		0.00250	1	05/09/2018 17:55	WG1108851
1,3-Dichloropropane	ND		0.00500	1	05/09/2018 17:55	WG1108851
cis-1,3-Dichloropropene	ND		0.00250	1	05/09/2018 17:55	WG1108851
trans-1,3-Dichloropropene	ND		0.00500	1	05/09/2018 17:55	WG1108851
2,2-Dichloropropane	ND		0.00250	1	05/09/2018 17:55	WG1108851
Di-isopropyl ether	ND		0.00100	1	05/09/2018 17:55	WG1108851
Ethylbenzene	ND		0.00250	1	05/09/2018 17:55	WG1108851
Hexachloro-1,3-butadiene	ND		0.0250	1	05/09/2018 17:55	WG1108851
Isopropylbenzene	ND		0.00250	1	05/09/2018 17:55	WG1108851
p-Isopropyltoluene	ND		0.00500	1	05/09/2018 17:55	WG1108851
2-Butanone (MEK)	ND		0.0250	1	05/09/2018 17:55	WG1108851
Methylene Chloride	ND		0.0250	1	05/09/2018 17:55	WG1108851
4-Methyl-2-pentanone (MIBK)	ND		0.0250	1	05/09/2018 17:55	WG1108851
Methyl tert-butyl ether	ND		0.00100	1	05/09/2018 17:55	WG1108851
Naphthalene	ND		0.0125	1	05/09/2018 17:55	WG1108851
n-Propylbenzene	ND		0.00500	1	05/09/2018 17:55	WG1108851
Styrene	ND		0.0125	1	05/09/2018 17:55	WG1108851
1,1,1,2-Tetrachloroethane	ND		0.00250	1	05/09/2018 17:55	WG1108851

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		0.00250	1	05/09/2018 17:55	WG1108851
1,1,2-Trichlorotrifluoroethane	ND		0.00250	1	05/09/2018 17:55	WG1108851
Tetrachloroethene	ND		0.00250	1	05/09/2018 17:55	WG1108851
Toluene	ND		0.00500	1	05/09/2018 17:55	WG1108851
1,2,3-Trichlorobenzene	ND		0.00250	1	05/09/2018 17:55	WG1108851
1,2,4-Trichlorobenzene	ND		0.0125	1	05/09/2018 17:55	WG1108851
1,1,1-Trichloroethane	ND		0.00250	1	05/09/2018 17:55	WG1108851
1,1,2-Trichloroethane	ND		0.00250	1	05/09/2018 17:55	WG1108851
Trichloroethene	ND		0.00100	1	05/09/2018 17:55	WG1108851
Trichlorofluoromethane	ND		0.00250	1	05/09/2018 17:55	WG1108851
1,2,3-Trichloropropane	ND		0.0125	1	05/09/2018 17:55	WG1108851
1,2,4-Trimethylbenzene	ND		0.00500	1	05/09/2018 17:55	WG1108851
1,2,3-Trimethylbenzene	ND		0.00500	1	05/09/2018 17:55	WG1108851
1,3,5-Trimethylbenzene	ND		0.00500	1	05/09/2018 17:55	WG1108851
Vinyl chloride	ND		0.00250	1	05/09/2018 17:55	WG1108851
Xylenes, Total	ND		0.00650	1	05/09/2018 17:55	WG1108851
(S) Toluene-d8	*111*		*80.0-120*		*05/09/2018 17:55*	WG1108851
(S) Dibromofluoromethane	*102*		*74.0-131*		*05/09/2018 17:55*	WG1108851
(S) 4-Bromofluorobenzene	*114*		*64.0-132*		*05/09/2018 17:55*	WG1108851

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 J4	4.00	1	05/11/2018 06:43	WG1109163
C28-C40 Oil Range	ND		4.00	1	05/11/2018 06:43	WG1109163
(S) o-Terphenyl	*59.4*		*18.0-148*		*05/11/2018 06:43*	WG1109163

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	05/08/2018 02:21	WG1107979
(S) a,a,a-Trifluorotoluene(FID)	*91.8*		*77.0-120*		*05/08/2018 02:21*	WG1107979

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		0.0250	1	05/09/2018 18:14	WG1108851
Acrylonitrile	ND		0.0125	1	05/09/2018 18:14	WG1108851
Benzene	ND		0.00100	1	05/09/2018 18:14	WG1108851
Bromobenzene	ND		0.0125	1	05/09/2018 18:14	WG1108851
Bromodichloromethane	ND		0.00250	1	05/09/2018 18:14	WG1108851
Bromoform	ND		0.0250	1	05/09/2018 18:14	WG1108851
Bromomethane	ND		0.0125	1	05/09/2018 18:14	WG1108851
n-Butylbenzene	ND		0.0125	1	05/09/2018 18:14	WG1108851
sec-Butylbenzene	ND		0.0125	1	05/09/2018 18:14	WG1108851
tert-Butylbenzene	ND		0.00500	1	05/09/2018 18:14	WG1108851
Carbon tetrachloride	ND		0.00500	1	05/09/2018 18:14	WG1108851
Chlorobenzene	ND		0.00250	1	05/09/2018 18:14	WG1108851
Chlorodibromomethane	ND		0.00250	1	05/09/2018 18:14	WG1108851
Chloroethane	ND		0.00500	1	05/09/2018 18:14	WG1108851
Chloroform	ND		0.00250	1	05/09/2018 18:14	WG1108851
Chloromethane	ND		0.0125	1	05/09/2018 18:14	WG1108851
2-Chlorotoluene	ND		0.00250	1	05/09/2018 18:14	WG1108851
4-Chlorotoluene	ND		0.00500	1	05/09/2018 18:14	WG1108851
1,2-Dibromo-3-Chloropropane	ND		0.0250	1	05/09/2018 18:14	WG1108851
1,2-Dibromoethane	ND		0.00250	1	05/09/2018 18:14	WG1108851
Dibromomethane	ND		0.00500	1	05/09/2018 18:14	WG1108851
1,2-Dichlorobenzene	ND		0.00500	1	05/09/2018 18:14	WG1108851
1,3-Dichlorobenzene	ND		0.00500	1	05/09/2018 18:14	WG1108851
1,4-Dichlorobenzene	ND		0.00500	1	05/09/2018 18:14	WG1108851
Dichlorodifluoromethane	ND		0.00250	1	05/09/2018 18:14	WG1108851
1,1-Dichloroethane	ND		0.00250	1	05/09/2018 18:14	WG1108851
1,2-Dichloroethane	ND		0.00250	1	05/09/2018 18:14	WG1108851
1,1-Dichloroethene	ND		0.00250	1	05/09/2018 18:14	WG1108851
cis-1,2-Dichloroethene	ND		0.00250	1	05/09/2018 18:14	WG1108851
trans-1,2-Dichloroethene	ND		0.00500	1	05/09/2018 18:14	WG1108851
1,2-Dichloropropane	ND		0.00500	1	05/09/2018 18:14	WG1108851
1,1-Dichloropropene	ND		0.00250	1	05/09/2018 18:14	WG1108851
1,3-Dichloropropane	ND		0.00500	1	05/09/2018 18:14	WG1108851
cis-1,3-Dichloropropene	ND		0.00250	1	05/09/2018 18:14	WG1108851
trans-1,3-Dichloropropene	ND		0.00500	1	05/09/2018 18:14	WG1108851
2,2-Dichloropropane	ND		0.00250	1	05/09/2018 18:14	WG1108851
Di-isopropyl ether	ND		0.00100	1	05/09/2018 18:14	WG1108851
Ethylbenzene	ND		0.00250	1	05/09/2018 18:14	WG1108851
Hexachloro-1,3-butadiene	ND		0.0250	1	05/09/2018 18:14	WG1108851
Isopropylbenzene	ND		0.00250	1	05/09/2018 18:14	WG1108851
p-Isopropyltoluene	ND		0.00500	1	05/09/2018 18:14	WG1108851
2-Butanone (MEK)	ND		0.0250	1	05/09/2018 18:14	WG1108851
Methylene Chloride	ND		0.0250	1	05/09/2018 18:14	WG1108851
4-Methyl-2-pentanone (MIBK)	ND		0.0250	1	05/09/2018 18:14	WG1108851
Methyl tert-butyl ether	ND		0.00100	1	05/09/2018 18:14	WG1108851
Naphthalene	ND		0.0125	1	05/09/2018 18:14	WG1108851
n-Propylbenzene	ND		0.00500	1	05/09/2018 18:14	WG1108851
Styrene	ND		0.0125	1	05/09/2018 18:14	WG1108851
1,1,1,2-Tetrachloroethane	ND		0.00250	1	05/09/2018 18:14	WG1108851

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		0.00250	1	05/09/2018 18:14	WG1108851
1,1,2-Trichlorotrifluoroethane	ND		0.00250	1	05/09/2018 18:14	WG1108851
Tetrachloroethene	ND		0.00250	1	05/09/2018 18:14	WG1108851
Toluene	ND		0.00500	1	05/09/2018 18:14	WG1108851
1,2,3-Trichlorobenzene	ND		0.00250	1	05/09/2018 18:14	WG1108851
1,2,4-Trichlorobenzene	ND		0.0125	1	05/09/2018 18:14	WG1108851
1,1,1-Trichloroethane	ND		0.00250	1	05/09/2018 18:14	WG1108851
1,1,2-Trichloroethane	ND		0.00250	1	05/09/2018 18:14	WG1108851
Trichloroethene	ND		0.00100	1	05/09/2018 18:14	WG1108851
Trichlorofluoromethane	ND		0.00250	1	05/09/2018 18:14	WG1108851
1,2,3-Trichloropropane	ND		0.0125	1	05/09/2018 18:14	WG1108851
1,2,4-Trimethylbenzene	ND		0.00500	1	05/09/2018 18:14	WG1108851
1,2,3-Trimethylbenzene	ND		0.00500	1	05/09/2018 18:14	WG1108851
1,3,5-Trimethylbenzene	ND		0.00500	1	05/09/2018 18:14	WG1108851
Vinyl chloride	ND		0.00250	1	05/09/2018 18:14	WG1108851
Xylenes, Total	ND		0.00650	1	05/09/2018 18:14	WG1108851
(S) Toluene-d8	*112*		*80.0-120*		*05/09/2018 18:14*	WG1108851
(S) Dibromofluoromethane	*100*		*74.0-131*		*05/09/2018 18:14*	WG1108851
(S) 4-Bromofluorobenzene	*114*		*64.0-132*		*05/09/2018 18:14*	WG1108851

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 J4	4.00	1	05/11/2018 06:56	WG1109163
C28-C40 Oil Range	ND		4.00	1	05/11/2018 06:56	WG1109163
(S) o-Terphenyl	*47.8*		*18.0-148*		*05/11/2018 06:56*	WG1109163

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	05/08/2018 02:43	WG1107979
(S) a,a,a-Trifluorotoluene(FID)	*92.6*		*77.0-120*		*05/08/2018 02:43*	WG1107979

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		0.0250	1	05/09/2018 18:32	WG1108851
Acrylonitrile	ND		0.0125	1	05/09/2018 18:32	WG1108851
Benzene	ND		0.00100	1	05/09/2018 18:32	WG1108851
Bromobenzene	ND		0.0125	1	05/09/2018 18:32	WG1108851
Bromodichloromethane	ND		0.00250	1	05/09/2018 18:32	WG1108851
Bromoform	ND		0.0250	1	05/09/2018 18:32	WG1108851
Bromomethane	ND		0.0125	1	05/09/2018 18:32	WG1108851
n-Butylbenzene	ND		0.0125	1	05/09/2018 18:32	WG1108851
sec-Butylbenzene	ND		0.0125	1	05/09/2018 18:32	WG1108851
tert-Butylbenzene	ND		0.00500	1	05/09/2018 18:32	WG1108851
Carbon tetrachloride	ND		0.00500	1	05/09/2018 18:32	WG1108851
Chlorobenzene	ND		0.00250	1	05/09/2018 18:32	WG1108851
Chlorodibromomethane	ND		0.00250	1	05/09/2018 18:32	WG1108851
Chloroethane	ND		0.00500	1	05/09/2018 18:32	WG1108851
Chloroform	ND		0.00250	1	05/09/2018 18:32	WG1108851
Chloromethane	ND		0.0125	1	05/09/2018 18:32	WG1108851
2-Chlorotoluene	ND		0.00250	1	05/09/2018 18:32	WG1108851
4-Chlorotoluene	ND		0.00500	1	05/09/2018 18:32	WG1108851
1,2-Dibromo-3-Chloropropane	ND		0.0250	1	05/09/2018 18:32	WG1108851
1,2-Dibromoethane	ND		0.00250	1	05/09/2018 18:32	WG1108851
Dibromomethane	ND		0.00500	1	05/09/2018 18:32	WG1108851
1,2-Dichlorobenzene	ND		0.00500	1	05/09/2018 18:32	WG1108851
1,3-Dichlorobenzene	ND		0.00500	1	05/09/2018 18:32	WG1108851
1,4-Dichlorobenzene	ND		0.00500	1	05/09/2018 18:32	WG1108851
Dichlorodifluoromethane	ND		0.00250	1	05/09/2018 18:32	WG1108851
1,1-Dichloroethane	ND		0.00250	1	05/09/2018 18:32	WG1108851
1,2-Dichloroethane	ND		0.00250	1	05/09/2018 18:32	WG1108851
1,1-Dichloroethene	ND		0.00250	1	05/09/2018 18:32	WG1108851
cis-1,2-Dichloroethene	ND		0.00250	1	05/09/2018 18:32	WG1108851
trans-1,2-Dichloroethene	ND		0.00500	1	05/09/2018 18:32	WG1108851
1,2-Dichloropropane	ND		0.00500	1	05/09/2018 18:32	WG1108851
1,1-Dichloropropene	ND		0.00250	1	05/09/2018 18:32	WG1108851
1,3-Dichloropropane	ND		0.00500	1	05/09/2018 18:32	WG1108851
cis-1,3-Dichloropropene	ND		0.00250	1	05/09/2018 18:32	WG1108851
trans-1,3-Dichloropropene	ND		0.00500	1	05/09/2018 18:32	WG1108851
2,2-Dichloropropane	ND		0.00250	1	05/09/2018 18:32	WG1108851
Di-isopropyl ether	ND		0.00100	1	05/09/2018 18:32	WG1108851
Ethylbenzene	ND		0.00250	1	05/09/2018 18:32	WG1108851
Hexachloro-1,3-butadiene	ND		0.0250	1	05/09/2018 18:32	WG1108851
Isopropylbenzene	ND		0.00250	1	05/09/2018 18:32	WG1108851
p-Isopropyltoluene	ND		0.00500	1	05/09/2018 18:32	WG1108851
2-Butanone (MEK)	0.0307		0.0250	1	05/09/2018 18:32	WG1108851
Methylene Chloride	ND		0.0250	1	05/09/2018 18:32	WG1108851
4-Methyl-2-pentanone (MIBK)	ND		0.0250	1	05/09/2018 18:32	WG1108851
Methyl tert-butyl ether	ND		0.00100	1	05/09/2018 18:32	WG1108851
Naphthalene	ND		0.0125	1	05/09/2018 18:32	WG1108851
n-Propylbenzene	ND		0.00500	1	05/09/2018 18:32	WG1108851
Styrene	ND		0.0125	1	05/09/2018 18:32	WG1108851
1,1,1,2-Tetrachloroethane	ND		0.00250	1	05/09/2018 18:32	WG1108851

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		0.00250	1	05/09/2018 18:32	WG1108851
1,1,2-Trichlorotrifluoroethane	ND		0.00250	1	05/09/2018 18:32	WG1108851
Tetrachloroethene	0.00295		0.00250	1	05/09/2018 18:32	WG1108851
Toluene	ND		0.00500	1	05/09/2018 18:32	WG1108851
1,2,3-Trichlorobenzene	ND		0.00250	1	05/09/2018 18:32	WG1108851
1,2,4-Trichlorobenzene	ND		0.0125	1	05/09/2018 18:32	WG1108851
1,1,1-Trichloroethane	ND		0.00250	1	05/09/2018 18:32	WG1108851
1,1,2-Trichloroethane	ND		0.00250	1	05/09/2018 18:32	WG1108851
Trichloroethene	ND		0.00100	1	05/09/2018 18:32	WG1108851
Trichlorofluoromethane	ND		0.00250	1	05/09/2018 18:32	WG1108851
1,2,3-Trichloropropane	ND		0.0125	1	05/09/2018 18:32	WG1108851
1,2,4-Trimethylbenzene	ND		0.00500	1	05/09/2018 18:32	WG1108851
1,2,3-Trimethylbenzene	ND		0.00500	1	05/09/2018 18:32	WG1108851
1,3,5-Trimethylbenzene	ND		0.00500	1	05/09/2018 18:32	WG1108851
Vinyl chloride	ND		0.00250	1	05/09/2018 18:32	WG1108851
Xylenes, Total	ND		0.00650	1	05/09/2018 18:32	WG1108851
(S) Toluene-d8	*110*		*80.0-120*		*05/09/2018 18:32*	WG1108851
(S) Dibromofluoromethane	*106*		*74.0-131*		*05/09/2018 18:32*	WG1108851
(S) 4-Bromofluorobenzene	*112*		*64.0-132*		*05/09/2018 18:32*	WG1108851

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 J4	4.00	1	05/11/2018 07:10	WG1109163
C28-C40 Oil Range	ND		4.00	1	05/11/2018 07:10	WG1109163
(S) o-Terphenyl	*34.9*		*18.0-148*		*05/11/2018 07:10*	WG1109163

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	05/08/2018 03:05	WG1107979
(S) a,a,a-Trifluorotoluene(FID)	*93.3*		*77.0-120*		*05/08/2018 03:05*	WG1107979

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		0.0250	1	05/09/2018 18:51	WG1108851
Acrylonitrile	ND		0.0125	1	05/09/2018 18:51	WG1108851
Benzene	ND		0.00100	1	05/09/2018 18:51	WG1108851
Bromobenzene	ND		0.0125	1	05/09/2018 18:51	WG1108851
Bromodichloromethane	ND		0.00250	1	05/09/2018 18:51	WG1108851
Bromoform	ND		0.0250	1	05/09/2018 18:51	WG1108851
Bromomethane	ND		0.0125	1	05/09/2018 18:51	WG1108851
n-Butylbenzene	ND		0.0125	1	05/09/2018 18:51	WG1108851
sec-Butylbenzene	ND		0.0125	1	05/09/2018 18:51	WG1108851
tert-Butylbenzene	ND		0.00500	1	05/09/2018 18:51	WG1108851
Carbon tetrachloride	ND		0.00500	1	05/09/2018 18:51	WG1108851
Chlorobenzene	ND		0.00250	1	05/09/2018 18:51	WG1108851
Chlorodibromomethane	ND		0.00250	1	05/09/2018 18:51	WG1108851
Chloroethane	ND		0.00500	1	05/09/2018 18:51	WG1108851
Chloroform	ND		0.00250	1	05/09/2018 18:51	WG1108851
Chloromethane	ND		0.0125	1	05/09/2018 18:51	WG1108851
2-Chlorotoluene	ND		0.00250	1	05/09/2018 18:51	WG1108851
4-Chlorotoluene	ND		0.00500	1	05/09/2018 18:51	WG1108851
1,2-Dibromo-3-Chloropropane	ND		0.0250	1	05/09/2018 18:51	WG1108851
1,2-Dibromoethane	ND		0.00250	1	05/09/2018 18:51	WG1108851
Dibromomethane	ND		0.00500	1	05/09/2018 18:51	WG1108851
1,2-Dichlorobenzene	ND		0.00500	1	05/09/2018 18:51	WG1108851
1,3-Dichlorobenzene	ND		0.00500	1	05/09/2018 18:51	WG1108851
1,4-Dichlorobenzene	ND		0.00500	1	05/09/2018 18:51	WG1108851
Dichlorodifluoromethane	ND		0.00250	1	05/09/2018 18:51	WG1108851
1,1-Dichloroethane	ND		0.00250	1	05/09/2018 18:51	WG1108851
1,2-Dichloroethane	ND		0.00250	1	05/09/2018 18:51	WG1108851
1,1-Dichloroethene	ND		0.00250	1	05/09/2018 18:51	WG1108851
cis-1,2-Dichloroethene	ND		0.00250	1	05/09/2018 18:51	WG1108851
trans-1,2-Dichloroethene	ND		0.00500	1	05/09/2018 18:51	WG1108851
1,2-Dichloropropane	ND		0.00500	1	05/09/2018 18:51	WG1108851
1,1-Dichloropropene	ND		0.00250	1	05/09/2018 18:51	WG1108851
1,3-Dichloropropane	ND		0.00500	1	05/09/2018 18:51	WG1108851
cis-1,3-Dichloropropene	ND		0.00250	1	05/09/2018 18:51	WG1108851
trans-1,3-Dichloropropene	ND		0.00500	1	05/09/2018 18:51	WG1108851
2,2-Dichloropropane	ND		0.00250	1	05/09/2018 18:51	WG1108851
Di-isopropyl ether	ND		0.00100	1	05/09/2018 18:51	WG1108851
Ethylbenzene	ND		0.00250	1	05/09/2018 18:51	WG1108851
Hexachloro-1,3-butadiene	ND		0.0250	1	05/09/2018 18:51	WG1108851
Isopropylbenzene	ND		0.00250	1	05/09/2018 18:51	WG1108851
p-Isopropyltoluene	ND		0.00500	1	05/09/2018 18:51	WG1108851
2-Butanone (MEK)	0.0289		0.0250	1	05/09/2018 18:51	WG1108851
Methylene Chloride	ND		0.0250	1	05/09/2018 18:51	WG1108851
4-Methyl-2-pentanone (MIBK)	ND		0.0250	1	05/09/2018 18:51	WG1108851
Methyl tert-butyl ether	ND		0.00100	1	05/09/2018 18:51	WG1108851
Naphthalene	ND		0.0125	1	05/09/2018 18:51	WG1108851
n-Propylbenzene	ND		0.00500	1	05/09/2018 18:51	WG1108851
Styrene	ND		0.0125	1	05/09/2018 18:51	WG1108851
1,1,1,2-Tetrachloroethane	ND		0.00250	1	05/09/2018 18:51	WG1108851

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		0.00250	1	05/09/2018 18:51	WG1108851
1,1,2-Trichlorotrifluoroethane	ND		0.00250	1	05/09/2018 18:51	WG1108851
Tetrachloroethene	ND		0.00250	1	05/09/2018 18:51	WG1108851
Toluene	ND		0.00500	1	05/09/2018 18:51	WG1108851
1,2,3-Trichlorobenzene	ND		0.00250	1	05/09/2018 18:51	WG1108851
1,2,4-Trichlorobenzene	ND		0.0125	1	05/09/2018 18:51	WG1108851
1,1,1-Trichloroethane	ND		0.00250	1	05/09/2018 18:51	WG1108851
1,1,2-Trichloroethane	ND		0.00250	1	05/09/2018 18:51	WG1108851
Trichloroethene	ND		0.00100	1	05/09/2018 18:51	WG1108851
Trichlorofluoromethane	ND		0.00250	1	05/09/2018 18:51	WG1108851
1,2,3-Trichloropropane	ND		0.0125	1	05/09/2018 18:51	WG1108851
1,2,4-Trimethylbenzene	ND		0.00500	1	05/09/2018 18:51	WG1108851
1,2,3-Trimethylbenzene	ND		0.00500	1	05/09/2018 18:51	WG1108851
1,3,5-Trimethylbenzene	ND		0.00500	1	05/09/2018 18:51	WG1108851
Vinyl chloride	ND		0.00250	1	05/09/2018 18:51	WG1108851
Xylenes, Total	ND		0.00650	1	05/09/2018 18:51	WG1108851
(S) Toluene-d8	*109*		*80.0-120*		*05/09/2018 18:51*	WG1108851
(S) Dibromofluoromethane	*106*		*74.0-131*		*05/09/2018 18:51*	WG1108851
(S) 4-Bromofluorobenzene	*111*		*64.0-132*		*05/09/2018 18:51*	WG1108851

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 J4	4.00	1	05/11/2018 07:23	WG1109163
C28-C40 Oil Range	ND		4.00	1	05/11/2018 07:23	WG1109163
(S) o-Terphenyl	*29.1*		*18.0-148*		*05/11/2018 07:23*	WG1109163

Method Blank (MB)

(MB) R3307787-5 05/07/18 11:01

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)	*97.0*			*77.0-120*

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

(LCS) R3307787-3 05/07/18 09:54 • (LCSD) R3307787-4 05/07/18 10:16

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	5.64	5.69	103	103	70.0-136			0.805	20
(S) a,a,a-Trifluorotoluene(FID)				*111*	*112*	*77.0-120*				

L991685-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L991685-04 05/08/18 04:56 • (MS) R3307787-6 05/08/18 05:19 • (MSD) R3307787-7 05/08/18 05:49

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 %
TPH (GC/FID) Low Fraction	6.75	ND	50.4	45.5	29.4	26.5	25	10.0-147			10.3	30
(S) a,a,a-Trifluorotoluene(FID)					*98.0*	*97.4*		*77.0-120*				

Method Blank (MB)

(MB) R3308501-3 05/09/18 12:59

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.0137	0.0250
Acrylonitrile	U		0.00190	0.0125
Benzene	U		0.000400	0.00100
Bromobenzene	U		0.00105	0.0125
Bromodichloromethane	U		0.000788	0.00250
Bromoform	U		0.00598	0.0250
Bromomethane	U		0.00370	0.0125
n-Butylbenzene	U		0.00384	0.0125
sec-Butylbenzene	U		0.00253	0.0125
tert-Butylbenzene	U		0.00155	0.00500
Carbon tetrachloride	U		0.00108	0.00500
Chlorobenzene	U		0.000573	0.00250
Chlorodibromomethane	U		0.000450	0.00250
Chloroethane	U		0.00108	0.00500
Chloroform	U		0.000415	0.00250
Chloromethane	U		0.00139	0.0125
2-Chlorotoluene	U		0.000920	0.00250
4-Chlorotoluene	U		0.00113	0.00500
1,2-Dibromo-3-Chloropropane	U		0.00510	0.0250
1,2-Dibromoethane	U		0.000525	0.00250
Dibromomethane	U		0.00100	0.00500
1,2-Dichlorobenzene	U		0.00145	0.00500
1,3-Dichlorobenzene	U		0.00170	0.00500
1,4-Dichlorobenzene	U		0.00197	0.00500
Dichlorodifluoromethane	U		0.000818	0.00250
1,1-Dichloroethane	U		0.000575	0.00250
1,2-Dichloroethane	U		0.000475	0.00250
1,1-Dichloroethene	U		0.000500	0.00250
cis-1,2-Dichloroethene	U		0.000690	0.00250
trans-1,2-Dichloroethene	U		0.00143	0.00500
1,2-Dichloropropane	U		0.00127	0.00500
1,1-Dichloropropene	U		0.000700	0.00250
1,3-Dichloropropane	U		0.00175	0.00500
cis-1,3-Dichloropropene	U		0.000678	0.00250
trans-1,3-Dichloropropene	U		0.00153	0.00500
2,2-Dichloropropane	U		0.000793	0.00250
Di-isopropyl ether	U		0.000350	0.00100
Ethylbenzene	U		0.000530	0.00250
Hexachloro-1,3-butadiene	U		0.0127	0.0250
Isopropylbenzene	U		0.000863	0.00250

Method Blank (MB)

(MB) R3308501-3 05/09/18 12:59

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
p-Isopropyltoluene	U		0.00233	0.00500
2-Butanone (MEK)	U		0.0125	0.0250
Methylene Chloride	0.0128	J	0.00664	0.0250
4-Methyl-2-pentanone (MIBK)	U		0.0100	0.0250
Methyl tert-butyl ether	U		0.000295	0.00100
Naphthalene	U		0.00312	0.0125
n-Propylbenzene	U		0.00118	0.00500
Styrene	U		0.00273	0.0125
1,1,1,2-Tetrachloroethane	U		0.000500	0.00250
1,1,2,2-Tetrachloroethane	U		0.000390	0.00250
Tetrachloroethene	U		0.000700	0.00250
Toluene	U		0.00125	0.00500
1,1,2-Trichlorotrifluoroethane	U		0.000675	0.00250
1,2,3-Trichlorobenzene	U		0.000625	0.00250
1,2,4-Trichlorobenzene	U		0.00482	0.0125
1,1,1-Trichloroethane	U		0.000275	0.00250
1,1,2-Trichloroethane	U		0.000883	0.00250
Trichloroethene	U		0.000400	0.00100
Trichlorofluoromethane	U		0.000500	0.00250
1,2,3-Trichloropropane	U		0.00510	0.0125
1,2,3-Trimethylbenzene	U		0.00115	0.00500
1,2,4-Trimethylbenzene	U		0.00116	0.00500
1,3,5-Trimethylbenzene	U		0.00108	0.00500
Vinyl chloride	U		0.000683	0.00250
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	*109*			*80.0-120*
(S) Dibromofluoromethane	*101*			*74.0-131*
(S) 4-Bromofluorobenzene	*114*			*64.0-132*

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

(LCS) R3308501-1 05/09/18 11:20 • (LCSD) R3308501-2 05/09/18 11:38

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	0.625	0.956	0.939	153	150	11.0-160			1.73	23
Acrylonitrile	0.625	0.677	0.674	108	108	61.0-143			0.456	20
Benzene	0.125	0.128	0.129	103	104	71.0-124			0.703	20
Bromobenzene	0.125	0.139	0.140	111	112	78.0-120			0.234	20
Bromodichloromethane	0.125	0.123	0.121	98.1	97.0	75.0-120			1.07	20

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

(LCS) R3308501-1 05/09/18 11:20 • (LCSD) R3308501-2 05/09/18 11:38

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	0.125	0.113	0.111	90.1	88.7	65.0-133			1.62	20
Bromomethane	0.125	0.134	0.133	107	106	26.0-160			1.03	20
n-Butylbenzene	0.125	0.121	0.124	97.0	99.3	73.0-126			2.36	20
sec-Butylbenzene	0.125	0.123	0.125	98.3	99.8	75.0-121			1.56	20
tert-Butylbenzene	0.125	0.122	0.124	97.6	98.8	74.0-122			1.31	20
Carbon tetrachloride	0.125	0.128	0.123	102	98.3	66.0-123			3.79	20
Chlorobenzene	0.125	0.113	0.112	90.5	89.9	79.0-121			0.754	20
Chlorodibromomethane	0.125	0.112	0.115	89.3	92.3	74.0-128			3.31	20
Chloroethane	0.125	0.152	0.152	122	122	51.0-147			0.212	20
Chloroform	0.125	0.126	0.121	101	97.1	73.0-123			4.08	20
Chloromethane	0.125	0.154	0.147	123	117	51.0-138			4.67	20
2-Chlorotoluene	0.125	0.120	0.128	96.2	103	72.0-124			6.57	20
4-Chlorotoluene	0.125	0.121	0.121	97.1	97.2	78.0-120			0.0708	20
1,2-Dibromo-3-Chloropropane	0.125	0.117	0.108	93.2	86.0	65.0-126			8.07	20
1,2-Dibromoethane	0.125	0.109	0.109	87.5	87.0	78.0-122			0.563	20
Dibromomethane	0.125	0.131	0.130	105	104	79.0-120			0.457	20
1,2-Dichlorobenzene	0.125	0.120	0.120	95.9	95.7	80.0-120			0.245	20
1,3-Dichlorobenzene	0.125	0.120	0.117	95.7	93.7	72.0-123			2.09	20
1,4-Dichlorobenzene	0.125	0.114	0.114	91.2	91.5	77.0-120			0.396	20
Dichlorodifluoromethane	0.125	0.144	0.147	115	117	49.0-155			2.01	20
1,1-Dichloroethane	0.125	0.132	0.128	105	103	70.0-128			2.50	20
1,2-Dichloroethane	0.125	0.124	0.126	99.3	101	69.0-128			1.24	20
1,1-Dichloroethene	0.125	0.135	0.133	108	107	63.0-131			1.53	20
cis-1,2-Dichloroethene	0.125	0.133	0.132	106	105	74.0-123			0.746	20
trans-1,2-Dichloroethene	0.125	0.122	0.118	97.6	94.5	72.0-122			3.23	20
1,2-Dichloropropane	0.125	0.133	0.136	106	109	75.0-126			2.87	20
1,1-Dichloropropene	0.125	0.139	0.137	111	110	72.0-130			1.31	20
1,3-Dichloropropane	0.125	0.114	0.116	90.9	92.5	80.0-121			1.71	20
cis-1,3-Dichloropropene	0.125	0.129	0.127	103	102	80.0-125			1.31	20
trans-1,3-Dichloropropene	0.125	0.122	0.122	97.3	97.8	75.0-129			0.494	20
2,2-Dichloropropane	0.125	0.133	0.136	107	109	60.0-129			2.23	20
Di-isopropyl ether	0.125	0.146	0.146	116	117	62.0-133			0.265	20
Ethylbenzene	0.125	0.116	0.120	93.2	96.3	77.0-120			3.27	20
Hexachloro-1,3-butadiene	0.125	0.116	0.129	92.5	103	68.0-128			11.1	20
Isopropylbenzene	0.125	0.118	0.119	94.4	95.0	75.0-120			0.677	20
p-Isopropyltoluene	0.125	0.111	0.118	89.1	94.2	74.0-125			5.50	20
2-Butanone (MEK)	0.625	0.740	0.727	118	116	37.0-159			1.78	21.3
Methylene Chloride	0.125	0.143	0.143	115	114	67.0-123			0.340	20
4-Methyl-2-pentanone (MIBK)	0.625	0.605	0.603	96.8	96.4	60.0-144			0.381	20
Methyl tert-butyl ether	0.125	0.133	0.133	107	107	66.0-125			0.197	20

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

(LCS) R3308501-1 05/09/18 11:20 • (LCSD) R3308501-2 05/09/18 11:38

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	0.125	0.108	0.114	86.4	91.1	64.0-125			5.27	20
n-Propylbenzene	0.125	0.122	0.122	98.0	97.6	78.0-120			0.353	20
Styrene	0.125	0.117	0.117	93.6	93.4	78.0-124			0.251	20
1,1,1,2-Tetrachloroethane	0.125	0.117	0.120	93.9	96.2	74.0-124			2.40	20
1,1,2,2-Tetrachloroethane	0.125	0.129	0.123	103	98.0	73.0-120			4.75	20
Tetrachloroethene	0.125	0.109	0.108	87.3	86.6	70.0-127			0.750	20
Toluene	0.125	0.114	0.113	91.5	90.1	70.0-120			1.51	20
1,1,2-Trichlorotrifluoroethane	0.125	0.134	0.136	107	109	64.0-135			1.34	20
1,2,3-Trichlorobenzene	0.125	0.107	0.118	85.8	94.3	68.0-126			9.44	20
1,2,4-Trichlorobenzene	0.125	0.113	0.120	90.7	96.2	70.0-127			5.93	20
1,1,1-Trichloroethane	0.125	0.128	0.125	102	100	69.0-125			1.92	20
1,1,2-Trichloroethane	0.125	0.114	0.116	91.4	92.9	78.0-120			1.70	20
Trichloroethene	0.125	0.115	0.119	92.1	95.2	79.0-120			3.26	20
Trichlorofluoromethane	0.125	0.148	0.145	118	116	59.0-136			2.06	20
1,2,3-Trichloropropane	0.125	0.124	0.130	99.3	104	73.0-124			4.73	20
1,2,3-Trimethylbenzene	0.125	0.118	0.121	94.7	97.1	76.0-120			2.46	20
1,2,4-Trimethylbenzene	0.125	0.117	0.118	93.5	94.2	75.0-120			0.733	20
1,3,5-Trimethylbenzene	0.125	0.122	0.122	97.5	97.2	75.0-120			0.343	20
Vinyl chloride	0.125	0.149	0.151	119	121	63.0-134			1.52	20
Xylenes, Total	0.375	0.331	0.329	88.3	87.7	77.0-120			0.606	20
(S) Toluene-d8				*108*	*108*	*80.0-120*				
(S) Dibromofluoromethane				*114*	*112*	*74.0-131*				
(S) 4-Bromofluorobenzene				*112*	*113*	*64.0-132*				

Method Blank (MB)

(MB) R3308766-1 05/09/18 22:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*65.1*			*18.0-148*

Method Blank (MB)

(MB) R3308900-1 05/10/18 23:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*77.2*			*18.0-148*

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

(LCS) R3308766-2 05/10/18 02:18 • (LCSD) R3308766-3 05/10/18 02:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	22.3	28.4	44.7	56.8	50.0-150	J4	J3	23.9	20
(S) o-Terphenyl				*49.8*	*60.8*	*18.0-148*				

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

(LCS) R3308900-2 05/11/18 00:11 • (LCSD) R3308900-3 05/11/18 00:24

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	34.2	39.9	68.4	79.9	50.0-150			15.4	20
(S) o-Terphenyl				*62.0*	*71.6*	*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, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.

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

State Accreditations

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

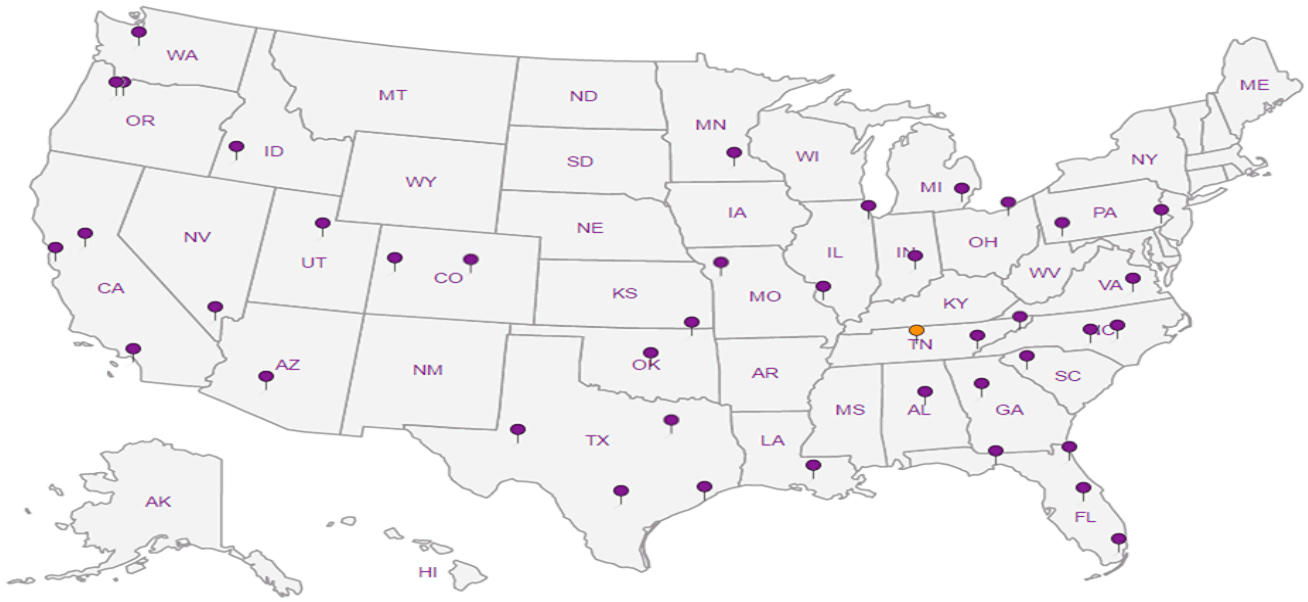
Third Party Federal Accreditations

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

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

Our Locations

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



Terracon Consultants, Inc
1242 Bramwood Place
Longmont, Colorado 80501

Billing Information: **SAME**

Pres Chk

Report to: **Mike Skridulis**

Email To: **mike.skridulis@terracon.com**

Project Description: **Wertman #1**

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

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

Client Project # **22177047**

Lab Project #

Collected by (print): **Drew Stephens**

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed: **STANDARD**

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC's - 8260	TBH - G/D/O - 8015	Remarks	Sample # (lab only)
SB-01	Grab	SS	10-11	5/1/18	0830	2	X	X		-01
SB-02	Grab	SS	8-11	5/1/18	0950	2	X	X		-02
SB-03	Grab	SS	9-10	5/1/18	0910	2	X	X		-03
SB-04	Grab	SS	8-10	5/1/18	1120	2	X	X		-04

Chain of Custody Page 1 of 1

ESC LAB SCIENCES
a subsidiary of Pace Analytical

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

L # L991462

T F134

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

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

Remarks:
FedEx: 4361 6930 2605

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

Tracking # 4361 6930 2605

pH _____ Temp _____

Flow _____ Other _____

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / (No) HCL / MeoH TBR
	5/4/18	1400		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 1.4 °C Bottles Received: 8-4oz
				If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 5-5-18 Time: 0845
				Hold:

Condition: NCF / (OK)

ANALYTICAL REPORT

May 22, 2018

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L994060
Samples Received:	05/16/2018
Project Number:	22177047
Description:	Wertman #1

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

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
Technical Service Representative

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

TABLE OF CONTENTS

MW-01 L994060-01 GW

Collected by: Drew Stephens
Collected date/time: 05/15/18 14:30
Received date/time: 05/16/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1112014	1	05/17/18 13:49	05/17/18 13:49	GB
Wet Chemistry by Method 4500CO2 D-2011	WG1112014	1	05/17/18 13:49	05/17/18 13:49	GB
Wet Chemistry by Method 9056A	WG1111964	1	05/16/18 14:08	05/16/18 14:08	MAJ
Wet Chemistry by Method 9056A	WG1111964	10	05/17/18 12:02	05/17/18 12:02	MAJ
Metals (ICP) by Method 6010B	WG1112052	1	05/16/18 15:57	05/17/18 00:45	TRB
Volatile Organic Compounds (GC) by Method RSK175	WG1113034	1	05/18/18 10:18	05/18/18 10:18	BG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1112138	1	05/16/18 15:58	05/16/18 15:58	TJJ

MW-02 L994060-02 GW

Collected by: Drew Stephens
Collected date/time: 05/15/18 15:00
Received date/time: 05/16/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1112014	1	05/17/18 13:57	05/17/18 13:57	GB
Wet Chemistry by Method 4500CO2 D-2011	WG1112014	1	05/17/18 13:57	05/17/18 13:57	GB
Wet Chemistry by Method 9056A	WG1111964	1	05/16/18 14:24	05/16/18 14:24	MAJ
Wet Chemistry by Method 9056A	WG1111964	10	05/17/18 12:19	05/17/18 12:19	MAJ
Metals (ICP) by Method 6010B	WG1112052	1	05/16/18 15:57	05/17/18 00:47	TRB
Volatile Organic Compounds (GC) by Method RSK175	WG1113034	1	05/18/18 10:22	05/18/18 10:22	BG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1112138	1	05/16/18 16:18	05/16/18 16:18	TJJ

MW-03 L994060-03 GW

Collected by: Drew Stephens
Collected date/time: 05/15/18 14:30
Received date/time: 05/16/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1112014	1	05/17/18 15:19	05/17/18 15:19	GB
Wet Chemistry by Method 4500CO2 D-2011	WG1112014	1	05/17/18 15:19	05/17/18 15:19	GB
Wet Chemistry by Method 9056A	WG1111964	1	05/16/18 14:41	05/16/18 14:41	MAJ
Wet Chemistry by Method 9056A	WG1111964	10	05/17/18 12:35	05/17/18 12:35	MAJ
Metals (ICP) by Method 6010B	WG1112052	1	05/16/18 15:57	05/17/18 00:50	TRB
Metals (ICP) by Method 6010B	WG1112052	5	05/16/18 15:57	05/17/18 10:25	TRB
Volatile Organic Compounds (GC) by Method RSK175	WG1113034	1	05/18/18 10:24	05/18/18 10:24	BG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1112138	1	05/16/18 16:38	05/16/18 16:38	TJJ

MW-04 L994060-04 GW

Collected by: Drew Stephens
Collected date/time: 05/15/18 16:00
Received date/time: 05/16/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG1112014	1	05/17/18 15:28	05/17/18 15:28	GB
Wet Chemistry by Method 4500CO2 D-2011	WG1112014	1	05/17/18 15:28	05/17/18 15:28	GB
Wet Chemistry by Method 9056A	WG1111964	1	05/16/18 14:57	05/16/18 14:57	MAJ
Wet Chemistry by Method 9056A	WG1111964	10	05/17/18 12:52	05/17/18 12:52	MAJ
Metals (ICP) by Method 6010B	WG1112052	1	05/16/18 15:57	05/17/18 00:52	TRB
Volatile Organic Compounds (GC) by Method RSK175	WG1113034	1	05/18/18 10:27	05/18/18 10:27	BG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1112138	1	05/16/18 16:59	05/16/18 16:59	TJJ

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

Daphne 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	05/17/2018 13:49	WG1112014

Sample Narrative:
L994060-01 WG1112014: Endpoint pH 4.5 HEADSPACE

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Free Carbon Dioxide	ND	T8	20.0	1	05/17/2018 13:49	WG1112014

Sample Narrative:
L994060-01 WG1112014: Endpoint pH 4.5 HEADSPACE

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	05/16/2018 14:08	WG1111964
Chloride	97.2		1.00	1	05/16/2018 14:08	WG1111964
Nitrate as (N)	3.92		0.100	1	05/16/2018 14:08	WG1111964
Nitrite as (N)	0.218		0.100	1	05/16/2018 14:08	WG1111964
Sulfate	529		50.0	10	05/17/2018 12:02	WG1111964

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium	270		1.00	1	05/17/2018 00:45	WG1112052
Iron	222		0.100	1	05/17/2018 00:45	WG1112052
Magnesium	159		1.00	1	05/17/2018 00:45	WG1112052
Potassium	39.8		1.00	1	05/17/2018 00:45	WG1112052
Sodium	134		1.00	1	05/17/2018 00:45	WG1112052
Strontium	4.22		0.0100	1	05/17/2018 00:45	WG1112052

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	0.0101		0.0100	1	05/18/2018 10:18	WG1113034
Ethane	ND		0.0130	1	05/18/2018 10:18	WG1113034
Ethene	ND		0.0130	1	05/18/2018 10:18	WG1113034

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	0.128		0.0500	1	05/16/2018 15:58	WG1112138
Acrolein	ND		0.0500	1	05/16/2018 15:58	WG1112138
Acrylonitrile	ND		0.0100	1	05/16/2018 15:58	WG1112138
Benzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
Bromobenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
Bromodichloromethane	ND		0.00100	1	05/16/2018 15:58	WG1112138
Bromoform	ND		0.00100	1	05/16/2018 15:58	WG1112138
Bromomethane	ND		0.00500	1	05/16/2018 15:58	WG1112138
n-Butylbenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
sec-Butylbenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
tert-Butylbenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Carbon tetrachloride	ND		0.00100	1	05/16/2018 15:58	WG1112138
Chlorobenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
Chlorodibromomethane	ND		0.00100	1	05/16/2018 15:58	WG1112138
Chloroethane	ND		0.00500	1	05/16/2018 15:58	WG1112138
Chloroform	ND		0.00500	1	05/16/2018 15:58	WG1112138
Chloromethane	ND		0.00250	1	05/16/2018 15:58	WG1112138
2-Chlorotoluene	ND		0.00100	1	05/16/2018 15:58	WG1112138
4-Chlorotoluene	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/16/2018 15:58	WG1112138
1,2-Dibromoethane	ND		0.00100	1	05/16/2018 15:58	WG1112138
Dibromomethane	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,2-Dichlorobenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,3-Dichlorobenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,4-Dichlorobenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
Dichlorodifluoromethane	ND		0.00500	1	05/16/2018 15:58	WG1112138
1,1-Dichloroethane	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,2-Dichloroethane	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,1-Dichloroethene	ND		0.00100	1	05/16/2018 15:58	WG1112138
cis-1,2-Dichloroethene	ND		0.00100	1	05/16/2018 15:58	WG1112138
trans-1,2-Dichloroethene	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,2-Dichloropropane	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,1-Dichloropropene	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,3-Dichloropropane	ND		0.00100	1	05/16/2018 15:58	WG1112138
cis-1,3-Dichloropropene	ND		0.00100	1	05/16/2018 15:58	WG1112138
trans-1,3-Dichloropropene	ND		0.00100	1	05/16/2018 15:58	WG1112138
2,2-Dichloropropane	ND		0.00100	1	05/16/2018 15:58	WG1112138
Di-isopropyl ether	ND		0.00100	1	05/16/2018 15:58	WG1112138
Ethylbenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
Hexachloro-1,3-butadiene	ND		0.00100	1	05/16/2018 15:58	WG1112138
Isopropylbenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
p-Isopropyltoluene	ND		0.00100	1	05/16/2018 15:58	WG1112138
2-Butanone (MEK)	ND		0.0100	1	05/16/2018 15:58	WG1112138
Methylene Chloride	ND		0.00500	1	05/16/2018 15:58	WG1112138
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/16/2018 15:58	WG1112138
Methyl tert-butyl ether	ND		0.00100	1	05/16/2018 15:58	WG1112138
Naphthalene	ND	J4	0.00500	1	05/16/2018 15:58	WG1112138
n-Propylbenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
Styrene	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/16/2018 15:58	WG1112138
Tetrachloroethene	ND		0.00100	1	05/16/2018 15:58	WG1112138
Toluene	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,2,3-Trichlorobenzene	ND	J4	0.00100	1	05/16/2018 15:58	WG1112138
1,2,4-Trichlorobenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,1,1-Trichloroethane	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,1,2-Trichloroethane	ND		0.00100	1	05/16/2018 15:58	WG1112138
Trichloroethene	ND		0.00100	1	05/16/2018 15:58	WG1112138
Trichlorofluoromethane	ND		0.00500	1	05/16/2018 15:58	WG1112138
1,2,3-Trichloropropane	ND		0.00250	1	05/16/2018 15:58	WG1112138
1,2,4-Trimethylbenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,2,3-Trimethylbenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
1,3,5-Trimethylbenzene	ND		0.00100	1	05/16/2018 15:58	WG1112138
Vinyl chloride	ND		0.00100	1	05/16/2018 15:58	WG1112138
Xylenes, Total	ND		0.00300	1	05/16/2018 15:58	WG1112138
(S) Toluene-d8	*105*		*80.0-120*		*05/16/2018 15:58*	WG1112138

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

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
(S) Dibromofluoromethane	*90.4*		*76.0-123*		*05/16/2018 15:58*	WG1112138
(S) 4-Bromofluorobenzene	*91.6*		*80.0-120*		*05/16/2018 15:58*	WG1112138

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	423		20.0	1	05/17/2018 13:57	WG1112014

Sample Narrative:
L994060-02 WG1112014: Endpoint pH 4.5 HEADSPACE

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Free Carbon Dioxide	ND	T8	20.0	1	05/17/2018 13:57	WG1112014

Sample Narrative:
L994060-02 WG1112014: Endpoint pH 4.5 HEADSPACE

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	05/16/2018 14:24	WG1111964
Chloride	83.8		1.00	1	05/16/2018 14:24	WG1111964
Nitrate as (N)	4.11		0.100	1	05/16/2018 14:24	WG1111964
Nitrite as (N)	ND		0.100	1	05/16/2018 14:24	WG1111964
Sulfate	492		50.0	10	05/17/2018 12:19	WG1111964

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium	161		1.00	1	05/17/2018 00:47	WG1112052
Iron	42.7		0.100	1	05/17/2018 00:47	WG1112052
Magnesium	119		1.00	1	05/17/2018 00:47	WG1112052
Potassium	11.9		1.00	1	05/17/2018 00:47	WG1112052
Sodium	136		1.00	1	05/17/2018 00:47	WG1112052
Strontium	3.02		0.0100	1	05/17/2018 00:47	WG1112052

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	05/18/2018 10:22	WG1113034
Ethane	ND		0.0130	1	05/18/2018 10:22	WG1113034
Ethene	ND		0.0130	1	05/18/2018 10:22	WG1113034

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	05/16/2018 16:18	WG1112138
Acrolein	ND		0.0500	1	05/16/2018 16:18	WG1112138
Acrylonitrile	ND		0.0100	1	05/16/2018 16:18	WG1112138
Benzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
Bromobenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
Bromodichloromethane	ND		0.00100	1	05/16/2018 16:18	WG1112138
Bromoform	ND		0.00100	1	05/16/2018 16:18	WG1112138
Bromomethane	ND		0.00500	1	05/16/2018 16:18	WG1112138
n-Butylbenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
sec-Butylbenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
tert-Butylbenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Carbon tetrachloride	ND		0.00100	1	05/16/2018 16:18	WG1112138
Chlorobenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
Chlorodibromomethane	ND		0.00100	1	05/16/2018 16:18	WG1112138
Chloroethane	ND		0.00500	1	05/16/2018 16:18	WG1112138
Chloroform	ND		0.00500	1	05/16/2018 16:18	WG1112138
Chloromethane	ND		0.00250	1	05/16/2018 16:18	WG1112138
2-Chlorotoluene	ND		0.00100	1	05/16/2018 16:18	WG1112138
4-Chlorotoluene	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/16/2018 16:18	WG1112138
1,2-Dibromoethane	ND		0.00100	1	05/16/2018 16:18	WG1112138
Dibromomethane	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,2-Dichlorobenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,3-Dichlorobenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,4-Dichlorobenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
Dichlorodifluoromethane	ND		0.00500	1	05/16/2018 16:18	WG1112138
1,1-Dichloroethane	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,2-Dichloroethane	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,1-Dichloroethene	ND		0.00100	1	05/16/2018 16:18	WG1112138
cis-1,2-Dichloroethene	ND		0.00100	1	05/16/2018 16:18	WG1112138
trans-1,2-Dichloroethene	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,2-Dichloropropane	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,1-Dichloropropene	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,3-Dichloropropane	ND		0.00100	1	05/16/2018 16:18	WG1112138
cis-1,3-Dichloropropene	ND		0.00100	1	05/16/2018 16:18	WG1112138
trans-1,3-Dichloropropene	ND		0.00100	1	05/16/2018 16:18	WG1112138
2,2-Dichloropropane	ND		0.00100	1	05/16/2018 16:18	WG1112138
Di-isopropyl ether	ND		0.00100	1	05/16/2018 16:18	WG1112138
Ethylbenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
Hexachloro-1,3-butadiene	ND		0.00100	1	05/16/2018 16:18	WG1112138
Isopropylbenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
p-Isopropyltoluene	ND		0.00100	1	05/16/2018 16:18	WG1112138
2-Butanone (MEK)	ND		0.0100	1	05/16/2018 16:18	WG1112138
Methylene Chloride	ND		0.00500	1	05/16/2018 16:18	WG1112138
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/16/2018 16:18	WG1112138
Methyl tert-butyl ether	ND		0.00100	1	05/16/2018 16:18	WG1112138
Naphthalene	ND	J4	0.00500	1	05/16/2018 16:18	WG1112138
n-Propylbenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
Styrene	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/16/2018 16:18	WG1112138
Tetrachloroethene	ND		0.00100	1	05/16/2018 16:18	WG1112138
Toluene	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,2,3-Trichlorobenzene	ND	J4	0.00100	1	05/16/2018 16:18	WG1112138
1,2,4-Trichlorobenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,1,1-Trichloroethane	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,1,2-Trichloroethane	ND		0.00100	1	05/16/2018 16:18	WG1112138
Trichloroethene	ND		0.00100	1	05/16/2018 16:18	WG1112138
Trichlorofluoromethane	ND		0.00500	1	05/16/2018 16:18	WG1112138
1,2,3-Trichloropropane	ND		0.00250	1	05/16/2018 16:18	WG1112138
1,2,4-Trimethylbenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,2,3-Trimethylbenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
1,3,5-Trimethylbenzene	ND		0.00100	1	05/16/2018 16:18	WG1112138
Vinyl chloride	ND		0.00100	1	05/16/2018 16:18	WG1112138
Xylenes, Total	ND		0.00300	1	05/16/2018 16:18	WG1112138
(S) Toluene-d8	*103*		*80.0-120*		*05/16/2018 16:18*	WG1112138

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
(S) Dibromofluoromethane	*86.2*		*76.0-123*		*05/16/2018 16:18*	WG1112138
(S) 4-Bromofluorobenzene	*94.2*		*80.0-120*		*05/16/2018 16:18*	WG1112138

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	409		20.0	1	05/17/2018 15:19	WG1112014

Sample Narrative:
L994060-03 WG1112014: Endpoint pH 4.5 HEADSPACE

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Free Carbon Dioxide	ND	T8	20.0	1	05/17/2018 15:19	WG1112014

Sample Narrative:
L994060-03 WG1112014: Endpoint pH 4.5 HEADSPACE

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	05/16/2018 14:41	WG1111964
Chloride	96.4		1.00	1	05/16/2018 14:41	WG1111964
Nitrate as (N)	5.46		0.100	1	05/16/2018 14:41	WG1111964
Nitrite as (N)	ND		0.100	1	05/16/2018 14:41	WG1111964
Sulfate	509		50.0	10	05/17/2018 12:35	WG1111964

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium	304		1.00	1	05/17/2018 00:50	WG1112052
Iron	615		0.500	5	05/17/2018 10:25	WG1112052
Magnesium	242		1.00	1	05/17/2018 00:50	WG1112052
Potassium	90.3		1.00	1	05/17/2018 00:50	WG1112052
Sodium	122		1.00	1	05/17/2018 00:50	WG1112052
Strontium	5.53		0.0100	1	05/17/2018 00:50	WG1112052

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	05/18/2018 10:24	WG1113034
Ethane	ND		0.0130	1	05/18/2018 10:24	WG1113034
Ethene	ND		0.0130	1	05/18/2018 10:24	WG1113034

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	05/16/2018 16:38	WG1112138
Acrolein	ND		0.0500	1	05/16/2018 16:38	WG1112138
Acrylonitrile	ND		0.0100	1	05/16/2018 16:38	WG1112138
Benzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
Bromobenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
Bromodichloromethane	ND		0.00100	1	05/16/2018 16:38	WG1112138
Bromoform	ND		0.00100	1	05/16/2018 16:38	WG1112138
Bromomethane	ND		0.00500	1	05/16/2018 16:38	WG1112138
n-Butylbenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
sec-Butylbenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
tert-Butylbenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Carbon tetrachloride	ND		0.00100	1	05/16/2018 16:38	WG1112138
Chlorobenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
Chlorodibromomethane	ND		0.00100	1	05/16/2018 16:38	WG1112138
Chloroethane	ND		0.00500	1	05/16/2018 16:38	WG1112138
Chloroform	ND		0.00500	1	05/16/2018 16:38	WG1112138
Chloromethane	ND		0.00250	1	05/16/2018 16:38	WG1112138
2-Chlorotoluene	ND		0.00100	1	05/16/2018 16:38	WG1112138
4-Chlorotoluene	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/16/2018 16:38	WG1112138
1,2-Dibromoethane	ND		0.00100	1	05/16/2018 16:38	WG1112138
Dibromomethane	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,2-Dichlorobenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,3-Dichlorobenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,4-Dichlorobenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
Dichlorodifluoromethane	ND		0.00500	1	05/16/2018 16:38	WG1112138
1,1-Dichloroethane	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,2-Dichloroethane	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,1-Dichloroethene	ND		0.00100	1	05/16/2018 16:38	WG1112138
cis-1,2-Dichloroethene	ND		0.00100	1	05/16/2018 16:38	WG1112138
trans-1,2-Dichloroethene	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,2-Dichloropropane	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,1-Dichloropropene	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,3-Dichloropropane	ND		0.00100	1	05/16/2018 16:38	WG1112138
cis-1,3-Dichloropropene	ND		0.00100	1	05/16/2018 16:38	WG1112138
trans-1,3-Dichloropropene	ND		0.00100	1	05/16/2018 16:38	WG1112138
2,2-Dichloropropane	ND		0.00100	1	05/16/2018 16:38	WG1112138
Di-isopropyl ether	ND		0.00100	1	05/16/2018 16:38	WG1112138
Ethylbenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
Hexachloro-1,3-butadiene	ND		0.00100	1	05/16/2018 16:38	WG1112138
Isopropylbenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
p-Isopropyltoluene	ND		0.00100	1	05/16/2018 16:38	WG1112138
2-Butanone (MEK)	ND		0.0100	1	05/16/2018 16:38	WG1112138
Methylene Chloride	ND		0.00500	1	05/16/2018 16:38	WG1112138
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/16/2018 16:38	WG1112138
Methyl tert-butyl ether	ND		0.00100	1	05/16/2018 16:38	WG1112138
Naphthalene	ND	J4	0.00500	1	05/16/2018 16:38	WG1112138
n-Propylbenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
Styrene	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/16/2018 16:38	WG1112138
Tetrachloroethene	ND		0.00100	1	05/16/2018 16:38	WG1112138
Toluene	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,2,3-Trichlorobenzene	ND	J4	0.00100	1	05/16/2018 16:38	WG1112138
1,2,4-Trichlorobenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,1,1-Trichloroethane	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,1,2-Trichloroethane	ND		0.00100	1	05/16/2018 16:38	WG1112138
Trichloroethene	ND		0.00100	1	05/16/2018 16:38	WG1112138
Trichlorofluoromethane	ND		0.00500	1	05/16/2018 16:38	WG1112138
1,2,3-Trichloropropane	ND		0.00250	1	05/16/2018 16:38	WG1112138
1,2,4-Trimethylbenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,2,3-Trimethylbenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
1,3,5-Trimethylbenzene	ND		0.00100	1	05/16/2018 16:38	WG1112138
Vinyl chloride	ND		0.00100	1	05/16/2018 16:38	WG1112138
Xylenes, Total	ND		0.00300	1	05/16/2018 16:38	WG1112138
(S) Toluene-d8	*109*		*80.0-120*		*05/16/2018 16:38*	WG1112138

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

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
(S) Dibromofluoromethane	*89.9*		*76.0-123*		*05/16/2018 16:38*	WG1112138
(S) 4-Bromofluorobenzene	*88.6*		*80.0-120*		*05/16/2018 16:38*	WG1112138

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Alkalinity	418		20.0	1	05/17/2018 15:28	WG1112014

Sample Narrative:
L994060-04 WG1112014: Endpoint pH 4.5 HEADSPACE

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Free Carbon Dioxide	ND	T8	20.0	1	05/17/2018 15:28	WG1112014

Sample Narrative:
L994060-04 WG1112014: Endpoint pH 4.5 HEADSPACE

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Bromide	ND		1.00	1	05/16/2018 14:57	WG1111964
Chloride	86.5		1.00	1	05/16/2018 14:57	WG1111964
Nitrate as (N)	4.22		0.100	1	05/16/2018 14:57	WG1111964
Nitrite as (N)	ND		0.100	1	05/16/2018 14:57	WG1111964
Sulfate	449		50.0	10	05/17/2018 12:52	WG1111964

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Calcium	156		1.00	1	05/17/2018 00:52	WG1112052
Iron	80.4		0.100	1	05/17/2018 00:52	WG1112052
Magnesium	136		1.00	1	05/17/2018 00:52	WG1112052
Potassium	12.6		1.00	1	05/17/2018 00:52	WG1112052
Sodium	116		1.00	1	05/17/2018 00:52	WG1112052
Strontium	3.42		0.0100	1	05/17/2018 00:52	WG1112052

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	05/18/2018 10:27	WG1113034
Ethane	ND		0.0130	1	05/18/2018 10:27	WG1113034
Ethene	ND		0.0130	1	05/18/2018 10:27	WG1113034

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	05/16/2018 16:59	WG1112138
Acrolein	ND		0.0500	1	05/16/2018 16:59	WG1112138
Acrylonitrile	ND		0.0100	1	05/16/2018 16:59	WG1112138
Benzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
Bromobenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
Bromodichloromethane	ND		0.00100	1	05/16/2018 16:59	WG1112138
Bromoform	ND		0.00100	1	05/16/2018 16:59	WG1112138
Bromomethane	ND		0.00500	1	05/16/2018 16:59	WG1112138
n-Butylbenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
sec-Butylbenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
tert-Butylbenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Carbon tetrachloride	ND		0.00100	1	05/16/2018 16:59	WG1112138
Chlorobenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
Chlorodibromomethane	ND		0.00100	1	05/16/2018 16:59	WG1112138
Chloroethane	ND		0.00500	1	05/16/2018 16:59	WG1112138
Chloroform	ND		0.00500	1	05/16/2018 16:59	WG1112138
Chloromethane	ND		0.00250	1	05/16/2018 16:59	WG1112138
2-Chlorotoluene	ND		0.00100	1	05/16/2018 16:59	WG1112138
4-Chlorotoluene	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	05/16/2018 16:59	WG1112138
1,2-Dibromoethane	ND		0.00100	1	05/16/2018 16:59	WG1112138
Dibromomethane	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,2-Dichlorobenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,3-Dichlorobenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,4-Dichlorobenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
Dichlorodifluoromethane	ND		0.00500	1	05/16/2018 16:59	WG1112138
1,1-Dichloroethane	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,2-Dichloroethane	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,1-Dichloroethene	ND		0.00100	1	05/16/2018 16:59	WG1112138
cis-1,2-Dichloroethene	ND		0.00100	1	05/16/2018 16:59	WG1112138
trans-1,2-Dichloroethene	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,2-Dichloropropane	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,1-Dichloropropene	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,3-Dichloropropane	ND		0.00100	1	05/16/2018 16:59	WG1112138
cis-1,3-Dichloropropene	ND		0.00100	1	05/16/2018 16:59	WG1112138
trans-1,3-Dichloropropene	ND		0.00100	1	05/16/2018 16:59	WG1112138
2,2-Dichloropropane	ND		0.00100	1	05/16/2018 16:59	WG1112138
Di-isopropyl ether	ND		0.00100	1	05/16/2018 16:59	WG1112138
Ethylbenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
Hexachloro-1,3-butadiene	ND		0.00100	1	05/16/2018 16:59	WG1112138
Isopropylbenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
p-Isopropyltoluene	ND		0.00100	1	05/16/2018 16:59	WG1112138
2-Butanone (MEK)	ND		0.0100	1	05/16/2018 16:59	WG1112138
Methylene Chloride	ND		0.00500	1	05/16/2018 16:59	WG1112138
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	05/16/2018 16:59	WG1112138
Methyl tert-butyl ether	ND		0.00100	1	05/16/2018 16:59	WG1112138
Naphthalene	ND	J4	0.00500	1	05/16/2018 16:59	WG1112138
n-Propylbenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
Styrene	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,1,1,2-Tetrachloroethane	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,1,2,2-Tetrachloroethane	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	05/16/2018 16:59	WG1112138
Tetrachloroethene	ND		0.00100	1	05/16/2018 16:59	WG1112138
Toluene	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,2,3-Trichlorobenzene	ND	J4	0.00100	1	05/16/2018 16:59	WG1112138
1,2,4-Trichlorobenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,1,1-Trichloroethane	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,1,2-Trichloroethane	ND		0.00100	1	05/16/2018 16:59	WG1112138
Trichloroethene	ND		0.00100	1	05/16/2018 16:59	WG1112138
Trichlorofluoromethane	ND		0.00500	1	05/16/2018 16:59	WG1112138
1,2,3-Trichloropropane	ND		0.00250	1	05/16/2018 16:59	WG1112138
1,2,4-Trimethylbenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,2,3-Trimethylbenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
1,3,5-Trimethylbenzene	ND		0.00100	1	05/16/2018 16:59	WG1112138
Vinyl chloride	ND		0.00100	1	05/16/2018 16:59	WG1112138
Xylenes, Total	ND		0.00300	1	05/16/2018 16:59	WG1112138
(S) Toluene-d8	*102*		*80.0-120*		*05/16/2018 16:59*	WG1112138

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

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
(S) Dibromofluoromethane	*87.9*		*76.0-123*		*05/16/2018 16:59*	WG1112138
(S) 4-Bromofluorobenzene	*91.6*		*80.0-120*		*05/16/2018 16:59*	WG1112138

L993811-01 Original Sample (OS) • Duplicate (DUP)

(OS) L993811-01 05/17/18 12:50 • (DUP) R3310888-1 05/17/18 12:58

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	487	493	1	1.29		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

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

(LCS) R3310888-3 05/17/18 15:09 • (LCSD) R3310888-6 05/17/18 17:50

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Alkalinity	100	104	104	104	104	85.0-115			0.138	20

Sample Narrative:

LCS: Endpoint pH 4.5

LCSD: Endpoint pH 4.5

L993811-01 Original Sample (OS) • Duplicate (DUP)

(OS) L993811-01 05/17/18 12:50 • (DUP) R3310888-2 05/17/18 12:58

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

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

Method Blank (MB)

(MB) R3310376-1 05/16/18 09:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	U		0.0790	1.00
Chloride	0.157	J	0.0519	1.00
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

L993808-02 Original Sample (OS) • Duplicate (DUP)

(OS) L993808-02 05/16/18 10:30 • (DUP) R3310376-4 05/16/18 10:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	U	0.000	10	0.000		15
Nitrate	63.7	63.1	10	1.06		15
Nitrite	0.309	0.288	10	7.27	J	15
Sulfate	2.79	1.95	10	35.4	J P1	15

L994158-05 Original Sample (OS) • Duplicate (DUP)

(OS) L994158-05 05/16/18 17:58 • (DUP) R3310376-7 05/16/18 18:14

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	0.501	1	0.000		15
Chloride	47.0	47.5	1	1.01		15
Nitrate	ND	0.000	1	0.000		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	21.6	21.7	1	0.328		15

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

(LCS) R3310376-2 05/16/18 09:19 • (LCSD) R3310376-3 05/16/18 09:36

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	39.6	99.3	99.0	80.0-120			0.312	15
Chloride	40.0	39.7	39.5	99.2	98.8	80.0-120			0.346	15
Nitrate	8.00	8.19	8.14	102	102	80.0-120			0.606	15
Nitrite	8.00	7.88	7.89	98.5	98.6	80.0-120			0.123	15
Sulfate	40.0	40.1	39.9	100	99.8	80.0-120			0.402	15

L993808-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L993808-04 05/16/18 11:03 • (MS) R3310376-5 05/16/18 11:19 • (MSD) R3310376-6 05/16/18 11:36

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromide	50.0	U	48.6	48.6	97.2	97.1	1	80.0-120			0.0391	15
Nitrite	5.00	0.0406	5.02	5.02	99.5	99.5	1	80.0-120			0.0279	15
Sulfate	50.0	10.3	58.1	57.9	95.6	95.3	1	80.0-120			0.297	15

L994158-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L994158-06 05/16/18 18:31 • (MS) R3310376-8 05/16/18 18:47

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	ND	59.7	119	1	80.0-120	
Chloride	50.0	ND	201	402	1	80.0-120	E J5
Nitrate	5.00	ND	5.95	118	1	80.0-120	
Nitrite	5.00	ND	6.12	122	1	80.0-120	J5
Sulfate	50.0	ND	100	200	1	80.0-120	E J5

Method Blank (MB)

(MB) R3310582-1 05/17/18 00:14

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

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

(LCS) R3310582-2 05/17/18 00:16 • (LCSD) R3310582-3 05/17/18 00:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium	10.0	10.3	10.2	103	102	80.0-120			1.58	20
Iron	10.0	10.2	10.0	102	100	80.0-120			1.66	20
Magnesium	10.0	10.7	10.5	107	105	80.0-120			1.85	20
Potassium	10.0	10.3	10.2	103	102	80.0-120			1.49	20
Sodium	10.0	10.2	10.1	102	101	80.0-120			1.19	20
Strontium	1.00	1.01	0.999	101	99.9	80.0-120			1.39	20

L994182-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L994182-01 05/17/18 00:21 • (MS) R3310582-5 05/17/18 00:26 • (MSD) R3310582-6 05/17/18 00:29

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	10.0	40.9	50.7	50.2	97.9	92.7	1	75.0-125			1.04	20
Iron	10.0	ND	10.2	10.2	102	102	1	75.0-125			0.491	20
Magnesium	10.0	4.33	14.9	14.7	106	104	1	75.0-125			1.66	20
Potassium	10.0	ND	11.3	11.2	104	102	1	75.0-125			1.10	20
Sodium	10.0	5.95	16.1	15.9	102	99.7	1	75.0-125			1.13	20
Strontium	1.00	0.170	1.19	1.17	102	100	1	75.0-125			0.945	20

Method Blank (MB)

(MB) R3311101-1 05/18/18 09:57

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

L994175-01 Original Sample (OS) • Duplicate (DUP)

(OS) L994175-01 05/18/18 10:29 • (DUP) R3311101-2 05/18/18 10:58

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

L994182-01 Original Sample (OS) • Duplicate (DUP)

(OS) L994182-01 05/18/18 11:01 • (DUP) R3311101-3 05/18/18 11:26

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

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

(LCS) R3311101-4 05/18/18 11:29 • (LCSD) R3311101-5 05/18/18 11:33

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0748	0.0732	110	108	85.0-115			2.14	20
Ethane	0.129	0.114	0.114	88.3	88.5	85.0-115			0.279	20
Ethene	0.127	0.116	0.117	91.4	91.9	85.0-115			0.497	20

Method Blank (MB)

(MB) R3310793-3 05/16/18 14:41

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) R3310793-3 05/16/18 14:41

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	U		0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	*105*			*80.0-120*
(S) Dibromofluoromethane	*86.3*			*76.0-123*
(S) 4-Bromofluorobenzene	*95.8*			*80.0-120*

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

(LCS) R3310793-1 05/16/18 13:05 • (LCSD) R3310793-2 05/16/18 13:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.125	0.0998	0.0948	79.8	75.9	10.0-160			5.06	23
Acrolein	0.125	0.0495	0.0408	39.6	32.6	10.0-160			19.3	20
Acrylonitrile	0.125	0.0946	0.0928	75.7	74.2	60.0-142			1.97	20
Benzene	0.0250	0.0219	0.0226	87.7	90.5	69.0-123			3.14	20

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

(LCS) R3310793-1 05/16/18 13:05 • (LCSD) R3310793-2 05/16/18 13:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromobenzene	0.0250	0.0220	0.0221	88.2	88.3	79.0-120			0.0947	20
Bromodichloromethane	0.0250	0.0219	0.0218	87.6	87.4	76.0-120			0.246	20
Bromoform	0.0250	0.0249	0.0258	99.8	103	67.0-132			3.47	20
Bromomethane	0.0250	0.0230	0.0240	92.0	96.0	18.0-160			4.23	20
n-Butylbenzene	0.0250	0.0213	0.0225	85.1	90.1	72.0-126			5.71	20
sec-Butylbenzene	0.0250	0.0225	0.0241	89.8	96.4	74.0-121			7.08	20
tert-Butylbenzene	0.0250	0.0220	0.0234	88.1	93.7	75.0-122			6.23	20
Carbon tetrachloride	0.0250	0.0200	0.0201	80.1	80.6	63.0-122			0.562	20
Chlorobenzene	0.0250	0.0265	0.0278	106	111	79.0-121			4.73	20
Chlorodibromomethane	0.0250	0.0269	0.0276	107	110	75.0-125			2.77	20
Chloroethane	0.0250	0.0220	0.0235	88.0	93.8	47.0-152			6.44	20
Chloroform	0.0250	0.0218	0.0224	87.3	89.8	72.0-121			2.82	20
Chloromethane	0.0250	0.0176	0.0175	70.3	70.0	48.0-139			0.388	20
2-Chlorotoluene	0.0250	0.0237	0.0236	94.7	94.5	74.0-122			0.159	20
4-Chlorotoluene	0.0250	0.0228	0.0234	91.1	93.7	79.0-120			2.81	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0186	0.0187	74.5	75.0	64.0-127			0.690	20
1,2-Dibromoethane	0.0250	0.0257	0.0261	103	104	77.0-123			1.23	20
Dibromomethane	0.0250	0.0215	0.0225	86.2	90.0	78.0-120			4.40	20
1,2-Dichlorobenzene	0.0250	0.0226	0.0229	90.3	91.7	80.0-120			1.54	20
1,3-Dichlorobenzene	0.0250	0.0247	0.0249	98.7	99.5	72.0-123			0.826	20
1,4-Dichlorobenzene	0.0250	0.0224	0.0227	89.5	90.8	77.0-120			1.39	20
Dichlorodifluoromethane	0.0250	0.0179	0.0182	71.8	72.8	49.0-155			1.37	20
1,1-Dichloroethane	0.0250	0.0186	0.0189	74.5	75.4	70.0-126			1.28	20
1,2-Dichloroethane	0.0250	0.0196	0.0199	78.6	79.7	67.0-126			1.40	20
1,1-Dichloroethene	0.0250	0.0208	0.0216	83.2	86.4	64.0-129			3.71	20
cis-1,2-Dichloroethene	0.0250	0.0202	0.0206	80.8	82.5	73.0-120			2.10	20
trans-1,2-Dichloroethene	0.0250	0.0206	0.0218	82.6	87.3	71.0-121			5.63	20
1,2-Dichloropropane	0.0250	0.0203	0.0216	81.3	86.5	75.0-125			6.20	20
1,1-Dichloropropene	0.0250	0.0219	0.0216	87.8	86.4	71.0-129			1.52	20
1,3-Dichloropropane	0.0250	0.0247	0.0260	98.6	104	80.0-121			5.29	20
cis-1,3-Dichloropropene	0.0250	0.0248	0.0251	99.1	100	79.0-123			1.17	20
trans-1,3-Dichloropropene	0.0250	0.0258	0.0254	103	101	74.0-127			1.68	20
2,2-Dichloropropane	0.0250	0.0207	0.0210	82.7	83.9	60.0-125			1.50	20
Di-isopropyl ether	0.0250	0.0175	0.0175	70.1	70.0	59.0-133			0.0502	20
Ethylbenzene	0.0250	0.0264	0.0279	106	112	77.0-120			5.65	20
Hexachloro-1,3-butadiene	0.0250	0.0205	0.0213	82.1	85.1	64.0-131			3.68	20
Isopropylbenzene	0.0250	0.0232	0.0239	92.9	95.8	75.0-120			3.05	20
p-Isopropyltoluene	0.0250	0.0218	0.0229	87.2	91.4	74.0-126			4.75	20
2-Butanone (MEK)	0.125	0.0899	0.0886	71.9	70.9	37.0-158			1.53	20
Methylene Chloride	0.0250	0.0206	0.0218	82.5	87.1	66.0-121			5.40	20

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

(LCS) R3310793-1 05/16/18 13:05 • (LCSD) R3310793-2 05/16/18 13:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	0.125	0.104	0.105	83.4	83.6	59.0-143			0.229	20
Methyl tert-butyl ether	0.0250	0.0204	0.0206	81.7	82.3	64.0-123			0.743	20
Naphthalene	0.0250	0.0133	0.0152	53.2	61.0	62.0-128	J4	J4	13.6	20
n-Propylbenzene	0.0250	0.0234	0.0247	93.5	99.0	79.0-120			5.66	20
Styrene	0.0250	0.0237	0.0245	94.8	97.8	78.0-124			3.20	20
1,1,1,2-Tetrachloroethane	0.0250	0.0235	0.0255	93.9	102	75.0-122			8.43	20
1,1,2,2-Tetrachloroethane	0.0250	0.0231	0.0231	92.5	92.5	71.0-122			0.0270	20
Tetrachloroethene	0.0250	0.0271	0.0289	108	116	70.0-127			6.53	20
Toluene	0.0250	0.0241	0.0257	96.2	103	77.0-120			6.42	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0225	0.0227	90.0	90.9	61.0-136			0.988	20
1,2,3-Trichlorobenzene	0.0250	0.0151	0.0180	60.6	72.0	61.0-133	J4		17.3	20
1,2,4-Trichlorobenzene	0.0250	0.0193	0.0203	77.2	81.4	69.0-129			5.26	20
1,1,1-Trichloroethane	0.0250	0.0201	0.0213	80.4	85.3	68.0-122			5.93	20
1,1,2-Trichloroethane	0.0250	0.0255	0.0262	102	105	78.0-120			2.52	20
Trichloroethene	0.0250	0.0219	0.0229	87.6	91.6	78.0-120			4.47	20
Trichlorofluoromethane	0.0250	0.0237	0.0238	94.9	95.2	56.0-137			0.278	20
1,2,3-Trichloropropane	0.0250	0.0227	0.0222	90.8	88.8	72.0-124			2.27	20
1,2,3-Trimethylbenzene	0.0250	0.0222	0.0234	88.6	93.6	75.0-120			5.46	20
1,2,4-Trimethylbenzene	0.0250	0.0233	0.0238	93.0	95.3	75.0-120			2.36	20
1,3,5-Trimethylbenzene	0.0250	0.0244	0.0233	97.8	93.1	75.0-120			4.83	20
Vinyl chloride	0.0250	0.0229	0.0237	91.6	94.8	64.0-133			3.35	20
Xylenes, Total	0.0750	0.0778	0.0813	104	108	77.0-120			4.40	20
(S) Toluene-d8				*105*	*107*	*80.0-120*				
(S) Dibromofluoromethane				*88.5*	*90.6*	*76.0-123*				
(S) 4-Bromofluorobenzene				*94.0*	*94.1*	*80.0-120*				

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.

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

State Accreditations

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

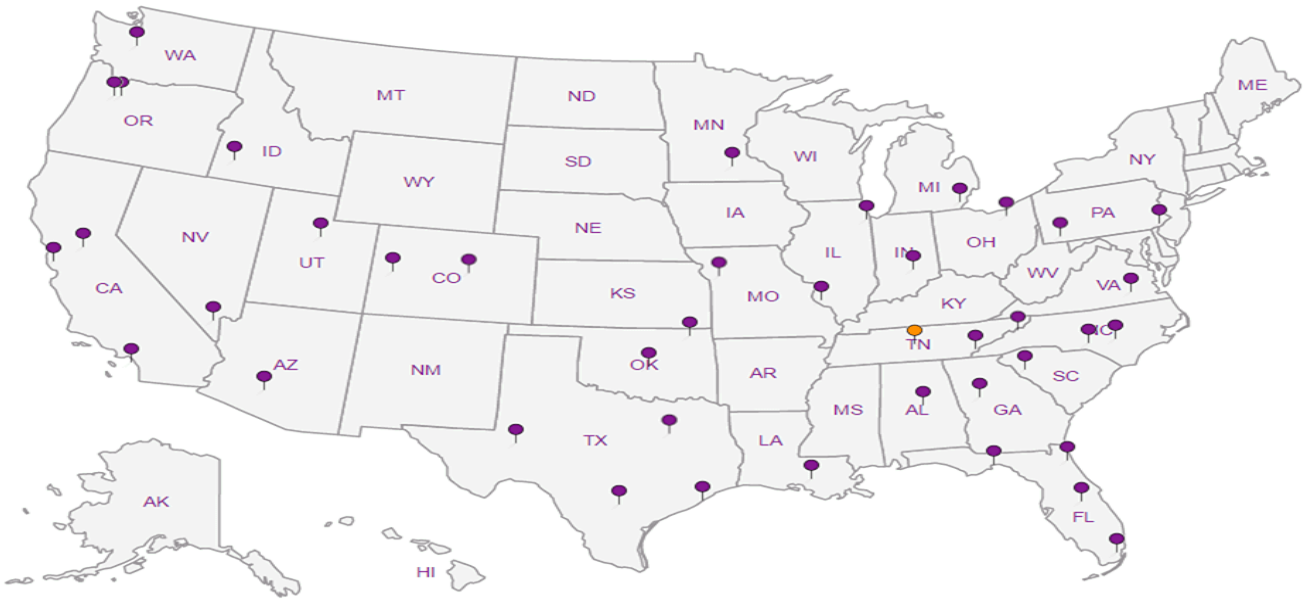
Third Party Federal Accreditations

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

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

Our Locations

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



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

Billing Information: Same

Report to: **Michael Skridulis**

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

Project Description: Wertman #1

City/State Collected: Longmont, CO

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

Client Project # 22177047

Lab Project #

Collected by (print): Drew Stephens

Site/Facility ID #

P.O. #

Collected by (signature): Drew

Immediately Packed on Ice N ___ Y X

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

Date Results Needed: Standard

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260 (2) 40ml Amber w/HCl	RSK-175 (2) 40ml Amber w/HCl	Carbon Dioxide - 250ml HDPE No PRes	Ca,Mg,Na,Fe,K,Sr - 250ml HDPE w/HN03	N02,N03,Cl,S04,Br,Alk - 500ml HDPE No Pres	Rem./Contaminant	Sample # (lab only)
MW-01	Grab	GW		5/15/18	1430	7	X	X	X	X	X		01
MW-02	Grab	GW		5/15/18	1500	7	X	X	X	X	X		02
MW-03	Grab	GW		5/15/18	1430	7	X	X	X	X	X		03
MW-04	Grab	GW		5/15/18	1600	7	X	X	X	X	X		04
		GW											

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

Remarks: 4361 6930 0933

pH ___ Temp ___
Flow ___ Other ___

Hold #

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ ___
Temp: 1.7 °C Bottles Received: 28

Condition: (lab use only) OK
COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Drew	5/15/15	1700	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Kathryn Citron

Date: 5/16/18 Time: 0895

Chain of Custody Page ___ of ___

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

L# 994060

H016

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

ESC LAB SCIENCES
Cooler Receipt Form

Client: TerrAlco	SDG#	994060	
Cooler Received/Opened On: 5/16/18	Temperature:	1.7	
Received By: Kathryn Cason			
Signature: Kathryn Cason			

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

ANALYTICAL REPORT

May 24, 2018

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L995388
Samples Received:	05/19/2018
Project Number:	22177047
Description:	Wertman #1

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

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
Technical Service Representative

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

TABLE OF CONTENTS

SVP-01 L995388-01 Air

Collected by: Drew Stephens
Collected date/time: 05/15/18 10:20
Received date/time: 05/19/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1114526	2	05/22/18 19:41	05/22/18 19:41	MBF
Organic Compounds (GC) by Method D1946	WG1114296	1	05/22/18 11:04	05/22/18 11:04	AMC

SVP-02 L995388-02 Air

Collected by: Drew Stephens
Collected date/time: 05/15/18 11:08
Received date/time: 05/19/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1114526	2	05/22/18 20:24	05/22/18 20:24	MBF
Organic Compounds (GC) by Method D1946	WG1114296	1	05/22/18 11:10	05/22/18 11:10	AMC

SVP-03 L995388-03 Air

Collected by: Drew Stephens
Collected date/time: 05/15/18 12:00
Received date/time: 05/19/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (MS) by Method TO-15	WG1114526	2	05/22/18 21:08	05/22/18 21:08	MBF
Organic Compounds (GC) by Method D1946	WG1114296	1	05/22/18 11:15	05/22/18 11:15	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. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne 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	2.50	5.94	3.52	8.37		2	WG1114526
Allyl chloride	107-05-1	76.53	0.400	1.25	ND	ND		2	WG1114526
Benzene	71-43-2	78.10	0.400	1.28	ND	ND		2	WG1114526
Benzyl Chloride	100-44-7	127	0.400	2.08	ND	ND		2	WG1114526
Bromodichloromethane	75-27-4	164	0.400	2.68	ND	ND		2	WG1114526
Bromoform	75-25-2	253	1.20	12.4	ND	ND		2	WG1114526
Bromomethane	74-83-9	94.90	0.400	1.55	ND	ND		2	WG1114526
1,3-Butadiene	106-99-0	54.10	4.00	8.85	ND	ND		2	WG1114526
Carbon disulfide	75-15-0	76.10	0.400	1.24	1.44	4.49		2	WG1114526
Carbon tetrachloride	56-23-5	154	0.400	2.52	ND	ND		2	WG1114526
Chlorobenzene	108-90-7	113	0.400	1.85	ND	ND		2	WG1114526
Chloroethane	75-00-3	64.50	0.400	1.06	ND	ND		2	WG1114526
Chloroform	67-66-3	119	0.400	1.95	ND	ND		2	WG1114526
Chloromethane	74-87-3	50.50	0.400	0.826	ND	ND		2	WG1114526
2-Chlorotoluene	95-49-8	126	0.400	2.06	ND	ND		2	WG1114526
Cyclohexane	110-82-7	84.20	0.400	1.38	ND	ND		2	WG1114526
Dibromochloromethane	124-48-1	208	0.400	3.40	ND	ND		2	WG1114526
1,2-Dibromoethane	106-93-4	188	0.400	3.08	ND	ND		2	WG1114526
1,2-Dichlorobenzene	95-50-1	147	0.400	2.40	ND	ND		2	WG1114526
1,3-Dichlorobenzene	541-73-1	147	0.400	2.40	ND	ND		2	WG1114526
1,4-Dichlorobenzene	106-46-7	147	0.400	2.40	ND	ND		2	WG1114526
1,2-Dichloroethane	107-06-2	99	0.400	1.62	ND	ND		2	WG1114526
1,1-Dichloroethane	75-34-3	98	0.400	1.60	ND	ND		2	WG1114526
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1114526
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1114526
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1114526
1,2-Dichloropropane	78-87-5	113	0.400	1.85	ND	ND		2	WG1114526
cis-1,3-Dichloropropene	10061-01-5	111	0.400	1.82	ND	ND		2	WG1114526
trans-1,3-Dichloropropene	10061-02-6	111	0.400	1.82	ND	ND		2	WG1114526
1,4-Dioxane	123-91-1	88.10	0.400	1.44	ND	ND		2	WG1114526
Ethanol	64-17-5	46.10	1.26	2.38	4.23	7.98		2	WG1114526
Ethylbenzene	100-41-4	106	0.400	1.73	ND	ND		2	WG1114526
4-Ethyltoluene	622-96-8	120	0.400	1.96	ND	ND		2	WG1114526
Trichlorofluoromethane	75-69-4	137.40	0.400	2.25	ND	ND		2	WG1114526
Dichlorodifluoromethane	75-71-8	120.92	0.400	1.98	0.419	2.07		2	WG1114526
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.400	3.07	ND	ND		2	WG1114526
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.400	2.80	ND	ND		2	WG1114526
Heptane	142-82-5	100	0.400	1.64	ND	ND		2	WG1114526
Hexachloro-1,3-butadiene	87-68-3	261	1.26	13.5	ND	ND		2	WG1114526
n-Hexane	110-54-3	86.20	0.400	1.41	ND	ND		2	WG1114526
Isopropylbenzene	98-82-8	120.20	0.400	1.97	ND	ND		2	WG1114526
Methylene Chloride	75-09-2	84.90	0.400	1.39	0.618	2.15		2	WG1114526
Methyl Butyl Ketone	591-78-6	100	2.50	10.2	ND	ND		2	WG1114526
2-Butanone (MEK)	78-93-3	72.10	2.50	7.37	ND	ND		2	WG1114526
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	2.50	10.2	ND	ND		2	WG1114526
Methyl methacrylate	80-62-6	100.12	0.400	1.64	ND	ND		2	WG1114526
MTBE	1634-04-4	88.10	0.400	1.44	ND	ND		2	WG1114526
Naphthalene	91-20-3	128	1.26	6.60	ND	ND		2	WG1114526
2-Propanol	67-63-0	60.10	2.50	6.15	ND	ND		2	WG1114526
Propene	115-07-1	42.10	0.800	1.38	ND	ND		2	WG1114526
Styrene	100-42-5	104	0.400	1.70	ND	ND		2	WG1114526
1,1,2,2-Tetrachloroethane	79-34-5	168	0.400	2.75	ND	ND		2	WG1114526
Tetrachloroethylene	127-18-4	166	0.400	2.72	ND	ND		2	WG1114526
Tetrahydrofuran	109-99-9	72.10	0.400	1.18	ND	ND		2	WG1114526
Toluene	108-88-3	92.10	0.400	1.51	0.626	2.36		2	WG1114526
1,2,4-Trichlorobenzene	120-82-1	181	1.26	9.33	ND	ND		2	WG1114526

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	0.400	2.18	ND	ND		2	WG1114526
1,1,2-Trichloroethane	79-00-5	133	0.400	2.18	ND	ND		2	WG1114526
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1114526
1,2,4-Trimethylbenzene	95-63-6	120	0.400	1.96	ND	ND		2	WG1114526
1,3,5-Trimethylbenzene	108-67-8	120	0.400	1.96	ND	ND		2	WG1114526
2,2,4-Trimethylpentane	540-84-1	114.22	0.400	1.87	ND	ND		2	WG1114526
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1114526
Vinyl Bromide	593-60-2	106.95	0.400	1.75	ND	ND		2	WG1114526
Vinyl acetate	108-05-4	86.10	0.400	1.41	ND	ND		2	WG1114526
m&p-Xylene	1330-20-7	106	0.800	3.47	1.18	5.11		2	WG1114526
o-Xylene	95-47-6	106	0.400	1.73	0.504	2.18		2	WG1114526
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*99.1*				WG1114526

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	2.00	16.9		1	WG1114296
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1114296
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1114296
Methane	74-82-8	16	0.400	ND		1	WG1114296

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	2.50	5.94	5.94	14.1		2	WG1114526
Allyl chloride	107-05-1	76.53	0.400	1.25	ND	ND		2	WG1114526
Benzene	71-43-2	78.10	0.400	1.28	ND	ND		2	WG1114526
Benzyl Chloride	100-44-7	127	0.400	2.08	ND	ND		2	WG1114526
Bromodichloromethane	75-27-4	164	0.400	2.68	ND	ND		2	WG1114526
Bromoform	75-25-2	253	1.20	12.4	ND	ND		2	WG1114526
Bromomethane	74-83-9	94.90	0.400	1.55	ND	ND		2	WG1114526
1,3-Butadiene	106-99-0	54.10	4.00	8.85	ND	ND		2	WG1114526
Carbon disulfide	75-15-0	76.10	0.400	1.24	ND	ND		2	WG1114526
Carbon tetrachloride	56-23-5	154	0.400	2.52	ND	ND		2	WG1114526
Chlorobenzene	108-90-7	113	0.400	1.85	ND	ND		2	WG1114526
Chloroethane	75-00-3	64.50	0.400	1.06	ND	ND		2	WG1114526
Chloroform	67-66-3	119	0.400	1.95	ND	ND		2	WG1114526
Chloromethane	74-87-3	50.50	0.400	0.826	0.625	1.29		2	WG1114526
2-Chlorotoluene	95-49-8	126	0.400	2.06	ND	ND		2	WG1114526
Cyclohexane	110-82-7	84.20	0.400	1.38	ND	ND		2	WG1114526
Dibromochloromethane	124-48-1	208	0.400	3.40	ND	ND		2	WG1114526
1,2-Dibromoethane	106-93-4	188	0.400	3.08	ND	ND		2	WG1114526
1,2-Dichlorobenzene	95-50-1	147	0.400	2.40	ND	ND		2	WG1114526
1,3-Dichlorobenzene	541-73-1	147	0.400	2.40	ND	ND		2	WG1114526
1,4-Dichlorobenzene	106-46-7	147	0.400	2.40	ND	ND		2	WG1114526
1,2-Dichloroethane	107-06-2	99	0.400	1.62	ND	ND		2	WG1114526
1,1-Dichloroethane	75-34-3	98	0.400	1.60	ND	ND		2	WG1114526
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1114526
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1114526
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1114526
1,2-Dichloropropane	78-87-5	113	0.400	1.85	ND	ND		2	WG1114526
cis-1,3-Dichloropropene	10061-01-5	111	0.400	1.82	ND	ND		2	WG1114526
trans-1,3-Dichloropropene	10061-02-6	111	0.400	1.82	ND	ND		2	WG1114526
1,4-Dioxane	123-91-1	88.10	0.400	1.44	ND	ND		2	WG1114526
Ethanol	64-17-5	46.10	1.26	2.38	5.09	9.60		2	WG1114526
Ethylbenzene	100-41-4	106	0.400	1.73	ND	ND		2	WG1114526
4-Ethyltoluene	622-96-8	120	0.400	1.96	ND	ND		2	WG1114526
Trichlorofluoromethane	75-69-4	137.40	0.400	2.25	ND	ND		2	WG1114526
Dichlorodifluoromethane	75-71-8	120.92	0.400	1.98	0.430	2.13		2	WG1114526
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.400	3.07	ND	ND		2	WG1114526
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.400	2.80	ND	ND		2	WG1114526
Heptane	142-82-5	100	0.400	1.64	ND	ND		2	WG1114526
Hexachloro-1,3-butadiene	87-68-3	261	1.26	13.5	ND	ND		2	WG1114526
n-Hexane	110-54-3	86.20	0.400	1.41	0.785	2.77		2	WG1114526
Isopropylbenzene	98-82-8	120.20	0.400	1.97	ND	ND		2	WG1114526
Methylene Chloride	75-09-2	84.90	0.400	1.39	1.57	5.46		2	WG1114526
Methyl Butyl Ketone	591-78-6	100	2.50	10.2	ND	ND		2	WG1114526
2-Butanone (MEK)	78-93-3	72.10	2.50	7.37	ND	ND		2	WG1114526
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	2.50	10.2	ND	ND		2	WG1114526
Methyl methacrylate	80-62-6	100.12	0.400	1.64	ND	ND		2	WG1114526
MTBE	1634-04-4	88.10	0.400	1.44	ND	ND		2	WG1114526
Naphthalene	91-20-3	128	1.26	6.60	ND	ND		2	WG1114526
2-Propanol	67-63-0	60.10	2.50	6.15	ND	ND		2	WG1114526
Propene	115-07-1	42.10	0.800	1.38	ND	ND		2	WG1114526
Styrene	100-42-5	104	0.400	1.70	ND	ND		2	WG1114526
1,1,2,2-Tetrachloroethane	79-34-5	168	0.400	2.75	ND	ND		2	WG1114526
Tetrachloroethylene	127-18-4	166	0.400	2.72	ND	ND		2	WG1114526
Tetrahydrofuran	109-99-9	72.10	0.400	1.18	ND	ND		2	WG1114526
Toluene	108-88-3	92.10	0.400	1.51	0.430	1.62		2	WG1114526
1,2,4-Trichlorobenzene	120-82-1	181	1.26	9.33	ND	ND		2	WG1114526

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	0.400	2.18	ND	ND		2	WG1114526
1,1,2-Trichloroethane	79-00-5	133	0.400	2.18	ND	ND		2	WG1114526
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1114526
1,2,4-Trimethylbenzene	95-63-6	120	0.400	1.96	ND	ND		2	WG1114526
1,3,5-Trimethylbenzene	108-67-8	120	0.400	1.96	ND	ND		2	WG1114526
2,2,4-Trimethylpentane	540-84-1	114.22	0.400	1.87	ND	ND		2	WG1114526
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1114526
Vinyl Bromide	593-60-2	106.95	0.400	1.75	ND	ND		2	WG1114526
Vinyl acetate	108-05-4	86.10	0.400	1.41	ND	ND		2	WG1114526
m&p-Xylene	1330-20-7	106	0.800	3.47	ND	ND		2	WG1114526
o-Xylene	95-47-6	106	0.400	1.73	ND	ND		2	WG1114526
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*96.5*				WG1114526

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	2.00	17.3		1	WG1114296
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1114296
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1114296
Methane	74-82-8	16	0.400	ND		1	WG1114296

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Acetone	67-64-1	58.10	2.50	5.94	4.44	10.6		2	WG1114526
Allyl chloride	107-05-1	76.53	0.400	1.25	ND	ND		2	WG1114526
Benzene	71-43-2	78.10	0.400	1.28	1.03	3.30		2	WG1114526
Benzyl Chloride	100-44-7	127	0.400	2.08	ND	ND		2	WG1114526
Bromodichloromethane	75-27-4	164	0.400	2.68	ND	ND		2	WG1114526
Bromoform	75-25-2	253	1.20	12.4	ND	ND		2	WG1114526
Bromomethane	74-83-9	94.90	0.400	1.55	2.46	9.54		2	WG1114526
1,3-Butadiene	106-99-0	54.10	4.00	8.85	ND	ND		2	WG1114526
Carbon disulfide	75-15-0	76.10	0.400	1.24	45.1	140		2	WG1114526
Carbon tetrachloride	56-23-5	154	0.400	2.52	ND	ND		2	WG1114526
Chlorobenzene	108-90-7	113	0.400	1.85	ND	ND		2	WG1114526
Chloroethane	75-00-3	64.50	0.400	1.06	ND	ND		2	WG1114526
Chloroform	67-66-3	119	0.400	1.95	ND	ND		2	WG1114526
Chloromethane	74-87-3	50.50	0.400	0.826	2.29	4.73		2	WG1114526
2-Chlorotoluene	95-49-8	126	0.400	2.06	ND	ND		2	WG1114526
Cyclohexane	110-82-7	84.20	0.400	1.38	4.72	16.3		2	WG1114526
Dibromochloromethane	124-48-1	208	0.400	3.40	ND	ND		2	WG1114526
1,2-Dibromoethane	106-93-4	188	0.400	3.08	ND	ND		2	WG1114526
1,2-Dichlorobenzene	95-50-1	147	0.400	2.40	ND	ND		2	WG1114526
1,3-Dichlorobenzene	541-73-1	147	0.400	2.40	ND	ND		2	WG1114526
1,4-Dichlorobenzene	106-46-7	147	0.400	2.40	ND	ND		2	WG1114526
1,2-Dichloroethane	107-06-2	99	0.400	1.62	ND	ND		2	WG1114526
1,1-Dichloroethane	75-34-3	98	0.400	1.60	ND	ND		2	WG1114526
1,1-Dichloroethene	75-35-4	96.90	0.400	1.59	ND	ND		2	WG1114526
cis-1,2-Dichloroethene	156-59-2	96.90	0.400	1.59	ND	ND		2	WG1114526
trans-1,2-Dichloroethene	156-60-5	96.90	0.400	1.59	ND	ND		2	WG1114526
1,2-Dichloropropane	78-87-5	113	0.400	1.85	ND	ND		2	WG1114526
cis-1,3-Dichloropropene	10061-01-5	111	0.400	1.82	ND	ND		2	WG1114526
trans-1,3-Dichloropropene	10061-02-6	111	0.400	1.82	ND	ND		2	WG1114526
1,4-Dioxane	123-91-1	88.10	0.400	1.44	ND	ND		2	WG1114526
Ethanol	64-17-5	46.10	1.26	2.38	5.14	9.69		2	WG1114526
Ethylbenzene	100-41-4	106	0.400	1.73	0.999	4.33		2	WG1114526
4-Ethyltoluene	622-96-8	120	0.400	1.96	ND	ND		2	WG1114526
Trichlorofluoromethane	75-69-4	137.40	0.400	2.25	ND	ND		2	WG1114526
Dichlorodifluoromethane	75-71-8	120.92	0.400	1.98	ND	ND		2	WG1114526
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.400	3.07	ND	ND		2	WG1114526
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.400	2.80	ND	ND		2	WG1114526
Heptane	142-82-5	100	0.400	1.64	1.46	5.99		2	WG1114526
Hexachloro-1,3-butadiene	87-68-3	261	1.26	13.5	ND	ND		2	WG1114526
n-Hexane	110-54-3	86.20	0.400	1.41	2.25	7.95		2	WG1114526
Isopropylbenzene	98-82-8	120.20	0.400	1.97	ND	ND		2	WG1114526
Methylene Chloride	75-09-2	84.90	0.400	1.39	1.18	4.10		2	WG1114526
Methyl Butyl Ketone	591-78-6	100	2.50	10.2	ND	ND		2	WG1114526
2-Butanone (MEK)	78-93-3	72.10	2.50	7.37	ND	ND		2	WG1114526
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	2.50	10.2	ND	ND		2	WG1114526
Methyl methacrylate	80-62-6	100.12	0.400	1.64	ND	ND		2	WG1114526
MTBE	1634-04-4	88.10	0.400	1.44	ND	ND		2	WG1114526
Naphthalene	91-20-3	128	1.26	6.60	ND	ND		2	WG1114526
2-Propanol	67-63-0	60.10	2.50	6.15	ND	ND		2	WG1114526
Propene	115-07-1	42.10	0.800	1.38	31.8	54.8		2	WG1114526
Styrene	100-42-5	104	0.400	1.70	ND	ND		2	WG1114526
1,1,2,2-Tetrachloroethane	79-34-5	168	0.400	2.75	ND	ND		2	WG1114526
Tetrachloroethylene	127-18-4	166	0.400	2.72	ND	ND		2	WG1114526
Tetrahydrofuran	109-99-9	72.10	0.400	1.18	0.611	1.80		2	WG1114526
Toluene	108-88-3	92.10	0.400	1.51	2.49	9.40		2	WG1114526
1,2,4-Trichlorobenzene	120-82-1	181	1.26	9.33	ND	ND		2	WG1114526

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

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1,1-Trichloroethane	71-55-6	133	0.400	2.18	ND	ND		2	WG1114526
1,1,2-Trichloroethane	79-00-5	133	0.400	2.18	ND	ND		2	WG1114526
Trichloroethylene	79-01-6	131	0.400	2.14	ND	ND		2	WG1114526
1,2,4-Trimethylbenzene	95-63-6	120	0.400	1.96	0.588	2.88		2	WG1114526
1,3,5-Trimethylbenzene	108-67-8	120	0.400	1.96	ND	ND		2	WG1114526
2,2,4-Trimethylpentane	540-84-1	114.22	0.400	1.87	0.662	3.09		2	WG1114526
Vinyl chloride	75-01-4	62.50	0.400	1.02	ND	ND		2	WG1114526
Vinyl Bromide	593-60-2	106.95	0.400	1.75	ND	ND		2	WG1114526
Vinyl acetate	108-05-4	86.10	0.400	1.41	ND	ND		2	WG1114526
m&p-Xylene	1330-20-7	106	0.800	3.47	1.28	5.55		2	WG1114526
o-Xylene	95-47-6	106	0.400	1.73	1.02	4.44		2	WG1114526
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*99.1*				WG1114526

Organic Compounds (GC) by Method D1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Oxygen	7782-44-7	32	2.00	17.1		1	WG1114296
Carbon Monoxide	630-08-0	28	2.00	ND		1	WG1114296
Carbon Dioxide	124-38-9	44.01	0.500	ND		1	WG1114296
Methane	74-82-8	16	0.400	ND		1	WG1114296

Method Blank (MB)

(MB) R3312407-3 05/22/18 12:37

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) R3312407-3 05/22/18 12:37

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	*97.6*			*60.0-140*

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

(LCS) R3312407-1 05/22/18 11:10 • (LCSD) R3312407-2 05/22/18 11:53

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	4.12	3.92	110	105	52.0-158			4.93	25
Propene	3.75	4.00	3.83	107	102	54.0-155			4.15	25
Dichlorodifluoromethane	3.75	3.99	3.89	106	104	69.0-143			2.50	25
1,2-Dichlorotetrafluoroethane	3.75	3.90	3.83	104	102	70.0-130			1.70	25
Chloromethane	3.75	3.91	3.75	104	100	70.0-130			4.05	25

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

(LCS) R3312407-1 05/22/18 11:10 • (LCSD) R3312407-2 05/22/18 11:53

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	3.79	3.67	101	98.0	70.0-130			3.24	25
1,3-Butadiene	3.75	3.69	3.65	98.5	97.4	70.0-130			1.15	25
Bromomethane	3.75	3.57	3.61	95.2	96.1	70.0-130			1.03	25
Chloroethane	3.75	3.53	3.75	94.0	100	70.0-130			6.22	25
Trichlorofluoromethane	3.75	3.65	3.88	97.4	103	70.0-130			6.01	25
1,1,2-Trichlorotrifluoroethane	3.75	3.86	3.74	103	99.6	70.0-130			3.38	25
1,1-Dichloroethene	3.75	3.90	3.70	104	98.8	70.0-130			5.22	25
1,1-Dichloroethane	3.75	3.88	3.71	103	99.0	70.0-130			4.37	25
Acetone	3.75	4.03	3.74	107	99.7	70.0-130			7.42	25
2-Propanol	3.75	3.90	3.74	104	99.7	66.0-150			4.19	25
Carbon disulfide	3.75	3.95	3.73	105	99.5	70.0-130			5.64	25
Methylene Chloride	3.75	3.84	3.67	102	97.9	70.0-130			4.51	25
MTBE	3.75	3.83	3.65	102	97.4	70.0-130			4.79	25
trans-1,2-Dichloroethene	3.75	3.97	3.78	106	101	70.0-130			4.84	25
n-Hexane	3.75	3.87	3.72	103	99.1	70.0-130			3.88	25
Vinyl acetate	3.75	3.99	3.77	106	101	70.0-130			5.53	25
Methyl Ethyl Ketone	3.75	3.95	3.76	105	100	70.0-130			4.86	25
cis-1,2-Dichloroethene	3.75	3.89	3.75	104	100	70.0-130			3.74	25
Chloroform	3.75	3.89	3.74	104	99.7	70.0-130			3.93	25
Cyclohexane	3.75	3.94	3.73	105	99.4	70.0-130			5.38	25
1,1,1-Trichloroethane	3.75	3.88	3.71	103	98.9	70.0-130			4.39	25
Carbon tetrachloride	3.75	3.87	3.74	103	99.6	70.0-130			3.59	25
Benzene	3.75	3.92	3.78	104	101	70.0-130			3.48	25
1,2-Dichloroethane	3.75	3.88	3.83	104	102	70.0-130			1.44	25
Heptane	3.75	4.05	3.89	108	104	70.0-130			3.90	25
Trichloroethylene	3.75	3.87	3.84	103	103	70.0-130			0.763	25
1,2-Dichloropropane	3.75	3.94	3.84	105	102	70.0-130			2.71	25
1,4-Dioxane	3.75	3.95	3.89	105	104	70.0-152			1.48	25
Bromodichloromethane	3.75	3.89	3.81	104	102	70.0-130			1.97	25
cis-1,3-Dichloropropene	3.75	3.90	3.84	104	102	70.0-130			1.66	25
4-Methyl-2-pentanone (MIBK)	3.75	3.96	3.90	106	104	70.0-142			1.69	25
Toluene	3.75	3.88	3.85	103	103	70.0-130			0.831	25
trans-1,3-Dichloropropene	3.75	3.84	3.81	102	101	70.0-130			0.784	25
1,1,2-Trichloroethane	3.75	3.81	3.83	102	102	70.0-130			0.714	25
Tetrachloroethylene	3.75	3.89	3.96	104	106	70.0-130			1.94	25
Methyl Butyl Ketone	3.75	4.01	4.03	107	107	70.0-150			0.515	25
Dibromochloromethane	3.75	3.91	3.92	104	104	70.0-130			0.217	25
1,2-Dibromoethane	3.75	3.87	3.88	103	103	70.0-130			0.0716	25
Chlorobenzene	3.75	3.89	3.92	104	105	70.0-130			0.892	25
Ethylbenzene	3.75	3.97	3.83	106	102	70.0-130			3.68	25

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

(LCS) R3312407-1 05/22/18 11:10 • (LCSD) R3312407-2 05/22/18 11:53

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	8.05	7.83	107	104	70.0-130			2.74	25
o-Xylene	3.75	3.97	3.89	106	104	70.0-130			2.15	25
Styrene	3.75	4.08	3.99	109	106	70.0-130			2.31	25
Bromoform	3.75	4.04	3.97	108	106	70.0-130			1.82	25
1,1,2,2-Tetrachloroethane	3.75	3.92	3.86	105	103	70.0-130			1.58	25
4-Ethyltoluene	3.75	3.92	3.90	105	104	70.0-130			0.446	25
1,3,5-Trimethylbenzene	3.75	3.99	3.98	107	106	70.0-130			0.261	25
1,2,4-Trimethylbenzene	3.75	3.91	3.92	104	105	70.0-130			0.190	25
1,3-Dichlorobenzene	3.75	4.03	3.97	107	106	70.0-130			1.35	25
1,4-Dichlorobenzene	3.75	4.19	4.16	112	111	70.0-130			0.767	25
Benzyl Chloride	3.75	4.00	3.92	107	104	70.0-144			2.15	25
1,2-Dichlorobenzene	3.75	4.00	3.94	107	105	70.0-130			1.51	25
1,2,4-Trichlorobenzene	3.75	4.51	4.57	120	122	70.0-155			1.32	25
Hexachloro-1,3-butadiene	3.75	4.33	4.37	115	116	70.0-145			0.884	25
Naphthalene	3.75	4.38	4.41	117	117	70.0-155			0.481	25
Allyl Chloride	3.75	3.95	3.71	105	98.9	70.0-130			6.27	25
2-Chlorotoluene	3.75	4.07	4.04	108	108	70.0-130			0.730	25
Methyl Methacrylate	3.75	3.87	3.86	103	103	70.0-130			0.275	25
Tetrahydrofuran	3.75	3.94	3.78	105	101	70.0-140			4.06	25
2,2,4-Trimethylpentane	3.75	3.90	3.71	104	98.9	70.0-130			5.10	25
Vinyl Bromide	3.75	3.61	3.91	96.3	104	70.0-130			8.01	25
Isopropylbenzene	3.75	3.97	3.89	106	104	70.0-130			2.00	25
(S) 1,4-Bromofluorobenzene				*99.4*	*99.9*	*60.0-140*				

Method Blank (MB)

(MB) R3311870-3 05/22/18 09:34

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Oxygen	0.882	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) R3311870-1 05/22/18 09:20 • (LCSD) R3311870-2 05/22/18 09:26

Analyte	Spike Amount %	LCS Result %	LCSD Result %	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Oxygen	2.50	2.71	2.78	108	111	70.0-130			2.43	20
Carbon Monoxide	2.50	2.64	2.54	106	102	70.0-130			3.69	20
Carbon Dioxide	2.50	2.76	2.69	111	108	70.0-130			2.78	20
Methane	2.00	2.15	2.10	107	105	70.0-130			2.32	20

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

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

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

State Accreditations

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

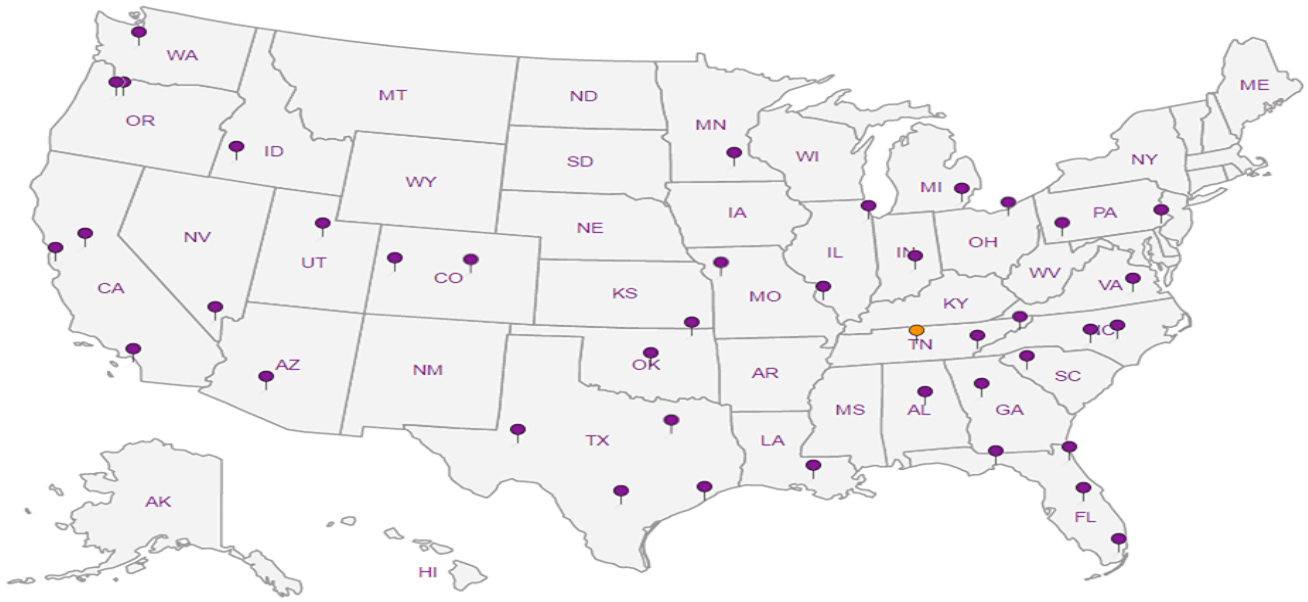
Third Party Federal Accreditations

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

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

Our Locations

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



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: Westman #1
City/State Collected: Longmont, CO
Phone: 303-776-3921
Fax: 303-776-4041
Client Project # 22177047
Lab Project #
Collected by (print): Drew Stephens
Site/Facility ID #
P.O. #
Collected by (signature):

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

Date Results Needed: STANDARD
Email? ___No ___Yes
FAX? ___No ___Yes
Canister Pressure/Vacuum

Analysis: TO-15; Fixed gasses (Methane, Ethane, Ethene)

Chain of Custody Page 1 of 1

ESC LABS 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# 1995788
Tab M144
Acctnum: TERRALCO
Template:
Prelogin:
TSR:
Cooler:
Shipped Via:

Sample ID	Sample Description	Can #	Date	Time	Initial	Final	TO-15	Fixed gasses			Rem./Contaminant	Sample # (lab only)
SVP-01	Soil Vapor	5752	5/15/18	1020	24	7	X	X				-01
SVP-02	↓	6874	↓	1108	24	4	X	X				-02
SVP-03	↓	7373	↓	1200	25	7	X	X				-03

Remarks: FX: 4361 6930 3391

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	5/18/18	1600	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____
Temp: °C Bottles Received: 3
Date: 5/19/18 Time: 0845

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

ESC LAB SCIENCES
Cooler Receipt Form

Client: TERRACO	SDG#	L995388
Cooler Received/Opened On: 5/19/18	Temperature:	4c
Received By: Ian White		
Signature: Ian		

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