

Tervita Corporation
Redonda Hazardous Waste Collection Facility
The Dangerous Goods Handling and Transportation Act
(DGHTA) Licence No. 337HW
Decommissioning Plan



April 21, 2021

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1. Site History

The Facility is located at 999 Redonda Street, Oakbank, Manitoba and is regulated under the *Dangerous Goods Handling and Transportation Act* (Licence No. 337HW).

General facility operations include the receipt of hazardous and non-hazardous wastes for the purpose of repacking/labpacking and storage prior to transport off-site for final disposal. The following wastes are prohibited at the Facility, and have not been received during the operation of that Facility:

- Waste containing polychlorinated biphenyls (PCBs);
- Radioactive material;
- Infectious waste;
- Biomedical waste;
- Explosives; and
- Hazardous waste which is readily capable of detonation or of explosive decomposition or reaction at normal temperature and pressure.

1.1 Hazardous Waste Storage

The outside Hazardous Waste (HW) Storage Area is currently comprised of 1 sealed sea-can with dimensions of 12.19m long x 2.44m wide x 2.59m high. Refer to Appendix A for a site plan. The HW inside is stored in the process area as shown as Appendix B and the process area is approximately 34m x 16m.

1.2 Industrial Water Management

All industrial water associated with the indoor wash bay is collected under the raised wash bay and pumped via a submersible pump into adjacently stored storage containers within the containment area. Once full, the water is transported offsite to an approved disposal facility.

1.3 Potential Impacts

Impacts to land, surface water and groundwater due to facility operations is not expected. All activities involving the repacking/labpacking and storage of HW occurs within the process area, which is all in secondary containment inside the Facility. The industrial water is collected and managed accordingly to avoid release into the environment.

1.4 Historical Baseline Reporting

In May 2020, a Baseline Environmental Monitoring Report was compiled by Wood PLC (Appendix C). This report included both a soil and groundwater investigation program that was analyzed against the applicable Environmental Quality Guidelines and Standards. Upon permanent closure of the facility, at the request of the Director, Tervita will conduct an investigation in accordance with "Manitoba Conservation's Guideline for Environmental Site Investigations in Manitoba", (March 1998), and compare the results to the baseline report to identify any contamination that may have resulted from the operations of the facility.

2. Description of Closure Plan

Upon closure of the facility, Tervita will conduct the following actions to return the facility to its original state:

1. Dispose of any inventory that remains on site. The maximum inventory that would require disposal/recycle would be 579 drum equivalents. Please note, this number is based on the downsized interior containment system which has the capacity to store 108,450L, plus an exterior containment devise (sea-can) of approximately 50 drum equivalents or 10,250 L for a total of 118,700 L. The inventory may increase to the

allowable storage capacity of 1,500 drum equivalents as per HW337, and therefore Tervita will review and update the Closure Plan annually to capture any changes in the closure cost estimate.

2. Clean the waste transfer/storage area, including purging and washing the onsite tank.
3. Conduct a detailed Phase II site assessment to identify potential sources of contamination (if applicable)
4. Obtain third party verification that closure objectives have been met (if applicable)

2.1 Post-Closure Monitoring

It is not anticipated that post-closure monitoring will be required as all inventory will be disposed of and the site will be returned to its original state, however this will be determined upon inspection from the Manitoba Sustainable Development.

2.2 Cost Estimate for Implementation of Closure Plan

Please find attached cost estimate (Appendix D) to eliminate a typical waste inventory onsite and includes labor and transportation. Since volumes coming into Redonda are unknown at this time the waste inventory calculation can be adjusted after a year of operation. A summary of the estimated costs associated with the full implementation of the closure plan are as follows:

Eliminate Inventory: Approximately \$60,485

Removal of Interior Containment: \$8,500

Removal of Exterior Containment: \$5,000

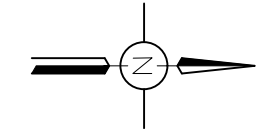
Removal of Wash bay: \$1,000

Environmental Site Assessment: Approximately \$ 40,000

Estimated subtotal: \$114,985

Appendix A - Site Plan

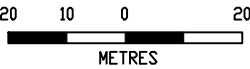
U:\redonda site_plan_rev_A (003).dwg, 11/14/2020 4:36:33pm, thomas



CERTIFICATE OF TITLE:
2005569/1 W.L.T.O.
(SE-CH D-TE: NOV. 14, 2019)

LEG-L DESCRIPTION:
LOT 1, PL-N 29953 WLTO
IN E.1/2 16-11-4 E.P.M.

CIVIC ADDRESS:
999 REDONDA STREET
R.M. OF SPRINGFIELD
M-NITOB-

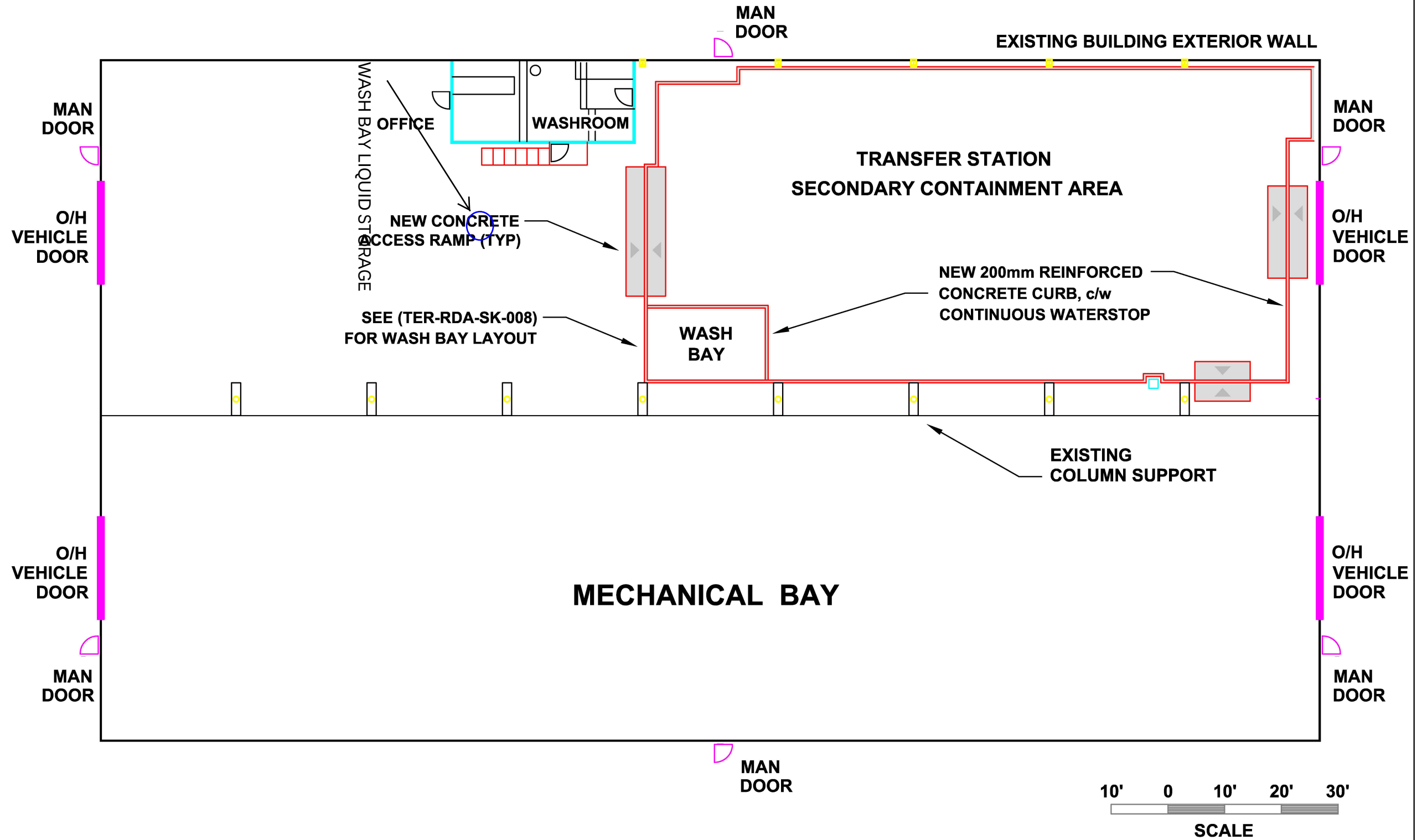
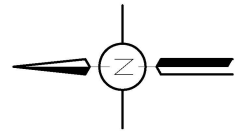


REV	DATE	REVISION DESCRIPTION	PROJ/AFE#	BY	CHK'D	APP'D
A	2020/05/12	ISSUED FOR APPLICATION	-	TL	NM	



REDONDA		
LEG-L PROPERTY -DDRESS	E. 1/2 16-11-04 E.P.M.	
SPRINGFIELD MANITOBA		
REDONDA FACILITY SITE PLAN		
SCALE: 1:500	DWG. No. TER-RDA-SK-002	REV. A

Appendix B - Process Area



X:\Facility Drawings\Redonda\TER-RDA-SK-003 Shop Layout.dwg, Apr 19, 2021 2:54:11pm, tlaw

REV	DATE	REVISION DESCRIPTION	PROJ/AFE#	BY	CHK'D	APP'D
A	2021/04/12	ISSUED FOR APPLICATION	-	TL	NM	



REDONDA		
LEGAL PROPERTY ADDRESS	E. 1/2 16-11-04 E.P.M.	
SPRINGFIELD MANITOBA REDONDA FACILITY SHOP BUILDING FLOOR LAYOUT		
SCALE: 1:500	DWG. No. TER-RDA-SK-003	REV. A

Appendix C - 2020 WOOD Environmental Site Assessment

Phase II Environmental Site Assessment

**999 Redonda Street, Rural Municipality of Springfield
Oakbank, Manitoba**

15 May 2020





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Phase II Environmental Site Assessment
999 Redonda Street, Rural Municipality of Springfield
Wood Project Number – WX18979

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Rev.	Date	Revision Notes	
	15 May 2020	FINAL	

Executive Summary

Wood Environment & Infrastructure Solutions, a division of Wood Canada Limited (Wood), conducted a Phase II Environmental Site Assessment (ESA) at 999 Redonda Street as part of the development of a new hazardous waste collection and storage facility in Oakbank, Manitoba (Site).

The purpose of the Phase II ESA was to assess areas of potential environmental concern (APECs) identified during a Phase I ESA completed at the Site by Wood in December 2019, as well as to collect soil and groundwater quality information in order to provide an assessment of the baseline conditions at the Site prior to Tervita operations.

APECs previously identified at the Site are related to historical fires which have occurred at the Site (APEC 1) as well as the presence of a 1,900 L fuel aboveground storage tank (AST) (APEC 2).

To address the APECs and provide further baseline assessment of the Site, 11 test holes were advanced at the Site (TH19-01 through TH19-11). As well, six groundwater monitoring wells were installed in order to characterize shallow soil and groundwater at the Site (i.e., depths up to 4.5 m below grade level).

Selected soil samples were submitted for laboratory analysis for petroleum hydrocarbon (PHC) fractions F1 to F4, Polychlorinated Biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), metals and extractable organic halides (EOX). Six groundwater samples were collected from the newly installed monitoring wells and submitted for laboratory analysis of PHC fractions F1 to F4, PAHs, VOCs, total organic halides (TOX), and metals. In addition, one sample, considered representative of the water supply well at the Site was submitted for the same groundwater chemical analysis additionally including dioxins and furans.

Soil and groundwater sample analysis indicate the concentrations of potential contaminants of concern were below the applicable guideline criteria for all soil and groundwater samples. Soil and groundwater concentrations do indicate some spatial trends in concentrations of PHCs, PAHs and EOX/TOX. Soil and groundwater samples collected near to the areas where historical fires occurred, or where run-off would accumulate (around the edges of the concrete apron surrounding the warehouse), indicate relatively higher concentrations in comparison to background (TH19-01). Concentrations of analytical parameters in the groundwater sample collected from the water well were relatively lower in comparison to shallow groundwater, or less than detection limits, indicating residual impact from historical fires is low and shallow and not in the deeper bedrock aquifer.

Based on the results of the Phase II ESA completed at the Site, there is no evidence to suggest that the Site has been negatively impacted by the historical fire events that took place on-Site to a degree that would represent a potential risk to human health and the environment. The Site is considered to be suitable for continued industrial use.

Based on the results of the current assessment, no further investigation at the Site is warranted at this time. However, if impacts are identified during the scheduled redevelopment of the Site, additional investigation may be required at that time.

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Glossary of Commonly Used Abbreviations

AEP	Alberta Environment and Parks
APEC	Areas of potential concern
CCME	Canadian Council of Ministers of the Environment
cm/s	centimetres per second
CSRA	Contaminated Sites Remediation Act
CSRR	Contaminated Sites Remediation Regulation
EDL	Estimated Detection Limit
EOX	Total Extractable Organic Halides
ESA	Environmental Site Assessment
m bgl	metres below ground level
NAPL	non-aqueous phase liquid
NCSCS	National Classification System for Contaminated Sites
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PHC	petroleum hydrocarbon
ppm _v	parts per million organic vapour
QA/QC	quality assurance/quality control
RPD	relative percent difference
TOX	Total Organic Halides
VOC	Volatile Organic Compounds

1.0 Introduction

Wood Environment & Infrastructure Solutions, a division of Wood Canada Limited (Wood), conducted a Phase II Environmental Site Assessment (ESA) at 999 Redonda Street as part of the development of a new hazardous waste collection and storage facility in Oakbank, Manitoba (Site). The purpose of the Phase II ESA was to assess the areas of potential environmental concern (APECs) identified during a Phase I ESA completed at the Site by Wood on 20 December 2019. As well, to collect soil and groundwater quality information in order to provide an assessment of the baseline conditions at the Site prior to Tervita operations.

1.1 Background

1.2 Site Location and Surrounding Land Use

The Site is located in the Rural Municipality of Springfield (RM of Springfield), Manitoba, in an industrial subdivision located near the eastern limits of the City of Winnipeg. A map showing the location of the Site in relation to the surrounding area is shown in Figure 1. A plan showing the layout of the Site and the neighbouring properties is provided in Figure 2.

According to the RM of Springfield, the Site and surrounding area is zoned as "MG", defined as Industrial General Zoning.

The Site currently consists of a residential dwelling with a modular office trailer attached to the south exterior wall, a warehouse building surrounded by a large concrete pad, a metal clad garage and a wooden storage shed. Two concrete slabs were also observed in the central portion of the Site.

The Site is industrial land use and will likely remain so for the foreseeable future. Surrounding land use consisted of commercial land use adjacent to the northeast and vacant land to the northwest, commercial land use to the east, a rail line followed by commercial land use to the south side, and vacant undeveloped grassland adjacent to the west side.

Land use is summarized in Table 1 and shown on Figure 1. The layout of the Site is shown on Figure 2. Photos of the Site and surrounding areas taken during the 2019 investigation are presented in Appendix A.

1.3 Previous Investigations

A Phase I ESA was conducted by Wood at the Site, the results of which were presented in the report entitled "*Phase I Environmental Site Assessment, 999 Redonda Street, Oakbank, Manitoba, WX18979*" dated 20 December 2019. As a part of the Phase I ESA, previous historical environmental information was reviewed for the Site, in addition conducting a Site visit, in order to observe the current conditions at the Site. The APECs identified in the report are discussed below.

- **APEC 1** – Several fires have occurred at the Site. Based on information reviewed, the fires potentially involved the burning of plastic, metals or other products and wastes stored on Site. Run-off from water used during fire suppression could potentially impact soil and groundwater at the Site by migrating combustion byproducts, chemicals and wastes from the fire to soil and groundwater locations at low areas, and at the edges of the concrete aprons and slabs at the Site. Specifically, the area south and south west of the existing concrete pad surrounding the warehouse, as historical storage of plastics along the south and west portions of the concrete pad may have been consumed during a 2006 fire. Based on aerial photographs runoff from water used to suppress the fire may have flowed off the pad and into the adjacent vegetated area. Additionally, runoff from water used to suppress the fires which damaged/destroyed the buildings east of the warehouse could potentially impact soil and groundwater near these buildings by migrating combustion byproducts, chemicals and wastes from the fire to soil and groundwater. As such the potential for impacts to soil and groundwater in these areas of the Site cannot be discounted.
- **APEC 2** - An approximate 1,900 L, steel, single walled diesel fuel AST was observed outside adjacent to the north exterior wall of the garage. The tank was situated on a concrete pad; however, no secondary containment was present. Based on the presence of the tank, the single walled construction and the lack of secondary containment potential for impacts to the Site cannot be discounted.

2.0 Scope of Work

Wood submitted a proposed scope of work with the original proposal for the project (WPG2019.621) detailing an assumed scope of work for assessing the Site based on the project objectives. The scope of work for the Phase II ESA was revised based on the results of the Phase I ESA conducted initially at the Site by Wood in order to assess APECs identified in the 2019 Wood Phase I ESA as well based on discussions with Tervita. The environmental scope of work proposed by Wood included the following general tasks:

- Advance 11 test holes at the Site, six of which were to be completed as monitoring wells.
- Complete logging, field screening and soil sampling during test hole advancement.
- Submit selected soil samples for analytical laboratory analysis for petroleum hydrocarbon (PHC) fractions F1 to F4, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), metals and total extractable organic halides (EOX).
- Conduct groundwater monitoring and sampling of newly installed monitoring wells as well as one on-Site water well.
- Submit groundwater samples for laboratory analysis of PHC fractions F1 to F4, PAHs, VOCs, metals total organic halides (TOX), and dioxins and furans.
- Prepare a report summarizing results of the assessment.

3.0 Investigative Methodology

3.1 Hazard Assessment and Service Locations

Prior to the start of the intrusive investigations, Wood completed a site-specific health and safety plan to identify hazards, project health and safety requirements, work site classification, and personal protective equipment requirements.

As part of standard ground disturbance procedures prior to commencing drilling, the locations of buried and overhead services were identified. The Manitoba Click Before You Dig program was contacted, which notified BellMTS, Manitoba Hydro, and Shaw Cable. Additionally, Wood contacted the RM of Springfield and a private locator to identify and mark respective underground utility locations.

3.2 Test Hole Drilling and Soil Sampling

The Phase II ESA drilling program was initiated on 3 December 2019, and continued on the 16 and 20 December 2019. The drilling program consisted of advancing 11 test holes (TH19-01 through TH19-11) using a track mounted drill rig operated by Maple Leaf Drilling Ltd. Six test holes were completed as groundwater monitoring wells. Test hole and monitoring well locations are shown on Figure 2.

During test hole advancement, soil samples were recovered at regular 0.8 m depth intervals, or more frequently when evidence of impacts or change in stratigraphy was noted. Soil samples were classified according to the Modified Unified Soil Classification system and visually assessed for evidence of impact.

The soil samples were split into two portions: one portion was placed in disposable soil bags (for field screening) and the other portion was placed in laboratory-prepared 40 mL vials (pre-charged with methanol) and 120 mL glass jars (for possible laboratory analyses).

Soil samples were field screened for combustible organic vapours using ambient temperature headspace (ATH) techniques and an RKI™ Eagle combustible vapour analyzer set in the no methane response mode. The ATH method involved partially filling and sealing disposable soil bag with soil and allowing vapours to accumulate prior to analyzing the headspace. Accumulated vapours were measured in parts per million total organic vapours (ppmv).

Soil samples were stored in an insulated cooler that contained ice packs while on-Site and during transport to the laboratory. Field protocols and quality assurance/quality control (QA/QC) procedures utilized by Wood were in accordance with industry standard protocols.

The location and elevation of all newly installed and existing monitoring wells were collected using a survey grade GPS system consisting of a Trimble TSC3 controller and R8 receiver. Northings and eastings, as well as top of casing and ground level elevations, were measured and recorded for all points. In addition to the monitoring well/test hole locations, the corners of buildings and other permanent structures and any identified utility locations were surveyed in, where possible.

3.3 Groundwater Monitoring and Sampling

Six test holes (TH19-01, TH19-03, TH19-04, TH19-07, TH19-08, and TH19-10) were completed as groundwater monitoring wells in order to measure subsurface vapour levels, establish groundwater conditions at the Site, and to allow for groundwater sampling. Monitoring wells were completed with a section of 0.010" slot screened interval with a solid PVC riser extending from the well screen to the ground surface. The borehole annulus around the screened interval was filled with 10/20 filter sand to a depth of approximately 0.15 m above the top of screen. Above the sand pack, the borehole annulus around the solid PVC casing was sealed with hydrated bentonite chips to ground's surface. Each of the monitoring wells installed was completed with a protective casing at surface and in general accordance with provincial regulations for environmental monitoring wells. The monitoring well construction details are shown on the applicable test hole logs (Appendix B).

The initial visit to the Site for groundwater monitoring and sampling was conducted on 20 December 2019. However, due to low water levels, and slow groundwater accumulation within monitoring well TH19-01 a second visit was conducted on 08 January 2020. Groundwater monitoring and sampling included the following:

- Inspection of groundwater monitoring well conditions;
- Measurement of groundwater monitoring well vapour concentrations;
- Determination of the presence and thickness of NAPL;
- Determination of groundwater levels; and
- Collection of groundwater samples.

Monitoring well vapour concentrations were measured with an RKL Eagle set in the no methane response mode and groundwater levels were measured with an electronic interface probe.

One water sample was collected from a faucet inside the warehouse building in order to characterize the groundwater quality from the water well. During sample collection, the water faucet was run for approximately 5 min, in order to collect a sample representative of well water. It is understood that the water from the faucet was from the water well located 3 m south of the warehouse building and did not undergo water treatment.

The collected groundwater samples were placed in clean certified bottles provided by the laboratory, stored in an insulated cooler with ice while on Site and during transport to the laboratory. The field protocols and QA/QC procedures utilized by Wood during Site monitoring were in accordance with standard industry protocols.

3.4 Laboratory Analysis

Potential contaminants of concern associated with the Site were related to the APECs identified in the Wood December 2019 Phase I ESA conducted at the Site, as well as the project objective of characterizing baseline conditions at the Site, prior to Tervita's planned operations. Samples were submitted for laboratory analysis to ALS Environmental in Winnipeg, Manitoba which is accredited by the Canadian Association Laboratory Accreditation Inc. (CALA) for testing in accordance with the International Standard ISO/IEC 17025.

Soil samples were submitted for chemical analysis for PHC fractions F1 to F4, metals and PAHs from each

of the 11 test hole locations. Soil samples from select test holes were also submitted for chemical analysis of VOCs (nine samples), PCBs (eight samples), and EOX (eight samples). Soil samples were selected based on location in relation to identified APECs, depth, and observations. Additionally, one soil sample was also submitted for grain size analysis.

Groundwater samples from each of the six monitoring wells were submitted for PHCs, VOCs, PAHs metals and TOX.

In addition, one water sample was collected from the on-Site water well located 5 m south of the warehouse building. The water sample was designated "Tap" and submitted for PHCs, VOCs, PAHs metals TOX and dioxins and furans

4.0 Site Setting

4.1 Regional Conditions

4.1.1 Regional Geology

Based on available geological maps, the subsurface stratigraphy in this area of the RM of Springfield normally consists of topsoil and fill materials underlain by glacio-lacustrine silt and clay to a depth of approximately 12 to 15 m from grade. The silt and clay deposits are low in hydraulic conductivity (in the order of 10^{-8} cm/s), with some secondary fracturing (Render 1970). A deposit of silty till, typically a few metres or more in thickness, occurs between the clay and the underlying bedrock. The bedrock in this area consists of dolomitic limestone with abundant chert nodules in the upper limestone layer and is of the Selkirk Member (Baracos et al., 1983). Bedrock is estimated to occur between 12 and 18 m below grade.

Fractured zones in the bedrock comprise the major aquifer in the area (Betcher et al. 1995). The overlying low conductivity silt and clay deposits do not support a useable source of groundwater, and as such are not utilized. In addition, the thickness and low conductivity deposits limit vertical migration and recharge to the underlying aquifers (Render 1970).

4.1.1.1 Domestic Groundwater Use

The Site and surrounding properties are part of the RM of Springfield and are not connected to the City of Winnipeg's water distribution system. The RM does not provide a municipal water service to this area. Two water wells were observed on-Site. A total of 13 water well records were identified on Site in MCC's GW Drill (2018) water well database. Of the records, five were classified as test wells and abandoned, five were well records for recharge wells, two well records for 12-inch supply wells, and one domestic well record. The water well records for the Site were either identified as "X-Potential" or as 999 Redonda. All wells were completed to approximately 15 m depth. Water well records for the Site are provided in Appendix C.

Water well records for wells identified within the same quarter section as the Site (NE16-11-4E1) and the surrounding quarter sections within 500 m of the Site (NW15-11-4E1, SW15-11-4E1, SE16-11-4E1) were reviewed. From this, the majority of the records indicated domestic use and in general all records indicate wells installed into the bedrock aquifer.

4.2 Site Characterization

4.2.1 Topography

The western portion of the Site includes a large warehouse building surrounded by a concrete pad, with the eastern portion comprised of several buildings and sheds. A topographic survey was conducted at the Site as a part of the project which indicated that the highest elevations at the Site are near the former building foundations in the central portion of the Site and the lowest Site elevations were at the western edge of the Site. Elevations indicate, surface water run-off flows outward away from the large warehouse in the western portion of the Site. The eastern portion of the Site includes a central gravel access road. Topography north of the road generally gently slopes to the north and east, and areas to the south, gently slope to the south and west. There is an existing swale in the northern portion of the Site that drains to the east. A topographic plan for the Site is included in Appendix D.

4.2.2 Stratigraphy

Stratigraphy at the test hole locations generally consisted of the following soil strata, in descending order:

- Organic matter;
- Gravel Fill;
- Clay;
- Silt (TH19-01, TH19-02 and TH19-06); and
- Clay.

A brief description of each of the soil strata is presented in the following paragraphs:

Organic Matter

Organic matter was encountered below the grass surface at six test holes (TH19-01, TH19-02, TH19-03, TH19-05, TH19-06 and TH19-09) and was approximately 9 cm in thickness.

Gravel Fill

Gravel fill was encountered at the ground surface of five test holes located around the perimeter of the concrete slab (TH19-04, TH19-07, TH19-08, TH19-10) and within the footprint of the warehouse building (TH19-11) and was approximately 75 cm in thickness.

Clay

Clay was encountered at all test hole locations and extended to the maximum explored depth of 4.6 meters below grade level (bgl). The clay was generally, medium or high plastic, medium to firm, damp, black/brown in colour and contained trace sand and trace mica.

Silt

Silt was encountered within the clay layer at test holes TH19-01 and TH19-02 and below the organic matter layer at TH19-06. The silt layer was 0.3 m, 0.5 m and 0.8 m thick, respectively. The silt was generally low plastic, damp to moist, soft and tan in colour. Plastic and organic debris was observed within the silt layer at TH19-06.

The subsurface soil stratigraphy encountered at each test hole location completed in 2019 is summarized in detail on the test hole logs in Appendix B.

4.2.3 Grain Size Designation

Grain size analysis was completed on soil sample collected from TH19-01 at 0.8 m bgl as part of the current assessment. The following grain size result was reported:

- TH19-01 – 0.8 m bgl (clay) – 2 % > 75 µm – Fine

Based on the results of the grain size analysis, native soils at the Site are predominantly fine-grained in nature. In general medium to high plastic clay was observed below the surface soil layer and extended to the maximum depth explored at each test hole. Based on the above, the Site is characterized as fine-grained for the purpose of this assessment.

5.0 Assessment Criteria

5.1 Applicable Guidelines

MCC has adopted the principles established by the CCME for environmental management and assessment of sites in Manitoba, in addition to the requirements of the Manitoba Contaminated Sites Remediation Act (CSRA) and the Manitoba Contaminated Sites Remediation Regulation (CSRR), M.R. 105/97. The ESA process in Manitoba is outlined in the MCC June 2016 Guideline document "Environmental Site Assessments in Manitoba" which discusses the derivation process to determine the applicable Assessment Guidelines and Reporting Standards for potentially contaminated soil, groundwater, surface water or sediment.

The Assessment Guidelines for the Site are used to determine the significance of risk to human health and the environment associated with the contamination discovered by an ESA and what future action is recommended to address the risk for the site. The Assessment Guidelines can be derived primarily from the Environmental Quality Guidelines (EQGs) published by CCME; however, should the CCME not provide adequate information or guidance, documents from other jurisdictions such as Ontario Ministry of Environment (MOE) and Alberta Environment and Parks (AEP) may be used, provided they are supported as the most scientifically valid Assessment Guidelines for the Site. The following documents produced by CCME were selected as being applicable for assessment of the Site dependent on the contaminants of concern, pathways and receptors:

- CCME 1999 (updates to 2019). Canadian Environmental Quality Guidelines (EQGs).
- CCME 2001 (revised 2008). Canada-Wide Standards (CWS) for Petroleum Hydrocarbons in Soil.
- Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ 2019).

Based on the conditions present at the Site, the following documents may be used for groundwater assessment:

- Government of Alberta, Alberta Tier 1 and Tier 2 Soil and Groundwater Remediation Guidelines January 2019 (AEP 2019).
- Ontario Ministry of the Environment. (MOE, 2011). Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act.

The document and exposure pathway selection and determination of assessment criteria for the Site is described in detail in Appendix E.

5.2 Soil and Groundwater

In consideration of the current and inferred future industrial land use of the Site, the fine-grained nature of the soil and the applicable exposure pathways (as outlined in Appendix E), assessment guidelines for each contaminant of concern in surface soil, subsoil, and groundwater were selected.

Based on the Site setting and above considerations, the limiting exposure pathways that are the most stringent for management of the Site impacts are:

- vapour inhalation (slab-on-grade);
- ecological contact;
- off-site migration check;
- management limits.

The groundwater sample taken from the indoor water supply tap located in the on-Site shop will be compared to GCDWQ 2019.

The limiting exposure pathways and associated applicable exposure pathways are presented in Appendix E and Table E-1.

6.0 Assessment Results

6.1 Soil Conditions

6.1.1 Field Observations

The vapour concentrations encountered during the drilling program were less than the instruments detectable limit (<5 ppm_v) in all of the soil samples collected.

Soil vapour concentrations measured and field observations made during the drilling program are summarized in Table 2 and detailed on the test hole logs (Appendix B).

6.1.2 Soil Laboratory Results

Following the drilling program, a total of 12 soil samples were submitted to ALS Canada Ltd. (ALS) laboratory in Winnipeg, Manitoba. All soil samples were submitted for analysis of BTEX and PHC fractions F1 to F4; 11 samples were submitted for metals and PAHs analysis; nine samples were submitted for VOCs analysis, eight samples were submitted for PCBs analysis; four samples were submitted for EOX analysis; and one samples was submitted for grain size designation. There were no exceedances over the applicable criteria in the samples submitted for analysis.

Soil laboratory results for parameters of PHCs, metals, PAHs, VOCs, PCBs and EOX are presented in Table 3 through Table 8 and on Figure 3 through Figure 7 and Figure 13 (EOX). Copies of the detailed analytical reports are provided in Appendix F.

6.2 Groundwater Conditions

6.2.1 Groundwater Monitoring

During the monitoring event, the water level at monitoring well TH19-01 was deemed insufficient for sampling, as such, a return visit for sampling TH19-01 was scheduled and conducted on 08 January 2020. During this Site visit, a water sample from the indoor water supply tap in the warehouse building located on Site was also collected. Results of the Site monitoring program are summarized in Table 9. Monitoring well construction details are shown on the test hole logs (Appendix B).

The depth to groundwater measured at the Site during the current assessment ranged from 1.84 m bgl (TH19-03) to 4.52 m bgl (TH19-02).

Groundwater elevations suggest that shallow groundwater elevations follow site topography with flow generally to the south, southwest. However, given the low conductivity soils, it is possible that groundwater levels within the monitoring wells had not stabilized at the time of measurement.

6.2.1.1 Well Headspace Vapour Concentrations

The in-well headspace vapour concentration was less than the equipment's detectable limit at all monitoring well locations (<5 ppm_v).

6.2.1.2 Non-Aqueous Phase Liquids

NAPL was not detected in any of the monitoring wells during the 2019 monitoring event.

6.2.2 Groundwater Laboratory Results

6.2.2.1 Groundwater Laboratory Results

A total of eight groundwater samples were submitted for laboratory analysis, including one sample from each of the six groundwater monitoring wells installed at the Site, as well as one blind field duplicate sample and one groundwater sample collected from the warehouse building, representative of the water well.

Samples were submitted for analysis of PHC fractions F1 to F4, VOCs, PAHs, metals, TOX, dioxins and furans. The results of all analysis indicated that the constituent concentrations were below the applicable guidelines for the assessment of the Site. Groundwater laboratory results for parameters of PHCs, metals, PAHs, VOCs, TOX and dioxins and furans are presented in Tables 10 through Table 15. Results are also summarized on Figures 9 through Figure 13 (TOX). Copies of the detailed analytical reports are provided in Appendix F.

Exceedances of aesthetic objectives for drinking water were noted for iron and manganese in the water sample collected from the tap in the warehouse. These iron and manganese concentrations in shallow groundwater are likely indicative of background conditions. Iron and manganese are aesthetic parameters, which relates to the palatability of potable water and the cause of staining on plumbing fixtures and laundry and, as indicated by Health Canada, it is not considered a risk to human health (Health Canada 2017).

6.3 Quality Assurance/Quality Control

6.3.1 Laboratory Accreditation

The Canadian Association Laboratory Accreditation Inc. (CALA) has accredited ALS Environmental in Winnipeg, MB for testing in accordance with the International Standard ISO/IEC 17025:2017.

6.3.2 Data Validation

6.3.2.1 Laboratory QA/QC

The laboratory incorporates various QA/QC procedures to ensure the accuracy of the laboratory results and assess the possibility of false positives attributable to analytical equipment contributions and laboratory control samples. The laboratory QA/QC includes the completion of laboratory blanks, blank

spikes and blank spike recovery. A summary of QA/QC findings is presented in the attached laboratory results.

6.3.2.2 Field QA/QC

One duplicate groundwater sample set was submitted as part of the field program. Relative percent difference (RPD) was calculated for parameters containing detectable concentrations at least five times the laboratory detection limit. The relative percent difference (RPD) approach can be used as a means of assessing the accuracy of the duplicate analytical results. The RPD is calculated for specific parameters using the following equation:

$$\text{Field Duplicate RPD (\%)} = \frac{|C_1 - C_2|}{(C_1 + C_2)/2} \times 100$$

where: RPD = relative percent difference

C1 = first of two observed values from the field duplicate analysis

C2 = second of two observed values from the field duplicate analysis

RPD values can be calculated for parameters that contain detectable concentrations at least five times greater than the laboratory method detection limit.

One duplicate soil sample set and one duplicate groundwater sample set were submitted as part of the field program. Due to low concentrations the RPDs could not be calculated for the soil blind field duplicate.

One duplicate groundwater sample (TH19-03/DUP1) was collected and submitted for analysis. Based on the low concentrations the RPD could not be calculated for the sample. RPDs were calculated for metals which ranged from 15% to 200%. The wide range in concentrations is likely due to sediment entrainment during sample collection.

6.3.2.3 Data Validation Summary

Based on the laboratory analysis, sample collection, sample storage, sample bottles and transportation of the samples to the laboratory, there was no material effect on the quality of the data collected as part of this assessment. The laboratory results for soil and groundwater samples obtained during Wood's investigation are considered to be valid.

7.0 Discussion

The purpose of the Phase II ESA was to further assess the two APECs identified during the Phase I ESA, as well as establish baseline conditions at the Site prior to Tervita's operation at the Site.

7.1 APEC 1 - Historical Fires

Several fires have historically occurred at the Site, generally located on the concrete apron surrounding the warehouse building, but also near former storage areas in the southern portion of the Site. Seven test holes were advanced in the areas where the fires occurred and in downgradient areas where run-off water may have accumulated. TH19-03 was located near a former storage Quonset where a fire occurred, as well as TH19-04 through TH19-09 were drilled in areas near the large concrete apron surrounding the current warehouse building. Soil samples from these test holes indicated generally low-level detections of PAHs in soil samples from test holes TH19-04, TH19-05 and TH19-06 and EOX at TH19-06. However, all concentrations were below applicable assessment criteria. Otherwise no discernable pattern in soil chemical concentrations were noted related to APEC 1.

Chemical analytical results from the groundwater samples collected at the Site indicate that groundwater concentrations are below the applicable groundwater quality guidelines for the Site. Based on the exposure pathways identified for groundwater, no risks to human or environmental health have been identified.

Based on a review of the relative soil groundwater concentrations of potential contaminants of concern, concentrations were noted to be generally higher in the southeast areas of the Site in the areas surrounding the warehouse and associated concrete pads. TH19-01 was positioned in a generally upgradient area of the Site in order to provide a location potentially representative of background conditions. The highest concentrations of PAHs were noted at TH19-04. This test hole and monitoring well was located at the south edge of the large concrete apron, where run-off may accumulate. These elevated concentrations may be indicative of the presence of impacts related to historical fires, however, are not at a concentration that would be considered a concern for future industrial use.

The water well, located 5 m south of the warehouse, is located in the central portion of the apron where the historical fires have occurred. Groundwater samples collected from the water well had concentrations of analytical parameters that were generally less than samples collected from other monitoring wells at the Site. Specifically concentrations of PAHs, and groundwater dioxins and furans were low or less than detection limits, indicating residual impact from historical fires is low and shallow and not in the bedrock aquifer.

The parameters for total extractable organic halides (EOX) for soil and total organic halides (TOX) for groundwater are parameters for describing the total organic halogen compounds present in soil or groundwater. The parameter can be used to screen samples for the presence of a range of substances, including volatile compounds, and persistent organic pollutants, some of which are produced during combustion. Soil and groundwater analysis for these compounds was conducted on samples collected from test holes and monitoring wells near the area of the edge of the apron where the fire occurred as well as a background sample and water well sample. The results indicated the highest (and only detectable) concentrations in soil were at TH19-07, located southwest of the apron. The highest concentration in groundwater was reported at TH19-10, located on the north side of the apron. Detectable concentrations were also reported for groundwater three other locations near the south edge

of the apron (TH19-03, TH19-04, and TH19-07). Concentrations at TH19-01, and the water well were less than detection limits, further supporting the conclusion that residual impact from historical operations and fires is low and shallow and not impacting the bedrock aquifer. TOX as well as dioxins and furans results are presented on Figure 13.

7.2 APEC 2 – On-Site AST

An on-Site AST was observed near the metal clad garage building. One test hole (TH19-02) was advanced in the vicinity of the AST in order to assess soil conditions related to potential petroleum hydrocarbon impacts from the fuel storage. Soil sample results indicate that concentrations of PHC constituents were below detection limits. These results indicate that impacts related to the use of the AST are either not present or limited in extent and do not pose a significant risk for continued use of the Site.

7.3 Baseline Conditions

As noted above, TH19-01 was positioned in a generally upgradient area of the Site in order to provide a location potentially representative of background conditions. With some exceptions, soil and groundwater concentrations of the chemical constituents analyzed were generally lower in this area of the Site. As noted above, the higher concentrations of PHCs, PAHs, and EOX and TOX were noted in the soil and groundwater samples collected from the area south of the warehouse and concrete apron. These concentrations are not considered a human or environmental risk, and do not exceed applicable environmental quality criteria. These concentrations should be utilized for comparison to future soil and groundwater monitoring data collected at the Site in order to determine if changes related to Tervita's operations are occurring at the Site.

8.0 Conclusions and Recommendations

The purpose of the Phase II ESA was to further assess APECs identified at the Site and to collect baseline soil and groundwater data prior to Tervita operations at the Site. Soil and groundwater concentrations do indicate some spatial trends in concentrations of PHCs, PAHs, and EOX/TOX. Soil and groundwater samples collected near to the areas where historical fires occurred, or where run-off would accumulate, indicate relatively higher concentrations in comparison to background (TH19-01). Concentrations of analytical parameters in the groundwater sample collected from the water well were low or less than detection limits, indicating residual impact from historical fires is low and shallow and not in the deeper bedrock aquifer.

Based on the results of the Phase II ESA completed at the Site, there is no evidence to suggest that the Site has been negatively impacted by the historical fire events that took place on-Site to a degree that would represent a potential risk to human health and the environment. The Site is considered to be suitable for continued industrial use.

Based on the results of the current assessment, no further investigation at the Site is warranted at this time. However, if impacts are identified during the scheduled redevelopment of the Site, additional investigation may be required at that time.

As exceedances of the applicable Reporting Standards were not identified, the report is not required to be submitted to MCC for review.

9.0 Project Limitations

The American Society for Testing and Materials Standard of Practice notes that no environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in the connection with a property. Performance of a standardized environmental site assessment protocol is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with the property, given reasonable limits of time and costs. The findings of this investigation are based on the interpretation of a limited number of analytical results pertaining to specific samples. The evaluation and interpretations do not preclude the existence of chemical substances other than those identified herein, or the possibility that contamination levels can vary between the areas of the investigation.

This report is based on, and limited by, the interpretation of data, circumstances, and conditions available at the time of completion of the work as referenced throughout the report. It has been prepared in accordance with generally accepted engineering practices.

10.0 Closure

We trust that the information presented in this report meets your current requirements. Should you have any questions, or concerns, please do not hesitate to contact Wood.

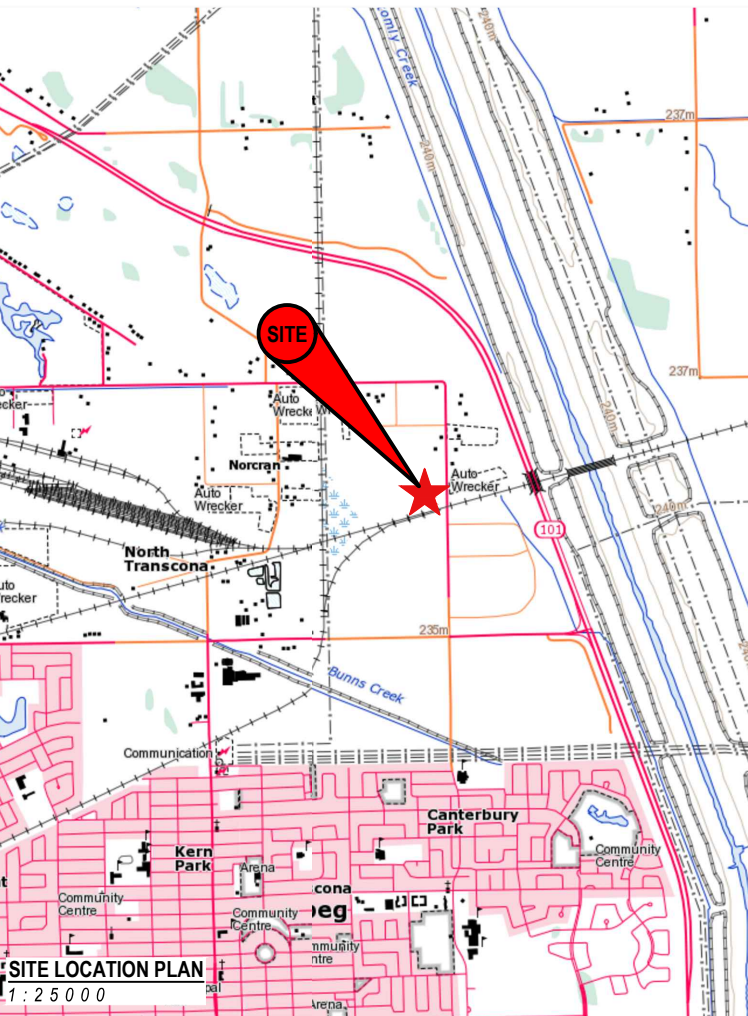
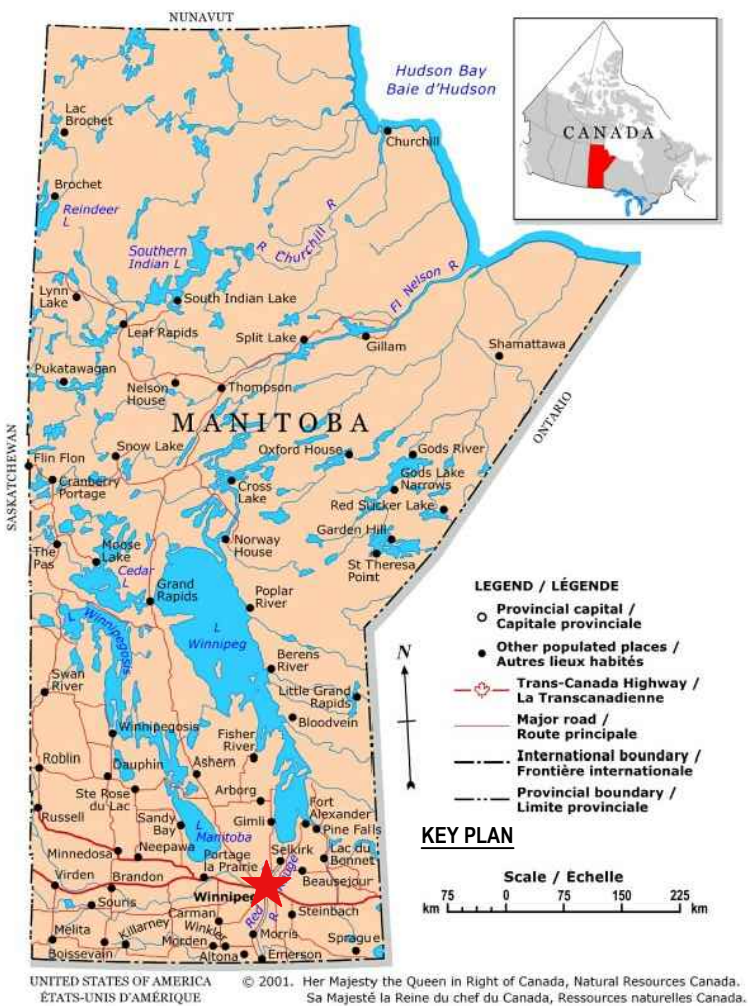
Further general limitations are provided in Appendix G.

11.0 References

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Figures

- Figure 1: Site and Surrounding Land Use Plan
- Figure 2: Test Hole and Monitoring Well Location Plan
- Figure 3: Soil Analytical Results (PHCs)
- Figure 4: Soil Analytical Results (Metals)
- Figure 5: Soil Analytical Results (PAHs)
- Figure 6: Soil Analytical Results (VOCs)
- Figure 7: Soil Analytical Results (PCBs)
- Figure 8: Groundwater Elevations
- Figure 9: Groundwater Analytical Results (PHCs)
- Figure 10: Groundwater Analytical Results (Metals)
- Figure 11: Groundwater Analytical Results (VOCs)
- Figure 12: Groundwater Analytical Results (PAHs)
- Figure 13: Analytical Results – EOX, TOX, Dioxins, Furans



440 DOVERCOURT DRIVE
WINNIPEG, MANITOBA R3Y 1N4
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TERVITA CORPORATION

LEGEND:

APPROXIMATE PROPERTY LINE - - - - -

NOTE:

- SITE FEATURES AND LOCATIONS ARE APPROXIMATE.

- IMAGES FROM AUTODESK IMAGERY AND TOPO MAP.

NO.	REVISION	DATE	BY

PHASE II ENVIRONMENTAL SITE ASSESSMENT

999 REDONDA STREET
RURAL MUNICIPALITY OF SPRINGFIELD
OAKBANK, MANITOBA

SITE AND SURROUNDING LAND USE PLAN

SCALE:	AS SHOWN	FIGURE 1
DATE:	MAY 2020	
DRAWN BY:	MD	
PROJECT NO.:	WX18979	

APPROXIMATE PROPERTY LINE
TEST HOLE
MONITORING WELL
WATER WELL

1

999 REDONDA STREET
RURAL MUNICIPALITY OF SPRINGFIELD
OAKBANK, MANITOBA

FIGURE 2

TERVITA CORPORATION

LEGEND:

APPROXIMATE PROPERTY LINE

TEST HOLE

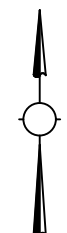
MONITORING WELL

WATER WELL

BELOW CRITERIA

ABOVE CRITERIA

NOTE:
.SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
.IMAGES FROM AUTODESK IMAGERY.



NO.	REVISION	DATE	BY

PHASE II ENVIRONMENTAL SITE ASSESSMENT

999 REDONDA STREET
RURAL MUNICIPALITY OF SPRINGFIELD
OAKBANK, MANITOBA

SOIL ANALYTICAL RESULTS - PHCs

SCALE:

DATE:

DRAWN BY:

PROJECT NO.:

AS SHOWN

MAY 2020

MD

WX18979

FIGURE 3





TERVITA CORPORATION

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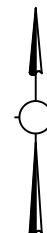
APPROXIMATE PROPERTY LINE

TEST HOLE

MONITORING WELL

BELOW CRITERIA

ABOVE CRITERIA

NOTE:
.SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
.IMAGES FROM AUTODESK IMAGERY.

NO.	REVISION	DATE	BY

PHASE II ENVIRONMENTAL SITE ASSESSMENT

999 REDONDA STREET
RURAL MUNICIPALITY OF SPRINGFIELD
OAKBANK, MANITOBA

SOIL ANALYTICAL RESULTS - PAHs

SCALE: AS SHOWN

DATE: MAY 2020

DRAWN BY: MD

PROJECT NO.: WX18979

FIGURE 5

TH19-01		
Depth	(m)	0.8
Acenaphthene	(mg/kg)	<0.0050
Acenaphthylene	(mg/kg)	<0.0050
Anthracene	(mg/kg)	<0.0040
Benzo(a)anthracene	(mg/kg)	<0.010
Benzo(a)pyrene	(mg/kg)	<0.010
Benzo[b+j]fluoranthene	(mg/kg)	<0.010
Benzo(g.h.i)perylene	(mg/kg)	<0.010
Benzo(k)fluoranthene	(mg/kg)	<0.010
Chrysene	(mg/kg)	<0.010
Dibenzo(a.h)anthracene	(mg/kg)	<0.0050
Fluoranthene	(mg/kg)	<0.010
Fluorene	(mg/kg)	<0.010
Indeno(1.2.3-cd)pyrene	(mg/kg)	<0.010
2-Methylnaphthalene	(mg/kg)	<0.010
Naphthalene	(mg/kg)	<0.010
Phenanthrene	(mg/kg)	<0.010
Pyrene	(mg/kg)	<0.010
B[a]P TPE	(mg/kg)	<0.020

TH19-03		
Depth	(m)	0.8
Acenaphthene	(mg/kg)	<0.0050
Acenaphthylene	(mg/kg)	<0.0050
Anthracene	(mg/kg)	<0.0040
Benzo(a)anthracene	(mg/kg)	<0.010
Benzo(a)pyrene	(mg/kg)	<0.010
Benzo[b+j]fluoranthene	(mg/kg)	<0.010
Benzo(g.h.i)perylene	(mg/kg)	<0.010
Benzo(k)fluoranthene	(mg/kg)	<0.010
Chrysene	(mg/kg)	<0.010
Dibenzo(a.h)anthracene	(mg/kg)	<0.0050
Fluoranthene	(mg/kg)	<0.010
Fluorene	(mg/kg)	<0.010
Indeno(1.2.3-cd)pyrene	(mg/kg)	<0.010
2-Methylnaphthalene	(mg/kg)	<0.010
Naphthalene	(mg/kg)	<0.010
Phenanthrene	(mg/kg)	<0.010
Pyrene	(mg/kg)	<0.010
B[a]P TPE	(mg/kg)	<0.020

TH19-04		
Depth	(m)	0.8
Acenaphthene	(mg/kg)	<0.0050
Acenaphthylene	(mg/kg)	<0.0050
Anthracene	(mg/kg)	0.0041
Benzo(a)anthracene	(mg/kg)	<0.10
Benzo(a)pyrene	(mg/kg)	<0.10
Benzo[b+j]fluoranthene	(mg/kg)	0.12
Benzo(g.h.i)perylene	(mg/kg)	0.13
Benzo(k)fluoranthene	(mg/kg)	<0.10
Chrysene	(mg/kg)	0.3
Dibenzo(a.h)anthracene	(mg/kg)	<0.050
Fluoranthene	(mg/kg)	0.032
Fluorene	(mg/kg)	<0.010
Indeno(1.2.3-cd)pyrene	(mg/kg)	<0.10
2-Methylnaphthalene	(mg/kg)	0.021
Naphthalene	(mg/kg)	0.014
Phenanthrene	(mg/kg)	0.02
Pyrene	(mg/kg)	0.091
B[a]P TPE	(mg/kg)	0.106

TH19-05		
Depth	(m)	0.8
Acenaphthene	(mg/kg)	0.0077
Acenaphthylene	(mg/kg)	0.11
Anthracene	(mg/kg)	0.0984
Benzo(a)anthracene	(mg/kg)	0.506
Benzo(a)pyrene	(mg/kg)	0.376
Benzo[b+j]fluoranthene	(mg/kg)	0.81
Benzo(g.h.i)perylene	(mg/kg)	0.302
Benzo(k)fluoranthene	(mg/kg)	0.307
Chrysene	(mg/kg)	0.646
Dibenzo(a.h)anthracene	(mg/kg)	0.0993
Fluoranthene	(mg/kg)	0.66
Fluorene	(mg/kg)	<0.010
Indeno(1.2.3-cd)pyrene	(mg/kg)	0.322
2-Methylnaphthalene	(mg/kg)	0.015
Naphthalene	(mg/kg)	0.015
Phenanthrene	(mg/kg)	0.071
Pyrene	(mg/kg)	0.85
B[a]P TPE	(mg/kg)	0.68

TH19-06		
Depth	(m)	0.8
Acenaphthene	(mg/kg)	<0.0050
Acenaphthylene	(mg/kg)	<0.0050
Anthracene	(mg/kg)	0.0098
Benzo(a)anthracene	(mg/kg)	0.03
Benzo(a)pyrene	(mg/kg)	0.022
Benzo[b+j]fluoranthene	(mg/kg)	0.038
Benzo(g.h.i)perylene	(mg/kg)	0.021
Benzo(k)fluoranthene	(mg/kg)	0.016
Chrysene	(mg/kg)	0.041
Dibenzo(a.h)anthracene	(mg/kg)	<0.0050
Fluoranthene	(mg/kg)	0.058
Fluorene	(mg/kg)	<0.010
Indeno(1.2.3-cd)pyrene	(mg/kg)	0.021
2-Methylnaphthalene	(mg/kg)	<0.010
Naphthalene	(mg/kg)	<0.010
Phenanthrene	(mg/kg)	0.032
Pyrene	(mg/kg)	0.057
B[a]P TPE	(mg/kg)	0.035

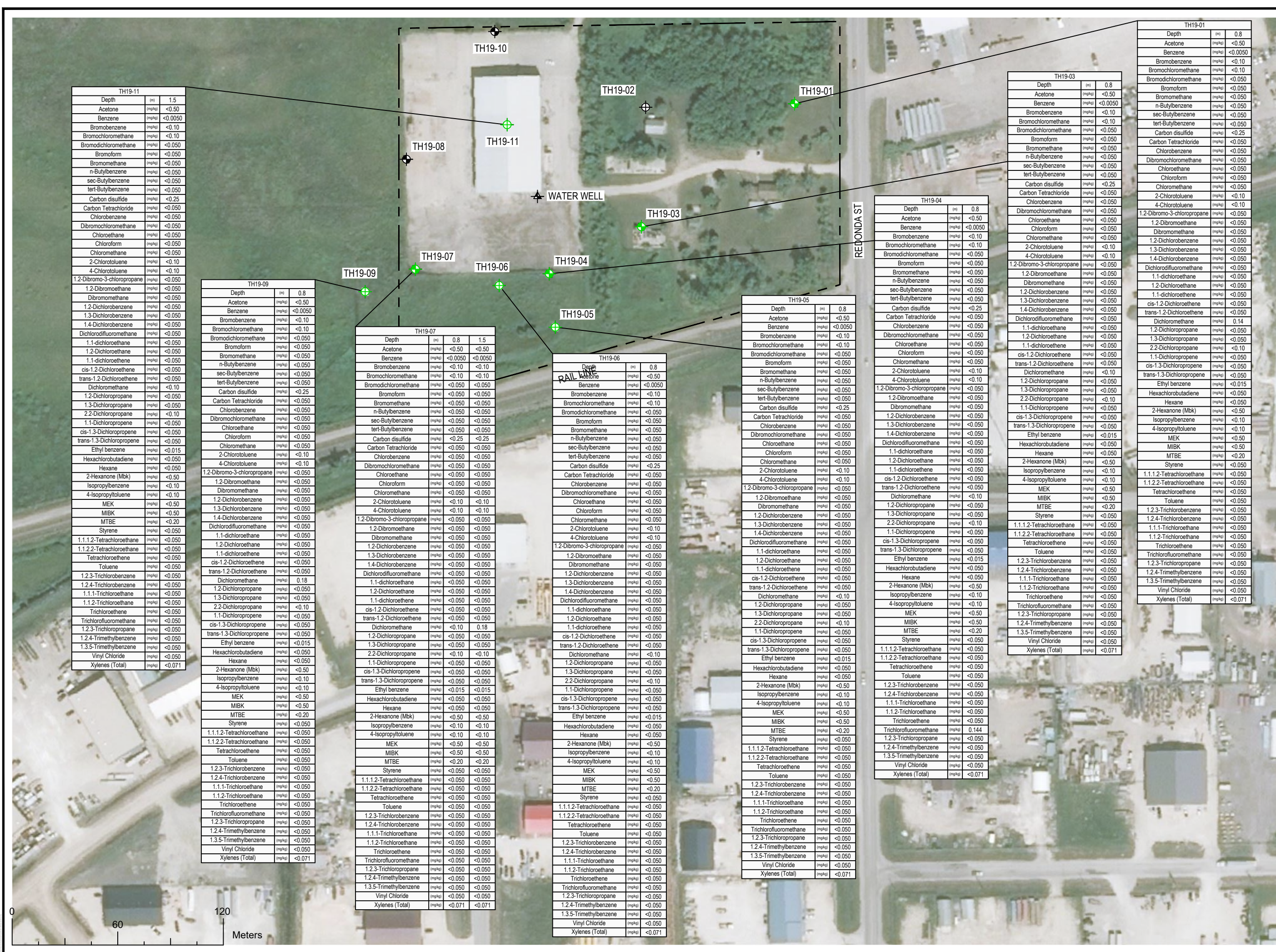
TH19-07			
Depth	(m)	0.8	1.5
Acenaphthene	(mg/kg)	<0.0050	<0.0050
Acenaphthylene	(mg/kg)	<0.0050	<0.0050
Anthracene	(mg/kg)	<0.0040	<0.0040
Benzo(a)anthracene	(mg/kg)	<0.010	<0.010
Benzo(a)pyrene	(mg/kg)	<0.010	<0.010
Benzo[b+j]fluoranthene	(mg/kg)	0.015	<0.010
Benzo(g.h.i)perylene	(mg/kg)	<0.010	<0.010
Benzo(k)fluoranthene	(mg/kg)	<0.010	<0.010
Chrysene	(mg/kg)	<0.010	<0.010
Dibenzo(a.h)anthracene	(mg/kg)	<0.0050	<0.0050
Fluoranthene	(mg/kg)	<0.010	<0.010
Fluorene	(mg/kg)	<0.010	<0.010
Indeno(1.2.3-cd)pyrene	(mg/kg)	<0.010	<0.010
2-Methylnaphthalene	(mg/kg)	<0.010	<0.010
Naphthalene	(mg/kg)	<0.010	<0.010
Phenanthrene	(mg/kg)	<0.010	<0.010
Pyrene	(mg/kg)	0.018	<0.010
B[a]P TPE	(mg/kg)	<0.020	<0.020

TH19-09		
Depth	(m)	0.8
Acenaphthene	(mg/kg)	<0.0050
Acenaphthylene	(mg/kg)	<0.0050
Anthracene	(mg/kg)	<0.0040
Benzo(a)anthracene	(mg/kg)	<0.010
Benzo(a)pyrene	(mg/kg)	<0.010
Benzo[b+j]fluoranthene	(mg/kg)	<0.010
Benzo(g.h.i)perylene	(mg/kg)	<0.010
Benzo(k)fluoranthene	(mg/kg)	<0.010
Chrysene	(mg/kg)	<0.010
Dibenzo(a.h)anthracene	(mg/kg)	<0.0050
Fluoranthene	(mg/kg)	<0.010
Fluorene	(mg/kg)	<0.010
Indeno(1.2.3-cd)pyrene	(mg/kg)	<0.010
2-Methylnaphthalene	(mg/kg)	<0.010
Naphthalene	(mg/kg)	<0.010
Phenanthrene	(mg/kg)	<0.010
Pyrene	(mg/kg)	<0.010
B[a]P TPE	(mg/kg)	<0.020

TH19-08		
Depth	(m)	0.8
Acenaphthene	(mg/kg)	<0.0050
Acenaphthylene	(mg/kg)	<0.0050
Anthracene	(mg/kg)	<0.0040
Benzo(a)anthracene	(mg/kg)	<0.010
Benzo(a)pyrene	(mg/kg)	<0.010
Benzo[b+j]fluoranthene	(mg/kg)	<0.010
Benzo(g.h.i)perylene	(mg/kg)	<0.010
Benzo(k)fluoranthene	(mg/kg)	<0.010
Chrysene	(mg/kg)	<0.010
Dibenzo(a.h)anthracene	(mg/kg)	<0.0050
Fluoranthene	(mg/kg)	<0.010
Fluorene	(mg/kg)	<0.010
Indeno(1.2.3-cd)pyrene	(mg/kg)	<0.010
2-Methylnaphthalene	(mg/kg)	<0.010
Naphthalene	(mg/kg)	<0.010
Phenanthrene	(mg/kg)	<0.010
Pyrene	(mg/kg)	<0.010
B[a]P TPE	(mg/kg)	<0.020

TH19-10		
Depth	(m)	0.8
Acenaphthene	(mg/kg)	<0.0050
Acenaphthylene	(mg/kg)	<0.0050
Anthracene	(mg/kg)	<0.0040
Benzo(a)anthracene	(mg/kg)	<0.010
Benzo(a)pyrene	(mg/kg)	<0.010
Benzo[b+j]fluoranthene	(mg/kg)	<0.010
Benzo(g.h.i)perylene	(mg/kg)	<0.010
Benzo(k)fluoranthene	(mg/kg)	<0.010
Chrysene	(mg/kg)	<0.010
Dibenzo(a.h)anthracene	(mg/kg)	<0.0050
Fluoranthene	(mg/kg)	<0.010
Fluorene	(mg/kg)	<0.010
Indeno(1.2.3-cd)pyrene	(mg/kg)	<0.010
2-Methylnaphthalene	(mg/kg)	<0.010
Naphthalene	(mg/kg)	<0.010
Phenanthrene	(mg/kg)	<0.010
Pyrene	(mg/kg)	<0.010
B[a]P TPE	(mg/kg)	<0.020

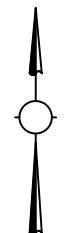
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Meters



TERVITA CORPORATION

LEGEND:
APPROXIMATE PROPERTY LINE 
TEST HOLE 
MONITORING WELL 
WATER WELL 

NOTE:
- SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
- IMAGES FROM AUTODESK IMAGERY.
- NO GUIDELINES.



NO.	REVISION	DATE	BY

PHASE II ENVIRONMENTAL SITE ASSESSMENT

999 REDONDA STREET
RURAL MUNICIPALITY OF SPRINGFIELD
OAKBANK, MANITOBA

SOIL ANALYTICAL RESULTS - PCBs

SCALE:	AS SHOWN	FIGURE 7
DATE:	MAY 2020	
DRAWN BY:	MD	
PROJECT NO.:	WX18979	



wood.

440 DOVERCOURT DRIVE
WINNIPEG, MANITOBA R3Y 1N4
PHONE: 204.488.2997 FAX:204.489.8261

TERVITA CORPORATION

LEGEND:

APPROXIMATE PROPERTY LINE

TEST HOLE

MONITORING WELL

WATER WELL

GROUNDWATER ELEVATIONS

(230.32m)

NOTE:

- SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
- IMAGES FROM AUTODESK IMAGERY.

NO.	REVISION	DATE	BY

PHASE II ENVIRONMENTAL SITE ASSESSMENT

999 REDONDA STREET
RURAL MUNICIPALITY OF SPRINGFIELD
OAKBANK, MANITOBA

GROUNDWATER ELEVATIONS PLAN

SCALE:

DATE:

DRAWN BY:

PROJECT NO.:

AS SHOWN

MAY 2020

MD

WX18979

FIGURE 8

TERVITA CORPORATION

LEGEND:

APPROXIMATE PROPERTY LINE

TEST HOLE

MONITORING WELL

WATER WELL

BELOW CRITERIA

ABOVE CRITERIA

⊕

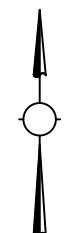
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★

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NOTE:
_SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
_IMAGES FROM AUTODESK IMAGERY.



NO.	REVISION	DATE	BY

PHASE II ENVIRONMENTAL SITE ASSESSMENT

999 REDONDA STREET
RURAL MUNICIPALITY OF SPRINGFIELD
OAKBANK, MANITOBA

GROUNDWATER ANALYTICAL
RESULTS - PHCs

SCALE:

DATE:

DRAWN BY:

PROJECT NO.:

AS SHOWN

MAY 2020

MD

WX18979

FIGURE 9





440 DOVERCOURT DRIVE
WINNIPEG, MANITOBA R3Y 1N4
PHONE: 204.488.2997 FAX:204.489.8261

TERVITA CORPORATION

LEGEND:

APPROXIMATE PROPERTY LINE

TEST HOLE

MONITORING WELL

WATER WELL

NOTE:

.SITE FEATURES AND LOCATIONS ARE APPROXIMATE.

.IMAGES FROM AUTODESK IMAGERY.

.NO AVAILABLE GUIDELINES.

NO.	REVISION	DATE	BY

PHASE II ENVIRONMENTAL SITE ASSESSMENT

999 REDONDA STREET
RURAL MUNICIPALITY OF SPRINGFIELD
OAKBANK, MANITOBA

GROUNDWATER ANALYTICAL
RESULTS - METALS

SCALE:	AS SHOWN	FIGURE 10
DATE:	MAY 2020	
DRAWN BY:	MD	
PROJECT NO.:	WX18979	

TH19-10		
Acenaphthene	(mg/L)	<0.000020
Acenaphthylene	(mg/L)	<0.000020
Anthracene	(mg/L)	<0.000010
Benzo(a)anthracene	(mg/L)	<0.000010
Benzo(a)pyrene	(mg/L)	<0.0000050
Benzo[b+j]fluoranthene	(mg/L)	<0.000010
Benzo(g,h,i)perylene	(mg/L)	<0.000020
Benzo(k)fluoranthene	(mg/L)	<0.000010
Chrysene	(mg/L)	<0.000020
Dibenzo(a,h)anthracene	(mg/L)	<0.0000050
Fluoranthene	(mg/L)	<0.000020
Fluorene	(mg/L)	<0.000020
Indeno(1,2,3-cd)pyrene	(mg/L)	<0.000010
2-Methylnaphthalene	(mg/L)	<0.000020
Naphthalene	(mg/L)	<0.000050
Phenanthrene	(mg/L)	<0.000050
Pyrene	(mg/L)	<0.000010
B[a]P TPE	(mg/L)	<0.000030

TH19-08		
Acenaphthene	(mg/L)	<0.000060
Acenaphthylene	(mg/L)	<0.000060
Anthracene	(mg/L)	<0.000030
Benzo(a)anthracene	(mg/L)	<0.000030
Benzo(a)pyrene	(mg/L)	<0.000015
Benzo[b+j]fluoranthene	(mg/L)	<0.000030
Benzo(g,h,i)perylene	(mg/L)	<0.000060
Benzo(k)fluoranthene	(mg/L)	<0.000030
Chrysene	(mg/L)	<0.000060
Dibenzo(a,h)anthracene	(mg/L)	<0.000015
Fluoranthene	(mg/L)	<0.000060
Fluorene	(mg/L)	<0.000060
Indeno(1,2,3-cd)pyrene	(mg/L)	<0.000060
2-Methylnaphthalene	(mg/L)	<0.000060
Naphthalene	(mg/L)	<0.00015
Phenanthrene	(mg/L)	<0.00015
Pyrene	(mg/L)	<0.000030
B[a]P TPE	(mg/L)	<0.000030

TH19-07		
Acenaphthene	(mg/L)	<0.000020
Acenaphthylene	(mg/L)	<0.000020
Anthracene	(mg/L)	<0.000010
Benzo(a)anthracene	(mg/L)	<0.000010
Benzo(a)pyrene	(mg/L)	0.0000066
Benzo[b+j]fluoranthene	(mg/L)	<0.000010
Benzo(g,h,i)perylene	(mg/L)	<0.000020
Benzo(k)fluoranthene	(mg/L)	<0.000010
Chrysene	(mg/L)	<0.000020
Dibenzo(a,h)anthracene	(mg/L)	<0.0000050
Fluoranthene	(mg/L)	<0.000020
Fluorene	(mg/L)	<0.000020
Indeno(1,2,3-cd)pyrene	(mg/L)	<0.000010
2-Methylnaphthalene	(mg/L)	<0.000020
Naphthalene	(mg/L)	<0.000050
Phenanthrene	(mg/L)	<0.000050
Pyrene	(mg/L)	0.000022
B[a]P TPE	(mg/L)	<0.000030

TAP (WATER WELL)		
Acenaphthene	(mg/L)	<0.000020
Acenaphthylene	(mg/L)	<0.000020
Anthracene	(mg/L)	<0.000010
Benzo(a)anthracene	(mg/L)	<0.000010
Benzo(a)pyrene	(mg/L)	<0.0000050
Benzo[b+j]fluoranthene	(mg/L)	<0.000010
Benzo(g,h,i)perylene	(mg/L)	<0.000020
Benzo(k)fluoranthene	(mg/L)	<0.000010
Chrysene	(mg/L)	<0.000020
Dibenzo(a,h)anthracene	(mg/L)	<0.0000050
Fluoranthene	(mg/L)	<0.000020
Fluorene	(mg/L)	<0.000020
Indeno(1,2,3-cd)pyrene	(mg/L)	<0.000010
2-Methylnaphthalene	(mg/L)	<0.000020
Naphthalene	(mg/L)	<0.000050
Phenanthrene	(mg/L)	<0.000050
Pyrene	(mg/L)	<0.000010
B[a]P TPE	(mg/L)	<0.000030

TH19-01		
Acenaphthene	(mg/L)	<0.000020
Acenaphthylene	(mg/L)	<0.000020
Anthracene	(mg/L)	<0.000010
Benzo(a)anthracene	(mg/L)	<0.000010
Benzo(a)pyrene	(mg/L)	<0.0000050
Benzo[b+j]fluoranthene	(mg/L)	<0.000010
Benzo(g,h,i)perylene	(mg/L)	<0.000020
Benzo(k)fluoranthene	(mg/L)	<0.000010
Chrysene	(mg/L)	<0.000020
Dibenzo(a,h)anthracene	(mg/L)	<0.0000050
Fluoranthene	(mg/L)	<0.000020
Fluorene	(mg/L)	<0.000020
Indeno(1,2,3-cd)pyrene	(mg/L)	<0.000010
2-Methylnaphthalene	(mg/L)	<0.000020
Naphthalene	(mg/L)	<0.000050
Phenanthrene	(mg/L)	<0.000050
Pyrene	(mg/L)	<0.000010
B[a]P TPE	(mg/L)	<0.000030

TH19-03			DUP
Acenaphthene	(mg/L)	<0.000020	<0.000020
Acenaphthylene	(mg/L)	<0.000020	<0.000020
Anthracene	(mg/L)	<0.000010	<0.000010
Benzo(a)anthracene	(mg/L)	<0.000010	<0.000010
Benzo(a)pyrene	(mg/L)	<0.0000050	<0.0000050
Benzo[b+j]fluoranthene	(mg/L)	<0.000010	<0.000010
Benzo(g,h,i)perylene	(mg/L)	<0.000020	<0.000020
Benzo(k)fluoranthene	(mg/L)	<0.000010	<0.000010
Chrysene	(mg/L)	<0.000020	<0.000020
Dibenzo(a,h)anthracene	(mg/L)	<0.0000050	<0.0000050
Fluoranthene	(mg/L)	<0.000020	<0.000020
Fluorene	(mg/L)	<0.000020	<0.000020
Indeno(1,2,3-cd)pyrene	(mg/L)	<0.000010	<0.000010
2-Methylnaphthalene	(mg/L)	<0.000020	<0.000020
Naphthalene	(mg/L)	<0.000050	<0.000050
Phenanthrene	(mg/L)	<0.000050	<0.000050
Pyrene	(mg/L)	<0.000010	<0.000010
B[a]P TPE	(mg/L)	<0.000030	<0.000030

TH19-04		
Acenaphthene	(mg/L)	<0.000020
Acenaphthylene	(mg/L)	<0.000020
Anthracene	(mg/L)	<0.000010
Benzo(a)anthracene	(mg/L)	<0.000010
Benzo(a)pyrene	(mg/L)	0.0000084
Benzo[b+j]fluoranthene	(mg/L)	0.000014
Benzo(g,h,i)perylene	(mg/L)	<0.000020
Benzo(k)fluoranthene	(mg/L)	<0.000010
Chrysene	(mg/L)	<0.000020
Dibenzo(a,h)anthracene	(mg/L)	<0.0000050
Fluoranthene	(mg/L)	<0.000020
Fluorene	(mg/L)	<0.000020
Indeno(1,2,3-cd)pyrene	(mg/L)	<0.000010
2-Methylnaphthalene	(mg/L)	<0.000020
Naphthalene	(mg/L)	<0.000050
Phenanthrene	(mg/L)	<0.000050
Pyrene	(mg/L)	0.000018
B[a]P TPE	(mg/L)	<0.000030

TERVITA CORPORATION

LEGEND:

APPROXIMATE PROPERTY LINE

TEST HOLE

MONITORING WELL

WATER WELL

BELOW CRITERIA

ABOVE CRITERIA

⊕

⊕

⊕

⬆

⬆

NOTE:
.SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
.IMAGES FROM AUTODESK IMAGERY.



NO.	REVISION	DATE	BY

PHASE II ENVIRONMENTAL SITE ASSESSMENT

999 REDONDA STREET
RURAL MUNICIPALITY OF SPRINGFIELD
OAKBANK, MANITOBA

GROUNDWATER ANALYTICAL
RESULTS - PAHs

SCALE:

DATE:

DRAWN BY:

PROJECT NO.:

AS SHOWN

MAY 2020

MD

WX18979

FIGURE 12

TERVITA CORPORATION

LEGEND:

APPROXIMATE PROPERTY LINE	---
TEST HOLE	⊕
MONITORING WELL	⊕
WATER WELL	★

*ND - NON DETECT

NOTE:
.SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
.IMAGES FROM AUTODESK IMAGERY.



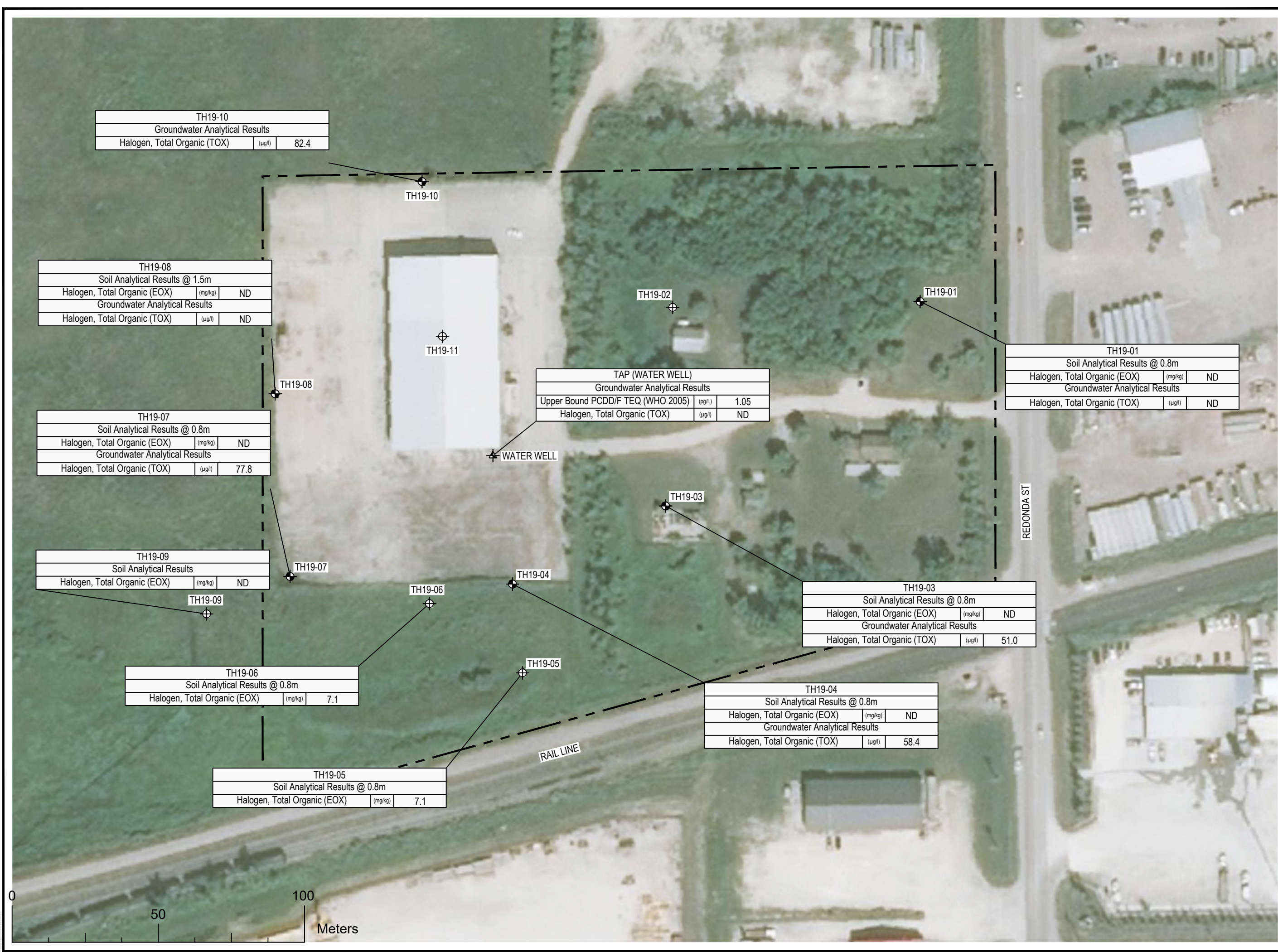
NO.	REVISION	DATE	BY

PHASE II ENVIRONMENTAL SITE ASSESSMENT

999 REDONDA STREET
RURAL MUNICIPALITY OF SPRINGFIELD
OAKBANK, MANITOBA

ANALYTICAL RESULTS -
EOX,TOX,DIOXINS, FURANS

SCALE:	AS SHOWN	FIGURE 13
DATE:	MAY 2020	
DRAWN BY:	MD	
PROJECT NO.:	WX18979	



Tables

Table 1: Site and Surrounding Land Use

Table 2: Field Observations and Soil Vapour Testing

Table 3: Soil Analytical Results – PHCs

Table 4: Soil Analytical Results – Metals

Table 5: Soil Analytical Results – PAHs

Table 6: Soil Analytical Results – VOCs

Table 7: Soil Analytical Results – PCBs

Table 8: Soil Analytical Results – EOX

Table 9: Groundwater Monitoring Well Data

Table 10: Groundwater Analytical Results – PHCs

Table 11: Groundwater Analytical Results - Metals

Table 12: Groundwater Analytical Results - PAHs

Table 13: Groundwater Analytical Results - VOCs

Table 14: Groundwater Analytical Results – Dioxins and Furans

Table 15: Groundwater Analytical Results – TOX

TABLE 1: SITE AND SURROUNDING LAND USE

Direction	Land Use	Approx. Distance (m)
Site	House/office, a warehouse building, and two storage sheds	-
North	Commercial storage yard	Adjacent
East	Redonda Street followed by commercial/industrial property	Adjacent/ 30
South	Rail line followed by commercial property	Adjacent/ 30
West	Vacant, undeveloped grassland	Adjacent

Notes:

- m - metres

TABLE 2: FIELD OBSERVATIONS

Sample Depth	Sample Number	Test Hole										
		TH19-01	TH19-02	TH19-03	TH19-04	TH19-05	TH19-06	TH19-07	TH19-08	TH19-09	TH19-10	TH19-11
		16-Dec-20	16-Dec-20	03-Dec-19	03-Dec-19	16-Dec-20	16-Dec-20	03-Dec-19	03-Dec-19	16-Dec-20	03-Dec-19	20-Dec-19
0.6 - 0.8	1	<5	<5	<5	<5	45	<5	<5	<5	<5	<5	<5
1.4 - 1.5	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2.1 - 2.3	3	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2.9 - 3.0	4	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
3.7 - 3.8	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4.4 - 4.6	6	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

Notes:

- All vapours in parts per million (ppm)
- **BOLD** indicates staining

Sample submitted for analytical chemistry; no exceedances noted

Sample submitted for analytical chemistry; exceedances noted

TABLE 3: SOIL ANALYTICAL RESULTS - PHCs

Test Hole	Sample ID	Depth (m)	Date (dd-mmm-yy)	Soil Vapour Concentration (ppm _v)	Grain Size (% > 75 µm)	Concentration (mg/kg)							
						Benzene	Toluene	Ethylbenzene	Xylenes	PHC Fraction F1	PHC Fraction F2	PHC Fraction F3	PHC Fraction F4
TH19-01	TH19-01 @ 0.8	0.8	16-Dec-19	<5	2.0	<0.0050	<0.050	<0.015	<0.071	<10	<25	<50	<50
TH19-02	TH19-02 @ 0.8	0.8	16-Dec-19	<5	---	<0.0050	<0.050	<0.015	<0.071	<10	<25	<50	<50
TH19-03	TH19-03 @ 0.8	0.8	03-Dec-19	<5	---	<0.0050	<0.050	<0.015	<0.071	<10	<25	<50	<50
TH19-04	TH19-04 @ 0.8	0.8	03-Dec-19	<5	---	<0.0050	<0.050	<0.015	<0.071	<10	<250	2260	2500
TH19-05	TH19-05 @ 0.8	0.8	16-Dec-19	<5	---	<0.0050	<0.050	<0.015	<0.071	<10	<25	<50	<50
TH19-06	TH19-06 @ 0.8	0.8	03-Dec-19	<5	---	<0.0050	<0.050	<0.015	<0.071	<10	<25	<50	<50
TH19-07	TH19-07 @ 0.8	0.8	03-Dec-19	<5	---	<0.0050	<0.050	<0.015	<0.071	<10	<130	480	500
	TH19-07 @ 1.5	1.5	03-Dec-19	<5	---	<0.0050	<0.050	<0.015	<0.071	<10	<25	<50	<50
TH19-08	TH19-08 @ 0.8	0.8	03-Dec-19	<5	---	<0.0050	<0.050	<0.015	<0.071	<10	<25	<50	52
TH19-09	TH19-09 @ 0.8	0.8	16-Dec-19	<5	---	<0.0050	<0.050	<0.015	<0.071	<10	<25	<50	<50
TH19-10	TH19-10 @ 0.8	0.8	03-Dec-19	<5	---	<0.0050	<0.050	<0.015	<0.071	<10	<25	<50	<50
TH19-11	TH19-11 @ 1.5	1.5	16-Dec-19	<5	---	<0.0050	<0.050	<0.015	<0.071	<10	<25	<50	<50
Applicable Industrial Soil Guidelines - CCME ¹				EQG - Surface Soil (≤1.5 m)		2.8	330	430	230	NG	NG	NG	NG
				CWS - Surface Soil (≤1.5 m)		NG	NG	NG	NG	320	260	2500	6600
				EQG - Subsoil (>1.5)		2.9	13000	6700	1600	NG	NG	NG	NG
				CWS - Subsoil (>1.5)		NG	NG	NG	NG	800	1,000	5000	10000

Notes:

- mg/kg - concentration in milligrams per kilogram
- m - metres
- ppm_v - parts per million organic vapour
- PHC Fraction F1 - volatile petroleum hydrocarbons (C₆ – C₁₀), less BTEX
- PHC Fraction F2 - extractable petroleum hydrocarbons (C₁₀ – C₁₆)
- PHC Fraction F3 - extractable petroleum hydrocarbons (C₁₆ – C₃₄)
- PHC Fraction F4 - extractable petroleum hydrocarbons (C₃₄ – C₅₀)
- NM - Not Measured
- See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Canada Ltd.
- CCME EQG Criteria – industrial land use criteria as outlined in the Canadian Council of the Ministers of the Environment (CCME) "Canadian Environmental Quality Guidelines", 1999 (updates to 2019). The benzene concentration is based on one in one hundred thousand (10⁻⁵) incremental risk of cancer. See Appendix G.
- CCME CWS PHC Criteria - industrial land use criteria as outlined in the Canadian Council of the Ministers of the Environment (CCME) "Canada-Wide Standards for Hydrocarbons in Soil", 2001, revised 2008. See Appendix G.

BOLD exceeds applicable soil guideline

- ND - not detected
- NG - no guideline
- -- - not analyzed

¹ As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR) . In this instance the reporting standards are equal to the guidelines and as such are not represented as a separate line.

TABLE 4: SOIL ANALYTICAL RESULTS - METALS

Parameter	Units	TH19-01 @ 0.8M	TH19-03 @ 0.8M	TH19-04 @ 0.8M	TH19-05 @ 0.8M	TH19-06 @ 0.8M	TH19-07 @ 0.8M	TH19-07 @ 1.5M	TH19-08 @ 0.8M	TH19-09 @ 0.8M	TH19-10 @ 0.8M	TH19-11 @ 1.5M	Assessment Criteria
Antimony	mg/kg (ppm)	0.31	0.5	1.98	0.43	0.42	<0.10	0.52	0.46	0.52	0.68	0.32	40
Aluminum	mg/kg (ppm)	31500	27200	1400	26400	22900	971	13800	15700	26900	23900	23600	NG
Arsenic	mg/kg (ppm)	9.34	9.15	1.24	8.46	7.24	0.61	9.03	5.52	9.35	5.22	7.04	12
Barium	mg/kg (ppm)	195	196	69.8	193	212	7.36	172	311	199	176	194	2000
Beryllium	mg/kg (ppm)	1.34	1.03	<0.10	1.12	0.89	<0.10	0.66	0.82	1.34	1.04	0.98	8
Cadmium	mg/kg (ppm)	0.164	0.365	0.552	0.497	0.318	0.02	0.286	0.213	0.077	0.441	0.359	22
Calcium	mg/kg (ppm)	7110	63800	147000	15800	65600	200000	74900	98200	9990	66000	58500	NG
Chromium	mg/kg (ppm)	53.3	43.3	7.64	44.7	38.7	2.39	20.9	26.6	48	38.3	41.1	87
Cobalt	mg/kg (ppm)	16	12.3	1.72	13.7	12	1.04	8.22	9.89	15.3	11.7	12.3	300
Copper	mg/kg (ppm)	31.8	29.9	28.9	35.4	27.9	2.83	21.3	23	33.1	34.9	28	91
Iron	mg/kg (ppm)	35600	28100	5160	28300	25500	2390	20900	20100	32800	25000	27600	NG
Lead	mg/kg (ppm)	16	13.2	40.3	21.9	18.7	1.48	10.1	11	16	44.8	12.2	600
Magnesium	mg/kg (ppm)	15600	26900	86100	15000	27800	128000	28300	59300	14200	44500	25700	NG
Manganese	mg/kg (ppm)	848	630	155	743	581	142	580	430	496	748	807	NG
Molybdenum	mg/kg (ppm)	0.32	0.54	1.7	0.55	0.49	0.24	0.8	1.08	0.44	0.42	0.25	40
Nickel	mg/kg (ppm)	48.2	35.4	19.1	38.1	34.6	2.21	24.2	27.4	46.1	32.8	36.6	89
Phosphorus	mg/kg (ppm)	542	610	132	954	537	56	578	398	511	450	516	NG
Potassium	mg/kg (ppm)	5850	4760	370	6480	4060	350	1530	2840	5430	4010	4160	NG
Selenium	mg/kg (ppm)	<0.20	<0.20	<0.20	0.47	0.25	<0.20	<0.20	0.36	<0.20	<0.20	0.21	2.9
Sodium	mg/kg (ppm)	719	148	59	626	279	61	493	344	580	327	397	NG
Silver	mg/kg (ppm)	0.13	0.12	0.1	0.14	0.12	<0.10	0.11	<0.10	0.15	0.12	0.11	40
Thallium	mg/kg (ppm)	0.429	0.3	<0.050	0.34	0.285	<0.050	0.232	0.214	0.405	0.258	0.33	3.6
Tin	mg/kg (ppm)	<2.0	<2.0	2.7	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.1	<2.0	300
Vanadium	mg/kg (ppm)	86	78.1	9.55	72.8	65.6	5.14	40	43.9	76.9	59.2	66.7	130
Uranium	mg/kg (ppm)	3.54	0.999	0.263	1.61	1.3	0.236	1.86	1.26	1.79	0.79	2.62	300
Zinc	mg/kg (ppm)	113	80	335	123	90.3	6	60.1	72.5	84.1	142	80.5	450

Notes:

< - less than the method detection limit

NG – not applicable/no guideline criteria established.

· mg/kg - concentration in milligrams per kilogram equivalent to µg/g - micro gram per gram

1 As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR) . Criteria are based on CCME standards unless otherwise noted

See laboratory report for detection limits, testing protocols and QA/QC procedures.

See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Laboratory in Winnipeg.

BOLD exceeds applicable soil guideline

TABLE 5: SOIL ANALYTICAL RESULTS - PAHs

Parameter	Units	Detection Limit	TH19-01 @ 0.8M	TH19-03 @ 0.8M	TH19-04 @ 0.8M	TH19-05 @ 0.8M	TH19-06 @ 0.8M	TH19-07 @ 0.8M	TH19-07 @ 1.5M	TH19-08 @ 0.8M	TH19-09 @ 0.8M	TH19-10 @ 0.8M	TH19-11 @ 1.5M	Assessment Criteria
Acenaphthene	mg/kg (ppm)	0.005	<0.0050	<0.0050	<0.0050	0.0077	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	96
Acenaphthylene	mg/kg (ppm)	0.005	<0.0050	<0.0050	<0.0050	0.11	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.17
Anthracene	mg/kg (ppm)	0.004	<0.0040	<0.0040	0.0041	0.0984	0.0098	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	32
Benzo(a)anthracene	mg/kg (ppm)	0.01	<0.010	<0.010	<0.10	0.506	0.03	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	10
Benzo(a)pyrene	mg/kg (ppm)	0.01	<0.010	<0.010	<0.10	0.376	0.022	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	72
Benzo[b+j]fluoranthene	mg/kg (ppm)	0.01	<0.010	<0.010	0.12	0.81	0.038	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	10
Benzo(g,h,i)perylene	mg/kg (ppm)	0.01	<0.010	<0.010	0.13	0.302	0.021	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	9.6
Benzo(k)fluoranthene	mg/kg (ppm)	0.01	<0.010	<0.010	<0.10	0.307	0.016	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	10
Chrysene	mg/kg (ppm)	0.01	<0.010	<0.010	0.3	0.646	0.041	0.049	<0.010	<0.010	<0.010	<0.010	<0.010	9.6
Dibenzo(a,h)anthracene	mg/kg (ppm)	0.005	<0.0050	<0.0050	<0.050	0.0993	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	10
Fluoranthene	mg/kg (ppm)	0.01	<0.010	<0.010	0.032	0.66	0.058	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	180
Fluorene	mg/kg (ppm)	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	69
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.01	<0.010	<0.010	<0.10	0.322	0.021	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	10
2-Methylnaphthalene	mg/kg (ppm)	0.01	<0.010	<0.010	0.021	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	85
Naphthalene	mg/kg (ppm)	0.01	<0.010	<0.010	0.014	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	22
Phenanthrene	mg/kg (ppm)	0.01	<0.010	<0.010	0.02	0.071	0.032	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	50
Pyrene	mg/kg (ppm)	0.01	<0.010	<0.010	0.091	0.85	0.057	0.018	<0.010	<0.010	<0.010	<0.010	<0.010	100
B[a]P Total Potency Equivalent	mg/kg (ppm)	0.02	<0.020	<0.020	0.106	0.68	0.035	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	5.3

Notes:

< - less than the method detection limit

NG – not applicable/no guideline criteria established.

mg/kg - concentration in milligrams per kilogram equivalent to µg/g - micro gram per gram

CCME – Industrial land use guidelines as outlined in the Canadian Council of the Ministers of the Environment (CCME) "Canadian Environmental Quality Guidelines", 1999 (updates to 2016). The B[a]P Total Potency Equivalent concentration is based on one in one hundred thousand (10-5) incremental risk of cancer.

See laboratory report for detection limits, testing protocols and QA/QC procedures.

See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Laboratory in Winnipeg.

1

As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR).

BOLD exceeds applicable soil guideline

TABLE 6: SOIL ANALYTICAL RESULTS - VOCs

Parameter	Units	TH19-01 @ 0.8M	TH19-03 @ 0.8M	TH19-04 @ 0.8M	TH19-05 @ 0.8M	TH19-06 @ 0.8M	TH19-07 @ 0.8M	TH19-07 @ 1.5M	TH19-09 @ 0.8M	TH19-11 @ 1.5M	Assessment Guidelines
Acetone	mg/kg (ppm)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	28
Benzene	mg/kg (ppm)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	2.9
Bromobenzene	mg/kg (ppm)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	NG
Bromochloromethane	mg/kg (ppm)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	18
Bromodichloromethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	18
Bromoform	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	1.7
Bromomethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.05
n-Butylbenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
sec-Butylbenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
tert-Butylbenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
Carbon disulfide	mg/kg (ppm)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	NG
Carbon Tetrachloride	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	50
Chlorobenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	10
Dibromochloromethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	13
Chloroethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
Chloroform	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	50
Chloromethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
2-Chlorotoluene	mg/kg (ppm)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	NG
4-Chlorotoluene	mg/kg (ppm)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	NG
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
1,2-Dibromoethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.05
Dibromomethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
1,2-Dichlorobenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	10
1,3-Dichlorobenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	10
1,4-Dichlorobenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	10
Dichlorodifluoromethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	25
1,1-dichloroethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	50
1,2-Dichloroethane	µg/g (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	50
1,1-dichloroethene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	50
cis-1,2-Dichloroethene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	50
trans-1,2-Dichloroethene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	50
Dichloromethane	mg/kg (ppm)	0.14	<0.10	<0.10	<0.10	<0.10	<0.10	0.18	0.18	<0.10	50
1,2-Dichloropropane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	50
1,3-Dichloropropane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
2,2-Dichloropropane	mg/kg (ppm)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	NG
1,1-Dichloropropene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
cis-1,3-Dichloropropene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.21
trans-1,3-Dichloropropene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.21
Ethyl benzene	mg/kg (ppm)	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	6700
Hexachlorobutadiene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.095
Hexane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
2-Hexanone (Methyl butyl ketone)	mg/kg (ppm)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
Isopropylbenzene	mg/kg (ppm)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	NG
4-Isopropyltoluene	mg/kg (ppm)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	NG
MEK	mg/kg (ppm)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	88
MIBK	mg/kg (ppm)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	210
MTBE	mg/kg (ppm)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	3.2
Styrene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	50
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.11
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
Tetrachloroethene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
Toluene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.5
1,2,3-Trichlorobenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	10
1,2,4-Trichlorobenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	10
1,1,1-Trichloroethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	50
1,1,2-Trichloroethane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	50
Trichloroethene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.92
Trichlorofluoromethane	mg/kg (ppm)	<0.050	<0.050	0.144	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	5.8
1,2,3-Trichloropropane	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
1,2,4-Trimethylbenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
1,3,5-Trimethylbenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
Vinyl Chloride	mg/kg (ppm)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.25
Xylenes (Total)	mg/kg (ppm)	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	1600

Notes:

• mg/kg - concentration in milligrams per kilogram

BOLD exceeds applicable soil guideline

• < - less than the method detection limit

• NG - No Guideline

• See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Environmental's Laboratory in Winnipeg.

• Guideline - CCME EQG commercial land use guidelines as outlined in the Canadian Council of the Ministers of the Environment (CCME) "Canadian Environmental Quality Guidelines", 1999 (updates to 2018)

¹ As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR). See Table D-1

TABLE 7: SOIL ANALYTICAL RESULTS - PCBs

Parameter	Units	Detection Limit	TH19-01 @ 0.8M	TH19-03 @ 0.8M	TH19-04 @ 0.8M	TH19-05 @ 0.8M	TH19-06 @ 0.8M	TH19-07 @ 0.8M	TH19-07 @ 1.5M	TH19-09 @ 0.8M	Guideline
PCBs - Total	mg/kg (ppm)	0.005	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	33

BOLD exceeds applicable soil guideline

TABLE 8: SOIL ANALYTICAL RESULTS - EXTRACTABLE ORGANIC HALIDES (EOX)

Parameter	Units	TH19-01 @ 0.8M	TH19-03 @ 0.8M	TH19-04 @ 0.8M	TH19-05 @ 0.8M	TH19-06 @ 0.8M	TH19-07 @ 0.8M	TH19-07 @ 1.5M	TH19-09	Guideline
Halogen, Total Organic (TOX)	mg/kg	ND	ND	ND	ND	7.1	ND	ND	ND	NG

BOLD exceeds applicable soil guideline

TABLE 9: GROUNDWATER MONITORING WELL DATA

Monitoring Well	Date	Ground Elevation	TOC Elevation	Total Depth	Depth to Water	Depth to Water	Ground Water Elevation	LNAPL Thickness	Well Headspace Vapours	Groundwater Headspace Vapours
	dd-mmm-yy	m	m	m btoc	m btoc	m bgl	m	mm	ppm _v	ppm _v
TH19-01	8-Jan-20	234.811	234.805	4.485	3.837	3.998	230.32	ND	<5	<5
TH19-03	20-Dec-19	235.61	235.604	4.49	1.677	1.837	231.114	ND	<5	<5
TH19-04	20-Dec-19	235.056	235.031	4.236	2.135	2.277	230.795	ND	<5	<5
TH19-07	20-Dec-19	234.706	234.669	3.614	2.222	2.384	231.055	ND	<5	<5
TH19-08	20-Dec-19	234.842	235.344	3.657	1.847	2.09	231.687	ND	<5	<5
TH19-10	20-Dec-19	234.792	234.786	4.476	2.574	2.748	230.31	ND	<5	<5

Notes:

- m - meters
- TOC - top of casing
- LNAPL - light non-aqueous phase liquids
- ORP - oxidation/reduction potential
- m btoc - meters below top of casing
- m bgl - meters below ground level
- mm - millimeters
- ppm_v - parts per million organic vapour
- --- - not measured
- ND - not detected
- NS - not surveyed
- NC - not calculated

TABLE 10: GROUNDWATER ANALYTICAL RESULTS - PHCs

Monitoring Well	Date (dd-mmm-yy)	Well Headspace Vapour Concentration (ppm _v)	Concentration (mg/L)							
			Benzene	Toluene	Ethylbenzene	Xylenes	PHC Fraction F1	PHC Fraction F2	PHC Fraction F3	PHC Fraction F4
TH19-01	8-Jan-20	<5	<0.00050	<0.00050	<0.00050	<0.00064	<0.10	<0.10	0.38	<0.25
TH19-03	20-Dec-19	<5	<0.00050	<0.00050	<0.00050	<0.00064	<0.10	<0.10	<0.25	<0.25
DUP1 (TH19-03)			<0.00050	0.00070	<0.00050	<0.00064	<0.10	<0.10	<0.25	<0.25
TH19-04	20-Dec-19	<5	<0.00050	<0.00050	<0.00050	<0.00064	<0.10	<0.10	1.26	0.66
TH19-07	20-Dec-19	<5	<0.00050	0.0012	<0.00050	<0.00064	<0.10	<0.10	0.98	0.83
TH19-08	20-Dec-19	<5	<0.00050	<0.00050	<0.00050	<0.00064	<0.10	<0.50	57.2	74
TH19-10	20-Dec-19	<5	<0.00050	<0.00050	<0.00050	<0.00064	<0.10	<0.10	<0.25	<0.25
Applicable Industrial Groundwater Guidelines (non-potable) ¹			19	240	150	74	9.9	3.1	NG	NG
Tap (Water Well)	8-Jan-20	<5	<0.00050	<0.00050	<0.00050	<0.00064	<0.10	<0.10	<0.25	<0.25
Potable Groundwater Guidelines (for comparison to Tap (Water Well))			0.005	0.06	0.073	0.09	NG	NG	NG	NG

Notes:

- mg/L - concentration in milligrams per liter
- ppm_v - parts per million organic vapour
- PHC Fraction F1 - volatile petroleum hydrocarbons (C₆ – C₁₀), less BTEX
- PHC Fraction F2 - extractable petroleum hydrocarbons (C₁₀ – C₁₆)
- PHC Fraction F3 - extractable petroleum hydrocarbons (C₁₆ – C₃₄)
- PHC Fraction F4 - extractable petroleum hydrocarbons (C₃₄ – C₅₀)
- < - less than the analytical detection limit
- NG - no guideline
- See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Canada Ltd.

¹ As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR). The assessment guidelines are based on Health Canada Guidelines for Canadian Drinking Water Quality and Alberta Environment and Parks Tier 2 Groundwater Remediation Guidelines (2019), as outlined in table D-1. See Appendix D.

TABLE 11: GROUNDWATER ANALYTICAL RESULTS - METALS

Parameter	TH19-01	TH19-03	DUP1 (TH19-03)	TH19-04	TH19-07	TH19-08	TH19-10	Assesment Criteria (non-potable)	Tap (Water Well)	Potable Criteria (Water Well)
Antimony	0.00026	<0.010	0.00051	<0.0010	<0.0010	<0.0010	0.0016	NG	<0.00010	NG
Aluminum	0.102	395	0.34	8.42	28.2	10.9	0.302	NG	<0.0030	NG
Arsenic	0.00093	0.289	0.00109	0.0086	0.0246	0.0076	0.0011	NG	0.00017	NG
Barium	0.0315	6.79	0.0436	0.198	0.398	0.187	0.05	NG	0.0181	1
Beryllium	<0.00010	0.021	<0.00010	<0.0010	0.0017	<0.0010	<0.0010	NG	<0.00010	NG
Cadmium	0.000196	0.0136	0.000133	0.000337	0.00117	0.000406	0.0014	NG	0.0000117	0.005
Calcium	514	9510	342	361	859	469	415	NG	42.9	NG
Chromium	0.00078	0.822	0.00203	0.0163	0.0598	0.0228	0.0015	NG	<0.00010	0.05
Cobalt	0.00552	0.36	0.00053	0.0228	0.0227	0.0172	0.0024	NG	0.00047	NG
Copper	0.00618	0.944	0.00786	0.0318	0.0846	0.0414	0.0312	NG	0.0169	1
Iron	0.187	631	0.559	12.6	58.6	16.6	0.76	NG	2.26	0.3
Lead	0.000404	0.409	0.0011	0.0184	0.0406	0.0286	0.0207	NG	0.00279	0.01
Magnesium	407	5210	363	282	551	307	314	NG	46	NG
Manganese	3.56	28.9	0.1	4.1	2.31	2.38	1.17	NG	0.0552	0.05
Molybdenum	0.00339	0.0094	0.00538	0.00371	0.00379	0.00558	0.00296	NG	0.000607	NG
Nickel	0.0208	1.02	0.0116	0.0409	0.0811	0.0401	0.0302	NG	0.00103	NG
Phosphorus	0.091	30.6	0.098	0.33	1.86	0.35	<0.30	NG	<0.030	NG
Potassium	11.4	96.2	7.24	7.21	10.8	7.63	7.85	NG	3.7	NG
Selenium	0.00214	<0.0050	0.00918	<0.00050	0.00078	<0.00050	<0.00050	NG	<0.000050	NG
Sodium	291	602	169	188	260	229	259	NG	25.7	NG
Silver	0.000019	0.0046	0.000023	0.00012	0.00035	0.00018	<0.00010	NG	<0.000010	NG
Thallium	0.00002	0.0087	0.000028	0.00016	0.00062	0.0002	<0.00010	NG	<0.000010	NG
Tin	0.00841	<0.010	0.00166	<0.0010	0.0017	0.0016	0.0031	NG	<0.00010	NG
Vanadium	0.00158	1.2	0.00191	0.0271	0.0946	0.0365	<0.0050	NG	<0.00050	NG
Uranium	0.11	0.168	0.145	0.0398	0.0977	0.0618	0.0969	NG	0.00103	0.02
Zinc	0.0217	1.7	0.0187	0.167	0.247	0.162	0.522	NG	0.211	5

Notes:

< - less than the method detection limit

NG – not applicable/no guideline criteria established.

mg/l - concentration in milligrams per litre

See laboratory report for detection limits, testing protocols and QA/QC procedures.

See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Laboratory in Winnipeg.

1 As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR) . The assessment guidelines are based on Alberta Environment and Parks Tier 2 Groundwater Remediation Guidelines (2019), as outlined in table D-1. See Appendix D.

2 Potable Comparison Criteria based on Health Canada Guidelines for Canadian Drinking Water Quality (2019)

BOLD

exceeds the referenced guidelines

TABLE 12 : GROUNDWATER ANALYTICAL RESULTS - PAHs

Parameter	Units	Detection Limit	TH19-01	TH19-03	DUP1 (TH19-03)	TH19-04	TH19-07	TH19-08	TH19-10	Assessment Criteria ¹	Tap (Water Well)	Potable Criteria ² (Water Well)
Acenaphthene	mg/kg (ppm)	0.005	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000060	<0.000020	NG	<0.000020	NG
Acenaphthylene	mg/kg (ppm)	0.005	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000060	<0.000020	NG	<0.000020	NG
Anthracene	mg/kg (ppm)	0.004	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030	<0.000010	0.32	<0.000010	NG
Benzo(a)anthracene	mg/kg (ppm)	0.01	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030	<0.000010	NG	<0.000010	NG
Benzo(a)pyrene	mg/kg (ppm)	0.01	<0.0000050	<0.0000050	<0.0000050	0.0000084	0.0000066	<0.000015	<0.0000050	0.0066	<0.0000050	0.00004
Benzo(b+j)fluoranthene	mg/kg (ppm)	0.01	<0.000010	<0.000010	<0.000010	0.000014	<0.000010	<0.000030	<0.000010	NG	<0.000010	NG
Benzo(g,h,i)perylene	mg/kg (ppm)	0.01	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000060	<0.000020	NG	<0.000020	NG
Benzo(k)fluoranthene	mg/kg (ppm)	0.01	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000030	<0.000010	NG	<0.000010	NG
Chrysene	mg/kg (ppm)	0.01	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000060	<0.000020	NG	<0.000020	NG
Dibenzo(a,h)anthracene	mg/kg (ppm)	0.005	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.000015	<0.0000050	10	<0.0000050	NG
Fluoranthene	mg/kg (ppm)	0.01	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000060	<0.000020	0.86	<0.000020	NG
Fluorene	mg/kg (ppm)	0.01	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000060	<0.000020	NG	<0.000020	NG
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.01	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000060	<0.000010	NG	<0.000010	NG
2-Methylnaphthalene	mg/kg (ppm)	0.01	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000060	<0.000020	NG	<0.000020	NG
Naphthalene	mg/kg (ppm)	0.01	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00015	<0.000050	NG	<0.000050	NG
Phenanthrene	mg/kg (ppm)	0.01	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00015	<0.000050	NG	<0.000050	NG
Pyrene	mg/kg (ppm)	0.01	<0.000010	<0.000010	<0.000010	0.000018	0.000022	<0.000030	<0.000010	NG	<0.000010	NG
B[a]P Total Potency Equivalent	mg/kg (ppm)	0.02	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	NG	<0.000030	0.00004

Notes:

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- < - less than the method detection limit
- NG - Not Graded - no guidelines were assigned
- CCME EQG – commercial land use guidelines as outlined in the Canadian Council of the Ministers of the Environment (CCME) "Canadian Environmental Quality Guidelines", 1999 (updates to 2016). The B[a]P Total Potency Equivalent concentration is based on one in one hundred thousand (10-5) incremental risk of cancer.
- See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Laboratory in Winnipeg.

¹ As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRA). The assessment guidelines are based on Alberta Environment and Parks Tier 2 Groundwater Remediation Guidelines (2019), as outline in table D-1. See Appendix D.

² Potable Comparison Criteria based on Health Canada Guidelines for Canadian Drinking Water Quality (2019)

TABLE 13: GROUNDWATER ANALYTICAL RESULTS - VOCs

Parameter	Units	TH19-01	TH19-03	DUP 1 (TH19-03)	TH19-04	TH19-07	TH19-08	TH19-10	Assessment Criteria ¹	Tap (Water Well)	Potable Criteria ² (Water Well)
Acetone	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG	<0.050	NG
Benzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	<0.00050	NG
Bromobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
Bromochloromethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	85	<0.0010	NG
Bromodichloromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	<0.00050	NG
Bromoform	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
Bromomethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
n-Butylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
sec-Butylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
tert-Butylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
Carbon disulfide	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NG	<0.0050	NG
Carbon Tetrachloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.08	<0.00050	0.002
Chlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	2.2	<0.0010	NG
Dibromochloromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	250	<0.00050	NG
Chloroethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
Chloroform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	3.5	<0.00050	NG
Chloromethane	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NG	<0.0050	NG
2-Chlorotoluene	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	<0.020	NG
4-Chlorotoluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
1,2-Dibromo-3-chloropropane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
1,2-Dibromoethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
Dibromomethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
1,2-Dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	9.6	<0.00050	0.005
1,3-Dichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	9.6	<0.0010	NG
1,4-Dichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	32	<0.0010	0.005
Dichlorodifluoromethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	4.4	<0.0010	NG
1,1-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	44	<0.00050	NG
1,2-Dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	1.2	<0.00050	0.005
1,1-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	4.5	<0.00050	0.014
cis-1,2-Dichloroethene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
trans-1,2-Dichloroethene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
Dichloromethane	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	410	<0.0050	0.05
1,2-Dichloropropane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
1,3-Dichloropropane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
2,2-Dichloropropane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
1,1-Dichloropropene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
cis-1,3-Dichloropropene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010	NG	<0.0010	NG
trans-1,3-Dichloropropene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
Ethyl benzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	<0.00050	NG
Hexachlorobutadiene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.22	<0.0010	NG
Hexane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.52	<0.0010	NG
2-Hexanone (Methyl butyl ketone)	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	<0.020	NG
Isopropylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
4-Isopropyltoluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
MEK	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	<0.020	NG
MIBK	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	<0.020	NG
MTBE	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	40	<0.00050	0.015
Styrene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	NG
1,1,1,2-Tetrachloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	<0.00050	NG
1,1,2,2-Tetrachloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	<0.00050	NG
Tetrachloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	1.8	<0.00050	0.01
Toluene	mg/L	<0.00050	<0.00050	0.0007	<0.00050	0.00115	<0.00050	<0.00050	NG	<0.00050	NG
1,2,3-Trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	6.9	<0.0010	NG
1,2,4-Trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	6.1	<0.0010	NG
1,1,1-Trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	<0.00050	NG
1,1,2-Trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	<0.00050	NG
Trichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	2.8	<0.00050	0.005
Trichlorofluoromethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	2.5	<0.0010	NG
1,2,3-Trichloropropane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
1,2,4-Trimethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
1,3,5-Trimethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	<0.0010	NG
Vinyl Chloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.12	<0.00050	0.002
Xylenes (Total)	mg/L	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	NG	<0.00064	NG

Notes:

- mg/L - concentration in milligrams per liter
- < - less than the method detection limit
- NG - No Guideline
- See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Environmental's Laboratory in Winnipeg.
- Guideline - Refer to Appendix D for criteria source

¹ As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR). The assessment guidelines are based on Alberta Environment and Parks Tier 2 Groundwater Remediation Guidelines (2019), as outlined in table D-1. See Appendix D.

² Potable Comparison Criteria based on Health Canada Guidelines for Canadian Drinking Water Quality (2019)

BOLD exceeds the referenced guidelines

TABLE 14: GROUNDWATER ANALYTICAL RESULTS - Dioxins and Furans

Parameter	Units	Detection Limit	Tap (Water Well)	MOE Assessment Guideline ²
2,3,7,8-TCDD	pg/L	0.59	<0.46	NG
1,2,3,7,8-PeCDD	pg/L	0.33	<0.26	NG
1,2,3,4,7,8-HxCDD	pg/L	0.42	<0.34	NG
1,2,3,6,7,8-HxCDD	pg/L	0.42	<0.34	NG
1,2,3,7,8,9-HxCDD	pg/L	0.42	<0.34	NG
1,2,3,4,6,7,8-HpCDD	pg/L	0.41	0.73	NG
OCDD	pg/L	0.8	3.11	NG
Total-TCDD	pg/L	0.59	<0.46	NG
Total TCDD # Homologues	-	---	0	NG
Total-PeCDD	pg/L	0.33	<0.26	NG
Total PeCDD # Homologues	-	---	0	NG
Total-HxCDD	pg/L	0.42	<0.34	NG
Total HxCDD # Homologues	-	---	0	NG
Total-HpCDD	pg/L	0.41	<0.40	NG
Total HpCDD # Homologues	-	---	0	NG
2,3,7,8-TCDF	pg/L	0.46	<0.32	NG
1,2,3,7,8-PeCDF	pg/L	0.36	0.34	NG
2,3,4,7,8-PeCDF	pg/L	0.3	<0.18	NG
1,2,3,4,7,8-HxCDF	pg/L	0.32	<0.19	NG
1,2,3,6,7,8-HxCDF	pg/L	0.33	<0.20	NG
1,2,3,7,8,9-HxCDF	pg/L	0.42	0.56	NG
2,3,4,6,7,8-HxCDF	pg/L	0.32	<0.19	NG
1,2,3,4,6,7,8-HpCDF	pg/L	0.29	<0.26	NG
1,2,3,4,7,8,9-HpCDF	pg/L	0.32	<0.31	NG
OCDF	pg/L	0.55	1.19	NG
Total-TCDF	pg/L	0.46	<0.32	NG
Total TCDF # Homologues	-	---	0	NG
Total-PeCDF	pg/L	0.36	0.34	NG
Total PeCDF # Homologues	-	---	1	NG
Total-HxCDF	pg/L	0.42	0.56	NG
Total HxCDF # Homologues	-	---	1	NG
Total-HpCDF	pg/L	0.32	<0.31	NG
Total HpCDF # Homologues	-	---	0	NG
Lower Bound PCDD/F TEQ (WHO 2005)	pg/L	---	0.0675	NG
Mid Point PCDD/F TEQ (WHO 2005)	pg/L	---	0.561	NG
Upper Bound PCDD/F TEQ (WHO 2005)	pg/L	---	1.05	15 ¹

Notes:

< - less than the method detection limit

NG – not applicable/no guideline criteria established.

· mg/kg - concentration in milligrams per kilogram equivalent to µg/g - micro gram per gram

¹ Standards Selected from the Ontario Ministry of Environment's Full Depth Generic Site Conditions Standards in a Potable Groundwater Condition. Table 3. 2011.

TABLE 15: GROUNDWATER ANALYTICAL RESULTS - TOTAL ORGANIC HALIDES (TOX)

Parameter	Units	TH19-01	TH19-03	DUP1 (TH19-03)	TH19-04	TH19-07	TH19-08	TH19-10	Tap (Water Well)	Guideline
Halogen, Total Organic (TOX)	µg/l	ND	51.0	54.6	58.4	77.8	ND	82.4	ND	NG

BOLD exceeds applicable soil guideline

Appendix A

Site Photographs



Photograph 1: Monitoring well TH19-11 inside building on site.



Photograph 2: Monitoring well TH19-03 in southeast of site .

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RM of Springfield
Oakbank, Manitoba

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DATE: Feb. 2019

PROJECT NO.: WX18979

PLATE 1



Photograph 3: Monitoring well TH19-04 on south part of site..



Photograph 4: Monitoring well TH19-07 on southwest part of site.

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PLATE 2



Photograph 5: Monitoring well TH19-08 on west side of site.



Photograph 6: Monitoring well TH19-10 on northwest side of site.



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PLATE 3

Appendix B

Test Hole Logs

PROJECT: Phase II Environmental Site Assessment		DRILLER: Maple Leaf Drilling Ltd.		TEST HOLE ID: TH19-01	
CLIENT: Tervita Corporation				PROJECT No: WX18979	
LOCATION: 999 Redonda St, Oakbank, MB		DRILL METHOD: 125mm SSA		ELEVATION: Not Surveyed	
SAMPLE TYPE		☒ Shelby Tube	☐ No Recovery	☒ SPT (N)	☐ Grab Sample
BACKFILL TYPE		☒ Bentonite	☐ Pea Gravel	☒ Drill Cuttings	☐ Grout
				☐ Split-Pen	☐ Core
				☐ Slough	☐ Sand

DEPTH (m)	POCKET PENETROMETER (kPa)		SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	WELL INSTALLATION TH19-01	COMMENTS	DEPTH (m)
	100	200									
0					ORGANIC (GRASS) - frozen CLAY - medium plastic, damp, firm, black with brown						0
1				CI			1				1
2				ML	SILT - low plastic, moist, soft, tan CLAY - medium plastic, damp to moist, firm, brown		2				2
3							3				3
4				CI	- below 2.4m, occasional mica - below 3.7m, occasional oxides		4				4
5							5				5
6							6				6
7											7
8											8
9											9
10											10

	Wood Environment & Infrastructure Solutions a division of Wood Canada Limited	LOGGED BY: AC	COMPLETION DEPTH: 4.6 m
		REVIEWED BY: JH	COMPLETION DATE: December 16, 2019
	Figure No.	Sheet 1 of 1	

WX18979 - PHASE I AND II ESA 999 REDONDA TERVITA GPJ 20/01/28 11:57 AM (WPG - ENVIRO LOG 1)

PROJECT: Phase II Environmental Site Assessment		DRILLER: Maple Leaf Drilling Ltd.		TEST HOLE ID: TH19-02	
CLIENT: Tervita Corporation				PROJECT No: WX18979	
LOCATION: 999 Redonda St, Oakbank, MB		DRILL METHOD: 125mm SSA		ELEVATION: Not Surveyed	
SAMPLE TYPE	☒ Shelby Tube	☐ No Recovery	☒ SPT (N)	☒ Grab Sample	☐ Split-Pen
BACKFILL TYPE	☒ Bentonite	☐ Pea Gravel	☒ Drill Cuttings	☐ Grout	☐ Slough
				☐ Core	☐ Sand

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400	COMBUSTIBLE VAPOUR (ppmv) 2000 4000 6000 8000	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0			OL		ORGANIC (GRASS) - frozen					
			CI		CLAY - medium plastic, damp, firm, black, some roots		1			
1			ML		SILT - low plastic, damp, soft, tan		2			
			CI		CLAY - medium plastic, damp, firm, light brown, occasional mica		3			
2							4			
3							5			
4							6			
5					END OF HOLE AT 4.6m BELOW EXISTING GRADE					
					Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 4.6m below grade with no accumulation of water prior to backfilling. - Test hole was backfilled with auger cuttings and bentonite.					
6										
7										
8										
9										
10										

	LOGGED BY: AC	COMPLETION DEPTH: 4.6 m
	REVIEWED BY: JH	COMPLETION DATE: December 16, 2019
	Figure No.	Sheet 1 of 1

WX18979 - PHASE I AND II ESA 999 REDONDA Tervita GPJ 20/01/28 11:57 AM (WPG - ENVIRO LOG 1)

PROJECT: Phase II Environmental Site Assessment		DRILLER: Maple Leaf Drilling Ltd.		TEST HOLE ID: TH19-03	
CLIENT: Tervita Corporation				PROJECT No: WX18979	
LOCATION: N5532079 E644909		DRILL METHOD: 125mm SSA		ELEVATION: Not Surveyed	
SAMPLE TYPE	☒ Shelby Tube	☐ No Recovery	☒ SPT (N)	☐ Grab Sample	☐ Split-Pen
BACKFILL TYPE	☒ Bentonite	☐ Pea Gravel	☒ Drill Cuttings	☐ Grout	☐ Slough
				☐ Core	☐ Sand

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 COMBUSTIBLE VAPOUR (ppmv) 2000 4000 6000 8000	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	WELL INSTALLATION TH19-03	COMMENTS	DEPTH (m)
0		OL		ORGANIC - grass, trace sand, frozen						0
		CH		CLAY - high plastic, damp, firm, brown to tan mottled, trace sand, some oxides		1				1
1				- below 0.7m, brown, no sand, mica		2				2
2				CLAY - silty, medium plastic, moist, soft, tan, frequent mica		3				3
				- below 1.9m, some silt, medium plastic, moist, soft, dark tan		4				4
3		CI		CLAY - silty, medium plastic, moist, soft, tan, frequent mica		5				5
				- below 3.0m, medium plastic, moist, soft, brown, some mica		6				6
4				- below 3.7m, frequent mica						7
5				END OF HOLE AT 4.6m BELOW EXISTING GRADE						8
6				Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 4.6m below grade with no accumulation of water prior to backfilling.						9
7										10

 Wood Environment & Infrastructure Solutions a division of Wood Canada Limited	LOGGED BY: AC	COMPLETION DEPTH: 4.6 m
	REVIEWED BY: JH	COMPLETION DATE: December 3, 2019
	Figure No.	Sheet 1 of 1

WX18979 - PHASE I AND II ESA 999 REDONDA TERVITA GPJ 20/01/28 11:58 AM (WPG - ENVIRO LOG 1)

PROJECT: Phase II Environmental Site Assessment		DRILLER: Maple Leaf Drilling Ltd.		TEST HOLE ID: TH19-04	
CLIENT: Tervita Corporation				PROJECT No: WX18979	
LOCATION: 999 Redonda St, Oakbank, MB		DRILL METHOD: 125mm SSA		ELEVATION: Not Surveyed	
SAMPLE TYPE	☒ Shelby Tube	☐ No Recovery	☒ SPT (N)	☒ Grab Sample	☐ Split-Pen
BACKFILL TYPE	☒ Bentonite	☐ Pea Gravel	☒ Drill Cuttings	☐ Grout	☐ Slough
					☐ Core
					☐ Sand

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 COMBUSTIBLE VAPOUR (ppmv) 2000 4000 6000 8000	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	WELL INSTALLATION TH19-04	COMMENTS	DEPTH (m)
0			GP	GRAVEL FILL - organic matter, poorly graded, moist, firm, light brown		1				0
1			CH	CLAY - high plastic, damp, firm, brown, some sand, some mica		2				1
2				CLAY - medium plastic, moist to wet, soft, light brown		3				2
3				- below 2.3m, soft to firm with occasional mica		4				3
4			CI	- below 3.0m, damp with frequent mica		5				4
5				END OF HOLE AT 4.6m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 4.6m below grade with no accumulation of water prior to backfilling.		6				5
6										6
7										7
8										8
9										9
10										10

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			Sheet 1 of 1

WX18979 - PHASE I AND II ESA 999 REDONDA TERVITA GPJ 20/01/28 11:58 AM (WPG - ENVIRO LOG 1)

PROJECT: Phase II Environmental Site Assessment		DRILLER: Maple Leaf Drilling Ltd.		TEST HOLE ID: TH19-05	
CLIENT: Tervita Corporation				PROJECT No: WX18979	
LOCATION: 999 Redonda St, Oakbank, MB		DRILL METHOD: 125mm SSA		ELEVATION: Not Surveyed	
SAMPLE TYPE		☒ Shelby Tube	☐ No Recovery	☒ SPT (N)	☐ Grab Sample
BACKFILL TYPE		☒ Bentonite	☐ Pea Gravel	☒ Drill Cuttings	☐ Grout
				☐ Split-Pen	☐ Core
				☐ Slough	☐ Sand

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 COMBUSTIBLE VAPOUR (ppmv) 2000 4000 6000 8000	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		OL		ORGANIC (GRASS) - 10mm thick CLAY - medium plastic, damp, firm, black, occasional roots, occasional debris (cinder)					0
1						1			1
2				- below 1.7m, damp to moist, soft to firm, tan to light brown		2			2
3		CI		- below 2.3m, occasional mica		3			3
4				- below 3.0m, occasional oxides		4			4
5						5			5
6						6			6
7				END OF HOLE AT 4.6m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 4.6m below grade with no accumulation of water prior to backfilling. - Test hole was backfilled with auger cuttings and bentonite.					7
8									8
9									9
10									10

	LOGGED BY: AC	COMPLETION DEPTH: 4.6 m
	REVIEWED BY: JH	COMPLETION DATE: December 16, 2019
	Figure No.	Sheet 1 of 1

WX18979 - PHASE I AND II ESA 999 REDONDA TERVITA GPJ 20/01/28 11:58 AM (WPG - ENVIRO LOG 1)

PROJECT: Phase II Environmental Site Assessment		DRILLER: Maple Leaf Drilling Ltd.		TEST HOLE ID: TH19-06	
CLIENT: Tervita Corporation				PROJECT No: WX18979	
LOCATION: 999 Redonda St, Oakbank, MB		DRILL METHOD: 125mm SSA		ELEVATION: Not Surveyed	
SAMPLE TYPE		☒ Shelby Tube	☐ No Recovery	☒ SPT (N)	☐ Grab Sample
BACKFILL TYPE		☒ Bentonite	☐ Pea Gravel	☐ Drill Cuttings	☐ Grout
				☐ Slough	☐ Sand

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400	COMBUSTIBLE VAPOUR (ppmv) 2000 4000 6000 8000	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0			OL		ORGANIC (GRASS) - frozen					
			ML		SILT - clayey, medium plastic, damp, soft to firm, tan with brown, debris (plastic) and organic debris (wood)		1			
1					CLAY - medium plastic, damp, firm, brown, occasional gravel		2			
2							3			
					- below 2.3m, occasional oxides, brown and black mottling		4			
3			CI				5			
4							6			
5					END OF HOLE AT 4.6m BELOW EXISTING GRADE					
					Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 4.6m below grade with no accumulation of water prior to backfilling. - Test hole was backfilled with auger cuttings and bentonite.					
6										
7										
8										
9										
10										

	LOGGED BY: AC	COMPLETION DEPTH: 4.6 m
	REVIEWED BY: JH	COMPLETION DATE: December 16, 2019
	Figure No.	Sheet 1 of 1

WX18979 - PHASE I AND II ESA 999 REDONDA TERVITA GPJ 20/01/28 11:58 AM (WPG - ENVIRO LOG 1)

PROJECT: Phase II Environmental Site Assessment		DRILLER: Maple Leaf Drilling Ltd.		TEST HOLE ID: TH19-07	
CLIENT: Tervita Corporation				PROJECT No: WX18979	
LOCATION: 999 Redonda St, Oakbank, MB		DRILL METHOD: 125mm SSA		ELEVATION: Not Surveyed	
SAMPLE TYPE		☒ Shelby Tube	☐ No Recovery	☒ SPT (N)	☐ Grab Sample
BACKFILL TYPE		☒ Bentonite	☐ Pea Gravel	☒ Drill Cuttings	☐ Grout
				☐ Split-Pen	☐ Core
				☐ Slough	☐ Sand

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 COMBUSTIBLE VAPOUR (ppmv) 2000 4000 6000 8000	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	WELL INSTALLATION TH19-07	COMMENTS	DEPTH (m)
0			GP	GRAVEL FILL - poorly graded, moist to wet, dense, grey						0
1			CI	CLAY - silty, medium plastic, moist, soft, light brown to tan		1				1
2			CH	CLAY - high plastic, damp, firm, brown		2				2
3						3				3
4						4				4
5						5				5
6						6				6
7										7
8										8
9										9
10										10

END OF HOLE AT 4.6m BELOW EXISTING GRADE

Notes:

- No sloughing was observed during drilling.
- No seepage was observed during drilling.
- Test hole remained open to 4.6m below grade with no accumulation of water prior to backfilling.

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Figure No.

COMPLETION DEPTH: 4.6 m

COMPLETION DATE: December 3, 2019

Sheet 1 of 1

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PROJECT: Phase II Environmental Site Assessment		DRILLER: Maple Leaf Drilling Ltd.		TEST HOLE ID: TH19-08	
CLIENT: Tervita Corporation				PROJECT No: WX18979	
LOCATION: 999 Redonda St, Oakbank, MB		DRILL METHOD: 125mm SSA		ELEVATION: Not Surveyed	
SAMPLE TYPE		☒ Shelby Tube	☐ No Recovery	☒ SPT (N)	☐ Grab Sample
BACKFILL TYPE		☒ Bentonite	☐ Pea Gravel	☒ Drill Cuttings	☐ Grout
				☐ Split-Pen	☐ Core
				☐ Slough	☐ Sand

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 COMBUSTIBLE VAPOUR (ppmv) 2000 4000 6000 8000	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	WELL INSTALLATION TH19-08	COMMENTS	DEPTH (m)
0			GP	GRAVEL FILL - organic matter, poorly graded, moist, firm, light brown						0
1				CLAY - high plastic, damp, soft to firm, brown		1				1
2			CH	- below 1.6m, medium plastic, moist, soft, light brown		2				2
3				- below 2.3m, damp to moist, firm, high plastic, brown, frequent mica		3				3
4			CI	CLAY - medium plastic, damp, soft, light brown, frequent mica		4				4
5				END OF HOLE AT 4.6m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 4.6m below grade with no accumulation of water prior to backfilling.		5				5
6						6				6
7										7
8										8
9										9
10										10

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		REVIEWED BY: JH	COMPLETION DATE: December 3, 2019
		Figure No.	Sheet 1 of 1

WX18979 - PHASE I AND II ESA 999 REDONDA TERVITA GPJ 20/01/28 11:58 AM (WPG - ENVIRO LOG 1)

PROJECT: Phase II Environmental Site Assessment		DRILLER: Maple Leaf Drilling Ltd.		TEST HOLE ID: TH19-09	
CLIENT: Tervita Corporation				PROJECT No: WX18979	
LOCATION: 999 Redonda St, Oakbank, MB		DRILL METHOD: 125mm SSA		ELEVATION: Not Surveyed	
SAMPLE TYPE	☒ Shelby Tube	☐ No Recovery	☒ SPT (N)	☒ Grab Sample	☐ Split-Pen
BACKFILL TYPE	☒ Bentonite	☐ Pea Gravel	☒ Drill Cuttings	☐ Grout	☐ Slough
				☐ Core	☐ Sand

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400	COMBUSTIBLE VAPOUR (ppmv) 2000 4000 6000 8000	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0			OL		ORGANIC (GRASS) - frozen CLAY - medium plastic, damp, firm, black					
1					- below 0.8m, damp to moist, soft to firm, brown with some black		1			
2			CI		- below 1.5m, mica		2			
3							3			
4					- below 3.0m, some oxides		4			
5							5			
END OF HOLE AT 3.7m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 3.7m below grade with no accumulation of water prior to backfilling. - Test hole was backfilled with auger cuttings and bentonite.										

WX18979 - PHASE I AND II ESA 999 REDONDA TERVITA GPJ 20/01/28 11:58 AM (WPG - ENVIRO LOG 1)

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COMPLETION DEPTH: 3.7 m
 COMPLETION DATE: December 16, 2019
 Sheet 1 of 1

PROJECT: Phase II Environmental Site Assessment		DRILLER: Maple Leaf Drilling Ltd.		TEST HOLE ID: TH19-10	
CLIENT: Tervita Corporation				PROJECT No: WX18979	
LOCATION: 999 Redonda St, Oakbank, MB		DRILL METHOD: 125mm SSA		ELEVATION: Not Surveyed	
SAMPLE TYPE	☒ Shelby Tube	☐ No Recovery	☐ SPT (N)	☐ Grab Sample	☐ Split-Pen
BACKFILL TYPE	☒ Bentonite	☐ Pea Gravel	☐ Drill Cuttings	☐ Grout	☐ Slough
				☐ Core	☐ Sand

DEPTH (m)	■ POCKET PENETROMETER (kPa) ■ 100 200 300 400 ▲ COMBUSTIBLE VAPOUR (ppmv) ▲ 2000 4000 6000 8000	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	WELL INSTALLATION TH19-10	COMMENTS	DEPTH (m)
0			GP	GRAVEL FILL - organic matter, poorly graded, damp, firm, black, trace sand		1				0
1			CH	CLAY - trace sand, high plastic, damp, light brown with black, some oxides, some mica		2				1
2			CI	CLAY - silty, medium plastic, damp to moist, soft to firm, light brown to tan		3				2
3				- below 2.3m, damp to moist, light brown		4				3
4				- below 3.0m, damp		5				4
5				- below 3.7m, frequent oxides		6				5
6				END OF HOLE AT 4.6m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 4.6m below grade with no accumulation of water prior to backfilling.						6
7										7
8										8
9										9
10										10

WX18979 - PHASE I AND II ESA 999 REDONDA TERVITA GPJ 20/01/28 11:58 AM (WPG - ENVIRO LOG 1)

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LOGGED BY: AC

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Figure No.

COMPLETION DEPTH: 4.6 m

COMPLETION DATE: December 3, 2019

Sheet 1 of 1

PROJECT: Phase II Environmental Site Assessment		DRILLER: Maple Leaf Drilling Ltd.		TEST HOLE ID: TH19-11	
CLIENT: Tervita Corporation				PROJECT No: WX18979	
LOCATION: 999 Redonda St, Oakbank, MB		DRILL METHOD: 125mm SSA		ELEVATION: Not Surveyed	
SAMPLE TYPE	☒ Shelby Tube	☐ No Recovery	☐ SPT (N)	☐ Grab Sample	☐ Split-Pen
BACKFILL TYPE	☒ Bentonite	☐ Pea Gravel	☐ Drill Cuttings	☐ Grout	☐ Slough
				☐ Core	☐ Sand

DEPTH (m)	POCKET PENETROMETER (kPa) 100 200 300 400 COMBUSTIBLE VAPOUR (ppmv) 2000 4000 6000 8000	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0				GRAVEL FILL - organic matter, poorly graded, moist, firm, light brown					
			GP			1			
1				CLAY - high plastic, damp, firm, black, trace gravel		2			
				- below 1.5m, high plastic, damp, firm, dark brown, occasional mica					
2			CH			3			
				- below 2.6m, frequent mica					
3				CLAY - medium plastic, moist, firm, brown, frequent mica		4			
4			CI			5			
5				END OF HOLE AT 4.6m BELOW EXISTING GRADE		6			
				Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 4.6m below grade with no accumulation of water prior to backfilling. - Test hole was backfilled with auger cuttings and bentonite.					
6									
7									
8									
9									
10									

	LOGGED BY: AC	COMPLETION DEPTH: 4.6 m
	REVIEWED BY: JH	COMPLETION DATE: December 20, 2019
	Figure No.	Sheet 1 of 1

WX18979 - PHASE I AND II ESA 999 REDONDA TERVITA GPJ 20/01/28 11:58 AM (WPG - ENVIRO LOG 1)

Appendix C

Water Wells Records

Well Search

Site – NE16-11-4E1

Quarter sections within 500 m of Site:

NW ¼ 15-11-4E1

SW ¼ 15-11-4E1

SE ¼ 16-11-4E1

Location: NE16-11-4E

Well_PID: 111325

Owner: X-POTENTIAL

Driller: Paul Slusarchuk Well Drilling LTd.

Well Name: RETURN TEST WELL #1

Well Use: TEST WELL

Water Use:

UTMX: 644608.1110

UTMY: 5532407.76

Accuracy XY:

UTMZ:

Accuracy Z:

Date Completed: 1998 May 27

WELL LOG

From	To	Log
(ft.)	(ft.)	
0	42.0	CLAY
42.0	50.0	TILL
50.0	51.0	LIMESTONE RUBBLE
51.0	65.0	SOFT LIMESTONE

65.0 80.0 SOFT LIMESTONE, LOOSE
80.0 102.0 LIMESTONE RUBBLE
102.0 118.0 LIMESTONE

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	52.5	CASING		5.00			GALVANIZED
52.5	118.0	OPEN HOLE		4.50			
0	40.0	CASING GROUT					CEMENT
40.0	118.0	CASING GROUT					BENTONITE

Top of Casing: 2.000 ft. above ground

PUMPING TEST

Date: 1998 May 27
Pumping Rate: 30.000 Imp. gallons/minute
Water level before pumping: 30.4 ft. below ground
Pumping level at end of test: 47.1 ft. below ground
Test duration: hours, 10 minutes
Water temperature: ?? degrees F

REMARKS

999 REDONDA, S SIDE OF PROPERTY, HOLE ABANDONED

Location: NE16-11-4E



Well_PID: 111328
 Owner: X-POTENTIAL
 Driller: Paul Slusarchuk Well Drilling LTd.
 Well Name: RETURN TEST WELL #2
 Well Use: TEST WELL
 Water Use:
 UTMX: 644608.1110
 UTMY: 5532407.76
 Accuracy XY:
 UTMZ:
 Accuracy Z:
 Date Completed: 1998 May 27

WELL LOG

From (ft.)	To (ft.)	Log
0	36.0	CLAY
36.0	39.0	TILL
39.0	50.0	WEATHERED LIMESTONE
50.0	118.0	LIMESTONE

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	52.0	CASING	5.00				GALVANIZED
52.0	118.0	OPEN HOLE		4.50			
0	40.0	CASING GROUT					BENTONITE
40.0	118.0	CASING GROUT					

Top of Casing: 2.000 ft. above ground

PUMPING TEST

Date: 1998 May 27
Pumping Rate: 10.000 Imp. gallons/minute
Water level before pumping: ?? ft. below ground
Pumping level at end of test: ?? ft. below ground
Test duration: ??? hours, ?? minutes
Water temperature: ?? degrees F

REMARKS

999 REDONDA, NW OF RETURN TEST WELL #1, ABANDONED

Location: NE16-11-4E

Well_PID: 111327
Owner: X-POTENTIAL
Driller: Paul Slusarchuk Well Drilling LTd.
Well Name: RETURN TEST WELL #3
Well Use: TEST WELL
Water Use:
UTMX: 644608.1110
UTMY: 5532407.76
Accuracy XY:
UTMZ:
Accuracy Z:
Date Completed: 1998 Jun 09



WELL LOG

From (ft.)	To (ft.)	Log
0	43.0	CLAY
43.0	49.0	TILL
49.0	54.0	SOFT LIMESTONE
54.0	122.0	LIMESTONE

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	51.0	CASING	5.00				GALVANIZED
51.0	122.0	OPEN HOLE		4.50			
0	40.0	CASING GROUT					BENTONITE
40.0	122.0	CASING GROUT					

Top of Casing: 1.000 ft. above ground

PUMPING TEST

Date: 1998 Jun 09

Pumping Rate: 10.000 Imp. gallons/minute

Water level before pumping: ?? ft. below ground

Pumping level at end of test: ?? ft. below ground

Test duration: ??? hours, ?? minutes

Water temperature: ?? degrees F

REMARKS



999 REDONDA, NE OF RETURN TEST WELL #1, HOLE ABANDONED

Location: NE16-11-4E

Well_PID: 111329

Owner: X-POTENTIAL

Driller: Paul Slusarchuk Well Drilling LTd.

Well Name: RETURN TEST WELL #4

Well Use: TEST WELL

Water Use:

UTMX: 644608.1110

UTMY: 5532407.76

Accuracy XY:

UTMZ:

Accuracy Z:

Date Completed: 1998 Jun 09

WELL LOG

From	To	Log
(ft.)	(ft.)	
0	37.0	CLAY
37.0	45.0	SILTY TILL
45.0	49.0	TILL WITH RUBBLE
49.0	145.0	LIMESTONE

WELL CONSTRUCTION

From	To	Casing	Inside	Outside	Slot	Type	Material
------	----	--------	--------	---------	------	------	----------



(ft.)	(ft.)	Type	Dia.(in)	Dia.(in)	Size(in)	
0	49.0	CASING		5.50		GALVANIZED
49.0	145.0	OPEN HOLE		4.90		
0	4.0	CASING GROUT				BENTONITE
4.0	40.0	CASING GROUT				CEMENT

Top of Casing:

PUMPING TEST

Date: 1998 Jun 09

Pumping Rate: 85.000 Imp. gallons/minute

Water level before pumping: 31.8 ft. below ground

Pumping level at end of test: 44.0 ft. below ground

Test duration: hours, 10 minutes

Water temperature: ?? degrees F

REMARKS

999 REDONDA, W SIDE OF PROPERTY, CASING LEFT IN HOLE

Location: NE16-11-4E

Well_PID: 111330

Owner: X-POTENTIAL

Driller: Paul Slusarchuk Well Drilling LTd.

Well Name: RETURN WELL #5

Well Use: RECHARGE

Water Use:



UTMX: 644608.1110

UTMY: 5532407.76

Accuracy XY:

UTMZ:

Accuracy Z: UNKNOWN

Date Completed: 1998 Jun 10

WELL LOG

From	To	Log
------	----	-----

(ft.)	(ft.)	
-------	-------	--

0	38.0	CLAY
---	------	------

38.0	45.0	TILL
------	------	------

45.0	49.0	LIMESTONE RUBBLE
------	------	------------------

49.0	125.0	LIMESTONE
------	-------	-----------

WELL CONSTRUCTION

From	To	Casing	Inside	Outside	Slot	Type	Material
------	----	--------	--------	---------	------	------	----------

(ft.)	(ft.)	Type	Dia.(in)	Dia.(in)	Size(in)		
-------	-------	------	----------	----------	----------	--	--

0	50.0	CASING	5.00				GALVANIZED
---	------	--------	------	--	--	--	------------

50.0	125.0	OPEN HOLE	4.00				
------	-------	-----------	------	--	--	--	--

5.0	35.0	CASING GROUT					CEMENT
-----	------	--------------	--	--	--	--	--------

35.0	45.0	CASING GROUT					BENTONITE
------	------	--------------	--	--	--	--	-----------

Top of Casing: 2.000 ft. above ground

PUMPING TEST

Date: 1998 Jun 10

Pumping Rate: 85.000 Imp. gallons/minute

Water level before pumping: 30.4 ft. below ground



Pumping level at end of test: 31.0 ft. below ground

Test duration: 1 hours, 15 minutes

Water temperature: ?? degrees F

REMARKS

999 REDONDA, N OF RETURN TEST WELL #4, PUMP TEST DATA FILE

Location: NE16-11-4E

Well_PID: 111331

Owner: X-POTENTIAL

Driller: Paul Slusarchuk Well Drilling LTd.

Well Name: RETURN WELL #6

Well Use: RECHARGE

Water Use:

UTMX: 644608.1110

UTMY: 5532407.76

Accuracy XY:

UTMZ:

Accuracy Z:

Date Completed: 1998 Jul 09

WELL LOG

From	To	Log
------	----	-----

(ft.)	(ft.)	
-------	-------	--

0	36.0	CLAY
---	------	------

36.0	47.0	TILL AND BOULDERS
------	------	-------------------



47.0 49.0 LIMESTONE RUBBLE
 49.0 51.0 SOFT LIMESTONE
 51.0 148.0 LIMESTONE

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	51.0	CASING	6.50			STEEL	
51.0	148.0	OPEN HOLE		6.50			
0	40.0	CASING GROUT					CEMENT
40.0	51.0	CASING GROUT					BENTONITE

Top of Casing: 1.000 ft. above ground

PUMPING TEST

Date: 1998 Jul 28
 Pumping Rate: 330.000 Imp. gallons/minute
 Water level before pumping: 31.4 ft. below ground
 Pumping level at end of test: 37.4 ft. below ground
 Test duration: 6 hours, minutes
 Water temperature: ?? degrees F

REMARKS

999 REDONDA, N OF RETURN WELL #5, PUMP TEST DATA FILE

Location: NE16-11-4E



Well_PID: 111332
 Owner: X-POTENTIAL
 Driller: Paul Slusarchuk Well Drilling LTd.
 Well Name: RETURN WELL #7
 Well Use: RECHARGE
 Water Use:
 UTMX: 644608.1110
 UTMY: 5532407.76
 Accuracy XY:
 UTMZ:
 Accuracy Z:
 Date Completed: 1998 Jul 10

WELL LOG

From (ft.)	To (ft.)	Log
0	38.0	CLAY
38.0	45.0	TILL
45.0	48.0	LIMESTONE RUBBLE AND TILL
48.0	49.0	LIMESTONE
49.0	51.0	SOFT LIMESTONE RUBBLE
51.0	148.0	LIMESTONE, MAIN FRACTURES 59-60 FEET, SMALLER FRACTURE AT 73 FEET

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	51.5	CASING	6.50				STEEL
51.5	148.0	OPEN HOLE	6.30				



0	40.0 CASING GROUT	CEMENT
40.0	50.0 CASING GROUT	BENTONITE

Top of Casing: 1.502 ft. above ground

PUMPING TEST

Date: 1998 Jul 30
Pumping Rate: 255.000 Imp. gallons/minute
Water level before pumping: 30.6 ft. below ground
Pumping level at end of test: 41.0 ft. below ground
Test duration: 4 hours, minutes
Water temperature: ?? degrees F

REMARKS

999 REDONDA, NW OF RETURN WELL #5, PUMP TEST DATA FILE

Location: NE16-11-4E

Well_PID: 110162
Owner: X POTENTIAL
Driller: Paul Slusarchuk Well Drilling LTd.
Well Name: RETURN WELL #8
Well Use: RECHARGE
Water Use: Industrial
UTMX: 644608.1110
UTMY: 5532407.76
Accuracy XY:



UTMZ:

Accuracy Z: UNKNOWN

Date Completed: 1998 Aug 06

WELL LOG

From (ft.)	To (ft.)	Log
0	36.0	CLAY
36.0	47.0	TILL
47.0	50.0	LIMESTONE RUBBLE
50.0	148.0	LIMESTONE

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	51.0	CASING	7.00			STEEL	
51.0	148.0	OPEN HOLE	6.30				
0	45.0	CASING GROUT				CEMENT	
45.0	51.0	CASING GROUT				BENTONITE	

Top of Casing: 2.000 ft. above ground

PUMPING TEST

Date: 1998 Aug 12

Pumping Rate: 360.000 Imp. gallons/minute

Water level before pumping: 33.7 ft. below ground

Pumping level at end of test: 40.2 ft. below ground

Test duration: 4 hours, minutes

Water temperature: ?? degrees F

REMARKS

99 REDONDA, FRACTURE START AT 52-56 FT

Location: NE16-11-4E

Well_PID: 77062

Owner: X-POTENTIAL

Driller: Paul Slusarchuk Well Drilling LTd.

Well Name: SOUTH WELL

Well Use: PRODUCTION

Water Use: Domestic

UTMX: 644608.1110

UTMY: 5532407.76

Accuracy XY: UNKNOWN

UTMZ:

Accuracy Z: UNKNOWN

Date Completed: 1993 Sep 27

WELL LOG

From	To	Log
(ft.)	(ft.)	
0	2.0	GRAVEL FILL
2.0	40.0	CLAY
40.0	48.0	SILTY TILL
48.0	52.0	RUBBLE LIMESTONE
52.0	119.9	LIMESTONE



119.9 129.9 CLAY, RUBBLE LIMESTONE AND SOME SAND
129.9 145.9 LIMESTONE

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	54.5	casing	6.50			INSERT	PVC
54.5	145.9	open hole	6.00				
0	0	casing grout					CEMENT

Top of Casing: 1.000 ft. above ground

PUMPING TEST

Date: 1993 Sep 27
Pumping Rate: 182.995 Imp. gallons/minute
Water level before pumping: 35.7 ft. below ground
Pumping level at end of test: 37.5 ft. below ground
Test duration: 21 hours, 30 minutes
Water temperature: ?? degrees F

REMARKS

999 REDONDA, PUMPED WITH AIR, WATER RIGHTS FILE, PREVIOUS
OWNER-GENERAL SCRAP LTD

Location: NE16-11-4E

Well_PID: 119785



Owner: UMA ENGINEERING

Driller: Friesen Drillers Ltd.

Well Name:

Well Use: OBSERVATION

Water Use:

UTMX: 644608.1110

UTMY: 5532407.76

Accuracy XY:

UTMZ:

Accuracy Z:

Date Completed: 2001 Jan 22

WELL LOG

From (ft.)	To (ft.)	Log
0	32.0	CLAY
32.0	44.0	TILL
44.0	53.0	RUBBLE - SOFT LIMESTONE
53.0	65.0	HARD LIMESTONE

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	56.0	CASING	4.50	4.00		INSERT	STEEL
56.0	65.0	OPEN HOLE		4.00			
40.0	56.0	GRAVEL PACK				PEA SIZE	GRAVEL
44.0	55.0	PERFORATIONS				WELDED	
10.0	40.0	CASING GROUT					BENTONITE

Top of Casing: 2.000 ft. above ground



PUMPING TEST

Date: 2001 Jan 22
Pumping Rate: 30.000 Imp. gallons/minute
Water level before pumping: 32.0 ft. below ground
Pumping level at end of test: 60.0 ft. below ground
Test duration: ??? hours, ?? minutes
Water temperature: ?? degrees F

REMARKS

999 REDONDA, SE CORNER OF PROPERTY.

Location: NE16-11-4E

Well_PID: 111323
Owner: X-POTENTIAL
Driller: Paul Slusarchuk Well Drilling LTd.
Well Name: 12 INCH SUPPLY WELL
Well Use: TEST WELL
Water Use: Industrial
UTMX: 644608.1110
UTMY: 5532407.76
Accuracy XY:
UTMZ:
Accuracy Z:
Date Completed: 1998 May 26



WELL LOG

From (ft.)	To (ft.)	Log
0	45.0	CLAY
45.0	55.0	TILL
55.0	138.0	LIMESTONE

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	56.0	CASING		5.00			GALVANIZED
56.0	138.0	OPEN HOLE		4.50			

Top of Casing: 2.000 ft. above ground

PUMPING TEST

Date: 1998 May 26

Pumping Rate: 80.000 Imp. gallons/minute

Water level before pumping: 34.7 ft. below ground

Pumping level at end of test: 35.3 ft. below ground

Test duration: 1 hours, minutes

Water temperature: ?? degrees F

REMARKS

999 REDONDA, PULLED CASING ON TEST HOLE & 12 INCH WELL INSTALLED

Location: NE16-11-4E

Well_PID: 111324

Owner: X-POTENTIAL

Driller: Paul Slusarchuk Well Drilling LTd.

Well Name: 12 INCH SUPPLY WELL

Well Use: PRODUCTION

Water Use: Industrial

UTMX: 644608.1110

UTMY: 5532407.76

Accuracy XY:

UTMZ:

Accuracy Z:

Date Completed: 1998 Jul 15

WELL LOG

From (ft.)	To (ft.)	Log
0	45.0	CLAY
45.0	55.0	TILL
55.0	148.0	LIMESTONE, MAJOR FRACTURE ZONE 59-65 FEET

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	58.0	CASING	12.00				STEEL
58.0	148.0	OPEN HOLE		11.00			
0	40.0	CASING GROUT					CEMENT

Top of Casing: 2.000 ft. above ground

PUMPING TEST

Date: 1998 Jul 20
Pumping Rate: 641.003 Imp. gallons/minute
Water level before pumping: 37.0 ft. below ground
Pumping level at end of test: 50.7 ft. below ground
Test duration: 24 hours, minutes
Water temperature: ?? degrees F

REMARKS

999 REDONDA, WATER USED FOR INDUSTRIAL COOLING

Location: NE16-11-4E

Well_PID: 77063
Owner: X-POTENTIAL
Driller: Paul Slusarchuk Well Drilling LTd.
Well Name: NORTH WELL
Well Use: RECHARGE
Water Use: Industrial
UTMX: 644608.1110
UTMY: 5532407.76
Accuracy XY: UNKNOWN
UTMZ:
Accuracy Z: UNKNOWN
Date Completed: 1993 Oct 05



WELL LOG

From (ft.)	To (ft.)	Log
0	37.0	CLAY
37.0	45.0	TILL AND RUBBLE LIMESTONE
45.0	53.0	RUBBLE LIMESTONE AND TILL
53.0	267.8	LIMESTONE

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	54.5	casing	6.50			INSERT	BLACK IRON
54.5	267.8	open hole	6.00				
0	0	casing grout				CEMENT	

Top of Casing: 1.000 ft. above ground

PUMPING TEST

Date: 1993 Oct 05

Pumping Rate: 167.005 Imp. gallons/minute

Water level before pumping: 34.1 ft. below ground

Pumping level at end of test: 45.6 ft. below ground

Test duration: 17 hours, 30 minutes

Water temperature: ?? degrees F

REMARKS

999 REDONDA, PUMPED WITH AIR, WELL ACIDIZED WITH 100 GAL ACID TO

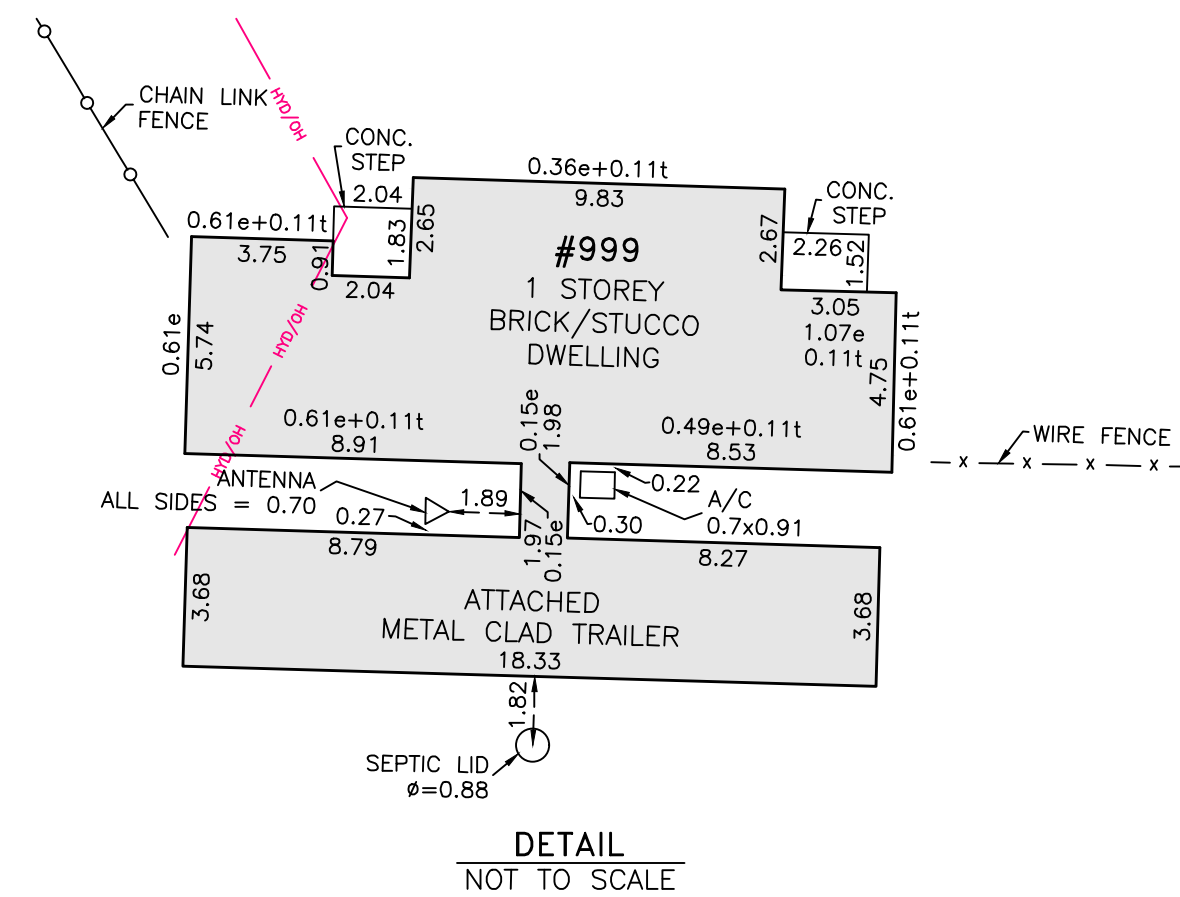
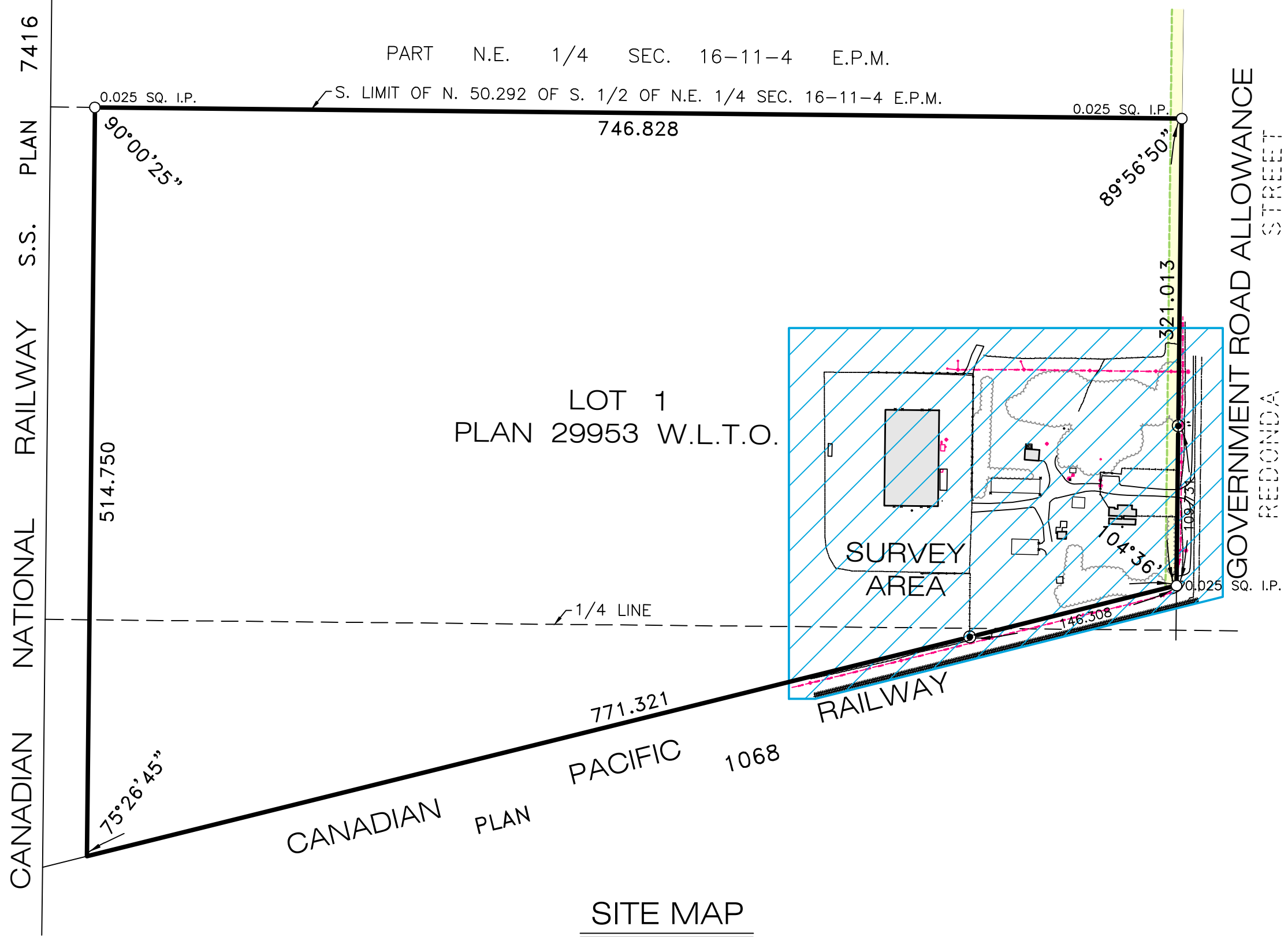
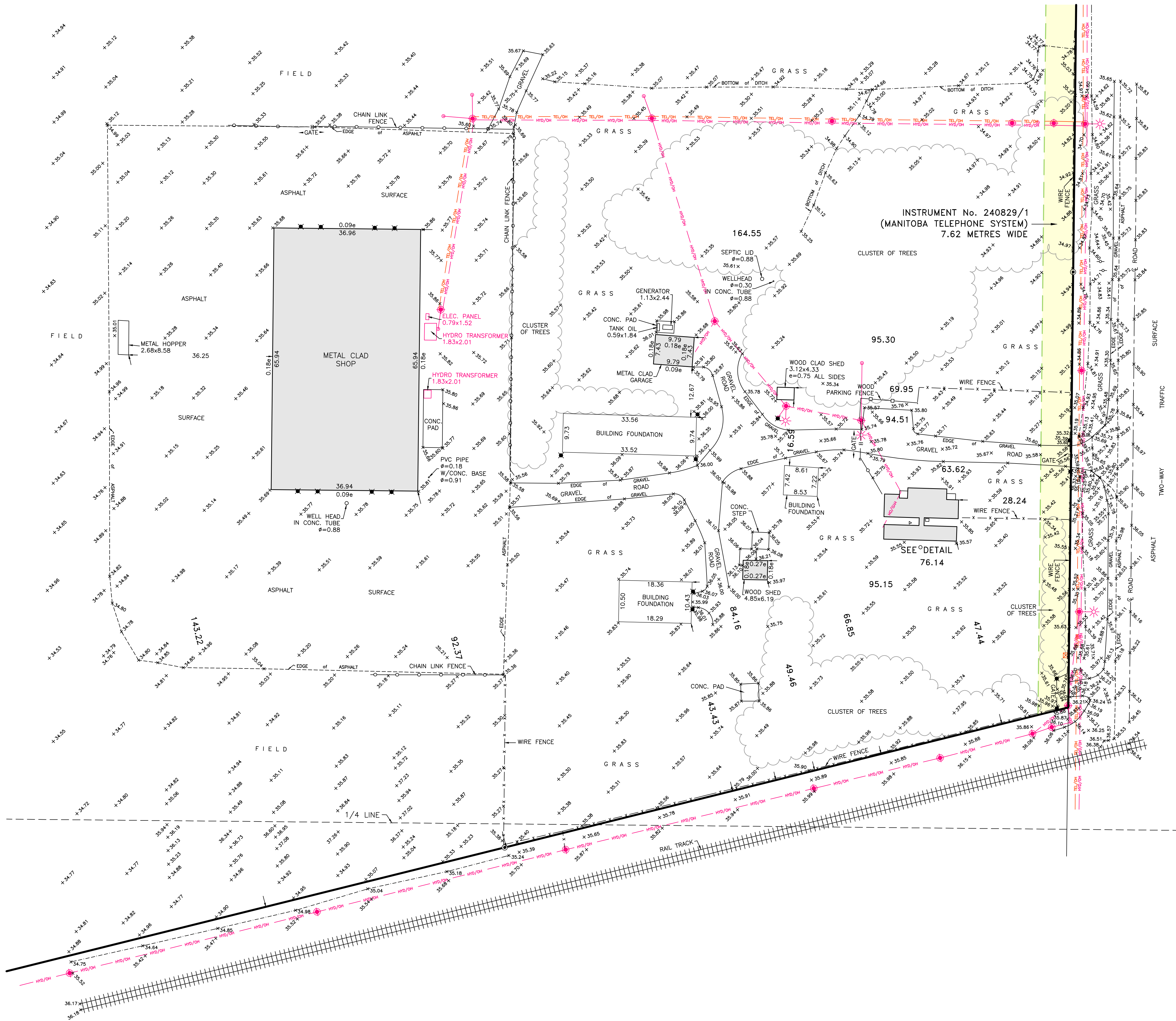


IMPROVE FLOW, WATER RIGHTS FILE, PREVIOUS OWNER-GENERAL SCRAP LTD

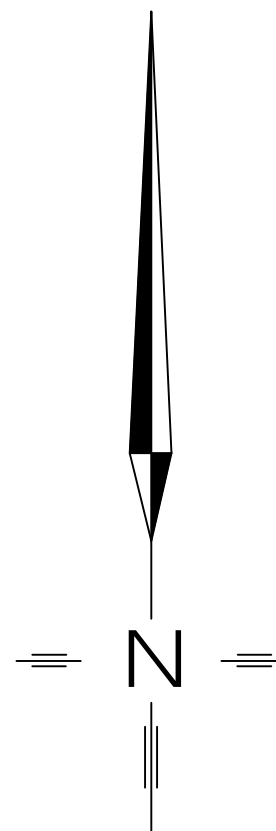


Appendix D

Topographic Plan



METRIC



BARNES & DUNCAN
SURVEYING, ENGINEERING & GEOMATICS
6 DONALD STREET
WINNIPEG, MANITOBA
R3L 0K6

CLIENT:
WOOD.

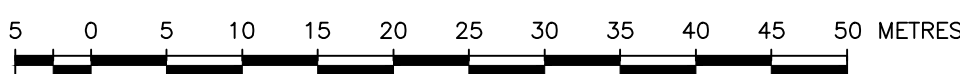
999 REDONA STREET
R.M. OF SPRINGFIELD, MANITOBA

PLAN OF TOPOGRAPHIC SURVEY
OF PART OF
E. 1/2 OF SECTION 16,
TOWNSHIP 11, RANGE 3 E.P.M.

BEING
LOT 1, PLAN 29953

R.M. OF SPRINGFIELD
MANITOBA

SCALE - 1 : 500



TITLE INFORMATION:

CERTIFICATE OF TITLE: 2005569/1 W.L.T.O. (SEARCH DATE: NOVEMBER 14, 2019)
REGISTERED OWNER: XPOTENTIAL PRODUCTS INC.
LEGAL DESCRIPTION: LOT 1, PLAN 29953 W.L.T.O.
IN E 1/2 16-11-4 EPM
ENCUMBRANCES: INSTRUMENTS NUMBERED 240829/1 AND 2606108/1 ARE REGISTERED AGAINST THE ABOVE
CERTIFICATE OF TITLE. ENCUMBRANCES NOTED HEREIN ARE PROVIDED FOR INFORMATION ONLY
AND HAVE NOT BEEN INVESTIGATED AS TO THEIR INTENT OR EXTENT.

LEGEND

Survey monuments found on the ground are described and shown thus 
0.013 diam. iron posts are placed at all points shown thus 
Property Lines and Dimensions  100.000
Fences  CHAIN LINK OR  WIRE OR  WOOD
Street and Traffic Signs 
Power Poles 
Power Poles with Light 
Guy Wire Anchors 
MTS Boxes 
Guard Posts 
Telephone Cables (overhead)  TEL/OH
Hydro Cables (overhead)  HYD/OH

NOTES

All dimensions are in metres and may be converted to feet by multiplying by 3.28084 .
Elevations are referred to Geodetic Datum and are indicated thus 
For Geodetic Elevations add 200.0 to all elevations shown.
Elevations are referred to City of Winnipeg Bench Mark No. 10-030, having an elevation of 233.068 metres.
Confirmation of existence and exact location of all services must be obtained from the individual
utilities before proceeding with construction.

This survey was made between the 16th day of November and the 13th day of December, 2019.

SHOULD INFORMATION ON THE DIGITAL FILE DIFFER FROM THE INFORMATION SHOWN ON THE
ORIGINAL HARD COPY, AS PROVIDED BY OUR FIRM, THE LATTER WILL GOVERN.

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THIS DOCUMENT IS NOT VALID UNLESS ORIGINALLY SIGNED AND SEALED BY THE MANITOBA LAND SURVEYOR

K. TODD BAILEY, M.L.S.
DATED THIS 16th DAY OF DECEMBER, 2019

FILE: 19-1234
DWG: 19-1234-1-TOPO
FB: B&D 1312-137/139

AN

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Appendix E

Assessment Criteria

Assessment Criteria & Regulatory Information

General

Manitoba Sustainable Development has adopted the principals established by the CCME for environmental management and assessment of sites in Manitoba, in addition to the requirements of the Manitoba Contaminated Sites Remediation Act (CSRA) and the Manitoba Contaminated Sites Remediation Regulation (CSRR), M.R. 105/97. The ESA process in Manitoba is outlined in the MSD June 2016 Guideline document "Environmental Site Assessments in Manitoba" which discusses the derivation process to determine the applicable Assessment Guidelines and Reporting Standards for potentially contaminated soil, groundwater, surface water or sediment.

The Assessment Guidelines for the Site are used to determine the significance of risk to human health and the environment associated with the contamination discovered by an ESA and what future action is recommended to address the risk for the site. The Assessment Guidelines can be derived primarily from the Environmental Quality Guidelines (EQGs) published by CCME; however, should the CCME not provide adequate information or guidance, documents from other jurisdictions may be used, provided they are supported as the most scientifically valid Assessment Guidelines for the Site. The Assessment Guidelines may differ from the applicable Reporting Standards.

The following documents produced by CCME were selected as being applicable for assessment of the Site dependent on the contaminants of concern, pathways and receptors:

- CCME 1999 (updates to 2019). Canadian Environmental Quality Guidelines (EQGs).
- CCME 2001 (revised 2008). Canada-Wide Standards (CWS) for Petroleum Hydrocarbons in Soil.
- Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ) (October 2014).

Based on the conditions present at the Site, the following documents may be used for groundwater assessment:

- Government of Alberta, Alberta Tier 1 and Tier 2 Soil and Groundwater Remediation Guidelines January 2019 (AEP 2019).
- Ontario Ministry of the Environment. (MOE, 2011). Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act.

As determined by CCME (A Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines, 2006), a tiered framework can be employed for the screening and assessment of contaminated sites. The framework relies on generic guidelines (Tier 1) and site-specific objectives (Tiers 2 and 3). The generic guidelines are simple numerical values, based on generic scenarios developed for different land uses, and employ conservative assumptions. Generic guidelines help evaluate the relative risk posed by contaminants at a site but may not always be an appropriate indication of actual risk based on-site conditions. Site-specific remediation objectives may be developed, either by modifying (within limits) the generic remediation objectives based on site-specific conditions (Tier 2) or by conducting a human health and/or ecological risk assessment (Tier 3).

The most common assessment guideline approach used in Manitoba is the Tier 2 protocol employing published individual guidelines based on the pathways and/or receptors that could be applicable to the Site. Adequate information must be acquired during the investigation to justify the inclusion or exclusion

of each of the exposure pathways. The published guidelines (CCME, Health Canada, AEP, or MOE) provide guidance as to what information is needed to determine if a pathway and/or receptor is applicable to a site or if it can be excluded.

Based on the listed published guideline documents (and their precursors), Wood conducted an evaluation of the applicable exposure pathways, land uses, key receptors and a visual evaluation of the predominant soil texture at the Site. The evaluation was conducted in accordance with CCME 2006 protocols and did not include the modification or recalculation of the formulas used to derive the Assessment Guideline values. The most stringent of the applicable exposure pathway guideline values was employed for assessment of each contaminant in soil, groundwater, and soil vapour.

The Contaminated Site Remediation Regulation (CSRR) establishes criteria (Reporting Standards) for when it is necessary to submit a site report to MSD. The applicable Reporting Standards are derived from the primary, secondary and tertiary standards (or their current equivalent) listed within the CSRR. The reporting standards listed includes the CCME EQG values as the primary values augmented by the MOE, Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, 2011 and the AEP, Tier 1 Soil and Groundwater Remediation Guidelines, 2019. The selection of Reporting Standard is based on the most applicable standard for the parameters and/or applicable Site conditions. Further adjustment of the Reporting Standards may be considered in order to use Tier 2 values for the standards outlined in the CSRR, should sufficient site characterization data be available. As such, the CSRA reporting threshold values may not be equivalent to the exposure pathway Assessment Guidelines.

Land Use

CCME has developed four generic land uses for use in assessment using these guidelines. A generic land use scenario is envisioned for each category based on the normal activities on these lands. The four land uses as defined by CCME are:

Agricultural lands: Agricultural land encompasses a wide range of activities including dairy, livestock and/or crop production. Most farms include a homestead, so the possible presence of an on-site residence (similar to those specified for residential/parkland sites, below) is considered in the default scenario. Agricultural lands are generally accessible by the farmer and his/her family members, including children, which represent the more sensitive human receptor category. Therefore, the critical human receptor in the agricultural land use category is assumed to be a toddler who receives 100% of his/her daily intake of soil and drinking water (groundwater) from the property.

Residential/Parkland: The generic residential property is a typical detached, single-family home with a backyard where children, particularly toddlers, play. The critical receptor assumed on a residential property is a toddler who receives 100% of his/her daily intake of soil, drinking water (groundwater), and air (indoors) from the property. Separate guidelines have been developed for two house foundation construction styles; below grade concrete foundation wall and floor slab (basement) and concrete slab-on-grade foundation. Parks may serve as areas for children's play and other family activities and are therefore also included in the residential land use category.

Commercial: Commercial properties span a wide variety of uses with varying degrees of public access. For purposes of criteria, the generic commercial property is assumed to contain a daycare facility, a sensitive commercial property use that is permitted in many municipal jurisdictions in Canada. It is

assumed that the critical receptor (toddler) spends a substantial portion of the weekdays at a daycare. In particular, it is assumed that the toddler spends 10 hours per day, 5 days per week for 48 weeks per year at the daycare. The toddler thereby receives an amount of his/her daily intake of drinking water (groundwater), and air (indoors) from the commercial property proportional to the number of hours per day, days per week and weeks per year spent at the facility. Intake via direct contact with soil (soil ingestion and dermal contact) is proportional to the days per week and weeks per year spent at the facility. Most commercial buildings are constructed with concrete slab-on-grade foundations.

Industrial: Industrial properties span a wide variety of uses but generally do not permit direct public access and therefore, children are not likely or frequently present. For purposes of deriving criteria, the generic industrial property is assumed to be a site with a building frequented by an adult worker who spends 10 hours per day, 5 days per week for 48 weeks per year on the property. The adult receptor thereby receives an amount of his/her daily intake of drinking water (groundwater), and air (indoors) from the industrial property proportional to the number of hours per day, days per week and weeks per year spent at the facility. Intake via direct contact with soil (soil ingestion and dermal contact) is proportional to the days per week and weeks per year spent at the facility. Most industrial buildings are constructed with concrete slab-on-grade foundations.

The Site is currently zoned as industrial land use, and proposed future land use is industrial.

The Site and surrounding land use is shown on Figure 1 and summarized in Table 1.

Grain Size Designation

CCME guidelines are prescribed for coarse-grained and fine-grained soils for Site assessments. Fine-grained soils are defined as having a median grain size of less than or equal to 75 µm; coarse-grained soils have a median grain size of greater than 75 µm. Where both fine- and coarse-grained strata are present, the dominant soil particle size is determined by the stratum governing horizontal and vertical migration to a receptor.

Grain size analysis was not completed as on two samples as part of the assessment:

- TH19-01 – 0.8 m bgl (clay) – 2 % > 75 µm – Fine

Based on the results of the grain size analysis, native soils at the Site are predominantly fine-grained in nature. In general medium to high plastic clay was observed below the surface soil layer and extended to the maximum depth explored at each test hole. Based on the above, the Site is characterized as fine-grained for the purpose of this assessment.

Applicable Exposure Pathways

Human Exposure Pathways

Potential human exposure pathways for commercial/industrial sites include the following: direct contact (soil ingestion, dermal contact, and soil inhalation), indoor vapour inhalation, and the protection of potable groundwater. Applicability of each of these potential exposure pathways is discussed in the following sections.

Soil Ingestion and Dermal Contact

Currently, portions of the Site are covered by concrete pads and buildings, however the majority of the Site is covered by vegetated areas. As such the direct contact (soil ingestion and dermal contact) pathway is considered applicable to the surface soil horizon.

The direct contact pathway is not considered applicable for the subsoil as the surface soil creates a suitable barrier to avoid contact. It is assumed that any ground disturbance in which soils at depth previously not accessible are brought to ground surface would result in short-term exposure and not be considered applicable to the exposure models in which the CCME guidelines are derived.

Vapour Inhalation

The indoor vapour inhalation pathway would be considered applicable to the Site as there are buildings present on Site.

Protection of Potable Groundwater

CCME considers all water bearing units as a potential potable groundwater resource; however, CCME defines a water bearing unit as having a hydraulic conductivity of greater than 10^{-4} cm/s. Furthermore, MSD recognizes the division between contaminated soil and groundwater that is not hydraulically connected to an underlying aquifer. A 5 m thickness of massive unfractured saturated fine-grained material, with a bulk hydraulic conductivity less than 10^{-5} cm/s is considered sufficient isolation of groundwater aquifers.

A water well records review was conducted by Wood, using the MSD GW Drill data base. The search determined that groundwater at the Site and within a 500 m radius of the Site are used for domestic purposes. These well records indicate the wells are installed into a depth of approximately 15 m. The water well records information for the Site is included in Appendix C. Based on the stratigraphic information from the water well records, as well as stratigraphic observations at the Site, a substantial thickness (> 6 m) of fine grained soil exists over the underlying aquifer, providing a sufficient confining layer as verified during test hole drilling.

As such, the potable groundwater pathway is not considered to be applicable for the assessment of near surface soil and groundwater Site.

As a water sample was collected from the water well located near the warehouse building, the applicable potable groundwater will be used for the assessment water quality from this well only.

Ecological Exposure Pathways

The potential ecological exposure pathway at the Site is the ecological soil contact and freshwater aquatic life pathways.

Ecological Soil Contact

The ecological soil contact pathway is protective of potential ecological receptor exposure, from terrestrial and subterranean organisms and plant root systems, to soils in the surface soil horizon. Presently, as the majority of the Site is covered by grass and other vegetation, the ecological pathway is applicable.

Ecological receptor direct contact exposure to soils in the subsoil horizon is not considered applicable as the surface soil creates a suitable barrier to avoid subsoil ecological contact from organisms at the ground surface and the subsoil horizon is not typically suitable to support invertebrates or burrowing mammals.

Freshwater Aquatic Life Pathway

CCME states that the freshwater aquatic life pathway may be excluded in cases where there is no surface water body within 10 m of a site classified as fine-grained and 500 m of a site classified as coarse-grain. If a surface water body is within 500 m, it must be assessed to determine whether the freshwater aquatic life pathway is applicable.

The nearest permanent surface water body is the Red River Floodway 800 m east of the Site. Based on information provided and the fine-grained soil encountered during the subsurface investigations, the protection of fresh water aquatic life pathway is not considered applicable to the assessment.

Miscellaneous Criteria

As commercial land use criteria are applicable to the Site, soil management limits as produced by CCME for PHCs are applicable to the assessment.

Management Limit

The management limits for PHCs applies for all soils in the surface soil and subsoil horizon.

Off-Site Migration Check

Surrounding properties include residential dwellings, which is a more sensitive land usage. Therefore, off-Site migration check does apply to the Site.

CCME 1991 Interim Criteria

CCME initially developed interim criteria for many potential contaminants in 1991. With the publishing of the Canadian Environmental Quality Guidelines in 1999 (and subsequent updates), CCME adopted a risk based scientific approach to determining soil quality guidelines. While many of the interim criteria have been superseded by updated guidelines, there are still contaminants, including several PAH, VOC and metal parameters, in which new guidelines have not yet been developed for all exposure pathways and, in some cases, the interim criteria still remain as the only guideline for assessment comparison.

Summary of Applicable Assessment Guidelines

Given the current and inferred future industrial land use of the Site, the fine-grained nature of the soil and the applicable exposure pathways as outlined in the previous sections, Wood determined assessment guidelines for each contaminant of concern. The most stringent of the applicable exposure pathway guideline values as produced by CCME was used for each contaminant for both the surface soil and subsoil horizons and groundwater. Where CCME did not provide an assessment guideline, applicable guidelines from other jurisdictions were included, based on applicability to the Site conditions. The limiting exposure pathways are presented in Table D-1 (Appendix D).

Wood has chosen the following applicable risk guideline criteria for the Site:

PHC Soil Assessment Guidelines

Above 1.5 m grade:

Industrial values for fine-grained soil in a non-potable groundwater situation as limited by the:

- Indoor Vapour Inhalation (Slab on Grade) exposure pathway for benzene;
- Ecological Soil Contact exposure pathway for toluene, ethylbenzene, xylenes and PHC fraction F1 – F4.

Below 1.5 m grade:

Industrial values for fine-grained soil in a non-potable groundwater situation as limited by the:

- Indoor Vapour Inhalation (Slab on Grade) exposure pathway for benzene, toluene, ethylbenzene, xylenes; and
- Management Limits for PHC fractions F1 – F4.

Metals Soil Assessment Guidelines

Industrial values as limited by the:

- Soil Ingestion exposure pathway for arsenic;
- Ecological Soil Contact exposure for cadmium, chromium, copper, lead, nickel, selenium, thallium, vanadium and zinc; and
- Interim Soil Quality Criterion for antimony, barium, beryllium, hexavalent chromium, cobalt, molybdenum, silver, and tin.

PAH Soil Assessment Guidelines

Industrial values for fine-grained soil in a non-potable groundwater situation as limited by the:

- Soil Contact exposure pathway for anthracene, benzo(a)pyrene, fluoranthene and B[a]P TEP;
- Provisional Soil Quality Guideline for Naphthalene; and
- Interim Criteria for benzo(a)anthracene, benzo(b+j)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,23-cd)pyrene, phenanthrene and pyrene.

VOC Soil Assessment Guidelines

Industrial values for fine-grained soil in a non-potable groundwater situation as limited by the:

- Interim Criteria for carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, dichloromethane, 1,2-dichloropropane, styrene, 1,1,2,2-tetrachloroethane, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, tetrachloroethene and trichloroethene.

There are no guidelines available for the remaining VOC parameters and therefore the analytical results are compared to the MOE Table 3 criteria.

PCB (Total) Soil Assessment Guidelines

Industrial values for fine-grained soil in a non-potable groundwater situation as limited by the soil contact exposure pathway

Groundwater Assessment Guidelines (Monitoring Wells)

Based on the exposure scenario present at the Site, Commercial/Industrial values for fine-grained soil in a non-potable groundwater situation have been used for groundwater comparison. As CCME does not provide applicable groundwater criteria for the conditions at the Site, the AEP 2019 Groundwater Remediation Guideline Values have been used for the purposes of this assessment.

- Inhalation exposure pathway for benzene, methylnaphthalenes, acetone, bromoform, bromomethane, carbon tetrachloride, chlorobenzene, dibromochloromethane, ethylene dibromide, 1,4-dichlorobenzene, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis 1,2-dichloroethene, trans 1,2-dichloroethene, dichloromethane, 1,2-dichloropropane, 1,3-dichloropropene, hexachlorobutadiene, methyl butyl ketone, MEK, MIBK, MTBE, 1,1,1,2-tetrachloroethane, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-Trichloroethane, trichloroethene (TCE), and vinyl chloride; and
- Soil Organisms Direct Contact exposure for toluene, ethylbenzene, xylenes, PHC fraction F1 – F2, anthracene, benzo(a)pyrene, and fluoranthene.

Groundwater Assessment Criteria (Water Well Sample)

- The Health Canada GCDWQ Maximum Acceptable Concentrations (MAC) are considered applicable for benzene, and xylenes;
- Dioxin and Furan Toxic Equivalency Factor (TEQ) guideline from MOE 2011 Table 2 (potable) and us compared to the upper bound result.



TABLE D-1: ASSESSMENT CRITERIA - Soil PHCs

Fine-Grained Soil Criteria (mg/kg)											
Criteria - Land Use	Exposure Pathway	Benzene	Toluene	Ethylbenzene	Xylenes	PHC Fraction F1	PHC Fraction F2	PHC Fraction F3	PHC Fraction F4		
CCME - Industrial Surface Soil (≤ 1.5 m)	Soil Ingestion	110	NA	620,000	NA	RES	RES	RES	RES		
	Dermal Contact	250	NA	560,000	NA	RES	RES	RES	RES		
	Indoor Vapour Inhalation (slab on grade)	2.8	13,000	6500	1600	4600	23000	NA	NA		
	Off-Site Migration Check	NG	NG	NG	NG	NA	NA	4300	RES		
	Ecological Soil Contact	310	330	430	230	320	260	2500	6600		
	Management Limits	NG	NG	NG	NG	800	1000	5000	10000		
MSD Reporting Standard		Surface Soil (≤1.5 m)		2.8	330	430	230	320	260	2,500	6,600
MSD Reporting Standards Selected From				CCME	CCME	CCME	CCME	CCME	CCME	CCME	CCME
CCME - Industrial Subsurface Soil (< 1.5	Indoor Vapour Inhalation (slab on grade)	2.9	13,000	6700	1600	4600	23000	NA	NA		
	Management Limits	NG	NG	NG	NG	800	1000	5000	10000		
Applicable Soil Guidelines		Subsurface Soil (> 1.5 m)		2.9	13,000	6,700	1,600	800	1,000	5,000	10,000
MSD Reporting Standards Selected From				CCME	CCME	CCME	CCME	CCME	CCME	CCME	CCME

- Benzene guidelines were selected based on the 10⁻⁵ incremental risk for human health
- MCC Reporting Standards - Manitoba Conservaiton and Climate Reporting standards as per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR). Values based on CCME standards unless noted.
- mg/kg - milligrams per kilogram
- mg/L - milligrams per liter
- PHC Fraction F1 - volatile petroleum hydrocarbons (C₆ – C₁₀), less BTEX
- PHC Fraction F2 - extractable petroleum hydrocarbons (C₁₀ – C₁₆)
- PHC Fraction F3 - extractable petroleum hydrocarbons (C₁₆ – C₃₄)
- PHC Fraction F4 - extractable petroleum hydrocarbons (C₃₄ – C₅₀)
- NC - not calculated
- NG - no guideline available
- NA - not applicable, calculated value exceeds 1,000,000 mg/kg
- NGR - no guideline required - Calculated value is greater than solubility or 1,000,000 mg/L.
- RES - Residual PHC formation. Calculated value exceeds 30,000 mg/kg and solubility limit for PHC fraction.
- CCME EQG Criteria – industrial land use criteria as outlined in the Canadian Council of the Ministers of the Environment (CCME) “Canadian Environmental Quality Guidelines”, 1999 (updates to 2019).
- CCME CWS PHC Criteria - industriial land use criteria as outlined in the Canadian Council of the Ministers of the Environment (CCME) “Canada-Wide Standards for Hydrocarbons in Soil”, 2001, revised 2008.
- AEP - Alberta Tier 2 Soil and Groundwater Remediation Guidelines (2019)
- Health Canada. 2019. Guidelines for Canadian Drinking Water Quality Summary Table.

TABLE D-1: ASSESSMENT CRITERIA - METALS

Land Use	Exposure Pathway	Soil Guidelines (mg/kg) (Metals)										
		Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt
Industrial	Soil Ingestion ^{HH}	NG	NC	12	10000	NC	NG	NG	49	NG	630	NC
	Indoor Vapour Inhalation ^{HH}	NG	NC	NC	NC	NC	NG	NG	NC	NG	NC	NC
	Off-Site Migration Check ^{HH}	NG	NC	NC	96000	NC	NG	NG	NC	NG	NC	NC
	Ecological Soil Contact ^{EH}	NG	NC	26	NC	NC	NG	NG	22	NG	87	NC
	Provisional SQG ^{EH}	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Interim Criteria ²	NG	40	50	2000	8	NG	NG	20	NG	800	300
	Assessment Criteria¹	NG	40	12	2000	8	NG	120	22	NG	87	300
Land Use	Exposure Pathway	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver
Industrial	Soil Ingestion ^{HH}	4000	NG	8200	NG	NG	NC	310	NG	NG	125	NC
	Indoor Vapour Inhalation ^{HH}	NC	NG	NC	NG	NG	NC	10000	NG	NG	NC	NC
	Off-Site Migration Check ^{HH}	NC	NG	740	NG	NG	NC	2500	NG	NG	1135	NC
	Ecological Soil Contact ^{EH}	91	NG	600	NG	NG	NC	89	NG	NG	2.9	NC
	Provisional SQG ^{EH}	NC	NC	NC	NC	NC	NC	NG	NC	NG	NG	NG
	Interim Criteria ²	500	NG	1000	NG	NG	40	500	NG	NG	10	40
	Assessment Criteria¹	91	NG	600	NG	NG	40	89	NG	NG	2.9	40
Land Use	Exposure Pathway	Sodium	Strontium	Sulfur	Thallium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Zirconium
Industrial	Soil Ingestion ^{HH}	NG	NG	NG	NC	NC	NG	NG	510	NC	140000	NC
	Indoor Vapour Inhalation ^{HH}	NG	NG	NG	NC	NC	NG	NG	NC	NC	NG	NC
	Off-Site Migration Check ^{HH}	NG	NG	NG	NC	NC	NG	NG	300	NC	140000	NC
	Ecological Soil Contact ^{EH}	NG	NG	NG	3.6	NC	NG	NG	2000	130	450	NC
	Provisional SQG ^{EH}	NG	NG	NG	1	NG	NG	NG	NG	NC	NC	NG
	Interim Criteria ²	NG	NG	NG	NG	300	NG	NG	NG	NG	1500	NG
	Assessment Criteria¹	NG	NG	NG	3.6	300	NG	NG	300	130	450	NG

Notes:

- ¹ As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR) . Criteria are based on CCME standards unless otherwise noted
- ² Interim Criteria based on non-scientific rational. In the case where a scientific defensible value established for an exposure pathway is greater than the interim criteria value, the scientific defensible value will be considered applicable
- mg/kg - concentration in milligrams per kilogram equivlanet to µg
- HH = Human Health
- EH = Environmental Health

TABLE D-1: ASSESSMENT CRITERIA - INDUSTRIAL - PAHs

Land Use	Exposure Pathway	Soil Guidelines (mg/kg) (PAHs) ⁴										
		Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b+j)fluoranthene	Benzo(b+j+k)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene
Industrial	Soil Contact ^{6 HH}	NC	NC	NG	32	NC	72	NC	NG	NC	NC	NC
	Soil and Food Ingestion ^{HH}	NC	NC	NG	NC	NC	NC	NC	NG	NC	NC	NC
	Provisional SQG ^{EH}	NG	NG	NG	NG	NG	1.4	NG	NG	NG	NG	NG
	Interim Criteria ⁵	NG	NG	NG	NG	10	NG	10	NG	NG	10	NG
	Assessment Criteria ³	96 ⁷	0.17 ⁷	NG	32	10	72	10	NG	9.6 ⁷	10	9.6 ⁷
Land Use	Exposure Pathway	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene	B(a)p TEP ¹		
Industrial	Soil Contact ^{6 HH}	NC	180	NC	NC	NG	NC	NC	NC	5.3		
	Soil and Food Ingestion ^{HH}	NC	NC	NC	NC	NG	NC	NC	NC	NC		
	Provisional SQG ^{EH}	NG	NG	NG	NG	NG	22	NG	NG	NG		
	Interim Criteria ⁵	10	NG	NG	10	NG	NG	50	100	NG		
	Assement Criteria ³	10	180	69 ⁷	10	85 ⁷	22	50	100	5.3		

Notes:

- ¹ B(a)P TEP guidelines were selected based on the 10⁻⁵ incremental risk for human health
- ² Combined values for soil injection and dermal contact for exposure pathway value will be considered applicable.
- ³ As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR) . Criteria are based on CCME standards unless otherwise noted
- ⁴ PAHs, VOC, and metals (with the exception of PCE and TCE) are independent of soil grain size or sample depth.
- ⁵ Interim Criteria based on non-scientific rational. In the case where a scientific defensible value established for an exposure pathway is greater than the interim criteria value, the scientific defensible value will be considered applicable.
- ⁶ Direct contact may be a combination and/or lowest of soil injestion, soil dermal contact, and particulate inhalation
- ⁷ Standards Selected from the Ontario Ministry of Environment's Full Depth Generic Site Conditions Standards in a Non-Potable Groundwater Condition. Table 3. 2011.
- PHC (F1) - volatile petroleum hydrocarbons (C₆ – C₁₀)
 - PHC (F2) - extractable petroleum hydrocarbons (C₁₀ – C₁₆)
 - PHC (F3) - extractable petroleum hydrocarbons (C₁₆ – C₃₄)
 - PHC (F4) - extractable petroleum hydrocarbons (C₃₄ – C₅₀)
 - mg/kg - concentration in milligrams per kilogram equivlanet to µ
 - HH = Human Health
 - EH = Environmental Health
 - **BOLD** – selected guideline
 - **Italics** – MSD Reporting Standard
 - NA - not applicable, calculated value exceeds 1,000,000 mg/kg
 - "--" CCME does not evaluate parameter
 - NC - not calculated
 - NG - no guideline available
 - RES - Residual PHC formation. Calculated value exceeds 30,000 mg/kg and solubility limit for PHC fraction.
 - CCME EQG Guideline – commercial land use criteria as outlined in the Canadian Council of the Ministers of the Environment (CCME) "[Canadian Environmental Quality Guidelines](#)", 1999 (updates to 2018).
 - CCME CWS PHC Guideline - commercial land use criteria as outlined in the Canadian Council of the Ministers of the Environment (CCME) "[Canada-Wide Standards for Hydrocarbons in Soil](#)", 2001, revised 2008.

TABLE D-1: ASSESSMENT CRITERIA - INDUSTRIAL - VOCs

Land Use	Exposure Pathway	Fine Grained Soil Guidelines (µg/g) (VOCs) ²									
		Acetone	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon disulfide
Industrial	Interim Soil Quality Criterion ⁵	--	--	--	--	--	--	--	--	--	--
	Assessment Criteria	28 ⁷	NG	18 ⁷	18 ⁷	1.7 ⁷	0.05 ⁷	NG	NG	NG	NG
Land Use	Exposure Pathway	Carbon Tetrachloride	Chlorobenzene	Dibromochloromethane	Chloroethane	Chloroform	Chloromethane	2-Chlorotoluene	4-Chlorotoluene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane (Ethylene dibromide)
Industrial	Interim Soil Quality Criterion ⁵	50	10	NG	--	50	--	--	--	--	--
	Assessment Criteria	50	10	13 ⁷	NG	50	NG	NG	NG	NG	0.05 ⁷
Land Use	Exposure Pathway	Dibromomethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-dichloroethane	1,2-Dichloroethane	1,1-dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene
Industrial	Interim Soil Quality Criterion ⁵	--	10	10	10	--	50	50	50	50	50
	Assessment Criteria	NG	10	10	10	25 ⁷	50	50	50	50	50
Land Use	Exposure Pathway	Dichloromethane	1,2-Dichloropropane	1,3-Dichloropropane	2,2-Dichloropropane	1,1-Dichloropropene	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	Hexachlorobutadiene	Hexane	2-Hexanone (Methyl butyl ketone)
Industrial	Interim Soil Quality Criterion ⁵	50	50	--	--	--	--	--	NG	--	--
	Assessment Criteria	50	50	NG	NG	NG	0.21 ⁷	0.21 ⁷	0.095 ⁷	NG	NG
Land Use	Exposure Pathway	Isopropylbenzene	4-Isopropyltoluene	MEK	MIBK	MTBE	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene
Industrial	Interim Soil Quality Criterion ⁵	--	--	--	--	NG	50	--	50	10	10
	Assessment Criteria	NG	NG	88 ⁷	210 ⁷	3.2 ⁷	50	0.11 ⁷	50	10	10
Land Use	Exposure Pathway	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichlorofluoromethane	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl Chloride			
Industrial	Interim Soil Quality Criterion ⁵	50	50	--	--	--	--	--			
	Assessment Criteria	50	50	5.8 ⁷	NG	NG	NG	0.25 ⁷			
Land Use	Exposure Pathway	Tetrachloroethene (PCE)	Trichloroethene (TCE)								
Industrial	Direct contact ⁴	NG	100								
	Inhalation of Indoor Air Check	0.5	0.92								
	Interim Soil Quality Criterion ⁵	50	50								
	Ecological Soil Contact (Provisional SOG)	34	50								
	Assessment Criteria	0.5	0.92								

Notes:

- ¹ Benzene guidelines were selected based on the 10⁻⁵ incremental risk for human health
- ² Combined values for soil injection and dermal contact for exposure pathway value will be considered applicable.
- ³ As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR) . Criteria are based on CCME standards unless otherwise noted
- ⁴ PAHs, VOC, and metals (with the exception of PCE and TCE) are independent of soil grain size or sample depth.
- ⁵ Interim Criteria based on non-scientific rational. In the case where a scientific defensible value established for an exposure pathway is greater than the interim criteria value, the scientific defensible value will be considered applicable.
- ⁶ Direct contact may be a combination and/or lowest of soil ingestion, soil dermal contact, and particulate inhalation
- ⁷ Standards Selected from the Ontario Ministry of Environment's Full Depth Generic Site Conditions Standards in a Non-Potable Groundwater Condition. Table 3. 2011.
 - mg/kg - concentration in milligrams per kilogram equivlanet to µg/g - micro gram per gram
 - HH = Human Health
 - EH = Environmental Health

- | | |
|-------------|----------------------------------|
| BOLD | Applicable Assessment Guidelines |
|-------------|----------------------------------|
- NA - not applicable, calculated value exceeds 1,000,000 mg/kg
 - "--" CCME does not evaluate parameter
 - NC - not calculated
 - NG - no guideline available
 - RES - Residual PHC formation. Calculated value exceeds 30,000 mg/kg and solubility limit for PHC fraction.
 - CCME EQG Guideline – commercial land use criteria as outlined in the Canadian Council of the Ministers of the Environment (CCME) “[Canadian Environmental Quality Guidelines](#)”, 1999 (updates to 2018).
 - CCME CWS PHC Guideline - commercial land use criteria as outlined in the Canadian Council of the Ministers of the Environment (CCME) “[Canada-Wide Standards for Hydrocarbons in Soil](#)”, 2001, revised 2008.

TABLE D-1: ASSESSMENT CRITERIA - INDUSTRIAL - PHCs

Fine-Grained Groundwater Criteria (mg/L)

Criteria	Exposure Pathway	Benzene	Toluene	Ethylbenzene	Xylenes	PHC Fraction F1	PHC Fraction F2	PHC Fraction F3	PHC Fraction F4
Health Canada	Drinking Water - MAC	0.005	0.06	0.14	0.09	NG	NG	NG	NG
	Drinking Water - AO	NG	0.024	0.0016	0.02	NG	NG	NG	NG
AEP	Potable	0.005	0.024	0.0016	0.02	2.2	1.1	NG	NG
	Vapour Inhalation	19	NG	NG	NG	NG	NG	NG	NG
	Eco-Soil Contact	540	240	150	74	9.9	3.1	NG	NG
Applicable Industrial Groundwater Guidelines		19	240	150	74	9.9	3.1	NG	NG

TABLE D-1: ASSESSMENT CRITERIA - INDUSTRIAL - Metals

Fine-Grained Groundwater Criteria (mg/L)

Criteria - Land Use	Exposure Pathway	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium
AEP - Industrial	Potable	NG	0.006	0.01	1	NG	NG	5	0.005	NG
	Vapour Inhalation	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Eco-Soil Contact	NG	NG	NG	NG	NG	NG	NG	NG	NG
Assessment Criteria (non-potable)		NG	NG	NG	NG	NG	NG	NG	NG	NG
Assessment Criteria (potable)		NG	NG	0.01	1	NG	NG	5	0.005	NG
Criteria - Land Use	Exposure Pathway	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	
AEP - Industrial	Potable	0.05	NG	1	0.3	0.01	NG	0.05	NG	
	Vapour Inhalation	NG	NG	NG	NG	NG	NG	NG	NG	
	Eco-Soil Contact	NG	NG	NG	NG	NG	NG	NG	NG	
Assessment Criteria (non-potable)		NG	NG	NG	NG	NG	NG	NG	NG	
Assessment Criteria (potable)		0.05	NG	1	0.3	0.01	NG	0.05	NG	
AEP - Industrial	Potable	NG	NG	NG	0.02	NG	NG	NG	NG	
	Vapour Inhalation	NG	NG	NG	NG	NG	NG	NG	NG	
	Management Limits	NG	NG	NG	NG	NG	NG	NG	NG	
Assessment Criteria (non-potable)		NG	NG	NG	NG	NG	NG	NG	NG	
Assessment Criteria (potable)		NG	NG	NG	0.002	NG	NG	NG	NG	
Criteria - Land Use	Exposure Pathway	Thallium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Zirconium	
AEP - Industrial	Potable	NG	NG	NG	NG	0.02	NG	5	NG	
	Vapour Inhalation	NG	NG	NG	NG	NG	NG	NG	NG	
	Management Limits	NG	NG	NG	NG	NG	NG	NG	NG	
Assessment Criteria (non-potable)		NG	NG	NG	NG	NG	NG	NG	NG	
Assessment Criteria (potable)		NG	NG	NG	NG	0.02	NG	5	NG	

BOLD Applicable Assessment Guidelines (non-potable)
BOLD Applicable Assessment Guidelines Water Well (potable)

Notes:

- mg/L - milligrams per Litre
- NC - not calculated
- NG - no guideline available
- NGR - no guideline required - Calculated value is greater than solubility or 1,000,000 mg/L.
- RES - Residual PHC formation. Calculated value exceeds 30,000 mg/kg and solubility limit for PHC fraction.
- AEP - Alberta Tier 2 Soil and Groundwater Remediation Guidelines (2019)

TABLE D-1: ASSESSMENT CRITERIA - INDUSTRIAL - PAHs

Land Use	Exposure Pathway	Fine Grained Groundwater Guidelines (mg/L) (PAHs) ⁴										
		Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	
Industrial	Inhalation	NGR	NG	NG	NGR	NG	NG	NG	NG	NG	NG	
	Eco Soil Contact	NG	NG	NG	0.32	NG	0.0066	NG	NG	NG	NG	
	Assessment Criteria ¹	NG	NG	NG	0.32	NG	0.0066	NG	NG	NG	NG	
Land Use	Exposure Pathway	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene	Quinoline	B(a)p TEP ¹
Industrial	Inhalation	NG	NGR	NGR	NG	NG	NG	NGR	NG	NGR	NG	NG
	Eco Soil Contact	NG	0.86	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Assessment Criteria ¹	NG	0.86	NG	NG	NG	NG	NG	NG	NG	NG	NG

TABLE D-1: ASSESSMENT CRITERIA - INDUSTRIAL - VOCs

Land Use	Exposure Pathway	Fine Grained Groundwater Guidelines (mg/L) (VOCs)									
		Acetone	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon disulfide
Industrial	Inhalation	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Eco Soil Contact	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Assessment Criteria ¹	NG	NG	NG	85 ²	NG	NG	NG	NG	NG	NG
Land Use	Exposure Pathway	Carbon Tetrachloride	Chlorobenzene	Dibromochloromethane	Chloroethane	Chloroform	Chloromethane	2-Chlorotoluene	4-Chlorotoluene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane (Ethylene dibromide)
Industrial	Inhalation	0.08	2.2	250	NG	3.5	NG	NG	NG	NG	NG
	Eco Soil Contact	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Assessment Criteria ¹	0.08	2.2	250	NG	3.5	NG	NG	NG	NG	NG
Land Use	Exposure Pathway	Dibromomethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-dichloroethane	1,2-Dichloroethane	1,1-dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene
Industrial	Inhalation	NG	NGR	NG	32	NG	44	1.2	4.5	NG	NG
	Eco Soil Contact	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Assessment Criteria ¹	NG	9.6 ²	9.6 ²	32	4.4 ²	44	1.2	4.5	NG	NG
Land Use	Exposure Pathway	Dichloromethane	1,2-Dichloropropane	1,3-Dichloropropene	2,2-Dichloropropane	1,1-Dichloropropene	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	Hexachlorobutadiene	Hexane	2-Hexanone (Methyl butyl ketone)
Industrial	Inhalation	410	NG	NG	NG	NG	NG	NG	0.22	NG	NG
	Eco Soil Contact	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Assessment Criteria ¹	410	NG	NG	NG	NG	NG	NG	0.22	0.52 ²	NG
Land Use	Exposure Pathway	Isopropylbenzene	4-Isopropyltoluene	MEK	MIBK	MTBE	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	Tetrachloroethene (PCE)	1,2,3-Trichlorobenzene
Industrial	Inhalation	NG	NG	NG	NG	40	NGR	NG	NG	1.8	6.9
	Eco Soil Contact	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	Assessment Criteria ¹	NG	NG	NG	NG	40	0.0015 ²	NG	NG	1.8	6.9
Land Use	Exposure Pathway	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene (TCE)	Trichlorofluoromethane	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl Chloride	
Industrial	Inhalation	6.1	NG	NG	2.8	NG	NG	NG	NG	0.12	
	Eco Soil Contact	NG	NG	NG	73	NG	NG	NG	NG	NG	
	Assessment Criteria ¹	6.1	NG	NG	2.8	2.5 ²	NG	NG	NG	0.12	

Notes:

¹ As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR) . Criteria are based on AEP 2019 Groundwater Remediation Guidelines unless otherwise noted

² Standards Selected from the Ontario Ministry of Environment's Full Depth Generic Site Conditions Standards in a Non-Potable Groundwater Condition. Table 3. 2011.

· mg/L - concentration in milligrams per kilogram equivalent to µg/g - micro gram per gram

BOLD – selected guideline

· NG - no guideline available

· NGR - no guideline required; calculated guideline exceeds solubility limit

Appendix F

Laboratory Reports



Wood Environment & Infrastructure
Solutions (Winnipeg)
ATTN: KEVIN BEECHINOR
440 Dovercourt Drive
Winnipeg MB R3Y 1G4

Date Received: 08-JAN-20
Report Date: 21-JAN-20 12:06 (MT)
Version: FINAL

Client Phone: 204-488-2997

Certificate of Analysis

Lab Work Order #: L2403425

Project P.O. #: NOT SUBMITTED

Job Reference: WX18979 999 REDONDA

C of C Numbers:

Legal Site Desc:


Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-1 TH19-01 @ 0.8M							
Sampled By: CLIENT on 16-DEC-19							
Matrix: SOIL							
Miscellaneous Parameters							
Moisture	28.5		0.10	%		09-JAN-20	R4966151
Extractable Organic Halides (EOX)	See Attached					14-JAN-20	R4973593
% Particles > 75um (Coarse/Fine)							
% >75um	2.0		1.0	%	16-JAN-20	16-JAN-20	R4973298
General Texture Class	Fine				16-JAN-20	16-JAN-20	R4973298
Metals in Soil by CRC ICPMS							
Aluminum (Al)	31500		5000	mg/kg	13-JAN-20	13-JAN-20	R4968866
Antimony (Sb)	0.31		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Arsenic (As)	9.34		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Barium (Ba)	195		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Beryllium (Be)	1.34		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Boron (B)	17.0		5.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Bismuth (Bi)	0.32		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Cadmium (Cd)	0.164		0.020	mg/kg	13-JAN-20	13-JAN-20	R4968866
Calcium (Ca)	7110		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Chromium (Cr)	53.3		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Cobalt (Co)	16.0		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Copper (Cu)	31.8		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Iron (Fe)	35600		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Lead (Pb)	16.0		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Lithium (Li)	36.0		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Magnesium (Mg)	15600		20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Manganese (Mn)	848		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Molybdenum (Mo)	0.32		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Nickel (Ni)	48.2		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Phosphorus (P)	542		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Potassium (K)	5850		100	mg/kg	13-JAN-20	13-JAN-20	R4968866
Selenium (Se)	<0.20		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Silver (Ag)	0.13		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Sodium (Na)	719		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Strontium (Sr)	51.1		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Sulfur (S)	<1000		1000	mg/kg	13-JAN-20	13-JAN-20	R4968866
Thallium (Tl)	0.429		0.050	mg/kg	13-JAN-20	13-JAN-20	R4968866
Tin (Sn)	<2.0		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Titanium (Ti)	199		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Tungsten (W)	<0.50		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Uranium (U)	3.54		0.050	mg/kg	13-JAN-20	13-JAN-20	R4968866
Vanadium (V)	86.0		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Zinc (Zn)	113		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Zirconium (Zr)	7.3		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
2-Methyl Naphthalene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acenaphthene	<0.0050		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acenaphthylene	<0.0050		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acridine	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Anthracene	<0.0040		0.0040	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(a)anthracene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(a)pyrene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(b&j)fluoranthene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-1 TH19-01 @ 0.8M Sampled By: CLIENT on 16-DEC-19 Matrix: SOIL							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Chrysene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Dibenzo(a,h)anthracene	<0.0050		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Fluoranthene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Fluorene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Indeno(1,2,3-cd)pyrene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Naphthalene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Phenanthrene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Pyrene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Quinoline	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
B(a)P Total Potency Equivalent	<0.020		0.020	mg/kg	09-JAN-20	13-JAN-20	R4967719
IACR (CCME)	<0.15		0.15		09-JAN-20	13-JAN-20	R4967719
Benzo(b+j+k)fluoranthene	<0.014		0.014	mg/kg	09-JAN-20	13-JAN-20	R4967719
Surrogate: Acenaphthene d10	109.9		60-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Chrysene d12	108.3		60-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Naphthalene d8	113.9		50-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Phenanthrene d10	110.2		60-130	%	09-JAN-20	13-JAN-20	R4967719
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1221	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1232	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1242	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1248	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1254	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1260	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1262	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1268	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Total PCBs	<0.050		0.050	mg/kg		15-JAN-20	R4970310
Surrogate: Decachlorobiphenyl	109.1		65-130	%		15-JAN-20	R4970310
VOC plus F1-F4 by Tumbler							
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<25		25	mg/kg	10-JAN-20	10-JAN-20	R4966649
F3 (C16-C34)	<50		50	mg/kg	10-JAN-20	10-JAN-20	R4966649
F4 (C34-C50)	<50		50	mg/kg	10-JAN-20	10-JAN-20	R4966649
Surrogate: 2-Bromobenzotrifluoride	91.3		60-140	%	10-JAN-20	10-JAN-20	R4966649
Chrom. to baseline at nC50	YES				10-JAN-20	10-JAN-20	R4966649
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		17-JAN-20	
F2-Naphth	<25		25	mg/kg		17-JAN-20	
F3-PAH	<50		50	mg/kg		17-JAN-20	
Total Hydrocarbons (C6-C50)	<76		76	mg/kg		17-JAN-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		17-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
Benzene	<0.0050		0.0050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromobenzene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromochloromethane	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromodichloromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromoform	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromomethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
n-Butylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-1 TH19-01 @ 0.8M Sampled By: CLIENT on 16-DEC-19 Matrix: SOIL VOC plus F1 by GCMS							
sec-Butylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
tert-Butylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Carbon disulfide	<0.25		0.25	mg/kg	16-DEC-19	11-JAN-20	R4969007
Carbon Tetrachloride	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chloroform	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chloromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
2-Chlorotoluene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
4-Chlorotoluene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dibromochloromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dibromo-3-chloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dibromoethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dibromomethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,3-Dichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,4-Dichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dichlorodifluoromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1-dichloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dichloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1-dichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
cis-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
trans-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dichloromethane	0.14		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dichloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,3-Dichloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
2,2-Dichloropropane	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1-Dichloropropene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
cis-1,3-Dichloropropene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
trans-1,3-Dichloropropene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Ethylbenzene	<0.015		0.015	mg/kg	16-DEC-19	11-JAN-20	R4969007
F1	<10		10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Hexachlorobutadiene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Hexane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
2-Hexanone (Methyl butyl ketone)	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
Isopropylbenzene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
4-Isopropyltoluene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
MEK	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
MIBK	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
MTBE	<0.20		0.20	mg/kg	16-DEC-19	11-JAN-20	R4969007
Styrene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1,1,2-Tetrachloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1,2,2-Tetrachloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Tetrachloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Toluene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2,3-Trichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2,4-Trichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1,1-Trichloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1,2-Trichloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Trichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Trichlorofluoromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-1	TH19-01 @ 0.8M							
Sampled By: CLIENT on 16-DEC-19								
Matrix: SOIL								
VOC plus F1 by GCMS								
1,2,3-Trichloropropane		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2,4-Trimethylbenzene		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,3,5-Trimethylbenzene		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Vinyl Chloride		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
M+P-Xylenes		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
o-Xylene		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Surrogate: 1,4-Difluorobenzene (SS)		119.1		70-130	%	16-DEC-19	11-JAN-20	R4969007
Surrogate: 3,4-Dichlorotoluene (SS)		107.8		70-130	%	16-DEC-19	11-JAN-20	R4969007
Surrogate: 4-Bromofluorobenzene (SS)		107.3		70-130	%	16-DEC-19	11-JAN-20	R4969007
L2403425-2	TH19-05 @ 0.8M							
Sampled By: CLIENT on 16-DEC-19								
Matrix: SOIL								
Miscellaneous Parameters								
Moisture		32.5		0.10	%		09-JAN-20	R4966151
Extractable Organic Halides (EOX)		See Attached					14-JAN-20	R4973593
Metals in Soil by CRC ICPMS								
Aluminum (Al)		26400		5000	mg/kg	13-JAN-20	13-JAN-20	R4968866
Antimony (Sb)		0.43		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Arsenic (As)		8.46		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Barium (Ba)		193		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Beryllium (Be)		1.12		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Boron (B)		19.0		5.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Bismuth (Bi)		0.28		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Cadmium (Cd)		0.497		0.020	mg/kg	13-JAN-20	13-JAN-20	R4968866
Calcium (Ca)		15800		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Chromium (Cr)		44.7		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Cobalt (Co)		13.7		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Copper (Cu)		35.4		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Iron (Fe)		28300		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Lead (Pb)		21.9		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Lithium (Li)		27.1		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Magnesium (Mg)		15000		20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Manganese (Mn)		743		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Molybdenum (Mo)		0.55		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Nickel (Ni)		38.1		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Phosphorus (P)		954		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Potassium (K)		6480		100	mg/kg	13-JAN-20	13-JAN-20	R4968866
Selenium (Se)		0.47		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Silver (Ag)		0.14		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Sodium (Na)		626		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Strontium (Sr)		55.2		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Sulfur (S)		<1000		1000	mg/kg	13-JAN-20	13-JAN-20	R4968866
Thallium (Tl)		0.340		0.050	mg/kg	13-JAN-20	13-JAN-20	R4968866
Tin (Sn)		<2.0		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Titanium (Ti)		224		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Tungsten (W)		<0.50		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Uranium (U)		1.61		0.050	mg/kg	13-JAN-20	13-JAN-20	R4968866
Vanadium (V)		72.8		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Zinc (Zn)		123		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Zirconium (Zr)		10.6		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Polyaromatic Hydrocarbons (PAHs)								

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-2 TH19-05 @ 0.8M							
Sampled By: CLIENT on 16-DEC-19							
Matrix: SOIL							
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.011		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
2-Methyl Naphthalene	0.015		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acenaphthene	0.0077		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acenaphthylene	0.110		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acridine	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Anthracene	0.0984		0.0040	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(a)anthracene	0.506		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(a)pyrene	0.376		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(b&j)fluoranthene	0.810		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(g,h,i)perylene	0.302		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(k)fluoranthene	0.307		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Chrysene	0.646		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Dibenzo(a,h)anthracene	0.0993		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Fluoranthene	0.660		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Fluorene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Indeno(1,2,3-cd)pyrene	0.322		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Naphthalene	0.015		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Phenanthrene	0.071		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Pyrene	0.850		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Quinoline	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
B(a)P Total Potency Equivalent	0.680		0.020	mg/kg	09-JAN-20	13-JAN-20	R4967719
IACR (CCME)	10.4		0.15		09-JAN-20	13-JAN-20	R4967719
Benzo(b+j+k)fluoranthene	1.12		0.014	mg/kg	09-JAN-20	13-JAN-20	R4967719
Surrogate: Acenaphthene d10	97.9		60-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Chrysene d12	112.3		60-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Naphthalene d8	105.4		50-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Phenanthrene d10	102.5		60-130	%	09-JAN-20	13-JAN-20	R4967719
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1221	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1232	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1242	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1248	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1254	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1260	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1262	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1268	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Total PCBs	<0.050		0.050	mg/kg		15-JAN-20	R4970310
Surrogate: Decachlorobiphenyl	110.4		65-130	%		15-JAN-20	R4970310
VOC plus F1-F4 by Tumbler							
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<25		25	mg/kg	10-JAN-20	10-JAN-20	R4966649
F3 (C16-C34)	<50		50	mg/kg	10-JAN-20	10-JAN-20	R4966649
F4 (C34-C50)	<50		50	mg/kg	10-JAN-20	10-JAN-20	R4966649
Surrogate: 2-Bromobenzotrifluoride	92.4		60-140	%	10-JAN-20	10-JAN-20	R4966649
Chrom. to baseline at nC50	YES				10-JAN-20	10-JAN-20	R4966649
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		17-JAN-20	
F2-Naphth	<25		25	mg/kg		17-JAN-20	
F3-PAH	<50		50	mg/kg		17-JAN-20	
Total Hydrocarbons (C6-C50)	<76		76	mg/kg		17-JAN-20	
Sum of Xylene Isomer Concentrations							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-2 TH19-05 @ 0.8M Sampled By: CLIENT on 16-DEC-19 Matrix: SOIL							
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		17-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
Benzene	<0.0050		0.0050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromobenzene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromochloromethane	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromodichloromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromoform	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromomethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
n-Butylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
sec-Butylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
tert-Butylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Carbon disulfide	<0.25		0.25	mg/kg	16-DEC-19	11-JAN-20	R4969007
Carbon Tetrachloride	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chloroform	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chloromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
2-Chlorotoluene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
4-Chlorotoluene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dibromochloromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dibromo-3-chloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dibromoethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dibromomethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,3-Dichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,4-Dichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dichlorodifluoromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1-dichloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dichloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1-dichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
cis-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
trans-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dichloromethane	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dichloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,3-Dichloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
2,2-Dichloropropane	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1-Dichloropropene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
cis-1,3-Dichloropropene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
trans-1,3-Dichloropropene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Ethylbenzene	<0.015		0.015	mg/kg	16-DEC-19	11-JAN-20	R4969007
F1	<10		10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Hexachlorobutadiene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Hexane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
2-Hexanone (Methyl butyl ketone)	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
Isopropylbenzene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
4-Isopropyltoluene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
MEK	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
MIBK	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
MTBE	<0.20		0.20	mg/kg	16-DEC-19	11-JAN-20	R4969007
Styrene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-2 TH19-05 @ 0.8M Sampled By: CLIENT on 16-DEC-19 Matrix: SOIL VOC plus F1 by GCMS 1,1,1,2-Tetrachloroethane 1,1,2,2-Tetrachloroethane Tetrachloroethene Toluene 1,2,3-Trichlorobenzene 1,2,4-Trichlorobenzene 1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichloroethene Trichlorofluoromethane 1,2,3-Trichloropropane 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene Vinyl Chloride M+P-Xylenes o-Xylene Surrogate: 1,4-Difluorobenzene (SS) Surrogate: 3,4-Dichlorotoluene (SS) Surrogate: 4-Bromofluorobenzene (SS)	<0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 121.7 129.5 107.3		0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 70-130 70-130 70-130	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg % % %	16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19	11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20	R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007 R4969007
L2403425-3 TH19-02 @ 0.8M Sampled By: CLIENT on 16-DEC-19 Matrix: SOIL BTEX and F1-F4 by Tumbler Method BTX plus F1 by GCMS Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10) Surrogate: 4-Bromofluorobenzene (SS) Surrogate: 3,4-Dichlorotoluene (SS) CCME Total Extractable Hydrocarbons F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) Surrogate: 2-Bromobenzotrifluoride Chrom. to baseline at nC50 CCME Total Hydrocarbons F1-BTEX Total Hydrocarbons (C6-C50) Sum of Xylene Isomer Concentrations Xylenes (Total) Miscellaneous Parameters Moisture	<0.0050 <0.050 <0.015 <0.050 <0.050 <10 102.5 129.8 <25 <50 <50 91.4 YES <10 <76 <0.071 26.2		0.0050 0.050 0.015 0.050 0.050 10 70-130 70-130 25 50 50 60-140 10 76 0.071 0.10	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg % % mg/kg mg/kg mg/kg % mg/kg mg/kg mg/kg %	16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 16-DEC-19 10-JAN-20 10-JAN-20 10-JAN-20 10-JAN-20 10-JAN-20 10-JAN-20 15-JAN-20 15-JAN-20 09-JAN-20	11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 11-JAN-20 10-JAN-20 10-JAN-20 10-JAN-20 10-JAN-20 10-JAN-20 10-JAN-20 15-JAN-20 15-JAN-20 15-JAN-20 	R4967626 R4967626 R4967626 R4967626 R4967626 R4967626 R4967626 R4967626 R4966649 R4966649 R4966649 R4966649 R4966649 R4966649 R4966649 R4966649 R4966649 R4966151
L2403425-4 TH19-09 @ 0.8M Sampled By: CLIENT on 16-DEC-19 Matrix: SOIL Miscellaneous Parameters Moisture Extractable Organic Halides (EOX)	29.6 See Attached		0.10	%		09-JAN-20 14-JAN-20	R4966151 R4973593

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-4 TH19-09 @ 0.8M Sampled By: CLIENT on 16-DEC-19 Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	26900		5000	mg/kg	13-JAN-20	13-JAN-20	R4968866
Antimony (Sb)	0.52		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Arsenic (As)	9.35		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Barium (Ba)	199		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Beryllium (Be)	1.34		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Boron (B)	14.4		5.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Bismuth (Bi)	0.34		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Cadmium (Cd)	0.077		0.020	mg/kg	13-JAN-20	13-JAN-20	R4968866
Calcium (Ca)	9990		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Chromium (Cr)	48.0		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Cobalt (Co)	15.3		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Copper (Cu)	33.1		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Iron (Fe)	32800		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Lead (Pb)	16.0		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Lithium (Li)	37.2		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Magnesium (Mg)	14200		20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Manganese (Mn)	496		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Molybdenum (Mo)	0.44		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Nickel (Ni)	46.1		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Phosphorus (P)	511		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Potassium (K)	5430		100	mg/kg	13-JAN-20	13-JAN-20	R4968866
Selenium (Se)	<0.20		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Silver (Ag)	0.15		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Sodium (Na)	580		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Strontium (Sr)	70.2		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Sulfur (S)	<1000		1000	mg/kg	13-JAN-20	13-JAN-20	R4968866
Thallium (Tl)	0.405		0.050	mg/kg	13-JAN-20	13-JAN-20	R4968866
Tin (Sn)	<2.0		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Titanium (Ti)	143		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Tungsten (W)	<0.50		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Uranium (U)	1.79		0.050	mg/kg	13-JAN-20	13-JAN-20	R4968866
Vanadium (V)	76.9		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Zinc (Zn)	84.1		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Zirconium (Zr)	9.0		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
2-Methyl Naphthalene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acenaphthene	<0.0050		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acenaphthylene	<0.0050		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acridine	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Anthracene	<0.0040		0.0040	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(a)anthracene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(a)pyrene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(b&i)fluoranthene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Chrysene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Dibenzo(a,h)anthracene	<0.0050		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Fluoranthene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Fluorene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Indeno(1,2,3-cd)pyrene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-4 TH19-09 @ 0.8M Sampled By: CLIENT on 16-DEC-19 Matrix: SOIL							
Polyaromatic Hydrocarbons (PAHs)							
Naphthalene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Phenanthrene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Pyrene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Quinoline	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
B(a)P Total Potency Equivalent	<0.020		0.020	mg/kg	09-JAN-20	13-JAN-20	R4967719
IACR (CCME)	<0.15		0.15		09-JAN-20	13-JAN-20	R4967719
Benzo(b+j+k)fluoranthene	<0.014		0.014	mg/kg	09-JAN-20	13-JAN-20	R4967719
Surrogate: Acenaphthene d10	105.4		60-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Chrysene d12	112.4		60-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Naphthalene d8	108.6		50-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Phenanthrene d10	108.1		60-130	%	09-JAN-20	13-JAN-20	R4967719
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1221	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1232	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1242	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1248	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1254	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1260	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1262	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1268	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Total PCBs	<0.050		0.050	mg/kg		15-JAN-20	R4970310
Surrogate: Decachlorobiphenyl	99.5		65-130	%		15-JAN-20	R4970310
VOC plus F1-F4 by Tumbler							
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<25		25	mg/kg	10-JAN-20	10-JAN-20	R4966649
F3 (C16-C34)	<50		50	mg/kg	10-JAN-20	10-JAN-20	R4966649
F4 (C34-C50)	<50		50	mg/kg	10-JAN-20	10-JAN-20	R4966649
Surrogate: 2-Bromobenzotrifluoride	87.9		60-140	%	10-JAN-20	10-JAN-20	R4966649
Chrom. to baseline at nC50	YES				10-JAN-20	10-JAN-20	R4966649
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		17-JAN-20	
F2-Naphth	<25		25	mg/kg		17-JAN-20	
F3-PAH	<50		50	mg/kg		17-JAN-20	
Total Hydrocarbons (C6-C50)	<76		76	mg/kg		17-JAN-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		17-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
Benzene	<0.0050		0.0050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromobenzene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromochloromethane	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromodichloromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromoform	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromomethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
n-Butylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
sec-Butylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
tert-Butylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Carbon disulfide	<0.25		0.25	mg/kg	16-DEC-19	11-JAN-20	R4969007
Carbon Tetrachloride	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-4 TH19-09 @ 0.8M Sampled By: CLIENT on 16-DEC-19 Matrix: SOIL							
VOC plus F1 by GCMS							
Chloroform	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chloromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
2-Chlorotoluene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
4-Chlorotoluene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dibromochloromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dibromo-3-chloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dibromoethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dibromomethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,3-Dichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,4-Dichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dichlorodifluoromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1-dichloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dichloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1-dichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
cis-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
trans-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dichloromethane	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dichloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,3-Dichloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
2,2-Dichloropropane	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1-Dichloropropene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
cis-1,3-Dichloropropene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
trans-1,3-Dichloropropene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Ethylbenzene	<0.015		0.015	mg/kg	16-DEC-19	11-JAN-20	R4969007
F1	<10		10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Hexachlorobutadiene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Hexane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
2-Hexanone (Methyl butyl ketone)	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
Isopropylbenzene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
4-Isopropyltoluene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
MEK	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
MIBK	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
MTBE	<0.20		0.20	mg/kg	16-DEC-19	11-JAN-20	R4969007
Styrene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1,1,2-Tetrachloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1,2,2-Tetrachloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Tetrachloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Toluene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2,3-Trichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2,4-Trichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1,1-Trichloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1,2-Trichloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Trichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Trichlorofluoromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2,3-Trichloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2,4-Trimethylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,3,5-Trimethylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Vinyl Chloride	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
M+P-Xylenes	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
o-Xylene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-4	TH19-09 @ 0.8M							
Sampled By: CLIENT on 16-DEC-19								
Matrix: SOIL								
VOC plus F1 by GCMS								
Surrogate: 1,4-Difluorobenzene (SS)		117.4		70-130	%	16-DEC-19	11-JAN-20	R4969007
Surrogate: 3,4-Dichlorotoluene (SS)		119.3		70-130	%	16-DEC-19	11-JAN-20	R4969007
Surrogate: 4-Bromofluorobenzene (SS)		105.8		70-130	%	16-DEC-19	11-JAN-20	R4969007
L2403425-5	TH19-06 @ 0.8M							
Sampled By: CLIENT on 16-DEC-19								
Matrix: SOIL								
Miscellaneous Parameters								
Moisture		25.5		0.10	%		09-JAN-20	R4966151
Extractable Organic Halides (EOX)		See Attached					14-JAN-20	R4973593
Metals in Soil by CRC ICPMS								
Aluminum (Al)		22900		5000	mg/kg	13-JAN-20	13-JAN-20	R4968866
Antimony (Sb)		0.42		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Arsenic (As)		7.24		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Barium (Ba)		212		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Beryllium (Be)		0.89		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Boron (B)		18.6		5.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Bismuth (Bi)		0.24		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Cadmium (Cd)		0.318		0.020	mg/kg	13-JAN-20	13-JAN-20	R4968866
Calcium (Ca)		65600		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Chromium (Cr)		38.7		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Cobalt (Co)		12.0		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Copper (Cu)		27.9		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Iron (Fe)		25500		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Lead (Pb)		18.7		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Lithium (Li)		26.3		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Magnesium (Mg)		27800		20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Manganese (Mn)		581		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Molybdenum (Mo)		0.49		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Nickel (Ni)		34.6		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Phosphorus (P)		537		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Potassium (K)		4060		100	mg/kg	13-JAN-20	13-JAN-20	R4968866
Selenium (Se)		0.25		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Silver (Ag)		0.12		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Sodium (Na)		279		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Strontium (Sr)		94.2		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Sulfur (S)		<1000		1000	mg/kg	13-JAN-20	13-JAN-20	R4968866
Thallium (Tl)		0.285		0.050	mg/kg	13-JAN-20	13-JAN-20	R4968866
Tin (Sn)		<2.0		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Titanium (Ti)		224		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Tungsten (W)		<0.50		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Uranium (U)		1.30		0.050	mg/kg	13-JAN-20	13-JAN-20	R4968866
Vanadium (V)		65.6		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Zinc (Zn)		90.3		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Zirconium (Zr)		5.9		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Polyaromatic Hydrocarbons (PAHs)								
1-Methyl Naphthalene		<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
2-Methyl Naphthalene		<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acenaphthene		<0.0050		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acenaphthylene		<0.0050		0.0050	mg/kg	09-JAN-20	13-JAN-20	R496

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-5 TH19-06 @ 0.8M							
Sampled By: CLIENT on 16-DEC-19							
Matrix: SOIL							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(a)anthracene	0.030		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(a)pyrene	0.022		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(b&j)fluoranthene	0.038		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(g,h,i)perylene	0.021		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(k)fluoranthene	0.016		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Chrysene	0.041		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Dibenzo(a,h)anthracene	<0.0050		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Fluoranthene	0.058		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Fluorene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Indeno(1,2,3-cd)pyrene	0.021		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Naphthalene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Phenanthrene	0.032		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Pyrene	0.057		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Quinoline	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
B(a)P Total Potency Equivalent	0.035		0.020	mg/kg	09-JAN-20	13-JAN-20	R4967719
IACR (CCME)	0.53		0.15		09-JAN-20	13-JAN-20	R4967719
Benzo(b+j+k)fluoranthene	0.054		0.014	mg/kg	09-JAN-20	13-JAN-20	R4967719
Surrogate: Acenaphthene d10	108.7		60-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Chrysene d12	119.0		60-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Naphthalene d8	111.1		50-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Phenanthrene d10	109.3		60-130	%	09-JAN-20	13-JAN-20	R4967719
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1221	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1232	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1242	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1248	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1254	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1260	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1262	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1268	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Total PCBs	<0.050		0.050	mg/kg		15-JAN-20	R4970310
Surrogate: Decachlorobiphenyl	113.0		65-130	%		15-JAN-20	R4970310
VOC plus F1-F4 by Tumbler							
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<25		25	mg/kg	10-JAN-20	10-JAN-20	R4966649
F3 (C16-C34)	<50		50	mg/kg	10-JAN-20	10-JAN-20	R4966649
F4 (C34-C50)	<50		50	mg/kg	10-JAN-20	10-JAN-20	R4966649
Surrogate: 2-Bromobenzotrifluoride	91.0		60-140	%	10-JAN-20	10-JAN-20	R4966649
Chrom. to baseline at nC50	YES				10-JAN-20	10-JAN-20	R4966649
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		17-JAN-20	
F2-Naphth	<25		25	mg/kg		17-JAN-20	
F3-PAH	<50		50	mg/kg		17-JAN-20	
Total Hydrocarbons (C6-C50)	<76		76	mg/kg		17-JAN-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		17-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
Benzene	<0.0050		0.0050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromobenzene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromochloromethane	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-5 TH19-06 @ 0.8M Sampled By: CLIENT on 16-DEC-19 Matrix: SOIL VOC plus F1 by GCMS							
Bromodichloromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromoform	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Bromomethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
n-Butylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
sec-Butylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
tert-Butylbenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Carbon disulfide	<0.25		0.25	mg/kg	16-DEC-19	11-JAN-20	R4969007
Carbon Tetrachloride	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chloroform	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Chloromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
2-Chlorotoluene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
4-Chlorotoluene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dibromochloromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dibromo-3-chloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dibromoethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dibromomethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,3-Dichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,4-Dichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dichlorodifluoromethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1-dichloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dichloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1-dichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
cis-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
trans-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Dichloromethane	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2-Dichloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,3-Dichloropropane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
2,2-Dichloropropane	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1-Dichloropropene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
cis-1,3-Dichloropropene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
trans-1,3-Dichloropropene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Ethylbenzene	<0.015		0.015	mg/kg	16-DEC-19	11-JAN-20	R4969007
F1	<10		10	mg/kg	16-DEC-19	11-JAN-20	R4969007
Hexachlorobutadiene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Hexane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
2-Hexanone (Methyl butyl ketone)	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
Isopropylbenzene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
4-Isopropyltoluene	<0.10		0.10	mg/kg	16-DEC-19	11-JAN-20	R4969007
MEK	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
MIBK	<0.50		0.50	mg/kg	16-DEC-19	11-JAN-20	R4969007
MTBE	<0.20		0.20	mg/kg	16-DEC-19	11-JAN-20	R4969007
Styrene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1,1,2-Tetrachloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1,1,2,2-Tetrachloroethane	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Tetrachloroethene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Toluene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2,3-Trichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2,4-Trichlorobenzene	<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-5 TH19-06 @ 0.8M								
Sampled By: CLIENT on 16-DEC-19								
Matrix: SOIL								
VOC plus F1 by GCMS								
1,1,1-Trichloroethane		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,1,2-Trichloroethane		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Trichloroethene		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Trichlorofluoromethane		0.144		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2,3-Trichloropropane		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,2,4-Trimethylbenzene		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
1,3,5-Trimethylbenzene		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Vinyl Chloride		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
M+P-Xylenes		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
o-Xylene		<0.050		0.050	mg/kg	16-DEC-19	11-JAN-20	R4969007
Surrogate: 1,4-Difluorobenzene (SS)		119.7		70-130	%	16-DEC-19	11-JAN-20	R4969007
Surrogate: 3,4-Dichlorotoluene (SS)		127.2		70-130	%	16-DEC-19	11-JAN-20	R4969007
Surrogate: 4-Bromofluorobenzene (SS)		106.1		70-130	%	16-DEC-19	11-JAN-20	R4969007
L2403425-6 TH19-11 @ 1.5M								
Sampled By: CLIENT on 20-DEC-19								
Matrix: SOIL								
Miscellaneous Parameters								
Moisture		25.3		0.10	%		09-JAN-20	R4966151
Metals in Soil by CRC ICPMS								
Aluminum (Al)		23600		5000	mg/kg	13-JAN-20	13-JAN-20	R4968866
Antimony (Sb)		0.32		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Arsenic (As)		7.04		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Barium (Ba)		194		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Beryllium (Be)		0.98		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Boron (B)		17.5		5.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Bismuth (Bi)		0.25		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Cadmium (Cd)		0.359		0.020	mg/kg	13-JAN-20	13-JAN-20	R4968866
Calcium (Ca)		58500		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Chromium (Cr)		41.1		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Cobalt (Co)		12.3		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Copper (Cu)		28.0		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Iron (Fe)		27600		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Lead (Pb)		12.2		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Lithium (Li)		31.7		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Magnesium (Mg)		25700		20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Manganese (Mn)		807		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Molybdenum (Mo)		0.25		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Nickel (Ni)		36.6		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Phosphorus (P)		516		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Potassium (K)		4160		100	mg/kg	13-JAN-20	13-JAN-20	R4968866
Selenium (Se)		0.21		0.20	mg/kg	13-JAN-20	13-JAN-20	R4968866
Silver (Ag)		0.11		0.10	mg/kg	13-JAN-20	13-JAN-20	R4968866
Sodium (Na)		397		50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Strontium (Sr)		105		0.50	mg/kg	13-JAN-20	13-JAN-20	R4968866
Sulfur (S)		<1000		1000	mg/kg	13-JAN-20	13-JAN-20	R4968866
Thallium (Tl)		0.330		0.050	mg/kg	13-JAN-20	13-JAN-20	R4968866
Tin (Sn)		<2.0		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866</

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-6 TH19-11 @ 1.5M							
Sampled By: CLIENT on 20-DEC-19							
Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Zinc (Zn)	80.5		2.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Zirconium (Zr)	6.1		1.0	mg/kg	13-JAN-20	13-JAN-20	R4968866
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
2-Methyl Naphthalene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acenaphthene	<0.0050		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acenaphthylene	<0.0050		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Acridine	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Anthracene	<0.0040		0.0040	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(a)anthracene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(a)pyrene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(b&j)fluoranthene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Chrysene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Dibenzo(a,h)anthracene	<0.0050		0.0050	mg/kg	09-JAN-20	13-JAN-20	R4967719
Fluoranthene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Fluorene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Indeno(1,2,3-cd)pyrene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Naphthalene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Phenanthrene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Pyrene	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
Quinoline	<0.010		0.010	mg/kg	09-JAN-20	13-JAN-20	R4967719
B(a)P Total Potency Equivalent	<0.020		0.020	mg/kg	09-JAN-20	13-JAN-20	R4967719
IACR (CCME)	<0.15		0.15		09-JAN-20	13-JAN-20	R4967719
Benzo(b+j+k)fluoranthene	<0.014		0.014	mg/kg	09-JAN-20	13-JAN-20	R4967719
Surrogate: Acenaphthene d10	104.1		60-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Chrysene d12	113.3		60-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Naphthalene d8	107.7		50-130	%	09-JAN-20	13-JAN-20	R4967719
Surrogate: Phenanthrene d10	107.7		60-130	%	09-JAN-20	13-JAN-20	R4967719
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1221	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1232	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1242	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1248	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1254	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1260	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1262	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Aroclor 1268	<0.010		0.010	mg/kg		15-JAN-20	R4970310
Total PCBs	<0.050		0.050	mg/kg		15-JAN-20	R4970310
Surrogate: Decachlorobiphenyl	113.5		65-130	%		15-JAN-20	R4970310
VOC plus F1-F4 by Tumbler							
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<25		25	mg/kg	10-JAN-20	10-JAN-20	R4966649
F3 (C16-C34)	<50		50	mg/kg	10-JAN-20	10-JAN-20	R4966649
F4 (C34-C50)	<50		50	mg/kg	10-JAN-20	10-JAN-20	R4966649
Surrogate: 2-Bromobenzotrifluoride	88.4		60-140	%	10-JAN-20	10-JAN-20	R4966649
Chrom. to baseline at nC50	YES				10-JAN-20	10-JAN-20	R4966649
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		17-JAN-20	
F2-Naphth	<25		25	mg/kg		17-JAN-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-6 TH19-11 @ 1.5M							
Sampled By: CLIENT on 20-DEC-19							
Matrix: SOIL							
CCME Total Hydrocarbons							
F3-PAH	<50		50	mg/kg		17-JAN-20	
Total Hydrocarbons (C6-C50)	<76		76	mg/kg		17-JAN-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		17-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.50		0.50	mg/kg	20-DEC-19	11-JAN-20	R4969007
Benzene	<0.0050		0.0050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Bromobenzene	<0.10		0.10	mg/kg	20-DEC-19	11-JAN-20	R4969007
Bromochloromethane	<0.10		0.10	mg/kg	20-DEC-19	11-JAN-20	R4969007
Bromodichloromethane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Bromoform	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Bromomethane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
n-Butylbenzene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
sec-Butylbenzene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
tert-Butylbenzene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Carbon disulfide	<0.25		0.25	mg/kg	20-DEC-19	11-JAN-20	R4969007
Carbon Tetrachloride	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Chlorobenzene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Chloroethane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Chloroform	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Chloromethane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
2-Chlorotoluene	<0.10		0.10	mg/kg	20-DEC-19	11-JAN-20	R4969007
4-Chlorotoluene	<0.10		0.10	mg/kg	20-DEC-19	11-JAN-20	R4969007
Dibromochloromethane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,2-Dibromo-3-chloropropane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,2-Dibromoethane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Dibromomethane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,2-Dichlorobenzene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,3-Dichlorobenzene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,4-Dichlorobenzene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Dichlorodifluoromethane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,1-dichloroethane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,2-Dichloroethane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,1-dichloroethene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
cis-1,2-Dichloroethene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
trans-1,2-Dichloroethene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Dichloromethane	0.18		0.10	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,2-Dichloropropane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,3-Dichloropropane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
2,2-Dichloropropane	<0.10		0.10	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,1-Dichloropropene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
cis-1,3-Dichloropropene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
trans-1,3-Dichloropropene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Ethylbenzene	<0.015		0.015	mg/kg	20-DEC-19	11-JAN-20	R4969007
F1	<10		10	mg/kg	20-DEC-19	11-JAN-20	R4969007
Hexachlorobutadiene	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Hexane	<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
2-Hexanone (Methyl butyl ketone)	<0.50		0.50	mg/kg	20-DEC-19	11-JAN-20	R4969007
Isopropylbenzene	<0.10		0.10	mg/kg	20-DEC-19	11-JAN-20	R4969007
4-Isopropyltoluene	<0.10		0.10	mg/kg	20-DEC-19	11-JAN-20	R4969007
MEK	<0.50		0.50	mg/kg	20-DEC-19	11-JAN-20	R4969007

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403425-6	TH19-11 @ 1.5M							
Sampled By:	CLIENT on 20-DEC-19							
Matrix:	SOIL							
VOC plus F1 by GCMS								
MIBK		<0.50		0.50	mg/kg	20-DEC-19	11-JAN-20	R4969007
MTBE		<0.20		0.20	mg/kg	20-DEC-19	11-JAN-20	R4969007
Styrene		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,1,1,2-Tetrachloroethane		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,1,2,2-Tetrachloroethane		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Tetrachloroethene		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Toluene		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,2,3-Trichlorobenzene		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,2,4-Trichlorobenzene		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,1,1-Trichloroethane		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,1,2-Trichloroethane		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Trichloroethene		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Trichlorofluoromethane		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,2,3-Trichloropropane		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,2,4-Trimethylbenzene		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
1,3,5-Trimethylbenzene		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Vinyl Chloride		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
M+P-Xylenes		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
o-Xylene		<0.050		0.050	mg/kg	20-DEC-19	11-JAN-20	R4969007
Surrogate: 1,4-Difluorobenzene (SS)		109.2		70-130	%	20-DEC-19	11-JAN-20	R4969007
Surrogate: 3,4-Dichlorotoluene (SS)		110.8		70-130	%	20-DEC-19	11-JAN-20	R4969007
Surrogate: 4-Bromofluorobenzene (SS)		97.7		70-130	%	20-DEC-19	11-JAN-20	R4969007

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BTEXS+F1-HSMS-WP	Soil	BTX plus F1 by GCMS	EPA 8260C
The soil methanol extract is added to water and reagents, then heated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			
EOX-MP	Misc.	Extractable Organic Halides (EOX)	SEE SUBLET LAB REPORT
The material is extracted with ethyl acetate then the extract is analyzed on the TOX (Total Organic Halides) instrument.			
F1-F4-CALC-WP	Soil	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-S
Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.			
In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.			
In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.			
In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.			
Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.			
3. Linearity of gasoline response within 15% throughout the calibration range.			
Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.			
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.			
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.			
F2-F4-TMB-FID-WP	Soil	CCME Total Extractable Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001
A soil or sediment sample is extracted with 1:1 hexane/acetone in a tumbler, followed by a silica gel clean up to facilitate separation of the hydrocarbons from other polar extractions. An aliquot of the solvent is analyzed using a gas chromatograph equipped with a flame -ionization detector.			
MET-200.2-CCMS-WP	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020B (mod)
Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.			
Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H ₂ S) may be excluded if lost during sampling, storage, or digestion.			
MOISTURE-WP	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
Moisture content in solid matrices is determined gravimetrically after drying to constant weight at 105°C.			
PAH,PANH-WP	Soil	Polyaromatic Hydrocarbons (PAHs)	EPA SW 846/8270-GC/MS
Samples are rotary extracted using a 1:1 mixture of acetone and dichloromethane. Extracts are concentrated and solvent exchanged to toluene. The toluene extract is analyzed by GCMS.			
PCB-ED	Soil	PCBs	EPA 3570/8082-GC-ECD
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3500, 3620, 3630, 3660, 3665 & 8082, published by the United States Environmental Protection Agency (EPA). The procedure involves a solid-liquid extraction of a subsample of the sediment/soil using a mixture of hexane and acetone. Water is added to the extract and the resulting hexane extract undergoes one or more of the following clean-up procedures (if required): florisil clean-up, silica gel clean-up, sulphur clean-up and/or sulphuric acid clean-up. The final extract is analysed by capillary column gas chromatography with electron capture detection (GC/ECD).			
PSA-75UM-SIEVE-WP	Soil	% Particles > 75um (Coarse/Fine)	ASTM D422-63
An air-dried sample is reduced to < 2 mm size and mixed with a dispersing agent (Calgon solution). The sample is washed through a 200 mesh (75 µm) sieve. The retained weight of sample is used to determine % sand fraction.			
VOC+F1-HSMS-WP	Soil	VOC plus F1 by GCMS	EPA 8260C
The soil methanol extract is added to water and reagents, then heated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			
XYLENES-SUM-CALC-WP	Soil	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
MP	ALS ENVIRONMENTAL - MIDDLETOWN, PENNSYLVANIA, USA
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2403425

Report Date: 21-JAN-20

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Client: Wood Environment & Infrastructure Solutions (Winnipeg)

440 Dovercourt Drive
Winnipeg MB R3Y 1G4

Contact: KEVIN BEECHINOR

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTEXS+F1-HSMS-WP		Soil						
Batch	R4967626							
WG3255738-4	DUP	L2403425-3						
Benzene		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	50	11-JAN-20
Toluene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	11-JAN-20
Ethyl benzene		<0.015	<0.015	RPD-NA	mg/kg	N/A	50	11-JAN-20
o-Xylene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	11-JAN-20
m+p-Xylenes		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	11-JAN-20
F1 (C6-C10)		<10	<10	RPD-NA	mg/kg	N/A	50	11-JAN-20
WG3255738-2	LCS							
Benzene			100.3		%		70-130	11-JAN-20
Toluene			92.2		%		70-130	11-JAN-20
Ethyl benzene			99.1		%		70-130	11-JAN-20
o-Xylene			104.0		%		70-130	11-JAN-20
m+p-Xylenes			107.1		%		70-130	11-JAN-20
WG3255738-3	LCS							
F1 (C6-C10)			75.2		%		70-130	11-JAN-20
WG3255738-1	MB							
Benzene			<0.0050		mg/kg		0.005	11-JAN-20
Toluene			<0.050		mg/kg		0.05	11-JAN-20
Ethyl benzene			<0.015		mg/kg		0.015	11-JAN-20
o-Xylene			<0.050		mg/kg		0.05	11-JAN-20
m+p-Xylenes			<0.050		mg/kg		0.05	11-JAN-20
F1 (C6-C10)			<10		mg/kg		10	11-JAN-20
Surrogate: 4-Bromofluorobenzene (SS)			84.3		%		70-130	11-JAN-20
Surrogate: 3,4-Dichlorotoluene (SS)			106.6		%		70-130	11-JAN-20
F2-F4-TMB-FID-WP		Soil						
Batch	R4966649							
WG3256223-3	IRM	ALS PHC RM3						
F2 (C10-C16)			96.7		%		70-130	10-JAN-20
F3 (C16-C34)			99.0		%		70-130	10-JAN-20
F4 (C34-C50)			107.7		%		70-130	10-JAN-20
WG3256223-2	LCS							
F2 (C10-C16)			98.7		%		70-130	10-JAN-20
F3 (C16-C34)			92.2		%		70-130	10-JAN-20
F4 (C34-C50)			101.1		%		70-130	10-JAN-20
WG3256223-1	MB							
F2 (C10-C16)			<25		mg/kg		25	10-JAN-20

Quality Control Report

Workorder: L2403425

Report Date: 21-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-TMB-FID-WP		Soil						
Batch R4966649								
WG3256223-1 MB								
F3 (C16-C34)			<50		mg/kg		50	10-JAN-20
F4 (C34-C50)			<50		mg/kg		50	10-JAN-20
Surrogate: 2-Bromobenzotrifluoride			95.8		%		60-140	10-JAN-20
MET-200.2-CCMS-WP		Soil						
Batch R4968866								
WG3256934-4 CRM		CANMET TILL-1						
Aluminum (Al)			102.2		%		70-130	13-JAN-20
Antimony (Sb)			107.5		%		70-130	13-JAN-20
Arsenic (As)			101.3		%		70-130	13-JAN-20
Barium (Ba)			99.7		%		70-130	13-JAN-20
Beryllium (Be)			112.1		%		70-130	13-JAN-20
Boron (B)			4.4		mg/kg		0-8.2	13-JAN-20
Bismuth (Bi)			112.3		%		70-130	13-JAN-20
Cadmium (Cd)			101.7		%		70-130	13-JAN-20
Calcium (Ca)			94.6		%		70-130	13-JAN-20
Chromium (Cr)			94.1		%		70-130	13-JAN-20
Cobalt (Co)			98.4		%		70-130	13-JAN-20
Copper (Cu)			102.7		%		70-130	13-JAN-20
Iron (Fe)			97.6		%		70-130	13-JAN-20
Lead (Pb)			112.8		%		70-130	13-JAN-20
Lithium (Li)			108.3		%		70-130	13-JAN-20
Magnesium (Mg)			105.2		%		70-130	13-JAN-20
Manganese (Mn)			104.0		%		70-130	13-JAN-20
Molybdenum (Mo)			101.6		%		70-130	13-JAN-20
Nickel (Ni)			97.0		%		70-130	13-JAN-20
Phosphorus (P)			97.4		%		70-130	13-JAN-20
Potassium (K)			82.5		%		70-130	13-JAN-20
Selenium (Se)			0.32		mg/kg		0.12-0.52	13-JAN-20
Silver (Ag)			0.24		mg/kg		0.12-0.32	13-JAN-20
Sodium (Na)			84.1		%		70-130	13-JAN-20
Strontium (Sr)			95.1		%		70-130	13-JAN-20
Thallium (Tl)			0.138		mg/kg		0.075-0.175	13-JAN-20
Tin (Sn)			0.8		mg/kg		0-3.1	13-JAN-20
Titanium (Ti)			81.5		%		70-130	13-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WP		Soil						
Batch	R4968866							
WG3256934-4	CRM	CANMET TILL-1						
Tungsten (W)			0.16		mg/kg		0-0.66	13-JAN-20
Uranium (U)			112.9		%		70-130	13-JAN-20
Vanadium (V)			92.3		%		70-130	13-JAN-20
Zinc (Zn)			97.8		%		70-130	13-JAN-20
Zirconium (Zr)			0.7		mg/kg		0-1.8	13-JAN-20
WG3256934-2	LCS							
Aluminum (Al)			102.5		%		80-120	13-JAN-20
Antimony (Sb)			104.6		%		80-120	13-JAN-20
Arsenic (As)			102.1		%		80-120	13-JAN-20
Barium (Ba)			100.7		%		80-120	13-JAN-20
Beryllium (Be)			109.7		%		80-120	13-JAN-20
Boron (B)			111.1		%		80-120	13-JAN-20
Bismuth (Bi)			107.2		%		80-120	13-JAN-20
Cadmium (Cd)			103.2		%		80-120	13-JAN-20
Calcium (Ca)			103.2		%		80-120	13-JAN-20
Chromium (Cr)			104.9		%		80-120	13-JAN-20
Cobalt (Co)			103.3		%		80-120	13-JAN-20
Copper (Cu)			103.5		%		80-120	13-JAN-20
Iron (Fe)			94.2		%		80-120	13-JAN-20
Lead (Pb)			108.3		%		80-120	13-JAN-20
Lithium (Li)			112.5		%		80-120	13-JAN-20
Magnesium (Mg)			117.7		%		80-120	13-JAN-20
Manganese (Mn)			101.2		%		80-120	13-JAN-20
Molybdenum (Mo)			102.7		%		80-120	13-JAN-20
Nickel (Ni)			101.0		%		80-120	13-JAN-20
Phosphorus (P)			106.6		%		80-120	13-JAN-20
Potassium (K)			100.8		%		80-120	13-JAN-20
Selenium (Se)			113.0		%		80-120	13-JAN-20
Silver (Ag)			101.7		%		80-120	13-JAN-20
Sodium (Na)			106.0		%		80-120	13-JAN-20
Strontium (Sr)			102.9		%		80-120	13-JAN-20
Sulfur (S)			117.4		%		70-130	13-JAN-20
Thallium (Tl)			105.1		%		80-120	13-JAN-20
Tin (Sn)			102.7		%		80-120	13-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WP		Soil						
Batch	R4968866							
WG3256934-2	LCS							
Titanium (Ti)			97.5		%		80-120	13-JAN-20
Tungsten (W)			108.5		%		70-130	13-JAN-20
Uranium (U)			115.9		%		80-120	13-JAN-20
Vanadium (V)			103.2		%		80-120	13-JAN-20
Zinc (Zn)			102.6		%		80-120	13-JAN-20
Zirconium (Zr)			98.4		%		80-120	13-JAN-20
WG3256934-1	MB							
Aluminum (Al)			<50		mg/kg		50	13-JAN-20
Antimony (Sb)			<0.10		mg/kg		0.1	13-JAN-20
Arsenic (As)			<0.10		mg/kg		0.1	13-JAN-20
Barium (Ba)			<0.50		mg/kg		0.5	13-JAN-20
Beryllium (Be)			<0.10		mg/kg		0.1	13-JAN-20
Boron (B)			<5.0		mg/kg		5	13-JAN-20
Bismuth (Bi)			<0.20		mg/kg		0.2	13-JAN-20
Cadmium (Cd)			<0.020		mg/kg		0.02	13-JAN-20
Calcium (Ca)			<50		mg/kg		50	13-JAN-20
Chromium (Cr)			<0.50		mg/kg		0.5	13-JAN-20
Cobalt (Co)			<0.10		mg/kg		0.1	13-JAN-20
Copper (Cu)			<0.50		mg/kg		0.5	13-JAN-20
Iron (Fe)			<50		mg/kg		50	13-JAN-20
Lead (Pb)			<0.50		mg/kg		0.5	13-JAN-20
Lithium (Li)			<2.0		mg/kg		2	13-JAN-20
Magnesium (Mg)			<20		mg/kg		20	13-JAN-20
Manganese (Mn)			<1.0		mg/kg		1	13-JAN-20
Molybdenum (Mo)			<0.10		mg/kg		0.1	13-JAN-20
Nickel (Ni)			<0.50		mg/kg		0.5	13-JAN-20
Phosphorus (P)			<50		mg/kg		50	13-JAN-20
Potassium (K)			<100		mg/kg		100	13-JAN-20
Selenium (Se)			<0.20		mg/kg		0.2	13-JAN-20
Silver (Ag)			<0.10		mg/kg		0.1	13-JAN-20
Sodium (Na)			<50		mg/kg		50	13-JAN-20
Strontium (Sr)			<0.50		mg/kg		0.5	13-JAN-20
Sulfur (S)			<1000		mg/kg		1000	13-JAN-20
Thallium (Tl)			<0.050		mg/kg		0.05	13-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WP								
Soil								
Batch R4968866								
WG3256934-1 MB								
Tin (Sn)			<2.0		mg/kg		2	13-JAN-20
Titanium (Ti)			<1.0		mg/kg		1	13-JAN-20
Tungsten (W)			<0.50		mg/kg		0.5	13-JAN-20
Uranium (U)			<0.050		mg/kg		0.05	13-JAN-20
Vanadium (V)			<0.20		mg/kg		0.2	13-JAN-20
Zinc (Zn)			<2.0		mg/kg		2	13-JAN-20
Zirconium (Zr)			<1.0		mg/kg		1	13-JAN-20
MOISTURE-WP								
Soil								
Batch R4966151								
WG3255124-2 LCS								
Moisture			100.3		%		90-110	09-JAN-20
WG3255124-1 MB								
Moisture			<0.10		%		0.1	09-JAN-20
PAH,PANH-WP								
Soil								
Batch R4967719								
WG3256667-3 DUP								
		L2403425-1						
1-Methyl Naphthalene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
2-Methyl Naphthalene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Acenaphthene		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	50	13-JAN-20
Acenaphthylene		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	50	13-JAN-20
Acridine		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Anthracene		<0.0040	<0.0040	RPD-NA	mg/kg	N/A	50	13-JAN-20
Benzo(a)anthracene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Benzo(a)pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Benzo(b&j)fluoranthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Benzo(g,h,i)perylene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Benzo(k)fluoranthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Chrysene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Dibenzo(a,h)anthracene		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	50	13-JAN-20
Fluoranthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Fluorene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Indeno(1,2,3-cd)pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Naphthalene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Phenanthrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
Pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP		Soil						
Batch	R4967719							
WG3256667-3	DUP	L2403425-1						
Quinoline		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	13-JAN-20
WG3256667-4	IRM	ALS PAH RM2						
1-Methyl Naphthalene			115.6		%		65-130	13-JAN-20
2-Methyl Naphthalene			122.1		%		65-130	13-JAN-20
Acenaphthene			114.8		%		65-130	13-JAN-20
Acenaphthylene			97.1		%		65-130	13-JAN-20
Anthracene			101.7		%		65-130	13-JAN-20
Benzo(a)anthracene			101.6		%		65-130	13-JAN-20
Benzo(a)pyrene			74.1		%		65-130	13-JAN-20
Benzo(b&j)fluoranthene			86.4		%		65-130	13-JAN-20
Benzo(g,h,i)perylene			79.4		%		65-130	13-JAN-20
Benzo(k)fluoranthene			91.7		%		65-130	13-JAN-20
Chrysene			96.5		%		65-130	13-JAN-20
Dibenzo(a,h)anthracene			93.9		%		65-130	13-JAN-20
Fluoranthene			106.0		%		65-130	13-JAN-20
Fluorene			103.6		%		65-130	13-JAN-20
Indeno(1,2,3-cd)pyrene			75.6		%		65-130	13-JAN-20
Naphthalene			127.8		%		65-130	13-JAN-20
Phenanthrene			106.3		%		65-130	13-JAN-20
Pyrene			108.4		%		65-130	13-JAN-20
WG3256667-2	LCS							
1-Methyl Naphthalene			118.1		%		60-130	13-JAN-20
2-Methyl Naphthalene			111.7		%		60-130	13-JAN-20
Acenaphthene			117.0		%		60-130	13-JAN-20
Acenaphthylene			106.7		%		60-130	13-JAN-20
Acridine			115.4		%		60-130	13-JAN-20
Anthracene			110.4		%		60-130	13-JAN-20
Benzo(a)anthracene			112.8		%		60-130	13-JAN-20
Benzo(a)pyrene			106.7		%		60-130	13-JAN-20
Benzo(b&j)fluoranthene			110.6		%		60-130	13-JAN-20
Benzo(g,h,i)perylene			108.0		%		60-130	13-JAN-20
Benzo(k)fluoranthene			114.5		%		60-130	13-JAN-20
Chrysene			111.1		%		60-130	13-JAN-20
Dibenzo(a,h)anthracene			106.3		%		60-130	13-JAN-20
Fluoranthene			112.7		%		60-130	13-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP		Soil						
Batch	R4967719							
WG3256667-2	LCS							
Fluorene			107.6		%		60-130	13-JAN-20
Indeno(1,2,3-cd)pyrene			102.6		%		60-130	13-JAN-20
Naphthalene			108.9		%		50-130	13-JAN-20
Phenanthrene			119.2		%		60-130	13-JAN-20
Pyrene			115.4		%		60-130	13-JAN-20
Quinoline			107.3		%		60-130	13-JAN-20
WG3256667-1	MB							
1-Methyl Naphthalene			<0.010		mg/kg		0.01	13-JAN-20
2-Methyl Naphthalene			<0.010		mg/kg		0.01	13-JAN-20
Acenaphthene			<0.0050		mg/kg		0.005	13-JAN-20
Acenaphthylene			<0.0050		mg/kg		0.005	13-JAN-20
Acridine			<0.010		mg/kg		0.01	13-JAN-20
Anthracene			<0.0040		mg/kg		0.004	13-JAN-20
Benzo(a)anthracene			<0.010		mg/kg		0.01	13-JAN-20
Benzo(a)pyrene			<0.010		mg/kg		0.01	13-JAN-20
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	13-JAN-20
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	13-JAN-20
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	13-JAN-20
Chrysene			<0.010		mg/kg		0.01	13-JAN-20
Dibenzo(a,h)anthracene			<0.0050		mg/kg		0.005	13-JAN-20
Fluoranthene			<0.010		mg/kg		0.01	13-JAN-20
Fluorene			<0.010		mg/kg		0.01	13-JAN-20
Indeno(1,2,3-cd)pyrene			<0.010		mg/kg		0.01	13-JAN-20
Naphthalene			<0.010		mg/kg		0.01	13-JAN-20
Phenanthrene			<0.010		mg/kg		0.01	13-JAN-20
Pyrene			<0.010		mg/kg		0.01	13-JAN-20
Quinoline			<0.010		mg/kg		0.01	13-JAN-20
Surrogate: Acenaphthene d10			101.2		%		60-130	13-JAN-20
Surrogate: Chrysene d12			105.4		%		60-130	13-JAN-20
Surrogate: Naphthalene d8			105.8		%		50-130	13-JAN-20
Surrogate: Phenanthrene d10			104.8		%		60-130	13-JAN-20

PCB-ED

Soil

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-ED		Soil						
Batch	R4970310							
WG3256620-3	CRM	PCB_SOIL_CRM915-050						
Aroclor 1260			89.2		%		65-130	15-JAN-20
WG3256620-4	DUP	L2403425-6						
Aroclor 1016		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	15-JAN-20
Aroclor 1221		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	15-JAN-20
Aroclor 1232		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	15-JAN-20
Aroclor 1242		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	15-JAN-20
Aroclor 1248		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	15-JAN-20
Aroclor 1254		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	15-JAN-20
Aroclor 1260		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	15-JAN-20
Aroclor 1262		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	15-JAN-20
Aroclor 1268		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	15-JAN-20
WG3256620-2	LCS	LCS_A1268						
Aroclor 1268			98.8		%		65-130	15-JAN-20
WG3256620-1	MB							
Aroclor 1016			<0.010		mg/kg		0.01	15-JAN-20
Aroclor 1221			<0.010		mg/kg		0.01	15-JAN-20
Aroclor 1232			<0.010		mg/kg		0.01	15-JAN-20
Aroclor 1242			<0.010		mg/kg		0.01	15-JAN-20
Aroclor 1248			<0.010		mg/kg		0.01	15-JAN-20
Aroclor 1254			<0.010		mg/kg		0.01	15-JAN-20
Aroclor 1260			<0.010		mg/kg		0.01	15-JAN-20
Aroclor 1262			<0.010		mg/kg		0.01	15-JAN-20
Aroclor 1268			<0.010		mg/kg		0.01	15-JAN-20
Surrogate: Decachlorobiphenyl			96.8		%		65-130	15-JAN-20
PSA-75UM-SIEVE-WP		Soil						
Batch	R4973298							
WG3260576-1	IRM	SRS-1704						
% >75um			68.1		%		65.7-75.7	16-JAN-20
VOC+F1-HSMS-WP		Soil						
Batch	R4969007							
WG3255736-2	LCS							
Acetone			117.7		%		70-130	10-JAN-20
Benzene			89.2		%		70-130	10-JAN-20
Bromobenzene			92.0		%		70-130	10-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Soil						
Batch	R4969007							
WG3255736-2	LCS							
Bromochloromethane			95.6		%		70-130	10-JAN-20
Bromodichloromethane			91.5		%		70-130	10-JAN-20
Bromoform			98.9		%		70-130	10-JAN-20
Bromomethane			113.7		%		60-140	10-JAN-20
n-Butylbenzene			86.3		%		70-130	10-JAN-20
sec-Butylbenzene			90.9		%		70-130	10-JAN-20
tert-Butylbenzene			92.5		%		70-130	10-JAN-20
Carbon disulfide			101.7		%		70-130	10-JAN-20
Carbon Tetrachloride			80.2		%		70-130	10-JAN-20
Chlorobenzene			91.3		%		70-130	10-JAN-20
Chloroethane			99.5		%		60-140	10-JAN-20
Chloroform			87.8		%		70-130	10-JAN-20
Chloromethane			185.8	RRQC	%		60-140	10-JAN-20
2-Chlorotoluene			96.5		%		70-130	10-JAN-20
4-Chlorotoluene			94.3		%		70-130	10-JAN-20
Dibromochloromethane			96.8		%		70-130	10-JAN-20
1,2-Dibromo-3-chloropropane			106.6		%		70-130	10-JAN-20
1,2-Dibromoethane			103.1		%		70-130	10-JAN-20
Dibromomethane			101.6		%		70-130	10-JAN-20
1,2-Dichlorobenzene			90.1		%		70-130	10-JAN-20
1,3-Dichlorobenzene			84.9		%		70-130	10-JAN-20
1,4-Dichlorobenzene			90.1		%		70-130	10-JAN-20
Dichlorodifluoromethane			263.3	RRQC	%		60-140	10-JAN-20
1,1-dichloroethane			88.3		%		70-130	10-JAN-20
1,2-Dichloroethane			98.2		%		70-130	10-JAN-20
1,1-dichloroethene			87.2		%		70-130	10-JAN-20
cis-1,2-Dichloroethene			90.8		%		70-130	10-JAN-20
trans-1,2-Dichloroethene			85.8		%		70-130	10-JAN-20
Dichloromethane			94.7		%		60-140	10-JAN-20
1,2-Dichloropropane			87.0		%		70-130	10-JAN-20
1,3-Dichloropropane			101.0		%		70-130	10-JAN-20
2,2-Dichloropropane			92.4		%		70-130	10-JAN-20
1,1-Dichloropropene			84.0		%		70-130	10-JAN-20
cis-1,3-Dichloropropene			96.7		%		70-130	10-JAN-20

Quality Control Report

Workorder: L2403425

Report Date: 21-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Soil						
Batch	R4969007							
WG3255736-2	LCS							
trans-1,3-Dichloropropene			98.7		%		70-130	10-JAN-20
Ethylbenzene			90.4		%		70-130	10-JAN-20
Hexachlorobutadiene			76.6		%		70-130	10-JAN-20
Hexane			74.2		%		70-130	10-JAN-20
2-Hexanone (Methyl butyl ketone)			124.2		%		70-130	10-JAN-20
Isopropylbenzene			92.3		%		70-130	10-JAN-20
4-Isopropyltoluene			90.8		%		70-130	10-JAN-20
MEK			121.3		%		70-130	10-JAN-20
MIBK			124.5		%		70-130	10-JAN-20
MTBE			91.4		%		70-130	10-JAN-20
Styrene			99.8		%		70-130	10-JAN-20
1,1,1,2-Tetrachloroethane			89.6		%		70-130	10-JAN-20
1,1,2,2-Tetrachloroethane			104.8		%		70-130	10-JAN-20
Tetrachloroethene			76.7		%		70-130	10-JAN-20
Toluene			90.3		%		70-130	10-JAN-20
1,2,3-Trichlorobenzene			91.4		%		70-130	10-JAN-20
1,2,4-Trichlorobenzene			76.1		%		70-130	10-JAN-20
1,1,1-Trichloroethane			85.3		%		70-130	10-JAN-20
1,1,2-Trichloroethane			101.5		%		70-130	10-JAN-20
Trichloroethene			82.7		%		70-130	10-JAN-20
Trichlorofluoromethane			79.9		%		60-140	10-JAN-20
1,2,3-Trichloropropane			102.6		%		70-130	10-JAN-20
1,2,4-Trimethylbenzene			93.8		%		70-130	10-JAN-20
1,3,5-Trimethylbenzene			93.0		%		70-130	10-JAN-20
Vinyl Chloride			136.4	RRQC	%		60-140	10-JAN-20
M+P-Xylenes			96.4		%		70-130	10-JAN-20
o-Xylene			93.2		%		70-130	10-JAN-20
COMMENTS: % Recovery for Dichlorodifluoromethane, Chloromethane & Vinyl Chloride are higher than our Data Quality Objective (DQO). Sample results are not affected as results for these compounds are less than our Limit of Reporting (LOR)								
WG3255736-4	LCS							
F1			114.2		%		70-130	10-JAN-20
WG3255736-1	MB							
Acetone			<0.50		mg/kg		0.5	10-JAN-20
Benzene			<0.0050		mg/kg		0.005	10-JAN-20
Bromobenzene			<0.10		mg/kg		0.1	10-JAN-20

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Soil						
Batch	R4969007							
WG3255736-1	MB							
Bromochloromethane			<0.10		mg/kg		0.1	10-JAN-20
Bromodichloromethane			<0.050		mg/kg		0.05	10-JAN-20
Bromoform			<0.050		mg/kg		0.05	10-JAN-20
Bromomethane			<0.050		mg/kg		0.05	10-JAN-20
n-Butylbenzene			<0.050		mg/kg		0.05	10-JAN-20
sec-Butylbenzene			<0.050		mg/kg		0.05	10-JAN-20
tert-Butylbenzene			<0.050		mg/kg		0.05	10-JAN-20
Carbon disulfide			<0.25		mg/kg		0.25	10-JAN-20
Carbon Tetrachloride			<0.050		mg/kg		0.05	10-JAN-20
Chlorobenzene			<0.050		mg/kg		0.05	10-JAN-20
Chloroethane			<0.050		mg/kg		0.05	10-JAN-20
Chloroform			<0.050		mg/kg		0.05	10-JAN-20
Chloromethane			<0.050		mg/kg		0.05	10-JAN-20
2-Chlorotoluene			<0.10		mg/kg		0.1	10-JAN-20
4-Chlorotoluene			<0.10		mg/kg		0.1	10-JAN-20
Dibromochloromethane			<0.050		mg/kg		0.05	10-JAN-20
1,2-Dibromo-3-chloropropane			<0.050		mg/kg		0.05	10-JAN-20
1,2-Dibromoethane			<0.050		mg/kg		0.05	10-JAN-20
Dibromomethane			<0.050		mg/kg		0.05	10-JAN-20
1,2-Dichlorobenzene			<0.050		mg/kg		0.05	10-JAN-20
1,3-Dichlorobenzene			<0.050		mg/kg		0.05	10-JAN-20
1,4-Dichlorobenzene			<0.050		mg/kg		0.05	10-JAN-20
Dichlorodifluoromethane			<0.050		mg/kg		0.05	10-JAN-20
1,1-dichloroethane			<0.050		mg/kg		0.05	10-JAN-20
1,2-Dichloroethane			<0.050		mg/kg		0.05	10-JAN-20
1,1-dichloroethene			<0.050		mg/kg		0.05	10-JAN-20
cis-1,2-Dichloroethene			<0.050		mg/kg		0.05	10-JAN-20
trans-1,2-Dichloroethene			<0.050		mg/kg		0.05	10-JAN-20
Dichloromethane			<0.10		mg/kg		0.1	10-JAN-20
1,2-Dichloropropane			<0.050		mg/kg		0.05	10-JAN-20
1,3-Dichloropropane			<0.050		mg/kg		0.05	10-JAN-20
2,2-Dichloropropane			<0.10		mg/kg		0.1	10-JAN-20
1,1-Dichloropropene			<0.050		mg/kg		0.05	10-JAN-20
cis-1,3-Dichloropropene			<0.050		mg/kg		0.05	10-JAN-20

Quality Control Report

Workorder: L2403425

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Soil						
Batch	R4969007							
WG3255736-1	MB							
trans-1,3-Dichloropropene			<0.050		mg/kg		0.05	10-JAN-20
Ethylbenzene			<0.015		mg/kg		0.015	10-JAN-20
F1			<10		mg/kg		10	10-JAN-20
Hexachlorobutadiene			<0.050		mg/kg		0.05	10-JAN-20
Hexane			<0.050		mg/kg		0.05	10-JAN-20
2-Hexanone (Methyl butyl ketone)			<0.50		mg/kg		0.5	10-JAN-20
Isopropylbenzene			<0.10		mg/kg		0.1	10-JAN-20
4-Isopropyltoluene			<0.10		mg/kg		0.1	10-JAN-20
MEK			<0.50		mg/kg		0.5	10-JAN-20
MIBK			<0.50		mg/kg		0.5	10-JAN-20
MTBE			<0.20		mg/kg		0.2	10-JAN-20
Styrene			<0.050		mg/kg		0.05	10-JAN-20
1,1,1,2-Tetrachloroethane			<0.050		mg/kg		0.05	10-JAN-20
1,1,2,2-Tetrachloroethane			<0.050		mg/kg		0.05	10-JAN-20
Tetrachloroethene			<0.050		mg/kg		0.05	10-JAN-20
Toluene			<0.050		mg/kg		0.05	10-JAN-20
1,2,3-Trichlorobenzene			<0.050		mg/kg		0.05	10-JAN-20
1,2,4-Trichlorobenzene			<0.050		mg/kg		0.05	10-JAN-20
1,1,1-Trichloroethane			<0.050		mg/kg		0.05	10-JAN-20
1,1,2-Trichloroethane			<0.050		mg/kg		0.05	10-JAN-20
Trichloroethene			<0.050		mg/kg		0.05	10-JAN-20
Trichlorofluoromethane			<0.050		mg/kg		0.05	10-JAN-20
1,2,3-Trichloropropane			<0.050		mg/kg		0.05	10-JAN-20
1,2,4-Trimethylbenzene			<0.050		mg/kg		0.05	10-JAN-20
1,3,5-Trimethylbenzene			<0.050		mg/kg		0.05	10-JAN-20
Vinyl Chloride			<0.050		mg/kg		0.05	10-JAN-20
M+P-Xylenes			<0.050		mg/kg		0.05	10-JAN-20
o-Xylene			<0.050		mg/kg		0.05	10-JAN-20
Surrogate: 1,4-Difluorobenzene (SS)			96.4		%		70-130	10-JAN-20
Surrogate: 3,4-Dichlorotoluene (SS)			111.7		%		70-130	10-JAN-20
Surrogate: 4-Bromofluorobenzene (SS)			90.2		%		70-130	10-JAN-20

Quality Control Report

Workorder: L2403425

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
RRQC	Refer to report remarks for information regarding this QC result.

Quality Control Report

Workorder: L2403425

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
% Moisture							
	1	16-DEC-19	09-JAN-20 12:00	14	24	days	EHTR
	2	16-DEC-19	09-JAN-20 12:00	14	24	days	EHTR
	3	16-DEC-19	09-JAN-20 12:00	14	24	days	EHTR
	4	16-DEC-19	09-JAN-20 12:00	14	24	days	EHTR
	5	16-DEC-19	09-JAN-20 12:00	14	24	days	EHTR
	6	20-DEC-19	09-JAN-20 12:00	14	20	days	EHTR
Aggregate Organics							
Extractable Organic Halides (EOX)							
	1	16-DEC-19	14-JAN-20 00:00	28	29	days	EHT
	2	16-DEC-19	14-JAN-20 00:00	28	29	days	EHT
	4	16-DEC-19	14-JAN-20 00:00	28	29	days	EHT
	5	16-DEC-19	14-JAN-20 00:00	28	29	days	EHT
Hydrocarbons							
CCME Total Extractable Hydrocarbons							
	1	16-DEC-19	10-JAN-20 14:00	14	25	days	EHTR
	2	16-DEC-19	10-JAN-20 14:00	14	25	days	EHTR
	3	16-DEC-19	10-JAN-20 14:00	14	25	days	EHTR
	4	16-DEC-19	10-JAN-20 14:00	14	25	days	EHTR
	5	16-DEC-19	10-JAN-20 14:00	14	25	days	EHTR
	6	20-DEC-19	10-JAN-20 14:00	14	21	days	EHTR
Polycyclic Aromatic Hydrocarbons							
Polyaromatic Hydrocarbons (PAHs)							
	1	16-DEC-19	09-JAN-20 00:00	14	24	days	EHTR
	2	16-DEC-19	09-JAN-20 00:00	14	24	days	EHTR
	4	16-DEC-19	09-JAN-20 00:00	14	24	days	EHTR
	5	16-DEC-19	09-JAN-20 00:00	14	24	days	EHTR
	6	20-DEC-19	09-JAN-20 00:00	14	20	days	EHTR

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
 EHTR: Exceeded ALS recommended hold time prior to sample receipt.
 EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
 EHT: Exceeded ALS recommended hold time prior to analysis.
 Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2403425 were received on 08-JAN-20 12:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

January 14, 2020

Ms. Judy Dalmajjer
ALS Environmental-Winnipeg MB
Unit 12-1329 Niakwa Road East
Winnipeg, MB, R2J 3T4

Certificate of Analysis

Project Name: TOX	Workorder: 3079655
Purchase Order:	Workorder ID: L2403425

Dear Ms. Dalmajjer:

Enclosed are the analytical results for samples received by the laboratory on Thursday, January 9, 2020.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Sarah S Leung (Project Coordinator) at (717) 944-5541.

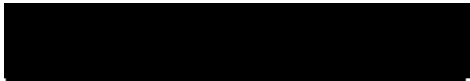
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Bea Ryback , Mr. Craig Riddell

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Ms. Sarah S Leung
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3079655 L2403425

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3079655001	L240345-1	Solid	12/16/2019 00:00	1/9/2020 10:27	Collected by Client
3079655002	L240345-2	Solid	12/16/2019 00:00	1/9/2020 10:27	Collected by Client
3079655003	L240345-4	Solid	12/16/2019 00:00	1/9/2020 10:27	Collected by Client
3079655004	L240345-5	Solid	12/16/2019 00:00	1/9/2020 10:27	Collected by Client

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SAMPLE SUMMARY

Workorder: 3079655 L2403425

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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**ANALYTICAL RESULTS**

Workorder: 3079655 L2403425

Lab ID: **3079655001**

Date Collected: 12/16/2019 00:00

Matrix: Solid

Sample ID: **L240345-1**

Date Received: 1/9/2020 10:27

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Halogen, Total Organic (TOX)	ND		mg/kg	6.6	SW846 9023			1/14/20 12:06	PAG	A
Moisture	27.6		%	0.1	S2540G-11			1/10/20 09:47	AXD	
Total Solids	72.4	1	%	0.1	S2540G-11			1/10/20 09:47	AXD	


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Project Coordinator**ALS Environmental Laboratory Locations Across North America**Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
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**ANALYTICAL RESULTS**

Workorder: 3079655 L2403425

Lab ID: **3079655002**

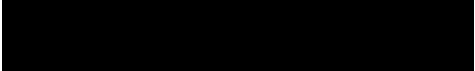
Date Collected: 12/16/2019 00:00

Matrix: Solid

Sample ID: **L240345-2**

Date Received: 1/9/2020 10:27

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Halogen, Total Organic (TOX)	ND		mg/kg	7.1	SW846 9023			1/14/20 12:16	PAG	A
Moisture	31.8		%	0.1	S2540G-11			1/10/20 09:47	AXD	
Total Solids	68.2	1	%	0.1	S2540G-11			1/10/20 09:47	AXD	


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**ANALYTICAL RESULTS**

Workorder: 3079655 L2403425

Lab ID: **3079655003**

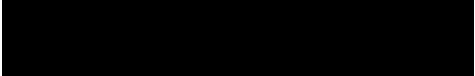
Date Collected: 12/16/2019 00:00

Matrix: Solid

Sample ID: **L240345-4**

Date Received: 1/9/2020 10:27

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Halogen, Total Organic (TOX)	7.1		mg/kg	6.4	SW846 9023			1/14/20 12:35	PAG	A
Moisture	28.8		%	0.1	S2540G-11			1/10/20 09:47	AXD	
Total Solids	71.2	1	%	0.1	S2540G-11			1/10/20 09:47	AXD	


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**ANALYTICAL RESULTS**

Workorder: 3079655 L2403425

Lab ID: **3079655004**

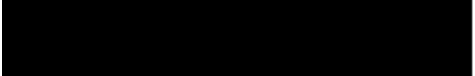
Date Collected: 12/16/2019 00:00

Matrix: Solid

Sample ID: **L240345-5**

Date Received: 1/9/2020 10:27

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Halogen, Total Organic (TOX)	ND		mg/kg	6.5	SW846 9023			1/14/20 12:48	PAG	A
Moisture	25.7		%	0.1	S2540G-11			1/10/20 09:47	AXD	
Total Solids	74.3	1	%	0.1	S2540G-11			1/10/20 09:47	AXD	


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ANALYTICAL RESULTS

Workorder: 3079655 L2403425

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3079655001	1	L240345-1	S2540G-11	Total Solids
Analyte was analyzed past the 7 day holding time.				
3079655002	1	L240345-2	S2540G-11	Total Solids
Analyte was analyzed past the 7 day holding time.				
3079655003	1	L240345-4	S2540G-11	Total Solids
Analyte was analyzed past the 7 day holding time.				
3079655004	1	L240345-5	S2540G-11	Total Solids
Analyte was analyzed past the 7 day holding time.				

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Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey

**ANALYSIS - PREP METHOD CROSS REFERENCE TABLE**

Workorder: 3079655 L2403425

Lab ID	Sample ID	Analysis Method	Prep Method
3079655001	L240345-1	S2540G-11	
3079655001	L240345-1	SW846 9023	
3079655002	L240345-2	S2540G-11	
3079655002	L240345-2	SW846 9023	
3079655003	L240345-4	S2540G-11	
3079655003	L240345-4	SW846 9023	
3079655004	L240345-5	S2540G-11	
3079655004	L240345-5	SW846 9023	

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QUALITY CONTROL DATA

Workorder: 3079655 L2403425

QC Batch: WETC/232971 **Analysis Method:** S2540G-11

QC Batch Method: S2540G-11

Associated Lab Samples: 3079655001, 3079655002, 3079655003, 3079655004

SAMPLE DUPLICATE: 3071456 ORIGINAL: 3079494001

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Moisture	78.5185	%	78.6246	.14	10
Total Solids	21.4814	%	21.3753	.5	5

SAMPLE DUPLICATE: 3071457 ORIGINAL: 3079460003

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Moisture	8.4651	%	7.7261	9.13	10
Total Solids	91.5348	%	92.2738	.8	5

SAMPLE DUPLICATE: 3071458 ORIGINAL: 3079655001

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Moisture	27.647	%	27.4878	.58	10
Total Solids	72.3529	%	72.5121	.22	5

SAMPLE DUPLICATE: 3071459 ORIGINAL: 3079734005

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Moisture	99.7414	%	99.732	.009	10
Total Solids	.2585	%	.2679	3.57	5

SAMPLE DUPLICATE: 3071460 ORIGINAL: 3079766007

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Moisture	2.0018	%	2.1259	6.01	10
Total Solids	97.9981	%	97.874	.13	5

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QUALITY CONTROL DATA

Workorder: 3079655 L2403425

SAMPLE DUPLICATE: 3071461 ORIGINAL: 3078769026

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Moisture	22.4344	%	22.3398	.42	10
Total Solids	77.5655	%	77.6601	.12	5

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QUALITY CONTROL DATA

Workorder: 3079655 L2403425

QC Batch: WETC/233109 **Analysis Method:** SW846 9023

QC Batch Method: SW846 9023

Associated Lab Samples: 3079655001, 3079655002, 3079655003, 3079655004

METHOD BLANK: 3072995

Parameter	Blank Result	Units	Reporting Limit
Halogen, Total Organic (TOX)	ND	mg/kg	5.0

LABORATORY CONTROL SAMPLE: 3072996

Parameter	LCS % Rec	Units	Spike Conc.	LCS Result	% Rec Limit
Halogen, Total Organic (TOX)	104	mg/kg	500	521	90 - 110

LABORATORY CONTROL SAMPLE: 3072997

Parameter	LCS % Rec	Units	Spike Conc.	LCS Result	% Rec Limit
Halogen, Total Organic (TOX)	104	mg/kg	500	521	90 - 110

MATRIX SPIKE: 3073268 DUPLICATE: 3073269 ORIGINAL: 3079655002

****NOTE - The Original Result shown below is a raw result and is only used for the purpose of calculating Matrix Spike percent recoveries. This result is not a final value and cannot be used as such.

Parameter	Original Result	Units	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Halogen, Total Organic (TOX)	2.895	mg/kg	483	493.77	506.96	102	104	80 - 120	2.64	20

METHOD BLANK: 3072999

Parameter	Blank Result	Units	Reporting Limit
Halogen, Total Organic (TOX)	ND	mg/kg	5.0

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QUALITY CONTROL DATA

Workorder: 3079655 L2403425

METHOD BLANK: 3073001

Parameter	Blank Result	Units	Reporting Limit
Halogen, Total Organic (TOX)	ND	mg/kg	5.0

ALS Environmental Laboratory Locations Across North America

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 3079655 L2403425

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
3079655001	L240345-1			S2540G-11	WETC/232971
3079655002	L240345-2			S2540G-11	WETC/232971
3079655003	L240345-4			S2540G-11	WETC/232971
3079655004	L240345-5			S2540G-11	WETC/232971
3079655001	L240345-1			SW846 9023	WETC/233109
3079655002	L240345-2			SW846 9023	WETC/233109
3079655003	L240345-4			SW846 9023	WETC/233109
3079655004	L240345-5			SW846 9023	WETC/233109

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**L2403425**

WINNIPEG

**Subcontract Request Form****Subcontract To:****ALS ENVIRONMENTAL - MIDDLETOWN, PENNSYLVANIA, USA**34 DOGWOOD LANE
MIDDLETOWN, PENNSYLVANIA 17057**NOTES:** Please reference on final report and invoice: PO# L2403425
ALS requires QC data to be provided with your final results.Please see enclosed 4 sample(s) in 4 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED	Priority Flag
		DUE DATE	
L2403425-1 TH19-01 @ 0.8M	Extractable Organic Halides (EOX) (EOX-MP 14)	12/ 16/ 2019 1/24/2020	
L2403425-2 TH19-05 @ 0.8M	Extractable Organic Halides (EOX) (EOX-MP 14)	12/ 16/ 2019 1/24/2020	
L2403425-4 TH19-09 @ 0.8M	Extractable Organic Halides (EOX) (EOX-MP 14)	12/ 16/ 2019 1/24/2020	
L2403425-5 TH19-06 @ 0.8M	Extractable Organic Halides (EOX) (EOX-MP 14)	12/ 16/ 2019 1/24/2020	

Subcontract Info Contact: Judy Dalmaijer (204) 255-9749
Analysis and reporting info contact: Judy Dalmaijer
12-1329 NIAKWA ROAD E
WINNIPEG, MB R2J3T4
Phone: (204) 255-9749 Email: Judy.Dalmaijer@alsglobal.com

Please email confirmation of [REDACTED] **Judy.Dalmaijer@alsglobal.com**

[REDACTED] Date Shipped: [REDACTED] **JAN 8**
Received By: [REDACTED] Date Received: [REDACTED] **1/9/2020**
Verified By: [REDACTED] Date Verified: [REDACTED] **1027**
Temperature: [REDACTED] **9°**

Sample Integrity Issues: _____

Wednesday, January 08, 2020 12:51 PM

Tuesday, January 14, 2020 11:00:29 PM

Page 15 of 24

ALS



United States Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection & Quarantine
4700 River Road
Riverdale, MD 20737

Permit to Receive Soil
Regulated by 7 CFR 330

This permit was generated electronically via the ePermits system.

PERMITTEE NAME:	Susan Magness	PERMIT NUMBER:	P330-18-00175
COMPANY:	ALS Environmental-Middletown	APPLICATION NUMBER:	P525-181207-001
RECEIVING ADDRESS:	301 Fulling Mill Road Middletown, PA 17057	DATE ISSUED:	06/15/2018
MAILING ADDRESS:	301 Fulling Mill Road Middletown, PA 17057		
PHONE:	(717) 944-5541	DATE AMENDED:	12/11/2018
FAX:		EXPIRES:	06/15/2021

PORTS OF ARRIVAL/PLANT INSPECTION STATIONS: AK, Anchorage; AL, Huntsville; AL, Mobile; AZ, Douglas; AZ, Lukeville; AZ, Naco; AZ, Nogales; AZ, Phoenix; AZ, San Luis; AZ, Tucson; CA, Calexico; CA, El Segundo; CA, Fresno; CA, Long Beach; CA, Oakland; CA, Ontario; CA, Otay Mesa; CA, Port Hueneme; CA, Sacramento; CA, San Diego; CA, San Francisco; CA, San Jose; CA, San Ysidro; CA, Tecate; CO, Denver; CT, Hartford; CT, New Haven; DE, Dover; DE, Wilmington; FL, Ft. Lauderdale; FL, Ft. Myers; FL, Ft. Pierce; FL, Jacksonville; FL, Key West; FL, Miami; FL, Miami (Cargo, DHL, Fed Ex, UPS, etc.); FL, Orlando; FL, Pensacola; FL, Port Canaveral; FL, Port Everglades; FL, Sanford; FL, Tampa; FL, West Palm Beach; GA, Atlanta; GA, Savannah; GU, Agana; HI, Hilo; HI, Honolulu; HI, Kahului; HI, Kailua-Kona; HI, Lihue; ID, Eastport; IL, Chicago; IN, Indianapolis; KY, Louisville; MA, South Boston; MD, Baltimore; MD, Beltsville; ME, Bangor; ME, Calais; ME, Houlton; ME, Portland; MI, Detroit; MI, Port Huron; MI, Romulus; MI, Sault Saint Marie; MN, Duluth; MN, Grand Portage; MN, International Falls; MN, Minneapolis; MO, Kansas City; MO, St. Louis; MP, Commonwealth of the Northern Mariana Islands; MS, Gulfport; MS, Port Bienville; MT, Raymond; MT, Roosville; MT, Sweetgrass; NC, Raleigh; NC, Wilmington; ND, Dunseith; ND, Pembina; ND, Portal; NJ, Linden; NM, Albuquerque; NM, Columbus; NM, Santa Teresa; NV, Las Vegas; NY, Albany; NY, Alexandria Bay; NY, Brooklyn; NY, Buffalo; NY, Champlain, Rouses Point; NY, Jamaica; NY, Newburgh; OH, Ashtabula; OH, Cincinnati; OH, Cleveland; OH, Columbus; OH, Toledo; OH, Wilmington; OK, Oklahoma City; OR, Portland; PA, Allentown; PA, Harrisburg; PA, Philadelphia; PA, Pittsburgh; PA, Scranton; PR, Aguadilla; PR, Carolina; PR, Fajardo; PR, Mayaguez; PR, Ponce; RI, Warwick/Providence; SC, Charleston; TN, Memphis; TN, Nashville; TX, Austin; TX, Brownsville; TX, Corpus Christi; TX, Dallas; TX, Del Rio; TX, Eagle Pass; TX, El Paso; TX, Fabens; TX, Falcon; TX, Fort Hancock; TX, Freeport; TX, Galveston; TX, Hidalgo; TX, Humble; TX, Laredo; TX, Los Indios; TX, Pharr; TX, Port Arthur; TX, Presidio; TX, Progresso; TX, Rio Grande City; TX, Roma; TX, San Antonio; TX, Victoria; UT, Salt Lake City; VA, Dulles; VA, Norfolk; VI, St. Croix; VI, St. Thomas; VT, Berlin; WA, Blaine; WA, Oroville; WA, Port Angeles; WA, SeaTac; WA, Sumas; WI, Green Bay; WI, Milwaukee

HAND CARRY: Yes

Under the conditions specified, this permit authorizes the following:

Quantity of Soil per Shipment and Treatment

3 lbs or less: Sterilization will interfere with intended use - Your facility MUST be inspected and approved to receive this soil

SPECIAL INSTRUCTIONS TO INSPECTORS

Permit Number P330-18-00175

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE
FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EPERMITS.

Gibbs Smith

DATE

12/11/2018

WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to \$250,000 (7 U.S.C. § 7734(b)) or punishable by a fine of not more than \$10,000, or imprisonment of not more than 5 years, or both (18 U.S.C. § 1001)

PERMIT CONDITIONS

CHEMICAL/PHYSICAL ANALYSIS IMPORTATION

USDA-APHIS issues this permit to Susan Magness with ALS Environmental-Middletown in Middletown, PA. The permit authorizes the importation of soil from all foreign sources (except countries with sanctions or embargoes by U.S. State Department) only for chemical/physical analysis in a controlled laboratory environment at the named facility on the permit.

HAND-CARRY

This permit also authorizes Susan Magness to hand carry the regulated soil per hand carry conditions stipulated below.

1. If an accidental release into the environment occurs, notification must be made within one business day to APHIS, PPQ, 4700 River Rd., unit 133; Riverdale, MD 20737; 866-524-5421. A written report of the incident must be submitted identifying: (a) the name of the permit holder (responsible person), (b) the permit number, (c) the country or State of origin of the soil, (d) the nature of the release, and (e) measures already taken to contain, reduce or limit the effects of the accidentally released soil. Any plans prepared to contain, reduce or limit the effects of the accidentally released soil may be submitted as developed.

2.

- This permit is issued by the United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS). It conveys APHIS regulations and requirements for the material(s) listed on this permit. It does not reduce or eliminate your legal duty and responsibility to comply with all other applicable Federal and State regulatory requirements.
- The permit number or a copy of the permit must accompany the shipment.
- You must be an individual at least 18 years old, or legal entity such as partnership, corporation, association, or joint venture.
- You are legally responsible for complying with all permit requirements and permit conditions.
- The regulated material and shipping container(s) are subject to inspection by officials of Custom and Border Protection (CBP) and APHIS. CBP or APHIS officials may require the shipment to be treated, seized, re-exported, or destroyed (in part or whole). You will be responsible for expenses.
- If you violate any applicable laws associated with this permit, you may face substantial

Permit Number P330-18-00175

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE
FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EPERMITS.

DATE

12/11/2018

GIBBS SMITH

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10. Further distribution of soil is not allowed without a permit from the receiving lab. While in storage, all soil must be kept locked (e.g. in freezer, cabinet) in the approved lab with access limited to authorized personnel or they will be in a restricted access building that requires a key card entry and access is restricted to authorized personnel only; or it must be in locked room restricted to authorized personnel only.

11. The soil must be handled as quarantined material until sterilized. This will include keeping the soil enclosed in containers when not in use and labeling all containers and/or storage areas:

12. All packing material, media, substrate, and shipping containers must be sterilized or destroyed as approved and prescribed by the permit conditions after removing the soil.

13. All unconsumed soil, containers and effluent must be autoclaved, incinerated or properly sterilized by the permittee at the conclusion of the project as approved and prescribed by the permit conditions.

14. Any water residues (effluent) from the processing of soil samples must be treated by an approved sterilization procedure such as hydroclave or autoclave.

15. All soil residues must be dry-heat treated, incinerated, hydroclaved or autoclaved or any other procedure approved by the Deputy Administrator.

Dry Heat Treatment: use one of the following schedules:

110- 120.5 degrees C (230-249 F) for 16 hours

121-154 degrees C (250-309 F) for 2 hours

154.4 - 192.5 degrees C (310-379 F) for 30 minutes

193-220 degrees C (380-429 F) for 4 minutes

221-232 degrees C (430-450) for 2 minutes

Time starts when the entire sample reaches the required temperature, and a suitable temperature probe or currently calibrated thermometer must be used for verification.

Autoclaving Waste

a. Waste must be autoclaved at 121 degrees Centigrade (250 degrees Fahrenheit) for a minimum of 30 minutes.

b. Autoclave tape or other indicators must be placed on each load prior to treatment. The autoclave tape or other indicator on each container must be checked to verify color change before disposal.

c. The autoclave must be professionally calibrated annually and a written record must be maintained.

Permit Number P330-18-00175

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FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EPERMITS.

Gibbs Smith

DATE

12/11/2018

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17. The permit holder must:

- maintain a valid PPQ 330 permit so long as any portion of the regulated soil remains untreated,
- not assign or transfer this permit to other persons without prior APHIS PPQ authorization,
- maintain an official permanent work assignment, residence, or affiliation at the address on this permit,
- notify the Pest Permit Staff as soon as possible of any change in the permit holder's work assignment, residence, or affiliation,
- notify the Pest Permit Staff of the receipt of unauthorized and/or misdirected shipments of regulated soil,
- adequately mitigate environmental impacts resulting from unauthorized release of the regulated soil,
- notify the Pest Permit Staff if the facility is damaged/destroyed or if you wish to decommission the facility,
- devitalize/sterilize all regulated soil prior to departure from the organization unless other arrangements are confirmed by the Pest Permit Staff.

Notifications to the Pest Permit Staff must be made via 866-524-5421 or pest.permits@aphis.usda.gov within one business day of the event triggering a notification.

18. Upon issuance of this permit (i.e., a signed PPQ 330), you will need to request the PPQ Form 550 Black/White labels at least 5 days in advance of shipping date. If you applied online using ePermits, you may request the labels using the My Shipments/Labels feature. Otherwise, send your request to BlackWhiteGreenYellowlabelrequest@aphis.usda.gov. All email requests must come from the permit holder or appointee, if requested by the appointee the permit holder must be Cc'd on all requests. Specify the approved port as listed on the permit and the total number of labels needed in multiples of four. You may request additional labels the same way. We will send you the labels by email as a pdf.

Permit Number P330-18-00175	
THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EPERMITS.  Gibbs Smith	DATE 12/11/2018

WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to \$250,000 (7 U.S.C. § 7734(b)) or punishable by a fine of not more than \$10,000, or imprisonment of not more than 5 years, or both (18 U.S.C. § 1001)



23.

- This permit is issued by the United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS). It conveys APHIS regulations and requirements for the material(s) listed on this permit. It does not reduce or eliminate your legal duty and responsibility to comply with all other applicable Federal and State regulatory requirements.
- The permit number or a copy of the permit must accompany the shipment.
- You must be an individual at least 18 years old, or legal entity such as partnership, corporation, association, or joint venture.
- You are legally responsible for complying with all permit requirements and permit conditions.
- The regulated material and shipping container(s) are subject to inspection by officials of Custom and Border Protection (CBP) and APHIS. CBP or APHIS officials may require the shipment to be treated, seized, re-exported, or destroyed (in part or whole). You will be responsible for expenses.
- If you violate any applicable laws associated with this permit, you may face substantial civil or criminal penalties. We may cancel all current permits and deny future permit applications.
- Without prior notice and during reasonable hours, authorized Federal and State Regulators must be allowed to inspect the conditions associated with the regulated materials/organisms authorized under this permit.

24. All solid wood packing material (SWPM) accompanying the shipment must be in compliance with ISPM 15 treatment regulations and IPPC stamp requirements and enforcement. Noncompliant shipments will be treated, re-exported or destroyed at the consignee's expense.
25. All operations must be consistent with information submitted in association with the above listed APHIS-PPQ inspected facility and subject to the conditions below.
26. Soil must be shipped in a securely closed, watertight container (primary container, test tube, vial, etc.) which must be enclosed in a second, durable watertight container (secondary container).

Permit Number P33D-18-00175	
THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EPERMITS. [Redacted] [Redacted] Gibbs Smith	DATE
	12/11/2018

WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to \$250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than \$10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001)

36. All soil residues must be dry-heat treated, incinerated, hydroclaved or autoclaved or any other procedure approved by the Deputy Administrator.

Dry Heat Treatment: use one of the following schedules:

- 110- 120.5 degrees C (230-249 F) for 16 hours
- 121-154 degrees C (250-309 F) for 2 hours
- 154.4 - 192.5 degrees C (310-379 F) for 30 minutes
- 193-220 degrees C (380-429 F) for 4 minutes
- 221-232 degrees C (430-450) for 2 minutes

Time starts when the entire sample reaches the required temperature, and a suitable temperature probe or currently calibrated thermometer must be used for verification.

Autoclaving Waste

- a. Waste must be autoclaved at 121 degrees Centigrade (250 degrees Fahrenheit) for a minimum of 30 minutes.
- b. Autoclave tape or other indicators must be placed on each load prior to treatment. The autoclave tape or other indicator on each container must be checked to verify color change before disposal.
- c. The autoclave must be professionally calibrated annually and a written record must be maintained.
- d. Every 3 months, you must use a commercially available biological indicator kit that uses bacterial spores (e.g. Geobacillus species) that are rendered unviable at 121 degrees C. You must follow the manufacturer's instructions. If any growth is observed, you must have the autoclave serviced and retested.

Incineration:

With the exception of metal and glass containers, all regulated and associated material must be reduced completely to ash at the end of the incineration cycle.

Hydroclave soil and other material using the following conditions:

- a. Soil must be hydroclaved at 121 degrees Centigrade (250 degrees Fahrenheit) for a minimum of 30 minutes, or at 132 degrees Centigrade (267 degrees Fahrenheit) for a minimum of 15 minutes.

Permit Number P330-18-00175

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE
FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EPERMITS.

[Redacted Signature]

GREGG SMITH

DATE

12/11/2018

WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to \$250,000 (7 U.S.C. § 7734(b)) or punishable by a fine of not more than \$10,000, or imprisonment of not more than 5 years, or both (18 U.S.C. § 1001)

Enclose the following supplemental information in each shipment:

- Permittee Name
- Permit number
- Label number

Underlying packaging/wrapping must carry the address, billing, and any other information required to direct the shipment to its final destination (i.e., the permit holder's address; N.B., USDA APHIS does not defray any additional shipping costs incurred for transiting the shipment through an inspection station as the initial US destination).

39. HAND CARRY PART 1 OF 2

The following conditions apply to all authorized hand carry events. Note that no PPQ-issued labels are required for hand carry events.

a) At least 20 days prior to each hand carry event, the permit holder or designee must notify the PPQ Permit Compliance Officer by email at PPQSoilHandCarryRequest@aphis.usda.gov. In the subject line of the email, write "Notification of Hand Carry - Permit # xxxx":

The email must contain the following information:

- hand carrier's name and permit number
- anticipated first port of entry into the United States
- date and time of arrival and method of transport (maritime, land border, air)
- description of the regulated material/organism and packaging used for transport
- travel plans from the first port of arrival to the final destination

The PPQ Permit Compliance Officer will notify the Customs and Border Protection (CBP) Agricultural Specialist at the port of entry to document and facilitate the entry of the regulated material/organism.

If you have domestic (connecting) air travel plans, please contact the Transportation Security Administration (TSA) prior to arrival into the U.S.: TSA Contact Center Telephone:

Permit Number P330-18-00175

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EPERMITS. Gibbs Smith	DATE 12/11/2018
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WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to \$250,000 (7 U.S.C. 7734(b)) or punishable by a fine of not more than \$10,000, or imprisonment of not more than 5 years, or both (18 U.S.C. 1001)

materials) or 877-770-5990 (for restricted or prohibited plant material).

g) Within 24 hours of the first business day of the regulated material/organisms' arrival at the facility, an independent third party (e.g. containment facility director, departmental chair, campus biosafety officer, etc.) must notify the PPQ Permit Compliance Officer via email at: BlackWhiteGreenYellow.labelrequest@aphis.usda.gov that the shipment remained sealed until arrival. The notification must include what regulated material/organism was imported, its origin, permit number, date of arrival, and quantity. In the subject line of the email, please write: "Notification of Hand Carry Arrival - Permit # xxxx". See 29(a) above for the list of e-mail addresses to use for the notification.

Failure to notify the PPQ Permit Compliance Officer may result in loss of hand carry privileges. A PPQ inspector may visit the facility to confirm the arrival of the package and its contents.

41. The Permit holder must comply with all the items listed below. In cases where notification is required, the notification must be made to the Pest Permit staff at 866-524-5421 or pest.permits@aphis.usda.gov within one business day of the event triggering a notification. You must also notify the PPQ State Plant Health Director in your State. Access the list of SPHDs at https://www.aphis.usda.gov/aphis/ourfocus/planthealth/ppq-program-overview/ct_sphd.

- maintain a valid PPQ 330 permit so long as any portion of the regulated soil remains untreated,
- not assign or transfer this permit to other persons without prior APHIS PPQ authorization,
- maintain an official permanent work assignment or affiliation at the address on this permit,
- notify the Pest Permit Staff of any change in the permit holder's work assignment, residence, or affiliation,
- notify the Pest Permit Staff of the receipt of unauthorized and/or misdirected shipments of regulated soil,
- adequately mitigate environmental impacts resulting from unauthorized or accidental release of the regulated soil,
- notify the Pest Permit Staff if the facility or equipment is damaged/destroyed or if you wish to decommission the facility,
- devitalize/sterilize all regulated soil prior to departure from the organization unless other arrangements are confirmed by the Pest Permit Staff,
- notify the Pest Permit Staff if you intend to let your permit expire and you will no longer receive or work with the regulated soil.

Permit Number P330-18-00175

	SIGNED ELECTRONICALLY BY THE OFFICIAL VIA EPERMITS.	DATE
	Gibbs Smith	12/11/2018

WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to \$250,000 (7 U.S.C. 7734(b)) or punishable by a fine of not more than \$10,000, or imprisonment of not more than 5 years, or both (18 U.S.C. 1001)



301 Fulling Mill Road
Middletown, PA 17057
P: (717) 944-5541
F: (717) 944-1430

Condition of Sample Receipt Form

Client: <u>Wmnipeg</u>	Work Order #: <u>3079655</u>	Date: <u>1/9</u>
1. Were airbills / tracking numbers present and recorded?.....		
Tracking number: <u>12 1002 F45 04 0727 1736</u>		NONE ☒ YES ☐ NO ☐
2. Are Custody Seals on shipping containers intact?.....		
		NONE ☒ YES ☐ NO ☐
3. Are Custody Seals on sample containers intact?.....		
		NONE ☒ YES ☐ NO ☐
4. Is there a COC (Chain-of-Custody) present?.....		
		YES ☒ NO ☐
5. Are the COC and bottle labels complete, legible and in agreement?.....		
		YES ☒ NO ☐
5a. Does the COC contain sample locations?.....		
		YES ☒ NO ☐
5b. Does the COC contain date and time of sample collection for all samples?.....		
		YES ☒ NO ☐
5c. Does the COC contain sample collectors name?.....		
<u>client who</u>		YES ☒ NO ☐
5d. Does the COC note the type(s) of preservation for all bottles?.....		
		YES ☒ NO ☐
5e. Does the COC note the number of bottles submitted for each sample?.....		
<u>not noted</u>		YES ☒ NO ☐
5f. Does the COC note the type of sample, composite or grab?.....		
<u>soil</u>		YES ☒ NO ☐
5g. Does the COC note the matrix of the sample(s)?.....		
		YES ☒ NO ☐
6. Are all aqueous samples requiring preservation preserved correctly?.....		
		N/A ☒ YES ☐ NO ☐
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?.....		
		YES ☒ NO ☐
8. Are all samples within holding times for the requested analyses?.....		
		YES ☒ NO ☐
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.).....		
		YES ☒ NO ☐
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?.....		
		N/A ☒ YES ☐ NO ☐
11. Were the samples received on ice?.....		
		YES ☒ NO ☐
12. Were sample temperatures measured at 0.0-6.0°C.....		
		YES ☒ NO ☐
13. Are the samples DW matrix ? IF YES, fill out Reportable Drinking Water questions below.....		
		YES ☒ NO ☐
13a. Are the samples required for SDWA compliance reporting?.....		
		N/A ☒ YES ☐ NO ☐
13b. Did the client provide a SDWA PWS ID#?.....		
		N/A ☒ YES ☐ NO ☐
13c. Are all aqueous unpreserved SDWA samples pH 5-9?.....		
		N/A ☒ YES ☐ NO ☐
13d. Did the client provide the SDWA sample location ID/Description?.....		
		N/A ☒ YES ☐ NO ☐
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?.....		
		N/A ☒ YES ☐ NO ☐

Cooler #: _____
Temperature (°C): 5 _____
Thermometer ID: 525 _____
Radiological (µCi): _____

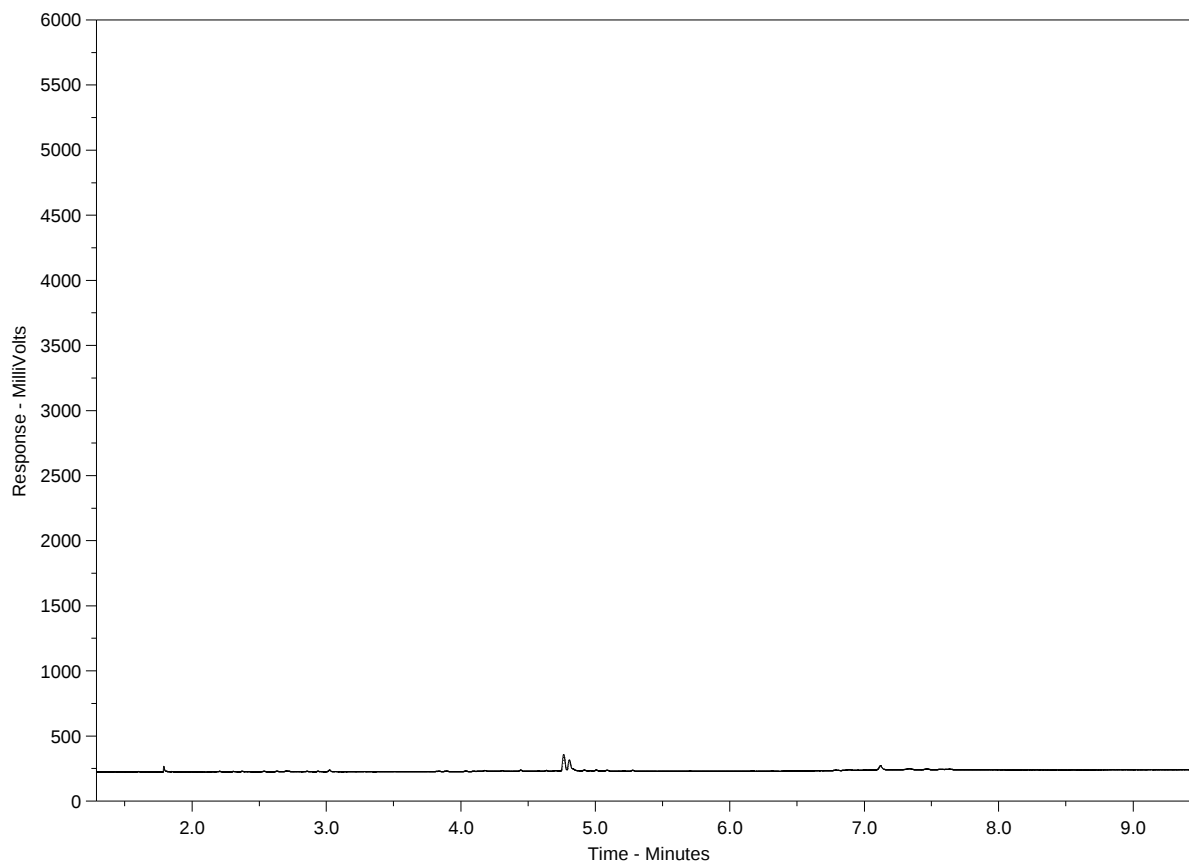
COMMENTS (Required for all NO responses above and any sample non-conformance):

Rev. 4/29/2019

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2403425-1
Client Sample ID: TH19-01 @ 0.8M



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

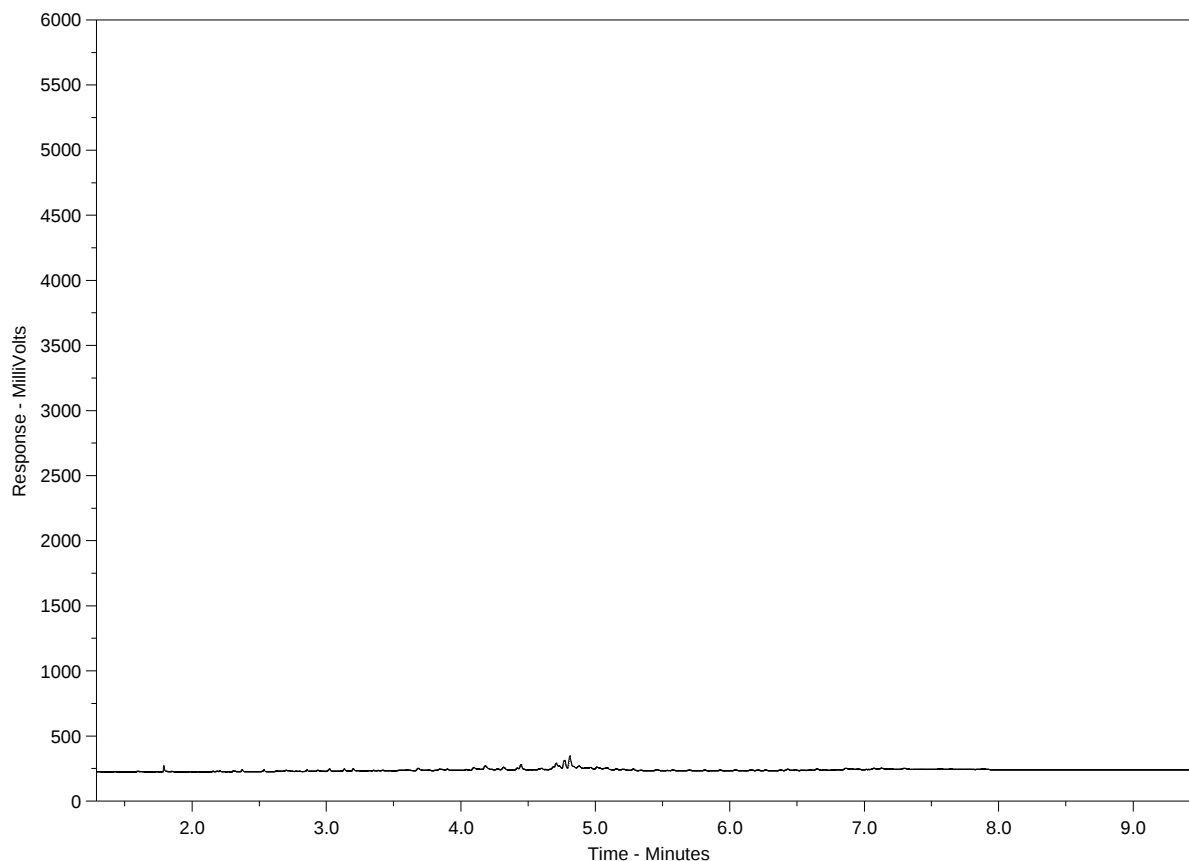
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2403425-2
Client Sample ID: TH19-05 @ 0.8M



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

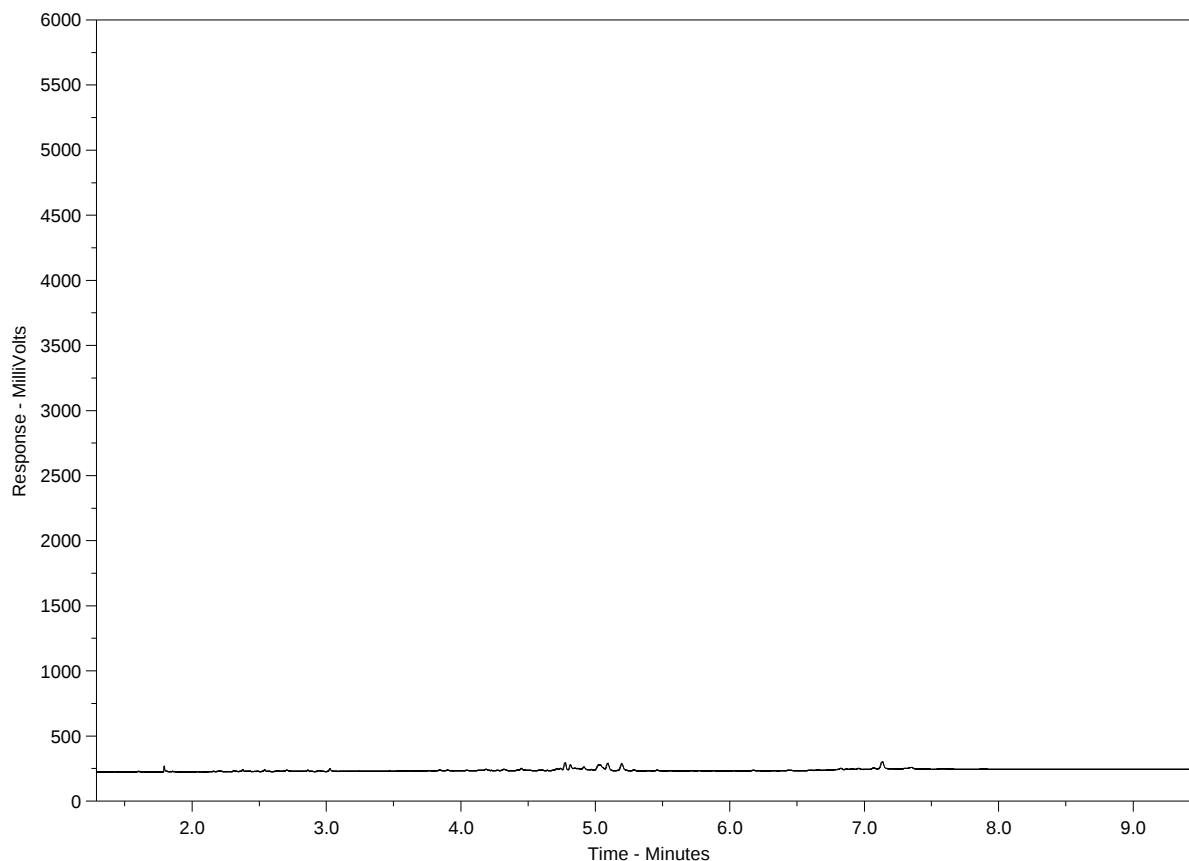
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2403425-3
Client Sample ID: TH19-02 @ 0.8M



← F2 →		F3		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

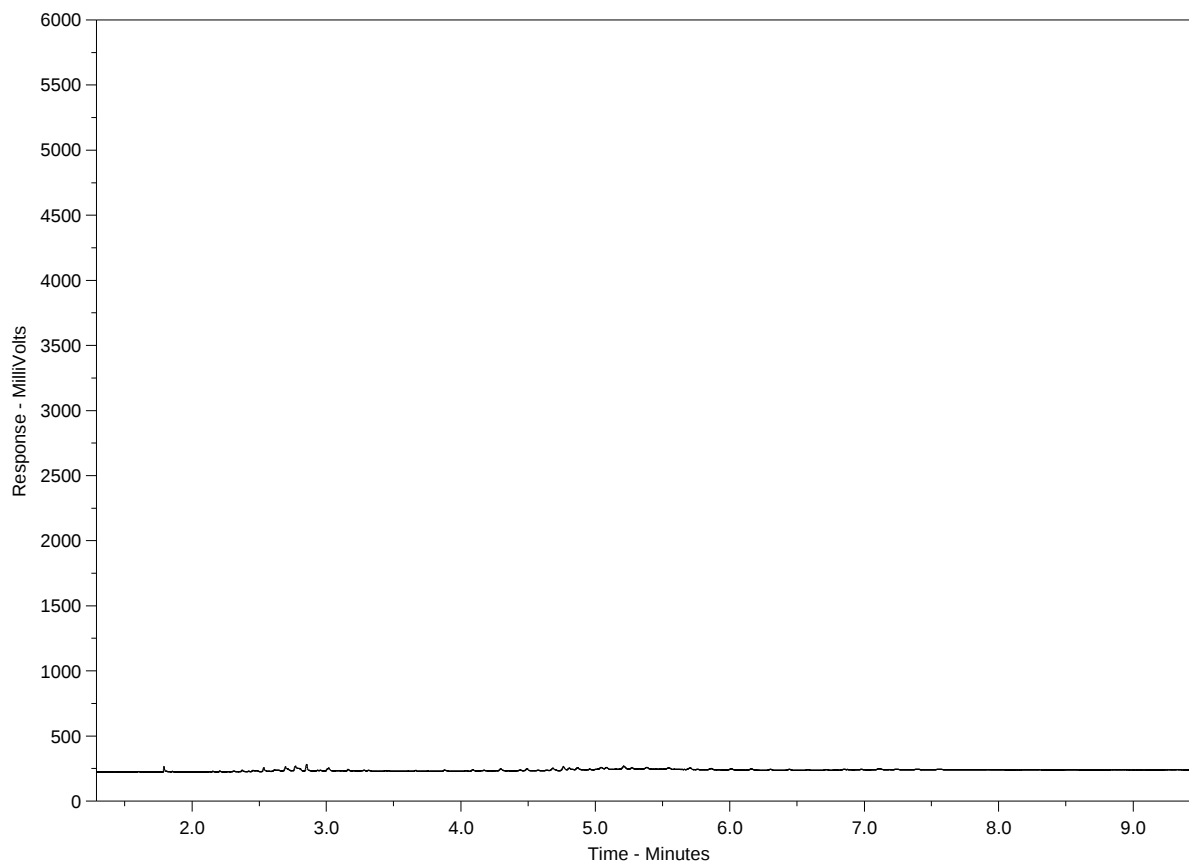
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2403425-4
Client Sample ID: TH19-09 @ 0.8M



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

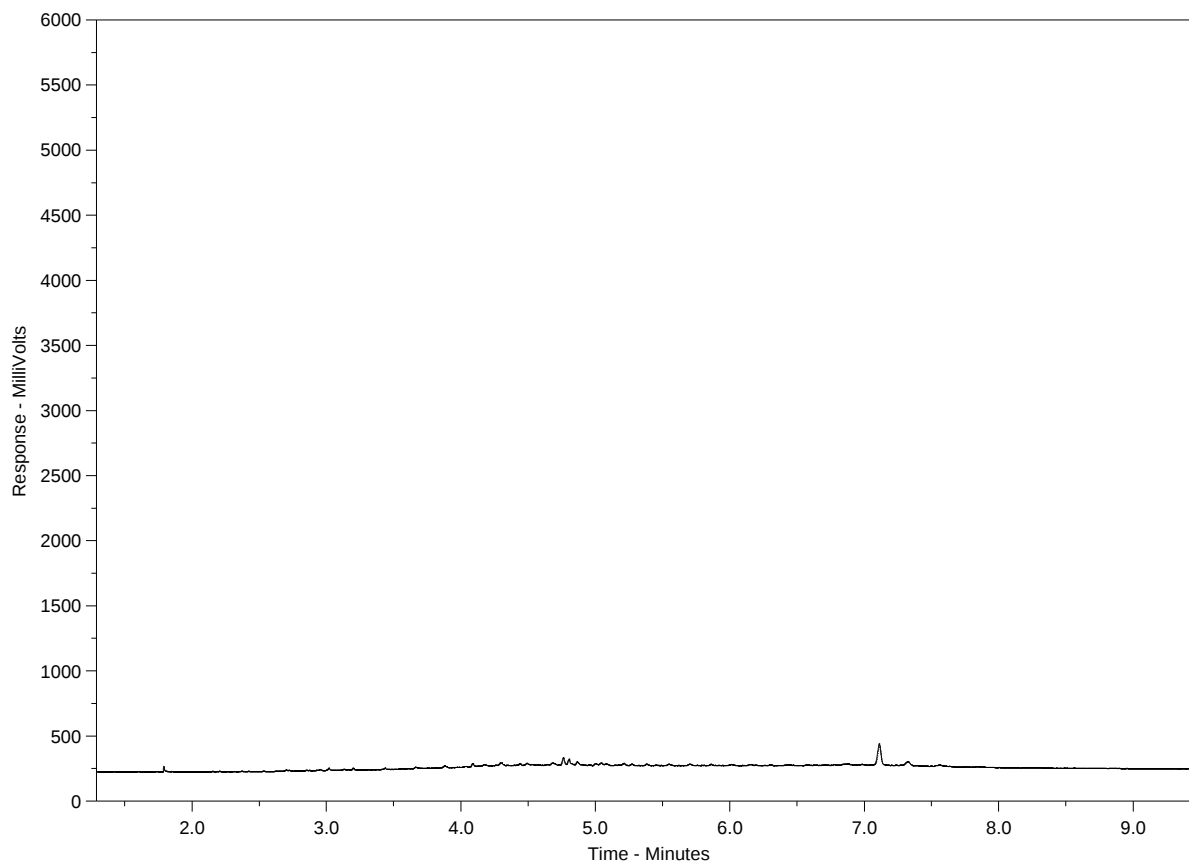
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2403425-5
Client Sample ID: TH19-06 @ 0.8M



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

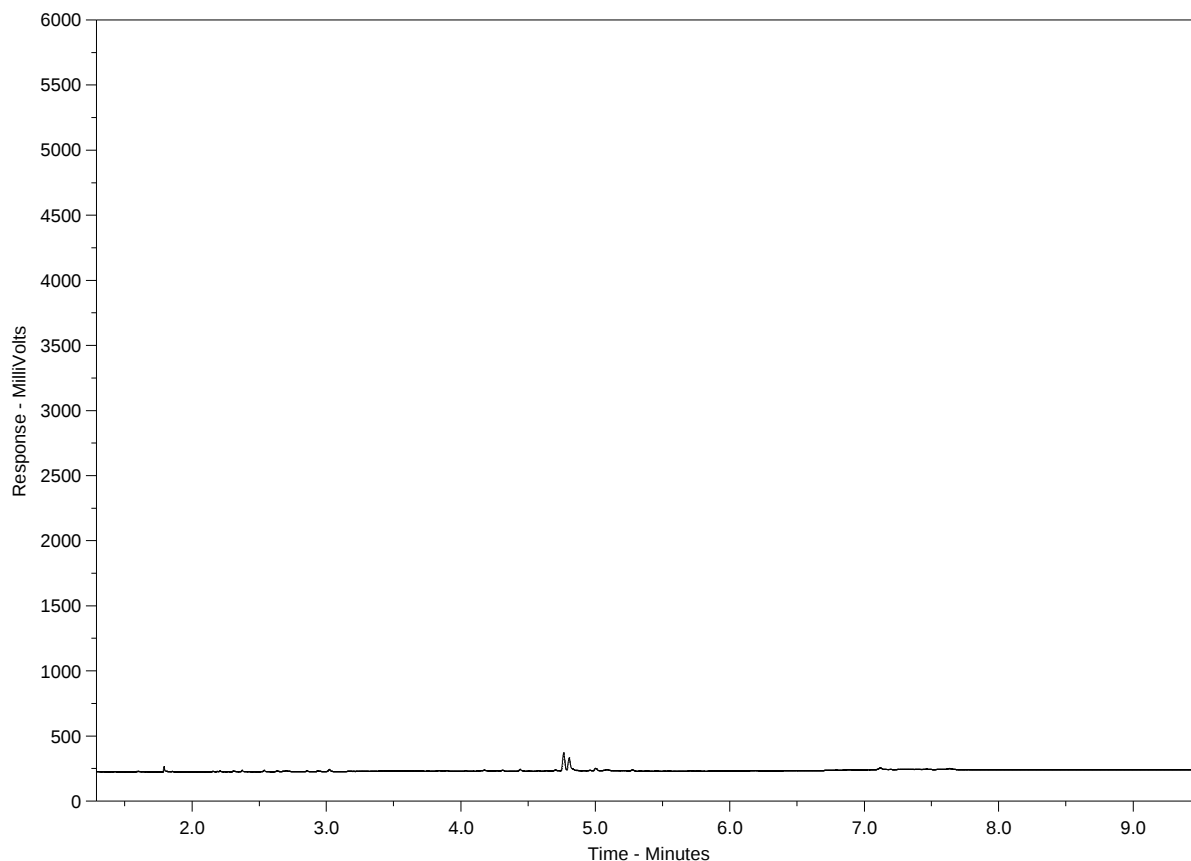
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2403425-6
Client Sample ID: TH19-11 @ 1.5M



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.



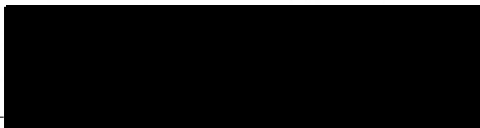
Wood Environment & Infrastructure
Solutions (Winnipeg)
ATTN: KEVIN BEECHINOR
440 Dovercourt Drive
Winnipeg MB R3Y 1G4

Date Received: 10-DEC-19
Report Date: 05-MAR-20 13:51 (MT)
Version: FINAL

Client Phone: 204-488-2997

Certificate of Analysis

Lab Work Order #: L2394273
Project P.O. #: NOT SUBMITTED
Job Reference: WX 18979 999 REDONDA
C of C Numbers:
Legal Site Desc:


Judy Dalmaijer
Account Manager

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ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-1 TH19-03 @ 0.8M							
Sampled By: CLIENT on 03-DEC-19							
Matrix: SOIL							
Miscellaneous Parameters							
Moisture	26.1		0.10	%		11-DEC-19	R4941938
Extractable Organic Halides (EOX)	See Attached					30-DEC-19	R5017777
Metals in Soil by CRC ICPMS							
Aluminum (Al)	27200		5000	mg/kg	20-DEC-19	27-DEC-19	R4957756
Antimony (Sb)	0.50		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Arsenic (As)	9.15		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Barium (Ba)	196		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Beryllium (Be)	1.03		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Boron (B)	14.4		5.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Bismuth (Bi)	0.26		0.20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Cadmium (Cd)	0.365		0.020	mg/kg	20-DEC-19	27-DEC-19	R4957756
Calcium (Ca)	63800		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Chromium (Cr)	43.3		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Cobalt (Co)	12.3		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Copper (Cu)	29.9		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Iron (Fe)	28100		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Lead (Pb)	13.2		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Lithium (Li)	29.2		2.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Magnesium (Mg)	26900		20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Manganese (Mn)	630		1.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Molybdenum (Mo)	0.54		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Nickel (Ni)	35.4		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Phosphorus (P)	610		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Potassium (K)	4760		100	mg/kg	20-DEC-19	27-DEC-19	R4957756
Selenium (Se)	<0.20		0.20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Silver (Ag)	0.12		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Sodium (Na)	148		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Strontium (Sr)	91.4		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Sulfur (S)	<1000		1000	mg/kg	20-DEC-19	27-DEC-19	R4957756
Thallium (Tl)	0.300		0.050	mg/kg	20-DEC-19	27-DEC-19	R4957756
Tin (Sn)	<2.0		2.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Titanium (Ti)	214		1.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Tungsten (W)	<0.50		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Uranium (U)	0.999		0.050	mg/kg	20-DEC-19	27-DEC-19	R4957756
Vanadium (V)	78.1		0.20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Zinc (Zn)	80.0		2.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Zirconium (Zr)	7.2		1.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
2-Methyl Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Acenaphthene	<0.0050		0.0050	mg/kg	18-DEC-19	19-DEC-19	R4948769
Acenaphthylene	<0.0050		0.0050	mg/kg	18-DEC-19	19-DEC-19	R4948769
Acridine	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Anthracene	<0.0040		0.0040	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(a)anthracene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(a)pyrene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(b&j)fluoranthene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Chrysene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Dibenzo(a,h)anthracene	<0.0050		0.0050	mg/kg	18-DEC-19	19-DEC-19	R4948769

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-1 TH19-03 @ 0.8M Sampled By: CLIENT on 03-DEC-19 Matrix: SOIL							
Polyaromatic Hydrocarbons (PAHs)							
Fluoranthene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Fluorene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Indeno(1,2,3-cd)pyrene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Phenanthrene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Pyrene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Quinoline	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
B(a)P Total Potency Equivalent	<0.020		0.020	mg/kg	18-DEC-19	19-DEC-19	R4948769
IACR (CCME)	<0.15		0.15		18-DEC-19	19-DEC-19	R4948769
Benzo(b+j+k)fluoranthene	<0.014		0.014	mg/kg	18-DEC-19	19-DEC-19	R4948769
Surrogate: Acenaphthene d10	104.8		60-130	%	18-DEC-19	19-DEC-19	R4948769
Surrogate: Chrysene d12	117.2		60-130	%	18-DEC-19	19-DEC-19	R4948769
Surrogate: Naphthalene d8	111.5		50-130	%	18-DEC-19	19-DEC-19	R4948769
Surrogate: Phenanthrene d10	109.1		60-130	%	18-DEC-19	19-DEC-19	R4948769
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1221	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1232	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1242	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1248	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1254	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1260	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1262	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1268	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Total PCBs	<0.050		0.050	mg/kg		17-DEC-19	R4944999
Surrogate: Decachlorobiphenyl	92.6		65-130	%		17-DEC-19	R4944999
VOC plus F1-F4 by Tumbler							
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<25		25	mg/kg	13-DEC-19	14-DEC-19	R4943247
F3 (C16-C34)	<50		50	mg/kg	13-DEC-19	14-DEC-19	R4943247
F4 (C34-C50)	<50		50	mg/kg	13-DEC-19	14-DEC-19	R4943247
Surrogate: 2-Bromobenzotrifluoride	77.4		60-140	%	13-DEC-19	14-DEC-19	R4943247
Chrom. to baseline at nC50	YES				13-DEC-19	14-DEC-19	R4943247
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		23-DEC-19	
F2-Naphth	<25		25	mg/kg		23-DEC-19	
F3-PAH	<50		50	mg/kg		23-DEC-19	
Total Hydrocarbons (C6-C50)	<76		76	mg/kg		23-DEC-19	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		23-DEC-19	
VOC plus F1 by GCMS							
Acetone	<0.50		0.50	mg/kg	03-DEC-19	20-DEC-19	R4953041
Benzene	<0.0050		0.0050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Bromobenzene	<0.10		0.10	mg/kg	03-DEC-19	20-DEC-19	R4953041
Bromochloromethane	<0.10		0.10	mg/kg	03-DEC-19	20-DEC-19	R4953041
Bromodichloromethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Bromoform	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Bromomethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
n-Butylbenzene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
sec-Butylbenzene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
tert-Butylbenzene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Carbon disulfide	<0.25		0.25	mg/kg	03-DEC-19	20-DEC-19	R4953041

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-1 TH19-03 @ 0.8M Sampled By: CLIENT on 03-DEC-19 Matrix: SOIL VOC plus F1 by GCMS							
Carbon Tetrachloride	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Chlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Chloroethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Chloroform	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Chloromethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
2-Chlorotoluene	<0.10		0.10	mg/kg	03-DEC-19	20-DEC-19	R4953041
4-Chlorotoluene	<0.10		0.10	mg/kg	03-DEC-19	20-DEC-19	R4953041
Dibromochloromethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,2-Dibromo-3-chloropropane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,2-Dibromoethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Dibromomethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,2-Dichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,3-Dichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,4-Dichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Dichlorodifluoromethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,1-dichloroethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,2-Dichloroethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,1-dichloroethene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
cis-1,2-Dichloroethene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
trans-1,2-Dichloroethene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Dichloromethane	<0.10		0.10	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,2-Dichloropropane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,3-Dichloropropane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
2,2-Dichloropropane	<0.10		0.10	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,1-Dichloropropene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
cis-1,3-Dichloropropene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
trans-1,3-Dichloropropene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Ethylbenzene	<0.015		0.015	mg/kg	03-DEC-19	20-DEC-19	R4953041
F1	<10		10	mg/kg	03-DEC-19	20-DEC-19	R4953041
Hexachlorobutadiene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Hexane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
2-Hexanone (Methyl butyl ketone)	<0.50		0.50	mg/kg	03-DEC-19	20-DEC-19	R4953041
Isopropylbenzene	<0.10		0.10	mg/kg	03-DEC-19	20-DEC-19	R4953041
4-Isopropyltoluene	<0.10		0.10	mg/kg	03-DEC-19	20-DEC-19	R4953041
MEK	<0.50		0.50	mg/kg	03-DEC-19	20-DEC-19	R4953041
MIBK	<0.50		0.50	mg/kg	03-DEC-19	20-DEC-19	R4953041
MTBE	<0.20		0.20	mg/kg	03-DEC-19	20-DEC-19	R4953041
Styrene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,1,1,2-Tetrachloroethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,1,1,2,2-Tetrachloroethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Tetrachloroethene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Toluene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,2,3-Trichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,2,4-Trichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,1,1-Trichloroethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,1,2-Trichloroethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Trichloroethene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Trichlorofluoromethane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,2,3-Trichloropropane	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,2,4-Trimethylbenzene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
1,3,5-Trimethylbenzene	<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-1	TH19-03 @ 0.8M							
Sampled By: CLIENT on 03-DEC-19								
Matrix: SOIL								
VOC plus F1 by GCMS								
Vinyl Chloride		<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
M+P-Xylenes		<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
o-Xylene		<0.050		0.050	mg/kg	03-DEC-19	20-DEC-19	R4953041
Surrogate: 1,4-Difluorobenzene (SS)		109.8		70-130	%	03-DEC-19	20-DEC-19	R4953041
Surrogate: 3,4-Dichlorotoluene (SS)		170.8	SURR-ND	70-130	%	03-DEC-19	20-DEC-19	R4953041
Surrogate: 4-Bromofluorobenzene (SS)		101.5		70-130	%	03-DEC-19	20-DEC-19	R4953041
L2394273-2	TH19-04 @ 0.8M							
Sampled By: CLIENT on 03-DEC-19								
Matrix: SOIL								
Miscellaneous Parameters								
Moisture		11.7		0.10	%		11-DEC-19	R4941938
F4G-SG		10600		500	mg/kg		17-DEC-19	R4945332
Extractable Organic Halides (EOX)		See Attached					30-DEC-19	R5017777
Metals in Soil by CRC ICPMS								
Aluminum (Al)		1400		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Antimony (Sb)		1.98		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Arsenic (As)		1.24		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Barium (Ba)		69.8		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Beryllium (Be)		<0.10		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Boron (B)		13.4		5.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Bismuth (Bi)		0.26		0.20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Cadmium (Cd)		0.552		0.020	mg/kg	20-DEC-19	27-DEC-19	R4957756
Calcium (Ca)		147000		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Chromium (Cr)		7.64		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Cobalt (Co)		1.72		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Copper (Cu)		28.9		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Iron (Fe)		5160		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Lead (Pb)		40.3		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Lithium (Li)		3.6		2.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Magnesium (Mg)		86100		20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Manganese (Mn)		155		1.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Molybdenum (Mo)		1.70		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Nickel (Ni)		19.1		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Phosphorus (P)		132		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Potassium (K)		370		100	mg/kg	20-DEC-19	27-DEC-19	R4957756
Selenium (Se)		<0.20		0.20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Silver (Ag)		0.10		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Sodium (Na)		59		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Strontium (Sr)		39.3		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Sulfur (S)		<1000		1000	mg/kg	20-DEC-19	27-DEC-19	R4957756
Thallium (Tl)		<0.050		0.050	mg/kg	20-DEC-19	27-DEC-19	R4957756
Tin (Sn)		2.7		2.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Titanium (Ti)		53.3		1.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Tungsten (W)		<0.50		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Uranium (U)		0.263		0.050	mg/kg	20-DEC-19	27-DEC-19	R4957756
Vanadium (V)		9.55		0.20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Zinc (Zn)		335		2.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Zirconium (Zr)		<1.0		1.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Polyaromatic Hydrocarbons (PAHs)								
1-Methyl Naphthalene		0.013		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
2-Methyl Naphthalene		0.021		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-2 TH19-04 @ 0.8M							
Sampled By: CLIENT on 03-DEC-19							
Matrix: SOIL							
Polyaromatic Hydrocarbons (PAHs)							
Acenaphthene	<0.0050		0.0050	mg/kg	18-DEC-19	20-DEC-19	R4948769
Acenaphthylene	<0.0050		0.0050	mg/kg	18-DEC-19	20-DEC-19	R4948769
Acridine	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Anthracene	0.0041	EMPC	0.0040	mg/kg	18-DEC-19	20-DEC-19	R4948769
Benzo(a)anthracene	<0.10	DLM	0.10	mg/kg	18-DEC-19	20-DEC-19	R4948769
Benzo(a)pyrene	<0.10	DLM	0.10	mg/kg	18-DEC-19	20-DEC-19	R4948769
Benzo(b&j)fluoranthene	0.12	EMPC	0.10	mg/kg	18-DEC-19	20-DEC-19	R4948769
Benzo(g,h,i)perylene	0.13	DLM	0.10	mg/kg	18-DEC-19	20-DEC-19	R4948769
Benzo(k)fluoranthene	<0.10	DLM	0.10	mg/kg	18-DEC-19	20-DEC-19	R4948769
Chrysene	0.30	EMPC	0.10	mg/kg	18-DEC-19	20-DEC-19	R4948769
Dibenzo(a,h)anthracene	<0.050	DLM	0.050	mg/kg	18-DEC-19	20-DEC-19	R4948769
Fluoranthene	0.032		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Fluorene	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Indeno(1,2,3-cd)pyrene	<0.10	DLM	0.10	mg/kg	18-DEC-19	20-DEC-19	R4948769
Naphthalene	0.014		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Phenanthrene	0.020		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Pyrene	0.091		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Quinoline	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
B(a)P Total Potency Equivalent	0.106		0.096	mg/kg	18-DEC-19	20-DEC-19	R4948769
IACR (CCME)	1.6		1.1		18-DEC-19	20-DEC-19	R4948769
Benzo(b+j+k)fluoranthene	<0.14		0.14	mg/kg	18-DEC-19	20-DEC-19	R4948769
Surrogate: Acenaphthene d10	100.9		60-130	%	18-DEC-19	20-DEC-19	R4948769
Surrogate: Chrysene d12	100.9		60-130	%	18-DEC-19	20-DEC-19	R4948769
Surrogate: Naphthalene d8	97.1		50-130	%	18-DEC-19	20-DEC-19	R4948769
Surrogate: Phenanthrene d10	94.5		60-130	%	18-DEC-19	20-DEC-19	R4948769
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1221	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1232	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1242	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1248	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1254	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1260	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1262	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1268	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Total PCBs	<0.050		0.050	mg/kg		17-DEC-19	R4944999
Surrogate: Decachlorobiphenyl	71.7		65-130	%		17-DEC-19	R4944999
VOC plus F1-F4 by Tumbler							
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<250	DLM	250	mg/kg	13-DEC-19	17-DEC-19	R4945202
F3 (C16-C34)	2260	DLM	500	mg/kg	13-DEC-19	17-DEC-19	R4945202
F4 (C34-C50)	2500	DLM	500	mg/kg	13-DEC-19	17-DEC-19	R4945202
Surrogate: 2-Bromobenzotrifluoride	79.6		60-140	%	13-DEC-19	17-DEC-19	R4945202
Chrom. to baseline at nC50	NO				13-DEC-19	17-DEC-19	R4945202
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		23-DEC-19	
F2-Naphth	<250		250	mg/kg		23-DEC-19	
F3-PAH	2260		500	mg/kg		23-DEC-19	
Total Hydrocarbons (C6-C50)	4750		750	mg/kg		23-DEC-19	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		23-DEC-19	
VOC plus F1 by GCMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-2 TH19-04 @ 0.8M Sampled By: CLIENT on 03-DEC-19 Matrix: SOIL VOC plus F1 by GCMS							
Acetone	<0.50		0.50	mg/kg	03-DEC-19	21-DEC-19	R4953041
Benzene	<0.0050		0.0050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromobenzene	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromochloromethane	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromodichloromethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromoform	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromomethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
n-Butylbenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
sec-Butylbenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
tert-Butylbenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Carbon disulfide	<0.25		0.25	mg/kg	03-DEC-19	21-DEC-19	R4953041
Carbon Tetrachloride	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Chlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Chloroethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Chloroform	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Chloromethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
2-Chlorotoluene	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
4-Chlorotoluene	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
Dibromochloromethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dibromo-3-chloropropane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dibromoethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Dibromomethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,3-Dichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,4-Dichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Dichlorodifluoromethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1-dichloroethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dichloroethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1-dichloroethene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
cis-1,2-Dichloroethene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
trans-1,2-Dichloroethene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Dichloromethane	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dichloropropane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,3-Dichloropropane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
2,2-Dichloropropane	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1-Dichloropropene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
cis-1,3-Dichloropropene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
trans-1,3-Dichloropropene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Ethylbenzene	<0.015		0.015	mg/kg	03-DEC-19	21-DEC-19	R4953041
F1	<10		10	mg/kg	03-DEC-19	21-DEC-19	R4953041
Hexachlorobutadiene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Hexane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
2-Hexanone (Methyl butyl ketone)	<0.50		0.50	mg/kg	03-DEC-19	21-DEC-19	R4953041
Isopropylbenzene	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
4-Isopropyltoluene	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
MEK	<0.50		0.50	mg/kg	03-DEC-19	21-DEC-19	R4953041
MIBK	<0.50		0.50	mg/kg	03-DEC-19	21-DEC-19	R4953041
MTBE	<0.20		0.20	mg/kg	03-DEC-19	21-DEC-19	R4953041
Styrene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1,1,2-Tetrachloroethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1,2,2-Tetrachloroethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-2 TH19-04 @ 0.8M								
Sampled By: CLIENT on 03-DEC-19								
Matrix: SOIL								
VOC plus F1 by GCMS								
Tetrachloroethene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Toluene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2,3-Trichlorobenzene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2,4-Trichlorobenzene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1,1-Trichloroethane		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1,2-Trichloroethane		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Trichloroethene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Trichlorofluoromethane		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2,3-Trichloropropane		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2,4-Trimethylbenzene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,3,5-Trimethylbenzene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Vinyl Chloride		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
M+P-Xylenes		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
o-Xylene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Surrogate: 1,4-Difluorobenzene (SS)		111.6		70-130	%	03-DEC-19	21-DEC-19	R4953041
Surrogate: 3,4-Dichlorotoluene (SS)		74.0		70-130	%	03-DEC-19	21-DEC-19	R4953041
Surrogate: 4-Bromofluorobenzene (SS)		95.3		70-130	%	03-DEC-19	21-DEC-19	R4953041
L2394273-3 TH19-07 @ 0.8M								
Sampled By: CLIENT on 03-DEC-19								
Matrix: SOIL								
Miscellaneous Parameters								
Moisture		12.8		0.10	%		11-DEC-19	R4941938
F4G-SG		1760		500	mg/kg		17-DEC-19	R4945332
Extractable Organic Halides (EOX)		See Attached					30-DEC-19	R5017777
Metals in Soil by CRC ICPMS								
Aluminum (Al)		971		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Antimony (Sb)		<0.10		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Arsenic (As)		0.61		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Barium (Ba)		7.36		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Beryllium (Be)		<0.10		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Boron (B)		11.5		5.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Bismuth (Bi)		<0.20		0.20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Cadmium (Cd)		0.020		0.020	mg/kg	20-DEC-19	27-DEC-19	R4957756
Calcium (Ca)		200000		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Chromium (Cr)		2.39		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Cobalt (Co)		1.04		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Copper (Cu)		2.83		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Iron (Fe)		2390		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Lead (Pb)		1.48		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Lithium (Li)		3.3		2.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Magnesium (Mg)		128000		20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Manganese (Mn)		142		1.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Molybdenum (Mo)		0.24		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Nickel (Ni)		2.21		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Phosphorus (P)		56		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Potassium (K)		350		100	mg/kg	20-DEC-19	27-DEC-19	R4957756
Selenium (Se)		<0.20		0.20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Silver (Ag)		<0.10		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Sodium (Na)		61		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Strontium (Sr)		37.7		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Sulfur (S)		1000		1000	mg/kg	20-DEC-19	27-DEC-19	R4957756

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-3 TH19-07 @ 0.8M Sampled By: CLIENT on 03-DEC-19 Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Thallium (Tl)	<0.050		0.050	mg/kg	20-DEC-19	27-DEC-19	R4957756
Tin (Sn)	<2.0		2.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Titanium (Ti)	21.4		1.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Tungsten (W)	<0.50		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Uranium (U)	0.236		0.050	mg/kg	20-DEC-19	27-DEC-19	R4957756
Vanadium (V)	5.14		0.20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Zinc (Zn)	6.0		2.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Zirconium (Zr)	1.4		1.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
2-Methyl Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Acenaphthene	<0.0050		0.0050	mg/kg	18-DEC-19	20-DEC-19	R4948769
Acenaphthylene	<0.0050		0.0050	mg/kg	18-DEC-19	20-DEC-19	R4948769
Acridine	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Anthracene	<0.0040		0.0040	mg/kg	18-DEC-19	20-DEC-19	R4948769
Benzo(a)anthracene	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Benzo(a)pyrene	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Benzo(b&j)fluoranthene	0.015	EMPC	0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Chrysene	0.049	EMPC	0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Dibenzo(a,h)anthracene	<0.0050		0.0050	mg/kg	18-DEC-19	20-DEC-19	R4948769
Fluoranthene	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Fluorene	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Indeno(1,2,3-cd)pyrene	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Phenanthrene	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Pyrene	0.018		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
Quinoline	<0.010		0.010	mg/kg	18-DEC-19	20-DEC-19	R4948769
B(a)P Total Potency Equivalent	<0.020		0.020	mg/kg	18-DEC-19	20-DEC-19	R4948769
IACR (CCME)	0.19		0.15		18-DEC-19	20-DEC-19	R4948769
Benzo(b+j+k)fluoranthene	0.015		0.014	mg/kg	18-DEC-19	20-DEC-19	R4948769
Surrogate: Acenaphthene d10	119.7		60-130	%	18-DEC-19	20-DEC-19	R4948769
Surrogate: Chrysene d12	108.8		60-130	%	18-DEC-19	20-DEC-19	R4948769
Surrogate: Naphthalene d8	120.2		50-130	%	18-DEC-19	20-DEC-19	R4948769
Surrogate: Phenanthrene d10	105.0		60-130	%	18-DEC-19	20-DEC-19	R4948769
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1221	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1232	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1242	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1248	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1254	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1260	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1262	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1268	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Total PCBs	<0.050		0.050	mg/kg		17-DEC-19	R4944999
Surrogate: Decachlorobiphenyl	68.2		65-130	%		17-DEC-19	R4944999
VOC plus F1-F4 by Tumbler							
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<130	DLM	130	mg/kg	13-DEC-19	14-DEC-19	R4943247
F3 (C16-C34)	480	DLM	250	mg/kg	13-DEC-19	14-DEC-19	R4943247

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-3 TH19-07 @ 0.8M Sampled By: CLIENT on 03-DEC-19 Matrix: SOIL							
CCME Total Extractable Hydrocarbons							
F4 (C34-C50)	500	DLM	250	mg/kg	13-DEC-19	14-DEC-19	R4943247
Surrogate: 2-Bromobenzotrifluoride	79.7		60-140	%	13-DEC-19	14-DEC-19	R4943247
Chrom. to baseline at nC50	NO				13-DEC-19	14-DEC-19	R4943247
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		23-DEC-19	
F2-Naphth	<130		130	mg/kg		23-DEC-19	
F3-PAH	480		250	mg/kg		23-DEC-19	
Total Hydrocarbons (C6-C50)	980		380	mg/kg		23-DEC-19	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		23-DEC-19	
VOC plus F1 by GCMS							
Acetone	<0.50		0.50	mg/kg	03-DEC-19	21-DEC-19	R4953041
Benzene	<0.0050		0.0050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromobenzene	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromochloromethane	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromodichloromethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromoform	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromomethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
n-Butylbenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
sec-Butylbenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
tert-Butylbenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Carbon disulfide	<0.25		0.25	mg/kg	03-DEC-19	21-DEC-19	R4953041
Carbon Tetrachloride	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Chlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Chloroethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Chloroform	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Chloromethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
2-Chlorotoluene	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
4-Chlorotoluene	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
Dibromochloromethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dibromo-3-chloropropane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dibromoethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Dibromomethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,3-Dichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,4-Dichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Dichlorodifluoromethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1-dichloroethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dichloroethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1-dichloroethene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
cis-1,2-Dichloroethene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
trans-1,2-Dichloroethene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Dichloromethane	0.18		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dichloropropane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,3-Dichloropropane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
2,2-Dichloropropane	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1-Dichloropropene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
cis-1,3-Dichloropropene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
trans-1,3-Dichloropropene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Ethylbenzene	<0.015		0.015	mg/kg	03-DEC-19	21-DEC-19	R4953041
F1	<10		10	mg/kg	03-DEC-19	21-DEC-19	R4953041
Hexachlorobutadiene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-3 TH19-07 @ 0.8M								
Sampled By: CLIENT on 03-DEC-19								
Matrix: SOIL								
VOC plus F1 by GCMS								
Hexane		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
2-Hexanone (Methyl butyl ketone)		<0.50		0.50	mg/kg	03-DEC-19	21-DEC-19	R4953041
Isopropylbenzene		<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
4-Isopropyltoluene		<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
MEK		<0.50		0.50	mg/kg	03-DEC-19	21-DEC-19	R4953041
MIBK		<0.50		0.50	mg/kg	03-DEC-19	21-DEC-19	R4953041
MTBE		<0.20		0.20	mg/kg	03-DEC-19	21-DEC-19	R4953041
Styrene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1,1,2-Tetrachloroethane		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1,2,2-Tetrachloroethane		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Tetrachloroethene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Toluene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2,3-Trichlorobenzene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2,4-Trichlorobenzene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1,1-Trichloroethane		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1,2-Trichloroethane		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Trichloroethene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Trichlorofluoromethane		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2,3-Trichloropropane		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2,4-Trimethylbenzene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,3,5-Trimethylbenzene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Vinyl Chloride		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
M+P-Xylenes		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
o-Xylene		<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Surrogate: 1,4-Difluorobenzene (SS)		122.1		70-130	%	03-DEC-19	21-DEC-19	R4953041
Surrogate: 3,4-Dichlorotoluene (SS)		108.2		70-130	%	03-DEC-19	21-DEC-19	R4953041
Surrogate: 4-Bromofluorobenzene (SS)		109.1		70-130	%	03-DEC-19	21-DEC-19	R4953041
L2394273-4 TH19-07 @ 1.5M								
Sampled By: CLIENT on 03-DEC-19								
Matrix: SOIL								
Miscellaneous Parameters								
Moisture		26.4		0.10	%		11-DEC-19	R4941938
Extractable Organic Halides (EOX)		See Attached					30-DEC-19	R5017777
Metals in Soil by CRC ICPMS								
Aluminum (Al)		13800		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Antimony (Sb)		0.52		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Arsenic (As)		9.03		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Barium (Ba)		172		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Beryllium (Be)		0.66		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Boron (B)		6.9		5.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Bismuth (Bi)		<0.20		0.20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Cadmium (Cd)		0.286		0.020	mg/kg	20-DEC-19	27-DEC-19	R4957756
Calcium (Ca)		74900		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Chromium (Cr)		20.9		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Cobalt (Co)		8.22		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Copper (Cu)		21.3		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Iron (Fe)		20900		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Lead (Pb)		10.1		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Lithium (Li)		19.6		2.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Magnesium (Mg)		28300		20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Manganese (Mn)		580		1.0	mg/kg	20-DEC-19	27-DEC-19	R4957756

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-4 TH19-07 @ 1.5M Sampled By: CLIENT on 03-DEC-19 Matrix: SOIL							
Metals in Soil by CRC ICPMS							
Molybdenum (Mo)	0.80		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Nickel (Ni)	24.2		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Phosphorus (P)	578		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Potassium (K)	1530		100	mg/kg	20-DEC-19	27-DEC-19	R4957756
Selenium (Se)	<0.20		0.20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Silver (Ag)	0.11		0.10	mg/kg	20-DEC-19	27-DEC-19	R4957756
Sodium (Na)	493		50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Strontium (Sr)	109		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Sulfur (S)	<1000		1000	mg/kg	20-DEC-19	27-DEC-19	R4957756
Thallium (Tl)	0.232		0.050	mg/kg	20-DEC-19	27-DEC-19	R4957756
Tin (Sn)	<2.0		2.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Titanium (Ti)	64.5		1.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Tungsten (W)	<0.50		0.50	mg/kg	20-DEC-19	27-DEC-19	R4957756
Uranium (U)	1.86		0.050	mg/kg	20-DEC-19	27-DEC-19	R4957756
Vanadium (V)	40.0		0.20	mg/kg	20-DEC-19	27-DEC-19	R4957756
Zinc (Zn)	60.1		2.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Zirconium (Zr)	6.4		1.0	mg/kg	20-DEC-19	27-DEC-19	R4957756
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
2-Methyl Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Acenaphthene	<0.0050		0.0050	mg/kg	18-DEC-19	19-DEC-19	R4948769
Acenaphthylene	<0.0050		0.0050	mg/kg	18-DEC-19	19-DEC-19	R4948769
Acridine	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Anthracene	<0.0040		0.0040	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(a)anthracene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(a)pyrene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(b&j)fluoranthene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Chrysene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Dibenzo(a,h)anthracene	<0.0050		0.0050	mg/kg	18-DEC-19	19-DEC-19	R4948769
Fluoranthene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Fluorene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Indeno(1,2,3-cd)pyrene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Phenanthrene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Pyrene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Quinoline	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
B(a)P Total Potency Equivalent	<0.020		0.020	mg/kg	18-DEC-19	19-DEC-19	R4948769
IACR (CCME)	<0.15		0.15		18-DEC-19	19-DEC-19	R4948769
Benzo(b+j+k)fluoranthene	<0.014		0.014	mg/kg	18-DEC-19	19-DEC-19	R4948769
Surrogate: Acenaphthene d10	105.5		60-130	%	18-DEC-19	19-DEC-19	R4948769
Surrogate: Chrysene d12	122.6		60-130	%	18-DEC-19	19-DEC-19	R4948769
Surrogate: Naphthalene d8	114.1		50-130	%	18-DEC-19	19-DEC-19	R4948769
Surrogate: Phenanthrene d10	110.2		60-130	%	18-DEC-19	19-DEC-19	R4948769
PCBs							
Aroclor 1016	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1221	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1232	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1242	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1248	<0.010		0.010	mg/kg		17-DEC-19	R4944999

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-4 TH19-07 @ 1.5M							
Sampled By: CLIENT on 03-DEC-19							
Matrix: SOIL							
PCBs							
Aroclor 1254	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1260	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1262	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Aroclor 1268	<0.010		0.010	mg/kg		17-DEC-19	R4944999
Total PCBs	<0.050		0.050	mg/kg		17-DEC-19	R4944999
Surrogate: Decachlorobiphenyl	77.1		65-130	%		17-DEC-19	R4944999
VOC plus F1-F4 by Tumbler							
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<25		25	mg/kg	13-DEC-19	14-DEC-19	R4943247
F3 (C16-C34)	<50		50	mg/kg	13-DEC-19	14-DEC-19	R4943247
F4 (C34-C50)	<50		50	mg/kg	13-DEC-19	14-DEC-19	R4943247
Surrogate: 2-Bromobenzotrifluoride	78.6		60-140	%	13-DEC-19	14-DEC-19	R4943247
Chrom. to baseline at nC50	YES				13-DEC-19	14-DEC-19	R4943247
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		23-DEC-19	
F2-Naphth	<25		25	mg/kg		23-DEC-19	
F3-PAH	<50		50	mg/kg		23-DEC-19	
Total Hydrocarbons (C6-C50)	<76		76	mg/kg		23-DEC-19	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		23-DEC-19	
VOC plus F1 by GCMS							
Acetone	<0.50		0.50	mg/kg	03-DEC-19	21-DEC-19	R4953041
Benzene	<0.0050		0.0050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromobenzene	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromochloromethane	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromodichloromethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromoform	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Bromomethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
n-Butylbenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
sec-Butylbenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
tert-Butylbenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Carbon disulfide	<0.25		0.25	mg/kg	03-DEC-19	21-DEC-19	R4953041
Carbon Tetrachloride	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Chlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Chloroethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Chloroform	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Chloromethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
2-Chlorotoluene	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
4-Chlorotoluene	<0.10		0.10	mg/kg	03-DEC-19	21-DEC-19	R4953041
Dibromochloromethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dibromo-3-chloropropane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dibromoethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Dibromomethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,3-Dichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,4-Dichlorobenzene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
Dichlorodifluoromethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1-dichloroethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,2-Dichloroethane	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
1,1-dichloroethene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
cis-1,2-Dichloroethene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041
trans-1,2-Dichloroethene	<0.050		0.050	mg/kg	03-DEC-19	21-DEC-19	R4953041

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-5 TH19-08 @ 0.8M Sampled By: CLIENT on 03-DEC-19 Matrix: SOIL							
CCME Total Extractable Hydrocarbons							
F3 (C16-C34)	<50		50	mg/kg	13-DEC-19	14-DEC-19	R4943247
F4 (C34-C50)	52		50	mg/kg	13-DEC-19	14-DEC-19	R4943247
Surrogate: 2-Bromobenzotrifluoride	77.2		60-140	%	13-DEC-19	14-DEC-19	R4943247
Chrom. to baseline at nC50	YES				13-DEC-19	14-DEC-19	R4943247
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		20-DEC-19	
F2-Naphth	<25		25	mg/kg		20-DEC-19	
F3-PAH	<50		50	mg/kg		20-DEC-19	
Total Hydrocarbons (C6-C50)	<76		76	mg/kg		20-DEC-19	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		13-DEC-19	
Miscellaneous Parameters							
Moisture	30.8		0.10	%		11-DEC-19	R4941938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	15700		50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Antimony (Sb)	0.46		0.10	mg/kg	16-DEC-19	23-DEC-19	R4953431
Arsenic (As)	5.52		0.10	mg/kg	16-DEC-19	23-DEC-19	R4953431
Barium (Ba)	311		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Beryllium (Be)	0.82		0.10	mg/kg	16-DEC-19	23-DEC-19	R4953431
Boron (B)	11.0		5.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Bismuth (Bi)	<0.20		0.20	mg/kg	16-DEC-19	23-DEC-19	R4953431
Cadmium (Cd)	0.213		0.020	mg/kg	16-DEC-19	23-DEC-19	R4953431
Calcium (Ca)	98200		50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Chromium (Cr)	26.6		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Cobalt (Co)	9.89		0.10	mg/kg	16-DEC-19	23-DEC-19	R4953431
Copper (Cu)	23.0		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Iron (Fe)	20100		50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Lead (Pb)	11.0		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Lithium (Li)	21.6		2.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Magnesium (Mg)	59300		20	mg/kg	16-DEC-19	23-DEC-19	R4953431
Manganese (Mn)	430		1.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Molybdenum (Mo)	1.08		0.10	mg/kg	16-DEC-19	23-DEC-19	R4953431
Nickel (Ni)	27.4		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Phosphorus (P)	398		50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Potassium (K)	2840		100	mg/kg	16-DEC-19	23-DEC-19	R4953431
Selenium (Se)	0.36		0.20	mg/kg	16-DEC-19	23-DEC-19	R4953431
Silver (Ag)	<0.10		0.10	mg/kg	16-DEC-19	23-DEC-19	R4953431
Sodium (Na)	344		50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Strontium (Sr)	68.5		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Sulfur (S)	<1000		1000	mg/kg	16-DEC-19	23-DEC-19	R4953431
Thallium (Tl)	0.214		0.050	mg/kg	16-DEC-19	23-DEC-19	R4953431
Tin (Sn)	<2.0		2.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Titanium (Ti)	82.4		1.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Tungsten (W)	<0.50		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Uranium (U)	1.26		0.050	mg/kg	16-DEC-19	23-DEC-19	R4953431
Vanadium (V)	43.9		0.20	mg/kg	16-DEC-19	23-DEC-19	R4953431
Zinc (Zn)	72.5		2.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Zirconium (Zr)	8.3		1.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
2-Methyl Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-5	TH19-08 @ 0.8M							
Sampled By: CLIENT on 03-DEC-19								
Matrix: SOIL								
Polyaromatic Hydrocarbons (PAHs)								
Acenaphthene		<0.0050		0.0050	mg/kg	18-DEC-19	19-DEC-19	R4948769
Acenaphthylene		<0.0050		0.0050	mg/kg	18-DEC-19	19-DEC-19	R4948769
Acridine		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Anthracene		<0.0040		0.0040	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(a)anthracene		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(a)pyrene		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(b&j)fluoranthene		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(g,h,i)perylene		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(k)fluoranthene		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Chrysene		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Dibenzo(a,h)anthracene		<0.0050		0.0050	mg/kg	18-DEC-19	19-DEC-19	R4948769
Fluoranthene		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Fluorene		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Indeno(1,2,3-cd)pyrene		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Naphthalene		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Phenanthrene		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Pyrene		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Quinoline		<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
B(a)P Total Potency Equivalent		<0.020		0.020	mg/kg	18-DEC-19	19-DEC-19	R4948769
IACR (CCME)		<0.15		0.15		18-DEC-19	19-DEC-19	R4948769
Benzo(b+j+k)fluoranthene		<0.014		0.014	mg/kg	18-DEC-19	19-DEC-19	R4948769
Surrogate: Acenaphthene d10		107.6		60-130	%	18-DEC-19	19-DEC-19	R4948769
Surrogate: Chrysene d12		122.9		60-130	%	18-DEC-19	19-DEC-19	R4948769
Surrogate: Naphthalene d8		87.0		50-130	%	18-DEC-19	19-DEC-19	R4948769
Surrogate: Phenanthrene d10		109.1		60-130	%	18-DEC-19	19-DEC-19	R4948769
L2394273-6	TH19-10 @ 0.8M							
Sampled By: CLIENT on 03-DEC-19								
Matrix: SOIL								
BTEX and F1-F4 by Tumbler Method								
BTX plus F1 by GCMS								
Benzene		<0.0050		0.0050	mg/kg	03-DEC-19	12-DEC-19	R4942491
Toluene		<0.050		0.050	mg/kg	03-DEC-19	12-DEC-19	R4942491
Ethyl benzene		<0.015		0.015	mg/kg	03-DEC-19	12-DEC-19	R4942491
o-Xylene		<0.050		0.050	mg/kg	03-DEC-19	12-DEC-19	R4942491
m+p-Xylenes		<0.050		0.050	mg/kg	03-DEC-19	12-DEC-19	R4942491
F1 (C6-C10)		<10		10	mg/kg	03-DEC-19	12-DEC-19	R4942491
Surrogate: 4-Bromofluorobenzene (SS)		93.2		70-130	%	03-DEC-19	12-DEC-19	R4942491
CCME Total Extractable Hydrocarbons								
F2 (C10-C16)		<25		25	mg/kg	13-DEC-19	14-DEC-19	R4943247
F3 (C16-C34)		<50		50	mg/kg	13-DEC-19	14-DEC-19	R4943247
F4 (C34-C50)		<50		50	mg/kg	13-DEC-19	14-DEC-19	R4943247
Surrogate: 2-Bromobenotrifluoride		79.6		60-140	%	13-DEC-19	14-DEC-19	R4943247
Chrom. to baseline at nC50		YES				13-DEC-19	14-DEC-19	R4943247
CCME Total Hydrocarbons								
F1-BTEX		<10		10	mg/kg		20-DEC-19	
F2-Naphth		<25		25	mg/kg		20-DEC-19	
F3-PAH		<50		50	mg/kg		20-DEC-19	
Total Hydrocarbons (C6-C50)		<76		76	mg/kg		20-DEC-19	
Sum of Xylene Isomer Concentrations								
Xylenes (Total)		<0.071		0.071	mg/kg		17-DEC-19	
Miscellaneous Parameters								

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394273-6 TH19-10 @ 0.8M							
Sampled By: CLIENT on 03-DEC-19							
Matrix: SOIL							
Moisture	26.2		0.10	%		13-DEC-19	R4943683
Metals in Soil by CRC ICPMS							
Aluminum (Al)	23900		5000	mg/kg	16-DEC-19	23-DEC-19	R4953431
Antimony (Sb)	0.68		0.10	mg/kg	16-DEC-19	23-DEC-19	R4953431
Arsenic (As)	5.22		0.10	mg/kg	16-DEC-19	23-DEC-19	R4953431
Barium (Ba)	176		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Beryllium (Be)	1.04		0.10	mg/kg	16-DEC-19	23-DEC-19	R4953431
Boron (B)	17.8		5.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Bismuth (Bi)	0.22		0.20	mg/kg	16-DEC-19	23-DEC-19	R4953431
Cadmium (Cd)	0.441		0.020	mg/kg	16-DEC-19	23-DEC-19	R4953431
Calcium (Ca)	66000		50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Chromium (Cr)	38.3		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Cobalt (Co)	11.7		0.10	mg/kg	16-DEC-19	23-DEC-19	R4953431
Copper (Cu)	34.9		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Iron (Fe)	25000		50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Lead (Pb)	44.8		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Lithium (Li)	29.6		2.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Magnesium (Mg)	44500		20	mg/kg	16-DEC-19	23-DEC-19	R4953431
Manganese (Mn)	748		1.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Molybdenum (Mo)	0.42		0.10	mg/kg	16-DEC-19	23-DEC-19	R4953431
Nickel (Ni)	32.8		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Phosphorus (P)	450		50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Potassium (K)	4010		100	mg/kg	16-DEC-19	23-DEC-19	R4953431
Selenium (Se)	<0.20		0.20	mg/kg	16-DEC-19	23-DEC-19	R4953431
Silver (Ag)	0.12		0.10	mg/kg	16-DEC-19	23-DEC-19	R4953431
Sodium (Na)	327		50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Strontium (Sr)	62.4		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Sulfur (S)	<1000		1000	mg/kg	16-DEC-19	23-DEC-19	R4953431
Thallium (Tl)	0.258		0.050	mg/kg	16-DEC-19	23-DEC-19	R4953431
Tin (Sn)	2.1		2.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Titanium (Ti)	150		1.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Tungsten (W)	<0.50		0.50	mg/kg	16-DEC-19	23-DEC-19	R4953431
Uranium (U)	0.790		0.050	mg/kg	16-DEC-19	23-DEC-19	R4953431
Vanadium (V)	59.2		0.20	mg/kg	16-DEC-19	23-DEC-19	R4953431
Zinc (Zn)	142		2.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Zirconium (Zr)	6.1		1.0	mg/kg	16-DEC-19	23-DEC-19	R4953431
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
2-Methyl Naphthalene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Acenaphthene	<0.0050		0.0050	mg/kg	18-DEC-19	19-DEC-19	R4948769
Acenaphthylene	<0.0050		0.0050	mg/kg	18-DEC-19	19-DEC-19	R4948769
Acridine	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Anthracene	<0.0040		0.0040	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(a)anthracene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(a)pyrene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(b&j)fluoranthene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Chrysene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Dibenzo(a,h)anthracene	<0.0050		0.0050	mg/kg	18-DEC-19	19-DEC-19	R4948769
Fluoranthene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769
Fluorene	<0.010		0.010	mg/kg	18-DEC-19	19-DEC-19	R4948769

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

[illegible]

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
SURR-ND	Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BTEXS+F1-HSMS-WP	Soil	BTX plus F1 by GCMS	EPA 8260C
The soil methanol extract is added to water and reagents, then heated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			
EOX-MP	Misc.	Extractable Organic Halides (EOX)	SEE SUBLET LAB REPORT
The material is extracted with ethyl acetate then the extract is analyzed on the TOX (Total Organic Halides) instrument.			
F1-F4-CALC-WP	Soil	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-S
Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.			
In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.			
In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.			
In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.			
Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.			
3. Linearity of gasoline response within 15% throughout the calibration range.			
Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.			
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.			
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.			
F2-F4-TMB-FID-WP	Soil	CCME Total Extractable Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001
A soil or sediment sample is extracted with 1:1 hexane/acetone in a tumbler, followed by a silica gel clean up to facilitate separation of the hydrocarbons from other polar extractions. An aliquot of the solvent is analyzed using a gas chromatograph equipped with a flame ionization detector.			
F4G-TMB-WP	Soil	CCME Gravimetric Heavy Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-S
A soil or sediment sample is extracted with 1:1 hexane/acetone in a tumbler, followed by a silica gel clean up to facilitate separation of the hydrocarbons from other polar extractions. An aliquot of the solvent is analyzed using gravimetric method			
MET-200.2-CCMS-WP	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020B (mod)
Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.			
Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H ₂ S) may be excluded if lost during sampling, storage, or digestion.			
MOISTURE-WP	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
Moisture content in solid matrices is determined gravimetrically after drying to constant weight at 105°C.			
PAH,PANH-WP	Soil	Polyaromatic Hydrocarbons (PAHs)	EPA SW 846/8270-GC/MS

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Samples are rotary extracted using a 1:1 mixture of acetone and dichloromethane. Extracts are concentrated and solvent exchanged to toluene. The toluene extract is analyzed by GCMS.			
PCB-ED	Soil	PCBs	EPA 3570/8082-GC-ECD
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3500, 3620, 3630, 3660, 3665 & 8082, published by the United States Environmental Protection Agency (EPA). The procedure involves a solid-liquid extraction of a subsample of the sediment/soil using a mixture of hexane and acetone. Water is added to the extract and the resulting hexane extract undergoes one or more of the following clean-up procedures (if required): florisil clean-up, silica gel clean-up, sulphur clean-up and/or sulphuric acid clean-up. The final extract is analysed by capillary column gas chromatography with electron capture detection (GC/ECD).			
VOC+F1-HSMS-WP	Soil	VOC plus F1 by GCMS	EPA 8260C
The soil methanol extract is added to water and reagents, then heated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			
XYLENES-SUM-CALC-WP	Soil	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
MP	ALS ENVIRONMENTAL - MIDDLETOWN, PENNSYLVANIA, USA
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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Client: Wood Environment & Infrastructure Solutions (Winnipeg)

440 Dovercourt Drive
Winnipeg MB R3Y 1G4

Contact: KEVIN BEECHINOR

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTEXS+F1-HSMS-WP Soil								
Batch	R4942491							
WG3240193-2	LCS							
Benzene			94.4		%		70-130	12-DEC-19
Toluene			101.5		%		70-130	12-DEC-19
Ethyl benzene			110.8		%		70-130	12-DEC-19
o-Xylene			116.4		%		70-130	12-DEC-19
m+p-Xylenes			110.8		%		70-130	12-DEC-19
WG3240193-3	LCS							
F1 (C6-C10)			74.5		%		70-130	12-DEC-19
WG3240193-1	MB							
Benzene			<0.0050		mg/kg		0.005	12-DEC-19
Toluene			<0.050		mg/kg		0.05	12-DEC-19
Ethyl benzene			<0.015		mg/kg		0.015	12-DEC-19
o-Xylene			<0.050		mg/kg		0.05	12-DEC-19
m+p-Xylenes			<0.050		mg/kg		0.05	12-DEC-19
F1 (C6-C10)			<10		mg/kg		10	12-DEC-19
Surrogate: 4-Bromofluorobenzene (SS)			90.9		%		70-130	12-DEC-19
F2-F4-TMB-FID-WP Soil								
Batch	R4943247							
WG3241707-3	IRM	ALS PHC RM3						
F2 (C10-C16)			86.1		%		70-130	14-DEC-19
F3 (C16-C34)			84.9		%		70-130	14-DEC-19
F4 (C34-C50)			80.4		%		70-130	14-DEC-19
WG3241707-2	LCS							
F2 (C10-C16)			93.6		%		70-130	14-DEC-19
F3 (C16-C34)			89.6		%		70-130	14-DEC-19
F4 (C34-C50)			90.5		%		70-130	14-DEC-19
WG3241707-1	MB							
F2 (C10-C16)			<25		mg/kg		25	14-DEC-19
F3 (C16-C34)			<50		mg/kg		50	14-DEC-19
F4 (C34-C50)			<50		mg/kg		50	14-DEC-19
Surrogate: 2-Bromobenzotrifluoride			75.6		%		60-140	14-DEC-19
F4G-TMB-WP Soil								
Batch	R4945332							
WG3245249-2	IRM	ALS PHC RM3						
F4G-SG			85.1		%		70-130	17-DEC-19
WG3245249-1	MB							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F4G-TMB-WP	Soil							
Batch	R4945332							
WG3245249-1	MB							
F4G-SG			<500		mg/kg		500	17-DEC-19
MET-200.2-CCMS-WP	Soil							
Batch	R4953431							
WG3243514-4	CRM	CANMET TILL-1						
Aluminum (Al)			111.5		%		70-130	23-DEC-19
Antimony (Sb)			104.8		%		70-130	23-DEC-19
Arsenic (As)			101.8		%		70-130	23-DEC-19
Barium (Ba)			99.4		%		70-130	23-DEC-19
Beryllium (Be)			107.6		%		70-130	23-DEC-19
Boron (B)			0.7		mg/kg		0-8.2	23-DEC-19
Bismuth (Bi)			102.8		%		70-130	23-DEC-19
Cadmium (Cd)			106.0		%		70-130	23-DEC-19
Calcium (Ca)			91.6		%		70-130	23-DEC-19
Chromium (Cr)			96.3		%		70-130	23-DEC-19
Cobalt (Co)			100.1		%		70-130	23-DEC-19
Copper (Cu)			111.7		%		70-130	23-DEC-19
Iron (Fe)			99.2		%		70-130	23-DEC-19
Lead (Pb)			104.2		%		70-130	23-DEC-19
Lithium (Li)			100.3		%		70-130	23-DEC-19
Magnesium (Mg)			104.6		%		70-130	23-DEC-19
Manganese (Mn)			112.4		%		70-130	23-DEC-19
Molybdenum (Mo)			101.7		%		70-130	23-DEC-19
Nickel (Ni)			100.7		%		70-130	23-DEC-19
Phosphorus (P)			102.7		%		70-130	23-DEC-19
Potassium (K)			77.5		%		70-130	23-DEC-19
Selenium (Se)			0.29		mg/kg		0.12-0.52	23-DEC-19
Silver (Ag)			0.26		mg/kg		0.12-0.32	23-DEC-19
Sodium (Na)			78.5		%		70-130	23-DEC-19
Strontium (Sr)			89.8		%		70-130	23-DEC-19
Thallium (Tl)			0.117		mg/kg		0.075-0.175	23-DEC-19
Tin (Sn)			1.0		mg/kg		0-3.1	23-DEC-19
Titanium (Ti)			84.4		%		70-130	23-DEC-19
Tungsten (W)			0.14		mg/kg		0-0.66	23-DEC-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WP		Soil						
Batch	R4953431							
WG3243514-4	CRM	CANMET TILL-1						
Uranium (U)			97.0		%		70-130	23-DEC-19
Vanadium (V)			97.1		%		70-130	23-DEC-19
Zinc (Zn)			103.8		%		70-130	23-DEC-19
Zirconium (Zr)			0.7		mg/kg		0-1.8	23-DEC-19
WG3243514-2	LCS							
Aluminum (Al)			105.1		%		80-120	23-DEC-19
Antimony (Sb)			107.5		%		80-120	23-DEC-19
Arsenic (As)			104.1		%		80-120	23-DEC-19
Barium (Ba)			104.8		%		80-120	23-DEC-19
Beryllium (Be)			109.2		%		80-120	23-DEC-19
Boron (B)			103.6		%		80-120	23-DEC-19
Bismuth (Bi)			104.1		%		80-120	23-DEC-19
Cadmium (Cd)			105.1		%		80-120	23-DEC-19
Calcium (Ca)			104.6		%		80-120	23-DEC-19
Chromium (Cr)			102.9		%		80-120	23-DEC-19
Cobalt (Co)			104.7		%		80-120	23-DEC-19
Copper (Cu)			106.2		%		80-120	23-DEC-19
Iron (Fe)			96.4		%		80-120	23-DEC-19
Lead (Pb)			105.5		%		80-120	23-DEC-19
Lithium (Li)			107.8		%		80-120	23-DEC-19
Magnesium (Mg)			111.4		%		80-120	23-DEC-19
Manganese (Mn)			104.6		%		80-120	23-DEC-19
Molybdenum (Mo)			106.4		%		80-120	23-DEC-19
Nickel (Ni)			103.3		%		80-120	23-DEC-19
Phosphorus (P)			106.2		%		80-120	23-DEC-19
Potassium (K)			106.2		%		80-120	23-DEC-19
Selenium (Se)			108.7		%		80-120	23-DEC-19
Silver (Ag)			104.7		%		80-120	23-DEC-19
Sodium (Na)			107.1		%		80-120	23-DEC-19
Strontium (Sr)			103.8		%		80-120	23-DEC-19
Sulfur (S)			109.3		%		70-130	23-DEC-19
Thallium (Tl)			105.2		%		80-120	23-DEC-19
Tin (Sn)			104.9		%		80-120	23-DEC-19
Titanium (Ti)			102.2		%		80-120	23-DEC-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WP		Soil						
Batch	R4953431							
WG3243514-2	LCS							
Tungsten (W)			108.3		%		70-130	23-DEC-19
Uranium (U)			108.2		%		80-120	23-DEC-19
Vanadium (V)			105.1		%		80-120	23-DEC-19
Zinc (Zn)			105.6		%		80-120	23-DEC-19
Zirconium (Zr)			99.4		%		80-120	23-DEC-19
WG3243514-1	MB							
Aluminum (Al)			<50		mg/kg		50	23-DEC-19
Antimony (Sb)			<0.10		mg/kg		0.1	23-DEC-19
Arsenic (As)			<0.10		mg/kg		0.1	23-DEC-19
Barium (Ba)			<0.50		mg/kg		0.5	23-DEC-19
Beryllium (Be)			<0.10		mg/kg		0.1	23-DEC-19
Boron (B)			<5.0		mg/kg		5	23-DEC-19
Bismuth (Bi)			<0.20		mg/kg		0.2	23-DEC-19
Cadmium (Cd)			<0.020		mg/kg		0.02	23-DEC-19
Calcium (Ca)			<50		mg/kg		50	23-DEC-19
Chromium (Cr)			<0.50		mg/kg		0.5	23-DEC-19
Cobalt (Co)			<0.10		mg/kg		0.1	23-DEC-19
Copper (Cu)			<0.50		mg/kg		0.5	23-DEC-19
Iron (Fe)			<50		mg/kg		50	23-DEC-19
Lead (Pb)			<0.50		mg/kg		0.5	23-DEC-19
Lithium (Li)			<2.0		mg/kg		2	23-DEC-19
Magnesium (Mg)			<20		mg/kg		20	23-DEC-19
Manganese (Mn)			<1.0		mg/kg		1	23-DEC-19
Molybdenum (Mo)			<0.10		mg/kg		0.1	23-DEC-19
Nickel (Ni)			<0.50		mg/kg		0.5	23-DEC-19
Phosphorus (P)			<50		mg/kg		50	23-DEC-19
Potassium (K)			<100		mg/kg		100	23-DEC-19
Selenium (Se)			<0.20		mg/kg		0.2	23-DEC-19
Silver (Ag)			<0.10		mg/kg		0.1	23-DEC-19
Sodium (Na)			<50		mg/kg		50	23-DEC-19
Strontium (Sr)			<0.50		mg/kg		0.5	23-DEC-19
Sulfur (S)			<1000		mg/kg		1000	23-DEC-19
Thallium (Tl)			<0.050		mg/kg		0.05	23-DEC-19
Tin (Sn)			<2.0		mg/kg		2	23-DEC-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WP		Soil						
Batch	R4953431							
WG3243514-1	MB							
Titanium (Ti)			<1.0		mg/kg		1	23-DEC-19
Tungsten (W)			<0.50		mg/kg		0.5	23-DEC-19
Uranium (U)			<0.050		mg/kg		0.05	23-DEC-19
Vanadium (V)			<0.20		mg/kg		0.2	23-DEC-19
Zinc (Zn)			<2.0		mg/kg		2	23-DEC-19
Zirconium (Zr)			<1.0		mg/kg		1	23-DEC-19
Batch	R4957756							
WG3247479-4	CRM	CANMET TILL-1						
Aluminum (Al)			107.3		%		70-130	27-DEC-19
Antimony (Sb)			98.7		%		70-130	27-DEC-19
Arsenic (As)			97.9		%		70-130	27-DEC-19
Barium (Ba)			100.3		%		70-130	27-DEC-19
Beryllium (Be)			97.9		%		70-130	27-DEC-19
Boron (B)			1.5		mg/kg		0-8.2	27-DEC-19
Bismuth (Bi)			106.3		%		70-130	27-DEC-19
Cadmium (Cd)			100.3		%		70-130	27-DEC-19
Calcium (Ca)			88.2		%		70-130	27-DEC-19
Chromium (Cr)			93.4		%		70-130	27-DEC-19
Cobalt (Co)			94.8		%		70-130	27-DEC-19
Copper (Cu)			98.7		%		70-130	27-DEC-19
Iron (Fe)			97.4		%		70-130	27-DEC-19
Lead (Pb)			100.0		%		70-130	27-DEC-19
Lithium (Li)			94.8		%		70-130	27-DEC-19
Magnesium (Mg)			105.0		%		70-130	27-DEC-19
Manganese (Mn)			107.4		%		70-130	27-DEC-19
Molybdenum (Mo)			101.9		%		70-130	27-DEC-19
Nickel (Ni)			93.9		%		70-130	27-DEC-19
Phosphorus (P)			99.3		%		70-130	27-DEC-19
Potassium (K)			77.5		%		70-130	27-DEC-19
Selenium (Se)			0.33		mg/kg		0.12-0.52	27-DEC-19
Silver (Ag)			0.23		mg/kg		0.12-0.32	27-DEC-19
Sodium (Na)			65.0	MES	%		70-130	27-DEC-19
Strontium (Sr)			92.8		%		70-130	27-DEC-19
Thallium (Tl)			0.116		mg/kg		0.075-0.175	27-DEC-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WP		Soil						
Batch	R4957756							
WG3247479-4	CRM	CANMET TILL-1						
Tin (Sn)			0.9		mg/kg		0-3.1	27-DEC-19
Titanium (Ti)			72.8		%		70-130	27-DEC-19
Tungsten (W)			0.11		mg/kg		0-0.66	27-DEC-19
Uranium (U)			99.2		%		70-130	27-DEC-19
Vanadium (V)			91.7		%		70-130	27-DEC-19
Zinc (Zn)			94.8		%		70-130	27-DEC-19
Zirconium (Zr)			0.6		mg/kg		0-1.8	27-DEC-19
WG3247479-2	LCS							
Aluminum (Al)			103.7		%		80-120	27-DEC-19
Antimony (Sb)			105.5		%		80-120	27-DEC-19
Arsenic (As)			100.9		%		80-120	27-DEC-19
Barium (Ba)			98.4		%		80-120	27-DEC-19
Beryllium (Be)			102.3		%		80-120	27-DEC-19
Boron (B)			97.2		%		80-120	27-DEC-19
Bismuth (Bi)			101.6		%		80-120	27-DEC-19
Cadmium (Cd)			98.6		%		80-120	27-DEC-19
Calcium (Ca)			99.8		%		80-120	27-DEC-19
Chromium (Cr)			99.6		%		80-120	27-DEC-19
Cobalt (Co)			98.4		%		80-120	27-DEC-19
Copper (Cu)			98.6		%		80-120	27-DEC-19
Iron (Fe)			87.8		%		80-120	27-DEC-19
Lead (Pb)			101.6		%		80-120	27-DEC-19
Lithium (Li)			101.2		%		80-120	27-DEC-19
Magnesium (Mg)			112.5		%		80-120	27-DEC-19
Manganese (Mn)			101.6		%		80-120	27-DEC-19
Molybdenum (Mo)			106.3		%		80-120	27-DEC-19
Nickel (Ni)			96.7		%		80-120	27-DEC-19
Phosphorus (P)			106.1		%		80-120	27-DEC-19
Potassium (K)			105.8		%		80-120	27-DEC-19
Selenium (Se)			97.8		%		80-120	27-DEC-19
Silver (Ag)			103.1		%		80-120	27-DEC-19
Sodium (Na)			101.0		%		80-120	27-DEC-19
Strontium (Sr)			112.4		%		80-120	27-DEC-19
Sulfur (S)			99.6		%		70-130	27-DEC-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WP		Soil						
Batch	R4957756							
WG3247479-2	LCS							
Thallium (Tl)			98.9		%		80-120	27-DEC-19
Tin (Sn)			99.2		%		80-120	27-DEC-19
Titanium (Ti)			99.9		%		80-120	27-DEC-19
Tungsten (W)			102.2		%		70-130	27-DEC-19
Uranium (U)			105.3		%		80-120	27-DEC-19
Vanadium (V)			100.9		%		80-120	27-DEC-19
Zinc (Zn)			99.3		%		80-120	27-DEC-19
Zirconium (Zr)			102.1		%		80-120	27-DEC-19
WG3247479-1	MB							
Aluminum (Al)			<50		mg/kg		50	27-DEC-19
Antimony (Sb)			<0.10		mg/kg		0.1	27-DEC-19
Arsenic (As)			<0.10		mg/kg		0.1	27-DEC-19
Barium (Ba)			<0.50		mg/kg		0.5	27-DEC-19
Beryllium (Be)			<0.10		mg/kg		0.1	27-DEC-19
Boron (B)			<5.0		mg/kg		5	27-DEC-19
Bismuth (Bi)			<0.20		mg/kg		0.2	27-DEC-19
Cadmium (Cd)			<0.020		mg/kg		0.02	27-DEC-19
Calcium (Ca)			<50		mg/kg		50	27-DEC-19
Chromium (Cr)			<0.50		mg/kg		0.5	27-DEC-19
Cobalt (Co)			<0.10		mg/kg		0.1	27-DEC-19
Copper (Cu)			<0.50		mg/kg		0.5	27-DEC-19
Iron (Fe)			<50		mg/kg		50	27-DEC-19
Lead (Pb)			<0.50		mg/kg		0.5	27-DEC-19
Lithium (Li)			<2.0		mg/kg		2	27-DEC-19
Magnesium (Mg)			<20		mg/kg		20	27-DEC-19
Manganese (Mn)			<1.0		mg/kg		1	27-DEC-19
Molybdenum (Mo)			<0.10		mg/kg		0.1	27-DEC-19
Nickel (Ni)			<0.50		mg/kg		0.5	27-DEC-19
Phosphorus (P)			<50		mg/kg		50	27-DEC-19
Potassium (K)			<100		mg/kg		100	27-DEC-19
Selenium (Se)			<0.20		mg/kg		0.2	27-DEC-19
Silver (Ag)			<0.10		mg/kg		0.1	27-DEC-19
Sodium (Na)			<50		mg/kg		50	27-DEC-19
Strontium (Sr)			<0.50		mg/kg		0.5	27-DEC-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WP		Soil						
Batch R4957756								
WG3247479-1 MB								
Sulfur (S)			<1000		mg/kg		1000	27-DEC-19
Thallium (Tl)			<0.050		mg/kg		0.05	27-DEC-19
Tin (Sn)			<2.0		mg/kg		2	27-DEC-19
Titanium (Ti)			<1.0		mg/kg		1	27-DEC-19
Tungsten (W)			<0.50		mg/kg		0.5	27-DEC-19
Uranium (U)			<0.050		mg/kg		0.05	27-DEC-19
Vanadium (V)			<0.20		mg/kg		0.2	27-DEC-19
Zinc (Zn)			<2.0		mg/kg		2	27-DEC-19
Zirconium (Zr)			<1.0		mg/kg		1	27-DEC-19
MOISTURE-WP		Soil						
Batch R4941938								
WG3239944-5 LCS								
Moisture			100.4		%		90-110	11-DEC-19
WG3239944-4 MB								
Moisture			<0.10		%		0.1	11-DEC-19
Batch R4943683								
WG3241745-2 LCS								
Moisture			100.1		%		90-110	13-DEC-19
WG3241745-1 MB								
Moisture			<0.10		%		0.1	13-DEC-19
PAH,PANH-WP		Soil						
Batch R4948769								
WG3246489-3 DUP		L2394273-1						
1-Methyl Naphthalene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
2-Methyl Naphthalene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Acenaphthene		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	50	19-DEC-19
Acenaphthylene		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	50	19-DEC-19
Acridine		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Anthracene		<0.0040	<0.0040	RPD-NA	mg/kg	N/A	50	19-DEC-19
Benzo(a)anthracene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Benzo(a)pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Benzo(b&j)fluoranthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Benzo(g,h,i)perylene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Benzo(k)fluoranthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Chrysene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19

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PAH,PANH-WP		Soil						
Batch	R4948769							
WG3246489-3 DUP		L2394273-1						
Dibenzo(a,h)anthracene		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	50	19-DEC-19
Fluoranthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Fluorene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Indeno(1,2,3-cd)pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Naphthalene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Phenanthrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
Quinoline		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	19-DEC-19
WG3246489-4 IRM		ALS PAH RM2						
1-Methyl Naphthalene			98.1		%		65-130	19-DEC-19
2-Methyl Naphthalene			103.5		%		65-130	19-DEC-19
Acenaphthene			121.0		%		65-130	19-DEC-19
Acenaphthylene			87.7		%		65-130	19-DEC-19
Anthracene			90.6		%		65-130	19-DEC-19
Benzo(a)anthracene			108.7		%		65-130	19-DEC-19
Benzo(a)pyrene			80.6		%		65-130	19-DEC-19
Benzo(b&j)fluoranthene			75.1		%		65-130	19-DEC-19
Benzo(g,h,i)perylene			94.3		%		65-130	19-DEC-19
Benzo(k)fluoranthene			75.8		%		65-130	19-DEC-19
Chrysene			117.0		%		65-130	19-DEC-19
Dibenzo(a,h)anthracene			94.5		%		65-130	19-DEC-19
Fluoranthene			92.7		%		65-130	19-DEC-19
Fluorene			96.9		%		65-130	19-DEC-19
Indeno(1,2,3-cd)pyrene			85.6		%		65-130	19-DEC-19
Naphthalene			112.3		%		65-130	19-DEC-19
Phenanthrene			94.9		%		65-130	19-DEC-19
Pyrene			101.8		%		65-130	19-DEC-19
WG3246489-2 LCS								
1-Methyl Naphthalene			113.1		%		60-130	19-DEC-19
2-Methyl Naphthalene			109.4		%		60-130	19-DEC-19
Acenaphthene			114.7		%		60-130	19-DEC-19
Acenaphthylene			102.9		%		60-130	19-DEC-19
Acridine			114.3		%		60-130	19-DEC-19
Anthracene			112.9		%		60-130	19-DEC-19
Benzo(a)anthracene			120.4		%		60-130	19-DEC-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP		Soil						
Batch	R4948769							
WG3246489-2	LCS							
Benzo(a)pyrene			101.5		%		60-130	19-DEC-19
Benzo(b&j)fluoranthene			93.4		%		60-130	19-DEC-19
Benzo(g,h,i)perylene			105.1		%		60-130	19-DEC-19
Benzo(k)fluoranthene			110.4		%		60-130	19-DEC-19
Chrysene			117.4		%		60-130	19-DEC-19
Dibenzo(a,h)anthracene			102.1		%		60-130	19-DEC-19
Fluoranthene			111.4		%		60-130	19-DEC-19
Fluorene			105.9		%		60-130	19-DEC-19
Indeno(1,2,3-cd)pyrene			102.4		%		60-130	19-DEC-19
Naphthalene			114.5		%		50-130	19-DEC-19
Phenanthrene			114.6		%		60-130	19-DEC-19
Pyrene			117.5		%		60-130	19-DEC-19
Quinoline			112.2		%		60-130	19-DEC-19
WG3246489-1	MB							
1-Methyl Naphthalene			<0.010		mg/kg		0.01	19-DEC-19
2-Methyl Naphthalene			<0.010		mg/kg		0.01	19-DEC-19
Acenaphthene			<0.0050		mg/kg		0.005	19-DEC-19
Acenaphthylene			<0.0050		mg/kg		0.005	19-DEC-19
Acridine			<0.010		mg/kg		0.01	19-DEC-19
Anthracene			<0.0040		mg/kg		0.004	19-DEC-19
Benzo(a)anthracene			<0.010		mg/kg		0.01	19-DEC-19
Benzo(a)pyrene			<0.010		mg/kg		0.01	19-DEC-19
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	19-DEC-19
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	19-DEC-19
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	19-DEC-19
Chrysene			<0.010		mg/kg		0.01	19-DEC-19
Dibenzo(a,h)anthracene			<0.0050		mg/kg		0.005	19-DEC-19
Fluoranthene			<0.010		mg/kg		0.01	19-DEC-19
Fluorene			<0.010		mg/kg		0.01	19-DEC-19
Indeno(1,2,3-cd)pyrene			<0.010		mg/kg		0.01	19-DEC-19
Naphthalene			<0.010		mg/kg		0.01	19-DEC-19
Phenanthrene			<0.010		mg/kg		0.01	19-DEC-19
Pyrene			<0.010		mg/kg		0.01	19-DEC-19
Quinoline			<0.010		mg/kg		0.01	19-DEC-19

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VOC+F1-HSMS-WP		Soil						
Batch	R4953041							
WG3247019-3	DUP	L2394273-1						
Acetone		<0.50	<0.50	RPD-NA	mg/kg	N/A	50	20-DEC-19
Benzene		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Bromobenzene		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	20-DEC-19
Bromochloromethane		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	20-DEC-19
Bromodichloromethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Bromoform		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Bromomethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
n-Butylbenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
sec-Butylbenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
tert-Butylbenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Carbon disulfide		<0.25	<0.25	RPD-NA	mg/kg	N/A	50	20-DEC-19
Carbon Tetrachloride		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Chlorobenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Chloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Chloroform		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Chloromethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
2-Chlorotoluene		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	20-DEC-19
4-Chlorotoluene		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	20-DEC-19
Dibromochloromethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,2-Dibromo-3-chloropropane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Dibromomethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,1-dichloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,1-dichloroethene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
cis-1,2-Dichloroethene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
trans-1,2-Dichloroethene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Dichloromethane		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,3-Dichloropropane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19

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VOC+F1-HSMS-WP		Soil						
Batch	R4953041							
WG3247019-3	DUP	L2394273-1						
2,2-Dichloropropane		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,1-Dichloropropene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
cis-1,3-Dichloropropene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
trans-1,3-Dichloropropene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Ethylbenzene		<0.015	<0.015	RPD-NA	mg/kg	N/A	50	20-DEC-19
F1		<10	<10	RPD-NA	mg/kg	N/A	50	20-DEC-19
Hexachlorobutadiene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Hexane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
2-Hexanone (Methyl butyl ketone)		<0.50	<0.50	RPD-NA	mg/kg	N/A	50	20-DEC-19
Isopropylbenzene		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	20-DEC-19
4-Isopropyltoluene		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	20-DEC-19
MEK		<0.50	<0.50	RPD-NA	mg/kg	N/A	50	20-DEC-19
MIBK		<0.50	<0.50	RPD-NA	mg/kg	N/A	50	20-DEC-19
MTBE		<0.20	<0.20	RPD-NA	mg/kg	N/A	50	20-DEC-19
Styrene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Tetrachloroethene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Toluene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,2,3-Trichlorobenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,2,4-Trichlorobenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Trichloroethene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,2,3-Trichloropropane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,2,4-Trimethylbenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
1,3,5-Trimethylbenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
Vinyl Chloride		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
M+P-Xylenes		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
o-Xylene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	20-DEC-19
WG3247019-2	LCS							
Acetone			107.1		%		70-130	20-DEC-19
Benzene			106.9		%		70-130	20-DEC-19

Quality Control Report

Workorder: L2394273

Report Date: 05-MAR-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Soil						
Batch	R4953041							
WG3247019-2	LCS							
Bromobenzene			103.7		%		70-130	20-DEC-19
Bromochloromethane			110.6		%		70-130	20-DEC-19
Bromodichloromethane			107.5		%		70-130	20-DEC-19
Bromoform			109.0		%		70-130	20-DEC-19
Bromomethane			101.7		%		60-140	20-DEC-19
n-Butylbenzene			108.6		%		70-130	20-DEC-19
sec-Butylbenzene			112.0		%		70-130	20-DEC-19
tert-Butylbenzene			107.1		%		70-130	20-DEC-19
Carbon disulfide			111.6		%		70-130	20-DEC-19
Carbon Tetrachloride			111.0		%		70-130	20-DEC-19
Chlorobenzene			110.1		%		70-130	20-DEC-19
Chloroethane			105.1		%		60-140	20-DEC-19
Chloroform			111.3		%		70-130	20-DEC-19
Chloromethane			129.5		%		60-140	20-DEC-19
2-Chlorotoluene			117.0		%		70-130	20-DEC-19
4-Chlorotoluene			108.6		%		70-130	20-DEC-19
Dibromochloromethane			107.5		%		70-130	20-DEC-19
1,2-Dibromo-3-chloropropane			107.1		%		70-130	20-DEC-19
1,2-Dibromoethane			102.4		%		70-130	20-DEC-19
Dibromomethane			111.1		%		70-130	20-DEC-19
1,2-Dichlorobenzene			111.5		%		70-130	20-DEC-19
1,3-Dichlorobenzene			109.2		%		70-130	20-DEC-19
1,4-Dichlorobenzene			114.7		%		70-130	20-DEC-19
Dichlorodifluoromethane			107.1		%		60-140	20-DEC-19
1,1-dichloroethane			107.9		%		70-130	20-DEC-19
1,2-Dichloroethane			107.1		%		70-130	20-DEC-19
1,1-dichloroethene			108.6		%		70-130	20-DEC-19
cis-1,2-Dichloroethene			111.4		%		70-130	20-DEC-19
trans-1,2-Dichloroethene			106.9		%		70-130	20-DEC-19
Dichloromethane			108.9		%		60-140	20-DEC-19
1,2-Dichloropropane			103.3		%		70-130	20-DEC-19
1,3-Dichloropropane			105.1		%		70-130	20-DEC-19
2,2-Dichloropropane			78.9		%		70-130	20-DEC-19
1,1-Dichloropropene			109.8		%		70-130	20-DEC-19

Quality Control Report

Workorder: L2394273

Report Date: 05-MAR-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Soil						
Batch	R4953041							
WG3247019-2	LCS							
cis-1,3-Dichloropropene			86.9		%		70-130	20-DEC-19
trans-1,3-Dichloropropene			82.5		%		70-130	20-DEC-19
Ethylbenzene			101.9		%		70-130	20-DEC-19
Hexachlorobutadiene			116.1		%		70-130	20-DEC-19
Hexane			106.5		%		70-130	20-DEC-19
2-Hexanone (Methyl butyl ketone)			96.1		%		70-130	20-DEC-19
Isopropylbenzene			107.7		%		70-130	20-DEC-19
4-Isopropyltoluene			106.9		%		70-130	20-DEC-19
MEK			97.6		%		70-130	20-DEC-19
MIBK			98.8		%		70-130	20-DEC-19
MTBE			107.0		%		70-130	20-DEC-19
Styrene			110.1		%		70-130	20-DEC-19
1,1,1,2-Tetrachloroethane			109.1		%		70-130	20-DEC-19
1,1,2,2-Tetrachloroethane			111.4		%		70-130	20-DEC-19
Tetrachloroethene			112.5		%		70-130	20-DEC-19
Toluene			106.5		%		70-130	20-DEC-19
1,2,3-Trichlorobenzene			105.7		%		70-130	20-DEC-19
1,2,4-Trichlorobenzene			111.3		%		70-130	20-DEC-19
1,1,1-Trichloroethane			110.6		%		70-130	20-DEC-19
1,1,2-Trichloroethane			107.2		%		70-130	20-DEC-19
Trichloroethene			109.0		%		70-130	20-DEC-19
Trichlorofluoromethane			115.4		%		60-140	20-DEC-19
1,2,3-Trichloropropane			108.1		%		70-130	20-DEC-19
1,2,4-Trimethylbenzene			106.4		%		70-130	20-DEC-19
1,3,5-Trimethylbenzene			108.5		%		70-130	20-DEC-19
Vinyl Chloride			124.9		%		60-140	20-DEC-19
M+P-Xylenes			109.8		%		70-130	20-DEC-19
o-Xylene			108.9		%		70-130	20-DEC-19
WG3247019-4	LCS							
F1			125.5		%		70-130	20-DEC-19
WG3247019-1	MB							
Acetone			<0.50		mg/kg		0.5	20-DEC-19
Benzene			<0.0050		mg/kg		0.005	20-DEC-19
Bromobenzene			<0.10		mg/kg		0.1	20-DEC-19
Bromochloromethane			<0.10		mg/kg		0.1	20-DEC-19

Quality Control Report

Workorder: L2394273

Report Date: 05-MAR-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Soil						
Batch	R4953041							
WG3247019-1	MB							
Bromodichloromethane			<0.050		mg/kg		0.05	20-DEC-19
Bromoform			<0.050		mg/kg		0.05	20-DEC-19
Bromomethane			<0.050		mg/kg		0.05	20-DEC-19
n-Butylbenzene			<0.050		mg/kg		0.05	20-DEC-19
sec-Butylbenzene			<0.050		mg/kg		0.05	20-DEC-19
tert-Butylbenzene			<0.050		mg/kg		0.05	20-DEC-19
Carbon disulfide			<0.25		mg/kg		0.25	20-DEC-19
Carbon Tetrachloride			<0.050		mg/kg		0.05	20-DEC-19
Chlorobenzene			<0.050		mg/kg		0.05	20-DEC-19
Chloroethane			<0.050		mg/kg		0.05	20-DEC-19
Chloroform			<0.050		mg/kg		0.05	20-DEC-19
Chloromethane			<0.050		mg/kg		0.05	20-DEC-19
2-Chlorotoluene			<0.10		mg/kg		0.1	20-DEC-19
4-Chlorotoluene			<0.10		mg/kg		0.1	20-DEC-19
Dibromochloromethane			<0.050		mg/kg		0.05	20-DEC-19
1,2-Dibromo-3-chloropropane			<0.050		mg/kg		0.05	20-DEC-19
1,2-Dibromoethane			<0.050		mg/kg		0.05	20-DEC-19
Dibromomethane			<0.050		mg/kg		0.05	20-DEC-19
1,2-Dichlorobenzene			<0.050		mg/kg		0.05	20-DEC-19
1,3-Dichlorobenzene			<0.050		mg/kg		0.05	20-DEC-19
1,4-Dichlorobenzene			<0.050		mg/kg		0.05	20-DEC-19
Dichlorodifluoromethane			<0.050		mg/kg		0.05	20-DEC-19
1,1-dichloroethane			<0.050		mg/kg		0.05	20-DEC-19
1,2-Dichloroethane			<0.050		mg/kg		0.05	20-DEC-19
1,1-dichloroethene			<0.050		mg/kg		0.05	20-DEC-19
cis-1,2-Dichloroethene			<0.050		mg/kg		0.05	20-DEC-19
trans-1,2-Dichloroethene			<0.050		mg/kg		0.05	20-DEC-19
Dichloromethane			<0.10		mg/kg		0.1	20-DEC-19
1,2-Dichloropropane			<0.050		mg/kg		0.05	20-DEC-19
1,3-Dichloropropane			<0.050		mg/kg		0.05	20-DEC-19
2,2-Dichloropropane			<0.10		mg/kg		0.1	20-DEC-19
1,1-Dichloropropene			<0.050		mg/kg		0.05	20-DEC-19
cis-1,3-Dichloropropene			<0.050		mg/kg		0.05	20-DEC-19
trans-1,3-Dichloropropene			<0.050		mg/kg		0.05	20-DEC-19

Quality Control Report

Workorder: L2394273

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Soil						
Batch	R4953041							
WG3247019-1	MB							
Ethylbenzene			<0.015		mg/kg		0.015	20-DEC-19
F1			<10		mg/kg		10	20-DEC-19
Hexachlorobutadiene			<0.050		mg/kg		0.05	20-DEC-19
Hexane			<0.050		mg/kg		0.05	20-DEC-19
2-Hexanone (Methyl butyl ketone)			<0.50		mg/kg		0.5	20-DEC-19
Isopropylbenzene			<0.10		mg/kg		0.1	20-DEC-19
4-Isopropyltoluene			<0.10		mg/kg		0.1	20-DEC-19
MEK			<0.50		mg/kg		0.5	20-DEC-19
MIBK			<0.50		mg/kg		0.5	20-DEC-19
MTBE			<0.20		mg/kg		0.2	20-DEC-19
Styrene			<0.050		mg/kg		0.05	20-DEC-19
1,1,1,2-Tetrachloroethane			<0.050		mg/kg		0.05	20-DEC-19
1,1,2,2-Tetrachloroethane			<0.050		mg/kg		0.05	20-DEC-19
Tetrachloroethene			<0.050		mg/kg		0.05	20-DEC-19
Toluene			<0.050		mg/kg		0.05	20-DEC-19
1,2,3-Trichlorobenzene			<0.050		mg/kg		0.05	20-DEC-19
1,2,4-Trichlorobenzene			<0.050		mg/kg		0.05	20-DEC-19
1,1,1-Trichloroethane			<0.050		mg/kg		0.05	20-DEC-19
1,1,2-Trichloroethane			<0.050		mg/kg		0.05	20-DEC-19
Trichloroethene			<0.050		mg/kg		0.05	20-DEC-19
Trichlorofluoromethane			<0.050		mg/kg		0.05	20-DEC-19
1,2,3-Trichloropropane			<0.050		mg/kg		0.05	20-DEC-19
1,2,4-Trimethylbenzene			<0.050		mg/kg		0.05	20-DEC-19
1,3,5-Trimethylbenzene			<0.050		mg/kg		0.05	20-DEC-19
Vinyl Chloride			<0.050		mg/kg		0.05	20-DEC-19
M+P-Xylenes			<0.050		mg/kg		0.05	20-DEC-19
o-Xylene			<0.050		mg/kg		0.05	20-DEC-19
Surrogate: 1,4-Difluorobenzene (SS)			101.1		%		70-130	20-DEC-19
Surrogate: 3,4-Dichlorotoluene (SS)			126.6		%		70-130	20-DEC-19
Surrogate: 4-Bromofluorobenzene (SS)			88.4		%		70-130	20-DEC-19

Quality Control Report

Workorder: L2394273

Report Date: 05-MAR-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

December 30, 2019

Mr. Craig Riddell
ALS Environmental-Winnipeg MB
Unit 12-1329 Niakwa Road East
Winnipeg, MB, R2J 3T4

Certificate of Analysis

Project Name: TOX	Workorder: 3077324
Purchase Order:	Workorder ID: L2394273

Dear Mr. Riddell:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, December 24, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Sarah S Leung (Project Coordinator) at (717) 944-5541.

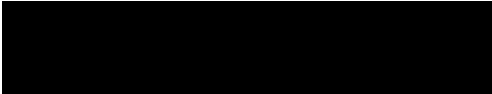
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Bea Ryback

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Ms. Sarah S Leung
Project Coordinator

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**SAMPLE SUMMARY**

Workorder: 3077324 L2394273

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3077324001	L2394273-1 TH19-03@0.8	Solid	12/3/2019 00:00	12/24/2019 08:35	Collected by Client
3077324002	L2394273-1 TH19-04@0.8	Solid	12/3/2019 00:00	12/24/2019 08:35	Collected by Client
3077324003	L2394273-1 TH19-07@0.8	Solid	12/3/2019 00:00	12/24/2019 08:35	Collected by Client
3077324004	L2394273-1 TH19-07@1.5	Solid	12/3/2019 00:00	12/24/2019 08:35	Collected by Client

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SAMPLE SUMMARY

Workorder: 3077324 L2394273

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

ALS Environmental Laboratory Locations Across North America

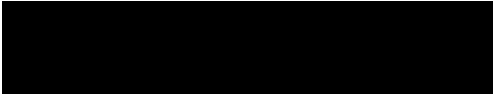
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ANALYTICAL RESULTS

Workorder: 3077324 L2394273

Lab ID: **3077324001**
Sample ID: **L2394273-1 TH19-03@0.8**Date Collected: 12/3/2019 00:00 Matrix: Solid
Date Received: 12/24/2019 08:35

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Halogen, Total Organic (TOX)	ND		mg/kg	6.4	SW846 9023			12/30/19 12:23	PAG	A
Moisture	25.3		%	0.1	S2540G-11			12/26/19 09:30	AXD	
Total Solids	74.7	1	%	0.1	S2540G-11			12/26/19 09:30	AXD	

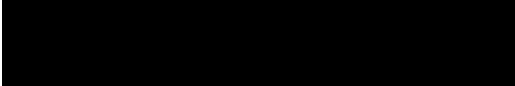

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**ANALYTICAL RESULTS**

Workorder: 3077324 L2394273

Lab ID: **3077324002**
Sample ID: **L2394273-1 TH19-04@0.8**Date Collected: 12/3/2019 00:00 Matrix: Solid
Date Received: 12/24/2019 08:35

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Halogen, Total Organic (TOX)	ND		mg/kg	5.0	SW846 9023			12/30/19 12:36	PAG	A
Moisture	9.3		%	0.1	S2540G-11			12/26/19 09:30	AXD	
Total Solids	90.7	1	%	0.1	S2540G-11			12/26/19 09:30	AXD	

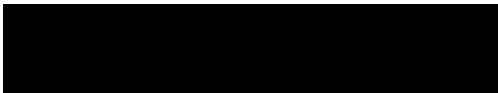

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**ANALYTICAL RESULTS**

Workorder: 3077324 L2394273

Lab ID: **3077324003**
Sample ID: **L2394273-1 TH19-07@0.8**Date Collected: 12/3/2019 00:00 Matrix: Solid
Date Received: 12/24/2019 08:35

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Halogen, Total Organic (TOX)	ND		mg/kg	4.9	SW846 9023			12/30/19 12:48	PAG	A
Moisture	4.7		%	0.1	S2540G-11			12/26/19 09:30	AXD	
Total Solids	95.3	1	%	0.1	S2540G-11			12/26/19 09:30	AXD	

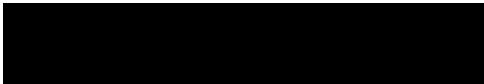

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**ANALYTICAL RESULTS**

Workorder: 3077324 L2394273

Lab ID: **3077324004**
Sample ID: **L2394273-1 TH19-07@1.5**Date Collected: 12/3/2019 00:00 Matrix: Solid
Date Received: 12/24/2019 08:35

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Halogen, Total Organic (TOX)	ND		mg/kg	6.2	SW846 9023			12/30/19 13:01	PAG	A
Moisture	25.8		%	0.1	S2540G-11			12/26/19 09:30	AXD	
Total Solids	74.2	1	%	0.1	S2540G-11			12/26/19 09:30	AXD	


Ms. Sarah S Leung
Project Coordinator**ALS Environmental Laboratory Locations Across North America**Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
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ANALYTICAL RESULTS

Workorder: 3077324 L2394273

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3077324001	1	L2394273-1 TH19-03@0.8	S2540G-11	Total Solids
Analyte was analyzed past the 7 day holding time.				
3077324002	1	L2394273-1 TH19-04@0.8	S2540G-11	Total Solids
Analyte was analyzed past the 7 day holding time.				
3077324003	1	L2394273-1 TH19-07@0.8	S2540G-11	Total Solids
Analyte was analyzed past the 7 day holding time.				
3077324004	1	L2394273-1 TH19-07@1.5	S2540G-11	Total Solids
Analyte was analyzed past the 7 day holding time.				

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Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey

**ANALYSIS - PREP METHOD CROSS REFERENCE TABLE**

Workorder: 3077324 L2394273

Lab ID	Sample ID	Analysis Method	Prep Method
3077324001	L2394273-1 TH19-03@0.8	S2540G-11	
3077324001	L2394273-1 TH19-03@0.8	SW846 9023	
3077324002	L2394273-1 TH19-04@0.8	S2540G-11	
3077324002	L2394273-1 TH19-04@0.8	SW846 9023	
3077324003	L2394273-1 TH19-07@0.8	S2540G-11	
3077324003	L2394273-1 TH19-07@0.8	SW846 9023	
3077324004	L2394273-1 TH19-07@1.5	S2540G-11	
3077324004	L2394273-1 TH19-07@1.5	SW846 9023	

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QUALITY CONTROL DATA

Workorder: 3077324 L2394273

QC Batch: WETC/232356 **Analysis Method:** S2540G-11

QC Batch Method: S2540G-11

Associated Lab Samples: 3077324001, 3077324002, 3077324003, 3077324004

SAMPLE DUPLICATE: 3065447 ORIGINAL: 3077051001

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Moisture	94.0438	%	94.1546	.12	10
Total Solids	5.9561	%	5.8453	1.88	5

SAMPLE DUPLICATE: 3065610 ORIGINAL: 3077058001

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Moisture	95.5028	%	95.5185	.02	10
Total Solids	4.4971	%	4.4814	.35	5

SAMPLE DUPLICATE: 3065448 ORIGINAL: 3077071001

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Moisture	97.4313	%	97.3091	.13	10
Total Solids	2.5686	%	2.6908	4.65	5

SAMPLE DUPLICATE: 3065449 ORIGINAL: 3077169006

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Moisture	5.5294	%	6.7322	19.6*	10
Total Solids	94.4705	%	93.2677	1.28	5

SAMPLE DUPLICATE: 3065450 ORIGINAL: 3077324004

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Moisture	25.8211	%	25.1385	2.68	10
Total Solids	74.1788	%	74.8614	.92	5

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QUALITY CONTROL DATA

Workorder: 3077324 L2394273

SAMPLE DUPLICATE: 3065451 ORIGINAL: 3077383009

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Moisture	22.3609	%	23.6478	5.59	10
Total Solids	77.639	%	76.3521	1.67	5

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QUALITY CONTROL DATA

Workorder: 3077324 L2394273

QC Batch: WETC/232537 **Analysis Method:** SW846 9023

QC Batch Method: SW846 9023

Associated Lab Samples: 3077324001, 3077324002, 3077324003, 3077324004

METHOD BLANK: 3067078

Parameter	Blank Result	Units	Reporting Limit
Halogen, Total Organic (TOX)	ND	mg/kg	5.0

LABORATORY CONTROL SAMPLE: 3067079

Parameter	LCS % Rec	Units	Spike Conc.	LCS Result	% Rec Limit
Halogen, Total Organic (TOX)	104	mg/kg	500	520	90 - 110

LABORATORY CONTROL SAMPLE: 3067080

Parameter	LCS % Rec	Units	Spike Conc.	LCS Result	% Rec Limit
Halogen, Total Organic (TOX)	101	mg/kg	500	504	90 - 110

MATRIX SPIKE: 3067267 DUPLICATE: 3067268 ORIGINAL: 3077324004

****NOTE - The Original Result shown below is a raw result and is only used for the purpose of calculating Matrix Spike percent recoveries. This result is not a final value and cannot be used as such.

Parameter	Original Result	Units	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Halogen, Total Organic (TOX)	0	mg/kg	461	415.71	427.74	90.2	92.8	80 - 120	2.85	20

METHOD BLANK: 3067082

Parameter	Blank Result	Units	Reporting Limit
Halogen, Total Organic (TOX)	ND	mg/kg	5.0

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**Workorder: 3077324 L2394273

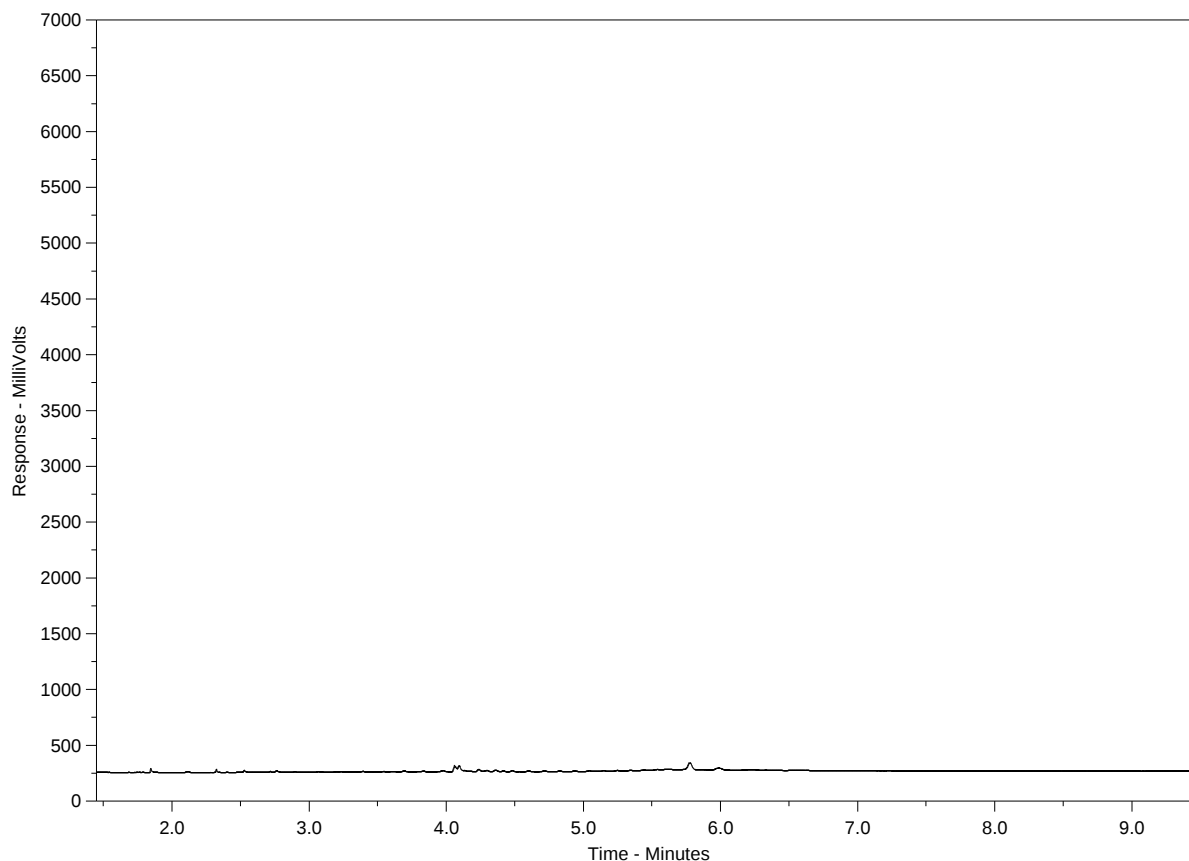
Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
3077324001	L2394273-1 TH19-03@0.8			S2540G-11	WETC/232356
3077324002	L2394273-1 TH19-04@0.8			S2540G-11	WETC/232356
3077324003	L2394273-1 TH19-07@0.8			S2540G-11	WETC/232356
3077324004	L2394273-1 TH19-07@1.5			S2540G-11	WETC/232356
3077324001	L2394273-1 TH19-03@0.8			SW846 9023	WETC/232537
3077324002	L2394273-1 TH19-04@0.8			SW846 9023	WETC/232537
3077324003	L2394273-1 TH19-07@0.8			SW846 9023	WETC/232537
3077324004	L2394273-1 TH19-07@1.5			SW846 9023	WETC/232537

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CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2394273-1
Client Sample ID: TH19-03 @ 0.8M



← F2 →		F3		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

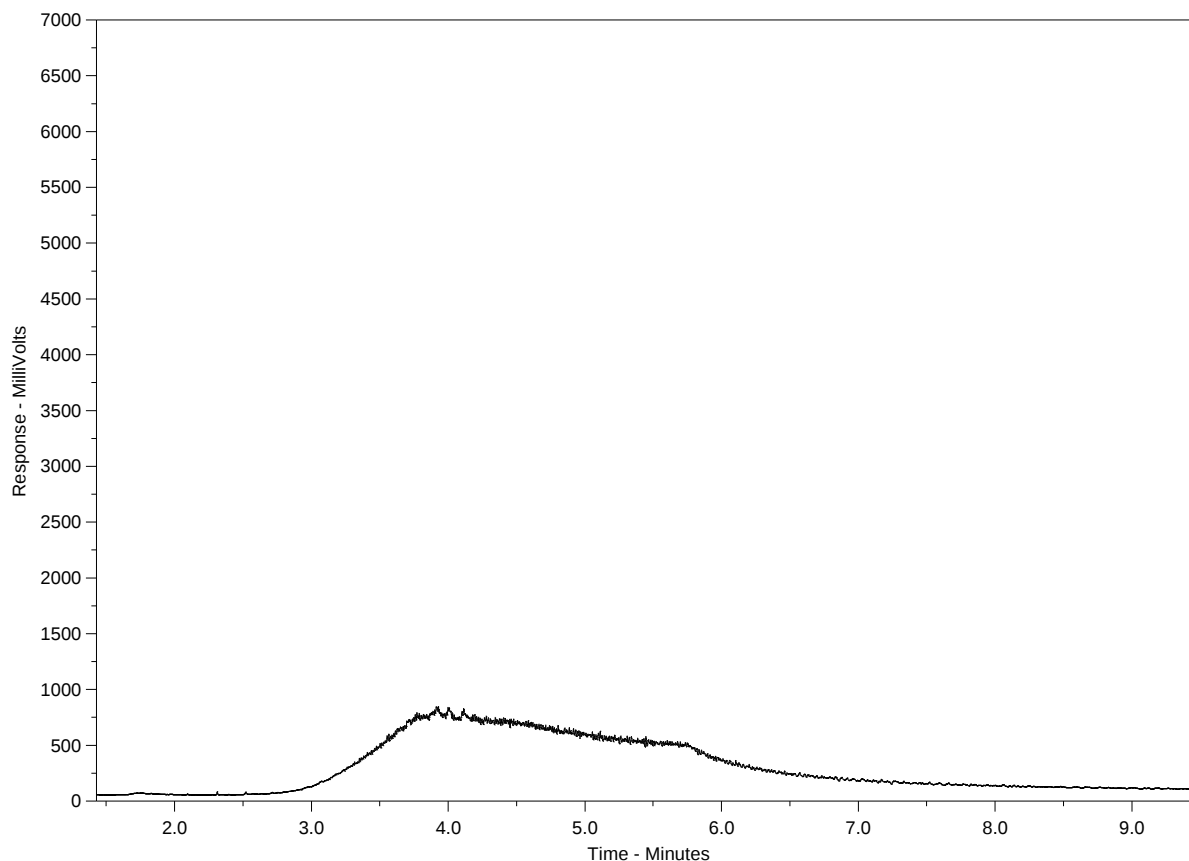
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2394273-2
Client Sample ID: TH19-04 @ 0.8M



← F2 →		F3		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

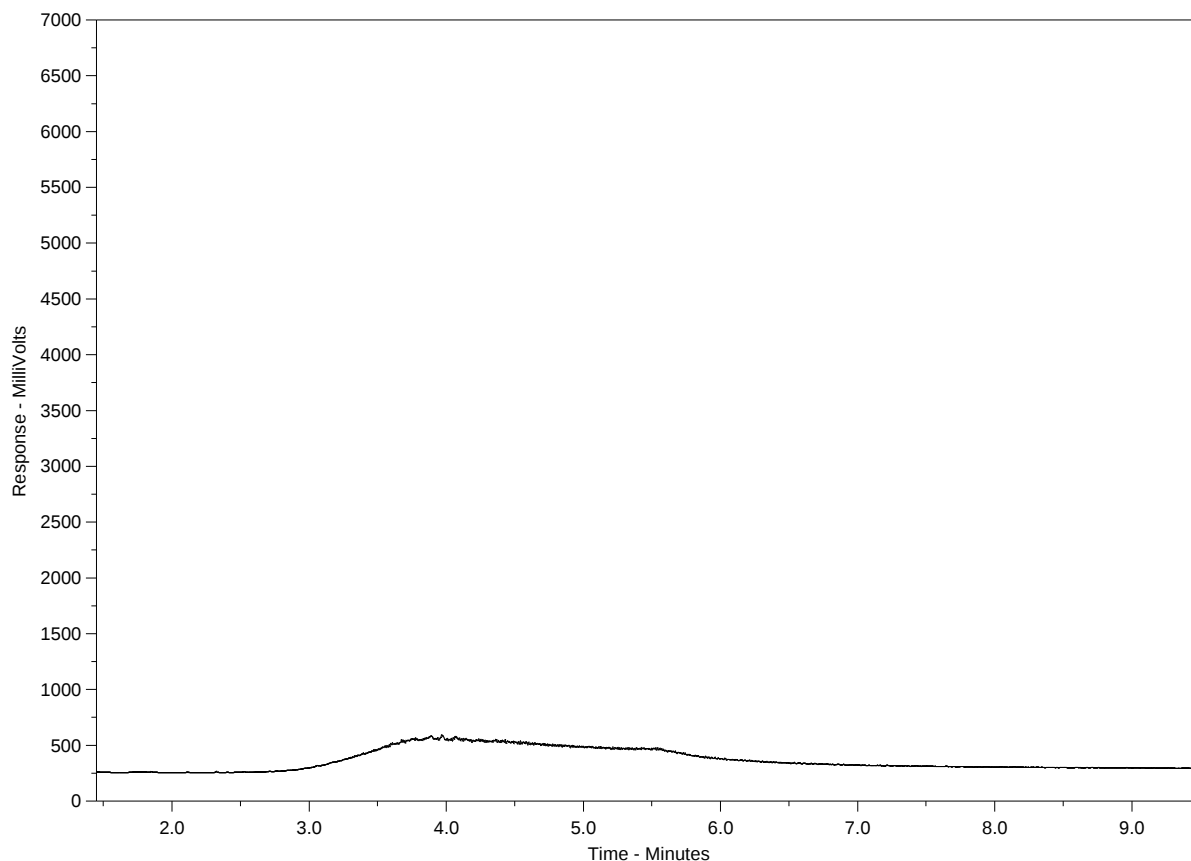
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2394273-3
Client Sample ID: TH19-07 @ 0.8M



← F2 →		F3		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

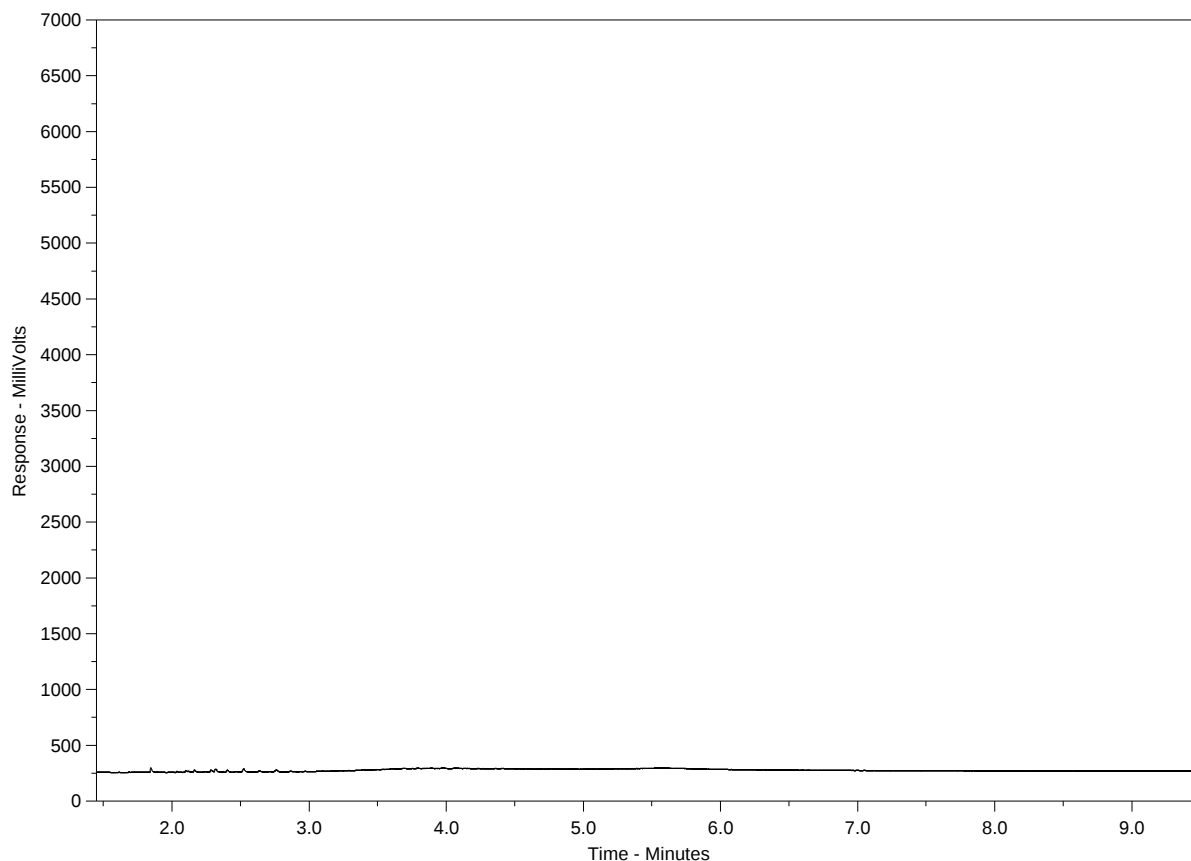
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2394273-4
Client Sample ID: TH19-07 @ 1.5M



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

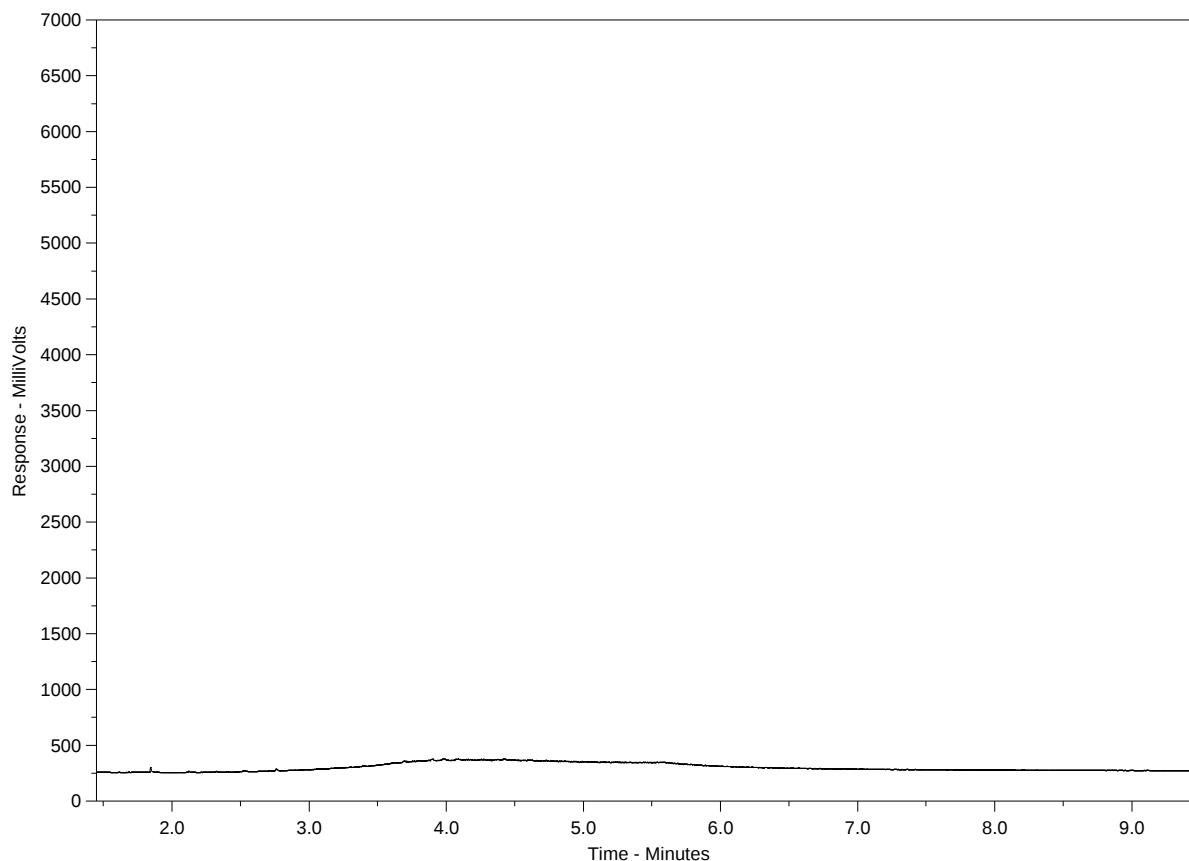
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2394273-5
Client Sample ID: TH19-08 @ 0.8M



← F2 →		F3		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

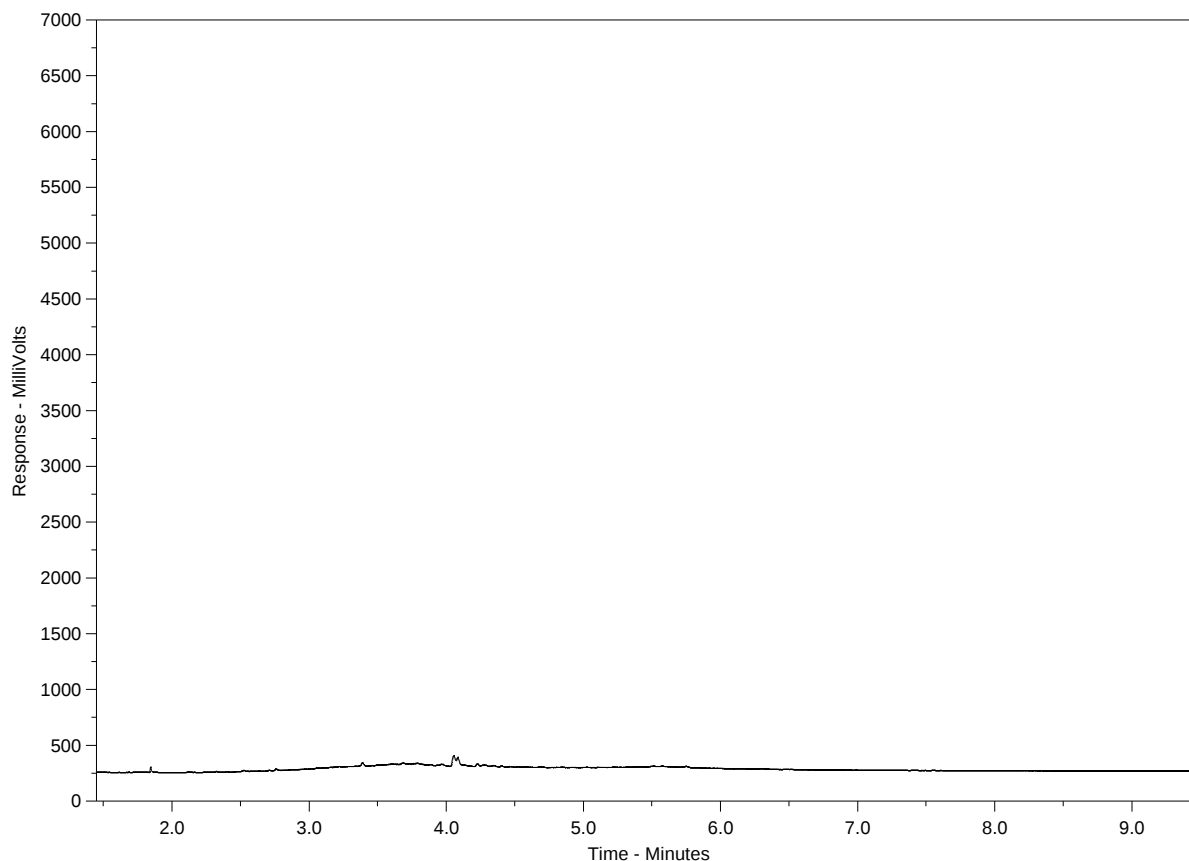
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2394273-6
Client Sample ID: TH19-10 @ 0.8M



← F2 →		F3		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.



L2394273-COFC

COC #

Page 1 of 1

Report to:			Report Format / Distribution			Service Requested:												
Company: Wood			☒ Standard ☐ Other			☒ Regular Service (Default)												
Contact:			☒ PDF ☒ Excel ☐ Fax			☐ Rush Service (2-3 Days)												
Address: 440 Dovercourt Drive			Email 1: kevin.beechinor@woodplc.com			☐ Priority Service (1 Day or ASAP)												
			Email 2: justin.huberdeau@woodplc.com			☐ Emergency Service (<1 Day / Wkend) - Contact ALS												
Phone: (204)488-2997 Fax: (204)489-8261			Analysis Request															
Invoice To: ☒ Same as Report			Indicate Bottles: Filtered / Preserved (F/P) →															
Company:			Client / Project Information:															
Contact:			Job #: WX18979 999 Redonda															
Address:			PO/AFE:															
Sample			Legal Site Description:															
Phone: Fax:			Quote #:															
Lab Work Order # (lab use only)			ALS Contact:			Sampler (Initials):												
[Sample]	Sample Identification		Date	Time	Sample Type	BTEX F1 - F4	PAH	VOC	PCB	Metals	EOX					Hazardous?	Highly Contaminated?	Number of Containers
#	(This description will appear on the report)		dd-mmm-yy	hh:mm	(Select from drop-down list)													
	TH19-03 @ 0.8 m		03-Dec-19		Soil	X	X	X	X	X	X							
	TH19-04 @ 0.8 m		03-Dec-19		Soil	X	X	X	X	X	X							
	TH19-05 @ 0.8 m		03-Dec-19		Soil	X	X	X	X	X	X							
	TH19-07 @ 0.8 m		03-Dec-19		Soil	X	X	X	X	X	X							
	TH19-07 @ 1.5 m		03-Dec-19		Soil	X	X	X	X	X	X							
	TH19-08 @ 0.8 m		03-Dec-19		Soil	X	X			X								
	TH19-10 @ 0.8 m		03-Dec-19		Soil	X	X			X								
Guidelines / Regulations			Special Instructions / Hazardous Details															
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.																		
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the adjacent worksheet.																		
Relinquished By:	Justin Huberdeau	Date & Time: 09:30	9-Dec-19	Received By:														
Relinquished By:		Date & Time:		Received By:														
						Temperature		Sample Condition (lab use only)										
						DEC 10 2019		Samples Received in Good Condition Y / N (if no provided details)										



Wood Environment & Infrastructure
Solutions (Winnipeg)
ATTN: JUSTIN HUBERDEAU
440 Dovercourt Drive
Winnipeg MB R3Y 1G4

Date Received: 20-DEC-19
Report Date: 08-MAY-20 15:14 (MT)
Version: FINAL REV. 2

Client Phone: 204-488-2997

Certificate of Analysis

Lab Work Order #: L2399352
Project P.O. #: NOT SUBMITTED
Job Reference: WX18979
C of C Numbers:
Legal Site Desc:

Comments:

8-MAY-2020 AMENDED REPORT - Dioxin & Furan Results removed from Frac-1 to -6

[Redacted Signature]

Hua Wo
Chemistry Laboratory Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-1 TH19-04							
Sampled By: CLIENT on 20-DEC-19 @ 12:00							
Matrix: GW							
Miscellaneous Parameters							
Extractable Organic Halides (EOX)	See Attached					08-JAN-20	R4965448
Mercury (Hg)-Total	0.0000260		0.0000050	mg/L	03-JAN-20	03-JAN-20	R4958945
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	8.42	DLM	0.030	mg/L	08-JAN-20	08-JAN-20	R4965231
Antimony (Sb)-Total	<0.0010	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Arsenic (As)-Total	0.0086	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Barium (Ba)-Total	0.198	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Beryllium (Be)-Total	<0.0010	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Bismuth (Bi)-Total	<0.00050	DLM	0.00050	mg/L	08-JAN-20	08-JAN-20	R4965231
Boron (B)-Total	0.27	DLM	0.10	mg/L	08-JAN-20	08-JAN-20	R4965231
Cadmium (Cd)-Total	0.000337	DLM	0.000050	mg/L	08-JAN-20	08-JAN-20	R4965231
Calcium (Ca)-Total	361	DLM	0.50	mg/L	08-JAN-20	08-JAN-20	R4965231
Cesium (Cs)-Total	0.00129	DLM	0.00010	mg/L	08-JAN-20	08-JAN-20	R4965231
Chromium (Cr)-Total	0.0163	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Cobalt (Co)-Total	0.0228	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Copper (Cu)-Total	0.0318	DLM	0.0050	mg/L	08-JAN-20	08-JAN-20	R4965231
Iron (Fe)-Total	12.6	DLM	0.10	mg/L	08-JAN-20	08-JAN-20	R4965231
Lead (Pb)-Total	0.0184	DLM	0.00050	mg/L	08-JAN-20	08-JAN-20	R4965231
Lithium (Li)-Total	0.360	DLM	0.010	mg/L	08-JAN-20	08-JAN-20	R4965231
Magnesium (Mg)-Total	282	DLM	0.050	mg/L	08-JAN-20	08-JAN-20	R4965231
Manganese (Mn)-Total	4.10	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Molybdenum (Mo)-Total	0.00371	DLM	0.00050	mg/L	08-JAN-20	08-JAN-20	R4965231
Nickel (Ni)-Total	0.0409	DLM	0.0050	mg/L	08-JAN-20	08-JAN-20	R4965231
Potassium (K)-Total	7.21	DLM	0.50	mg/L	08-JAN-20	08-JAN-20	R4965231
Phosphorus (P)-Total	0.33	DLM	0.30	mg/L	08-JAN-20	08-JAN-20	R4965231
Rubidium (Rb)-Total	0.0184	DLM	0.0020	mg/L	08-JAN-20	08-JAN-20	R4965231
Selenium (Se)-Total	<0.00050	DLM	0.00050	mg/L	08-JAN-20	08-JAN-20	R4965231
Silicon (Si)-Total	32.3	DLM	1.0	mg/L	08-JAN-20	08-JAN-20	R4965231
Silver (Ag)-Total	0.00012	DLM	0.00010	mg/L	08-JAN-20	08-JAN-20	R4965231
Sodium (Na)-Total	188	DLM	0.50	mg/L	08-JAN-20	08-JAN-20	R4965231
Strontium (Sr)-Total	1.83	DLM	0.0020	mg/L	08-JAN-20	08-JAN-20	R4965231
Sulfur (S)-Total	425	DLM	5.0	mg/L	08-JAN-20	08-JAN-20	R4965231
Tellurium (Te)-Total	<0.0020	DLM	0.0020	mg/L	08-JAN-20	08-JAN-20	R4965231
Thallium (Tl)-Total	0.00016	DLM	0.00010	mg/L	08-JAN-20	08-JAN-20	R4965231
Thorium (Th)-Total	0.0031	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Tin (Sn)-Total	<0.0010	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Titanium (Ti)-Total	0.165	DLM	0.0030	mg/L	08-JAN-20	08-JAN-20	R4965231
Tungsten (W)-Total	<0.0010	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Uranium (U)-Total	0.0398	DLM	0.00010	mg/L	08-JAN-20	08-JAN-20	R4965231
Vanadium (V)-Total	0.0271	DLM	0.0050	mg/L	08-JAN-20	08-JAN-20	R4965231
Zinc (Zn)-Total	0.167	DLM	0.030	mg/L	08-JAN-20	08-JAN-20	R4965231
Zirconium (Zr)-Total	0.0026	DLM	0.0020	mg/L	08-JAN-20	08-JAN-20	R4965231
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Acenaphthene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Acenaphthylene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Anthracene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Acridine	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(a)anthracene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(a)pyrene	0.0000084		0.0000050	mg/L	27-DEC-19	03-JAN-20	R4959944

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-1 TH19-04							
Sampled By: CLIENT on 20-DEC-19 @ 12:00							
Matrix: GW							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(b&j)fluoranthene	0.000014	EMPC	0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Chrysene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Dibenzo(a,h)anthracene	<0.0000050		0.000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Fluoranthene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Fluorene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Naphthalene	<0.000050		0.000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Phenanthrene	<0.000050		0.000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Pyrene	0.000018		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Quinoline	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	27-DEC-19	03-JAN-20	R4959944
Surrogate: Acenaphthene d10	85.1		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Acridine d9	75.0		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Chrysene d12	95.3		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Naphthalene d8	77.9		50-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Phenanthrene d10	87.4		60-130	%	27-DEC-19	03-JAN-20	R4959944
VOC plus F1 to F4							
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	21-DEC-19	28-DEC-19	R4957846
F3 (C16-C34)	1.26		0.25	mg/L	21-DEC-19	28-DEC-19	R4957846
F4 (C34-C50)	0.66		0.25	mg/L	21-DEC-19	28-DEC-19	R4957846
Surrogate: 2-Bromobenzotrifluoride	104.0		60-140	%	21-DEC-19	28-DEC-19	R4957846
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		07-JAN-20	
F2-Naphth	<0.10		0.10	mg/L		07-JAN-20	
F3-PAH	1.26		0.25	mg/L		07-JAN-20	
Total Hydrocarbons (C6-C50)	1.92		0.38	mg/L		07-JAN-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		03-JAN-20	
Total Trihalomethanes (THMs)							
Total THMs	<0.0013		0.0013	mg/L		03-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.050		0.050	mg/L		31-DEC-19	R4958822
Benzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Bromobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromochloromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromodichloromethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Bromoform	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromomethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
n-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
sec-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
tert-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Carbon disulfide	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
Carbon Tetrachloride	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Chlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Chloroethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Chloroform	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Chloromethane	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
2-Chlorotoluene	<0.020		0.020	mg/L		31-DEC-19	R4958822
4-Chlorotoluene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-1 TH19-04							
Sampled By: CLIENT on 20-DEC-19 @ 12:00							
Matrix: GW							
VOC plus F1 by GCMS							
Dibromochloromethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2-Dibromo-3-chloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2-Dibromoethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dibromomethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dichlorodifluoromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1-dichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2-Dichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1-dichloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
cis-1,2-Dichloroethene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
trans-1,2-Dichloroethene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dichloromethane	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
1,2-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,3-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
2,2-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
cis-1,3-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
trans-1,3-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Ethylbenzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
F1	<0.10		0.10	mg/L		31-DEC-19	R4958822
Hexachlorobutadiene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Hexane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
2-Hexanone (Methyl butyl ketone)	<0.020		0.020	mg/L		31-DEC-19	R4958822
Isopropylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
4-Isopropyltoluene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
MEK	<0.020		0.020	mg/L		31-DEC-19	R4958822
MIBK	<0.020		0.020	mg/L		31-DEC-19	R4958822
MTBE	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Styrene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1,1,2-Tetrachloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1,2,2-Tetrachloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Tetrachloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Toluene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2,3-Trichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,4-Trichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1,1-Trichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Trichloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Trichlorofluoromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,3-Trichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,4-Trimethylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,3,5-Trimethylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Vinyl Chloride	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
M+P-Xylenes	<0.00040		0.00040	mg/L		31-DEC-19	R4958822
o-Xylene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Surrogate: 4-Bromofluorobenzene (SS)	88.1		70-130	%		31-DEC-19	R4958822
Surrogate: 1,4-Difluorobenzene (SS)	98.8		70-130	%		31-DEC-19	R4958822
Surrogate: 3,4-Dichlorotoluene (SS)	81.8		70-130	%		31-DEC-19	R4958822

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-2 TH19-03							
Sampled By: CLIENT on 20-DEC-19 @ 12:30							
Matrix: GW							
Miscellaneous Parameters							
Extractable Organic Halides (EOX)	See Attached					08-JAN-20	R4965448
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	03-JAN-20	03-JAN-20	R4958945
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	395	DLM	0.30	mg/L	08-JAN-20	08-JAN-20	R4965231
Antimony (Sb)-Total	<0.010	DLM	0.010	mg/L	08-JAN-20	08-JAN-20	R4965231
Arsenic (As)-Total	0.289	DLM	0.010	mg/L	08-JAN-20	08-JAN-20	R4965231
Barium (Ba)-Total	6.79	DLM	0.010	mg/L	08-JAN-20	08-JAN-20	R4965231
Beryllium (Be)-Total	0.021	DLM	0.010	mg/L	08-JAN-20	08-JAN-20	R4965231
Bismuth (Bi)-Total	0.0063	DLM	0.0050	mg/L	08-JAN-20	08-JAN-20	R4965231
Boron (B)-Total	1.1	DLM	1.0	mg/L	08-JAN-20	08-JAN-20	R4965231
Cadmium (Cd)-Total	0.0136	DLM	0.00050	mg/L	08-JAN-20	08-JAN-20	R4965231
Calcium (Ca)-Total	9510	DLM	5.0	mg/L	08-JAN-20	08-JAN-20	R4965231
Cesium (Cs)-Total	0.0525	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Chromium (Cr)-Total	0.822	DLM	0.010	mg/L	08-JAN-20	08-JAN-20	R4965231
Cobalt (Co)-Total	0.360	DLM	0.010	mg/L	08-JAN-20	08-JAN-20	R4965231
Copper (Cu)-Total	0.944	DLM	0.050	mg/L	08-JAN-20	08-JAN-20	R4965231
Iron (Fe)-Total	631	DLM	1.0	mg/L	08-JAN-20	08-JAN-20	R4965231
Lead (Pb)-Total	0.409	DLM	0.0050	mg/L	08-JAN-20	08-JAN-20	R4965231
Lithium (Li)-Total	1.33	DLM	0.10	mg/L	08-JAN-20	08-JAN-20	R4965231
Magnesium (Mg)-Total	5210	DLM	0.50	mg/L	08-JAN-20	08-JAN-20	R4965231
Manganese (Mn)-Total	28.9	DLM	0.010	mg/L	08-JAN-20	08-JAN-20	R4965231
Molybdenum (Mo)-Total	0.0094	DLM	0.0050	mg/L	08-JAN-20	08-JAN-20	R4965231
Nickel (Ni)-Total	1.02	DLM	0.050	mg/L	08-JAN-20	08-JAN-20	R4965231
Potassium (K)-Total	96.2	DLM	5.0	mg/L	08-JAN-20	08-JAN-20	R4965231
Phosphorus (P)-Total	30.6	DLM	3.0	mg/L	08-JAN-20	08-JAN-20	R4965231
Rubidium (Rb)-Total	0.862	DLM	0.020	mg/L	08-JAN-20	08-JAN-20	R4965231
Selenium (Se)-Total	<0.0050	DLM	0.0050	mg/L	08-JAN-20	08-JAN-20	R4965231
Silicon (Si)-Total	633	DLM	10	mg/L	08-JAN-20	08-JAN-20	R4965231
Silver (Ag)-Total	0.0046	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Sodium (Na)-Total	602	DLM	5.0	mg/L	08-JAN-20	08-JAN-20	R4965231
Strontium (Sr)-Total	11.8	DLM	0.020	mg/L	08-JAN-20	08-JAN-20	R4965231
Sulfur (S)-Total	851	DLM	50	mg/L	08-JAN-20	08-JAN-20	R4965231
Tellurium (Te)-Total	<0.020	DLM	0.020	mg/L	08-JAN-20	08-JAN-20	R4965231
Thallium (Tl)-Total	0.0087	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Thorium (Th)-Total	0.194	DLM	0.010	mg/L	08-JAN-20	08-JAN-20	R4965231
Tin (Sn)-Total	<0.010	DLM	0.010	mg/L	08-JAN-20	08-JAN-20	R4965231
Titanium (Ti)-Total	4.64	DLM	0.030	mg/L	08-JAN-20	08-JAN-20	R4965231
Tungsten (W)-Total	<0.010	DLM	0.010	mg/L	08-JAN-20	08-JAN-20	R4965231
Uranium (U)-Total	0.168	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Vanadium (V)-Total	1.20	DLM	0.050	mg/L	08-JAN-20	08-JAN-20	R4965231
Zinc (Zn)-Total	1.70	DLM	0.30	mg/L	08-JAN-20	08-JAN-20	R4965231
Zirconium (Zr)-Total	0.053	DLM	0.020	mg/L	08-JAN-20	08-JAN-20	R4965231
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Acenaphthene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Acenaphthylene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Anthracene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Acridine	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(a)anthracene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	27-DEC-19	03-JAN-20	R4959944

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-2 TH19-03							
Sampled By: CLIENT on 20-DEC-19 @ 12:30							
Matrix: GW							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Chrysene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Fluoranthene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Fluorene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Naphthalene	<0.000050		0.000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Phenanthrene	<0.000050		0.000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Pyrene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Quinoline	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	27-DEC-19	03-JAN-20	R4959944
Surrogate: Acenaphthene d10	85.6		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Acridine d9	85.6		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Chrysene d12	116.7		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Naphthalene d8	84.6		50-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Phenanthrene d10	92.0		60-130	%	27-DEC-19	03-JAN-20	R4959944
VOC plus F1 to F4							
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	21-DEC-19	28-DEC-19	R4957846
F3 (C16-C34)	<0.25		0.25	mg/L	21-DEC-19	28-DEC-19	R4957846
F4 (C34-C50)	<0.25		0.25	mg/L	21-DEC-19	28-DEC-19	R4957846
Surrogate: 2-Bromobenzotrifluoride	101.8		60-140	%	21-DEC-19	28-DEC-19	R4957846
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		07-JAN-20	
F2-Naphth	<0.10		0.10	mg/L		07-JAN-20	
F3-PAH	<0.25		0.25	mg/L		07-JAN-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		07-JAN-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		03-JAN-20	
Total Trihalomethanes (THMs)							
Total THMs	<0.0013		0.0013	mg/L		03-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.050		0.050	mg/L		31-DEC-19	R4958822
Benzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Bromobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromochloromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromodichloromethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Bromoform	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromomethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
n-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
sec-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
tert-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Carbon disulfide	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
Carbon Tetrachloride	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Chlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Chloroethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Chloroform	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Chloromethane	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
2-Chlorotoluene	<0.020		0.020	mg/L		31-DEC-19	R4958822
4-Chlorotoluene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-2 TH19-03							
Sampled By: CLIENT on 20-DEC-19 @ 12:30							
Matrix: GW							
VOC plus F1 by GCMS							
Dibromochloromethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2-Dibromo-3-chloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2-Dibromoethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dibromomethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dichlorodifluoromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1-dichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2-Dichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1-dichloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
cis-1,2-Dichloroethene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
trans-1,2-Dichloroethene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dichloromethane	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
1,2-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,3-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
2,2-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
cis-1,3-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
trans-1,3-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Ethylbenzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
F1	<0.10		0.10	mg/L		31-DEC-19	R4958822
Hexachlorobutadiene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Hexane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
2-Hexanone (Methyl butyl ketone)	<0.020		0.020	mg/L		31-DEC-19	R4958822
Isopropylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
4-Isopropyltoluene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
MEK	<0.020		0.020	mg/L		31-DEC-19	R4958822
MIBK	<0.020		0.020	mg/L		31-DEC-19	R4958822
MTBE	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Styrene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1,1,2-Tetrachloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1,2,2-Tetrachloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Tetrachloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Toluene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2,3-Trichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,4-Trichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1,1-Trichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Trichloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Trichlorofluoromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,3-Trichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,4-Trimethylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,3,5-Trimethylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Vinyl Chloride	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
M+P-Xylenes	<0.00040		0.00040	mg/L		31-DEC-19	R4958822
o-Xylene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Surrogate: 4-Bromofluorobenzene (SS)	88.0		70-130	%		31-DEC-19	R4958822
Surrogate: 1,4-Difluorobenzene (SS)	98.9		70-130	%		31-DEC-19	R4958822
Surrogate: 3,4-Dichlorotoluene (SS)	91.5		70-130	%		31-DEC-19	R4958822

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-3 TH19-10 Sampled By: CLIENT on 20-DEC-19 @ 13:00 Matrix: GW							
Miscellaneous Parameters							
Extractable Organic Halides (EOX)	See Attached					08-JAN-20	R4965448
Mercury (Hg)-Total	0.0000090		0.0000050	mg/L	03-JAN-20	03-JAN-20	R4958945
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.302	DLM	0.030	mg/L	08-JAN-20	08-JAN-20	R4965231
Antimony (Sb)-Total	0.0016	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Arsenic (As)-Total	0.0011	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Barium (Ba)-Total	0.0500	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Beryllium (Be)-Total	<0.0010	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Bismuth (Bi)-Total	<0.00050	DLM	0.00050	mg/L	08-JAN-20	08-JAN-20	R4965231
Boron (B)-Total	0.42	DLM	0.10	mg/L	08-JAN-20	08-JAN-20	R4965231
Cadmium (Cd)-Total	0.00140	DLM	0.000050	mg/L	08-JAN-20	08-JAN-20	R4965231
Calcium (Ca)-Total	415	DLM	0.50	mg/L	08-JAN-20	08-JAN-20	R4965231
Cesium (Cs)-Total	<0.00010	DLM	0.00010	mg/L	08-JAN-20	08-JAN-20	R4965231
Chromium (Cr)-Total	0.0015	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Cobalt (Co)-Total	0.0024	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Copper (Cu)-Total	0.0312	DLM	0.0050	mg/L	08-JAN-20	08-JAN-20	R4965231
Iron (Fe)-Total	0.76	DLM	0.10	mg/L	08-JAN-20	08-JAN-20	R4965231
Lead (Pb)-Total	0.0207	DLM	0.00050	mg/L	08-JAN-20	08-JAN-20	R4965231
Lithium (Li)-Total	0.639	DLM	0.010	mg/L	08-JAN-20	08-JAN-20	R4965231
Magnesium (Mg)-Total	314	DLM	0.050	mg/L	08-JAN-20	08-JAN-20	R4965231
Manganese (Mn)-Total	1.17	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Molybdenum (Mo)-Total	0.00296	DLM	0.00050	mg/L	08-JAN-20	08-JAN-20	R4965231
Nickel (Ni)-Total	0.0302	DLM	0.0050	mg/L	08-JAN-20	08-JAN-20	R4965231
Potassium (K)-Total	7.85	DLM	0.50	mg/L	08-JAN-20	08-JAN-20	R4965231
Phosphorus (P)-Total	<0.30	DLM	0.30	mg/L	08-JAN-20	08-JAN-20	R4965231
Rubidium (Rb)-Total	0.0026	DLM	0.0020	mg/L	08-JAN-20	08-JAN-20	R4965231
Selenium (Se)-Total	<0.00050	DLM	0.00050	mg/L	08-JAN-20	08-JAN-20	R4965231
Silicon (Si)-Total	12.9	DLM	1.0	mg/L	08-JAN-20	08-JAN-20	R4965231
Silver (Ag)-Total	<0.00010	DLM	0.00010	mg/L	08-JAN-20	08-JAN-20	R4965231
Sodium (Na)-Total	259	DLM	0.50	mg/L	08-JAN-20	08-JAN-20	R4965231
Strontium (Sr)-Total	2.75	DLM	0.0020	mg/L	08-JAN-20	08-JAN-20	R4965231
Sulfur (S)-Total	699	DLM	5.0	mg/L	08-JAN-20	08-JAN-20	R4965231
Tellurium (Te)-Total	<0.0020	DLM	0.0020	mg/L	08-JAN-20	08-JAN-20	R4965231
Thallium (Tl)-Total	<0.00010	DLM	0.00010	mg/L	08-JAN-20	08-JAN-20	R4965231
Thorium (Th)-Total	<0.0010	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Tin (Sn)-Total	0.0031	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Titanium (Ti)-Total	0.0128	DLM	0.0030	mg/L	08-JAN-20	08-JAN-20	R4965231
Tungsten (W)-Total	<0.0010	DLM	0.0010	mg/L	08-JAN-20	08-JAN-20	R4965231
Uranium (U)-Total	0.0969	DLM	0.00010	mg/L	08-JAN-20	08-JAN-20	R4965231
Vanadium (V)-Total	<0.0050	DLM	0.0050	mg/L	08-JAN-20	08-JAN-20	R4965231
Zinc (Zn)-Total	0.522	DLM	0.030	mg/L	08-JAN-20	08-JAN-20	R4965231
Zirconium (Zr)-Total	<0.0020	DLM	0.0020	mg/L	08-JAN-20	08-JAN-20	R4965231
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Acenaphthene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Acenaphthylene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Anthracene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Acridine	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(a)anthracene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	27-DEC-19	03-JAN-20	R4959944

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-3 TH19-10							
Sampled By: CLIENT on 20-DEC-19 @ 13:00							
Matrix: GW							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Chrysene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Fluoranthene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Fluorene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Naphthalene	<0.000050		0.000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Phenanthrene	<0.000050		0.000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Pyrene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Quinoline	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	27-DEC-19	03-JAN-20	R4959944
Surrogate: Acenaphthene d10	86.7		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Acridine d9	89.3		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Chrysene d12	100.6		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Naphthalene d8	80.3		50-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Phenanthrene d10	90.2		60-130	%	27-DEC-19	03-JAN-20	R4959944
VOC plus F1 to F4							
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	21-DEC-19	28-DEC-19	R4957846
F3 (C16-C34)	<0.25		0.25	mg/L	21-DEC-19	28-DEC-19	R4957846
F4 (C34-C50)	<0.25		0.25	mg/L	21-DEC-19	28-DEC-19	R4957846
Surrogate: 2-Bromobenzotrifluoride	101.8		60-140	%	21-DEC-19	28-DEC-19	R4957846
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		07-JAN-20	
F2-Naphth	<0.10		0.10	mg/L		07-JAN-20	
F3-PAH	<0.25		0.25	mg/L		07-JAN-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		07-JAN-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		03-JAN-20	
Total Trihalomethanes (THMs)							
Total THMs	<0.0013		0.0013	mg/L		03-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.050		0.050	mg/L		31-DEC-19	R4958822
Benzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Bromobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromochloromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromodichloromethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Bromoform	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromomethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
n-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
sec-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
tert-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Carbon disulfide	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
Carbon Tetrachloride	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Chlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Chloroethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Chloroform	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Chloromethane	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
2-Chlorotoluene	<0.020		0.020	mg/L		31-DEC-19	R4958822
4-Chlorotoluene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-3 TH19-10							
Sampled By: CLIENT on 20-DEC-19 @ 13:00							
Matrix: GW							
VOC plus F1 by GCMS							
Dibromochloromethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2-Dibromo-3-chloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2-Dibromoethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dibromomethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dichlorodifluoromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1-dichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2-Dichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1-dichloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
cis-1,2-Dichloroethene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
trans-1,2-Dichloroethene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dichloromethane	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
1,2-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,3-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
2,2-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
cis-1,3-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
trans-1,3-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Ethylbenzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
F1	<0.10		0.10	mg/L		31-DEC-19	R4958822
Hexachlorobutadiene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Hexane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
2-Hexanone (Methyl butyl ketone)	<0.020		0.020	mg/L		31-DEC-19	R4958822
Isopropylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
4-Isopropyltoluene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
MEK	<0.020		0.020	mg/L		31-DEC-19	R4958822
MIBK	<0.020		0.020	mg/L		31-DEC-19	R4958822
MTBE	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Styrene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1,1,2-Tetrachloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1,2,2-Tetrachloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Tetrachloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Toluene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2,3-Trichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,4-Trichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1,1-Trichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Trichloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Trichlorofluoromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,3-Trichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,4-Trimethylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,3,5-Trimethylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Vinyl Chloride	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
M+P-Xylenes	<0.00040		0.00040	mg/L		31-DEC-19	R4958822
o-Xylene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Surrogate: 4-Bromofluorobenzene (SS)	71.5		70-130	%		31-DEC-19	R4958822
Surrogate: 1,4-Difluorobenzene (SS)	95.3		70-130	%		31-DEC-19	R4958822
Surrogate: 3,4-Dichlorotoluene (SS)	71.4		70-130	%		31-DEC-19	R4958822

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-4 TH19-08							
Sampled By: CLIENT on 20-DEC-19 @ 13:30							
Matrix: GW							
Miscellaneous Parameters							
Extractable Organic Halides (EOX)	See Attached					08-JAN-20	R4965448
Mercury (Hg)-Total	0.0000590		0.0000050	mg/L	03-JAN-20	03-JAN-20	R4958945
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	10.9	DLM	0.030	mg/L	09-JAN-20	09-JAN-20	R4966116
Antimony (Sb)-Total	<0.0010	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Arsenic (As)-Total	0.0076	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Barium (Ba)-Total	0.187	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Beryllium (Be)-Total	<0.0010	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Bismuth (Bi)-Total	<0.00050	DLM	0.00050	mg/L	09-JAN-20	09-JAN-20	R4966116
Boron (B)-Total	0.34	DLM	0.10	mg/L	09-JAN-20	09-JAN-20	R4966116
Cadmium (Cd)-Total	0.000406	DLM	0.000050	mg/L	09-JAN-20	09-JAN-20	R4966116
Calcium (Ca)-Total	469	DLM	0.50	mg/L	09-JAN-20	09-JAN-20	R4966116
Cesium (Cs)-Total	0.00181	DLM	0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Chromium (Cr)-Total	0.0228	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Cobalt (Co)-Total	0.0172	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Copper (Cu)-Total	0.0414	DLM	0.0050	mg/L	09-JAN-20	09-JAN-20	R4966116
Iron (Fe)-Total	16.6	DLM	0.10	mg/L	09-JAN-20	09-JAN-20	R4966116
Lead (Pb)-Total	0.0286	DLM	0.00050	mg/L	09-JAN-20	09-JAN-20	R4966116
Lithium (Li)-Total	0.558	DLM	0.010	mg/L	09-JAN-20	09-JAN-20	R4966116
Magnesium (Mg)-Total	307	DLM	0.050	mg/L	09-JAN-20	09-JAN-20	R4966116
Manganese (Mn)-Total	2.38	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Molybdenum (Mo)-Total	0.00558	DLM	0.00050	mg/L	09-JAN-20	09-JAN-20	R4966116
Nickel (Ni)-Total	0.0401	DLM	0.0050	mg/L	09-JAN-20	09-JAN-20	R4966116
Potassium (K)-Total	7.63	DLM	0.50	mg/L	09-JAN-20	09-JAN-20	R4966116
Phosphorus (P)-Total	0.35	DLM	0.30	mg/L	09-JAN-20	09-JAN-20	R4966116
Rubidium (Rb)-Total	0.0236	DLM	0.0020	mg/L	09-JAN-20	09-JAN-20	R4966116
Selenium (Se)-Total	<0.00050	DLM	0.00050	mg/L	09-JAN-20	09-JAN-20	R4966116
Silicon (Si)-Total	35.2	DLM	1.0	mg/L	09-JAN-20	09-JAN-20	R4966116
Silver (Ag)-Total	0.00018	DLM	0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Sodium (Na)-Total	229	DLM	0.50	mg/L	09-JAN-20	09-JAN-20	R4966116
Strontium (Sr)-Total	2.37	DLM	0.0020	mg/L	09-JAN-20	09-JAN-20	R4966116
Sulfur (S)-Total	578	DLM	5.0	mg/L	09-JAN-20	09-JAN-20	R4966116
Tellurium (Te)-Total	<0.0020	DLM	0.0020	mg/L	09-JAN-20	09-JAN-20	R4966116
Thallium (Tl)-Total	0.00020	DLM	0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Thorium (Th)-Total	0.0042	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Tin (Sn)-Total	0.0016	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Titanium (Ti)-Total	0.220	DLM	0.0030	mg/L	09-JAN-20	09-JAN-20	R4966116
Tungsten (W)-Total	<0.0010	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Uranium (U)-Total	0.0618	DLM	0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Vanadium (V)-Total	0.0365	DLM	0.0050	mg/L	09-JAN-20	09-JAN-20	R4966116
Zinc (Zn)-Total	0.162	DLM	0.030	mg/L	09-JAN-20	09-JAN-20	R4966116
Zirconium (Zr)-Total	0.0037	DLM	0.0020	mg/L	09-JAN-20	09-JAN-20	R4966116
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000060	DLM	0.000060	mg/L	27-DEC-19	03-JAN-20	R4959944
2-Methyl Naphthalene	<0.000060	DLM	0.000060	mg/L	27-DEC-19	03-JAN-20	R4959944
Acenaphthene	<0.000060	DLM	0.000060	mg/L	27-DEC-19	03-JAN-20	R4959944
Acenaphthylene	<0.000060	DLM	0.000060	mg/L	27-DEC-19	03-JAN-20	R4959944
Anthracene	<0.000030	DLM	0.000030	mg/L	27-DEC-19	03-JAN-20	R4959944
Acridine	<0.000060	DLM	0.000060	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(a)anthracene	<0.000030	DLM	0.000030	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(a)pyrene	<0.000015	DLM	0.000015	mg/L	27-DEC-19	03-JAN-20	R4959944

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-4 TH19-08							
Sampled By: CLIENT on 20-DEC-19 @ 13:30							
Matrix: GW							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(b&j)fluoranthene	<0.000030	DLM	0.000030	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(g,h,i)perylene	<0.000060	DLM	0.000060	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(k)fluoranthene	<0.000030	DLM	0.000030	mg/L	27-DEC-19	03-JAN-20	R4959944
Chrysene	<0.000060	DLM	0.000060	mg/L	27-DEC-19	03-JAN-20	R4959944
Dibenzo(a,h)anthracene	<0.000015	DLM	0.000015	mg/L	27-DEC-19	03-JAN-20	R4959944
Fluoranthene	<0.000060	DLM	0.000060	mg/L	27-DEC-19	03-JAN-20	R4959944
Fluorene	<0.000060	DLM	0.000060	mg/L	27-DEC-19	03-JAN-20	R4959944
Indeno(1,2,3-cd)pyrene	<0.000060	DLM	0.000060	mg/L	27-DEC-19	03-JAN-20	R4959944
Naphthalene	<0.00015	DLM	0.00015	mg/L	27-DEC-19	03-JAN-20	R4959944
Phenanthrene	<0.00015	DLM	0.00015	mg/L	27-DEC-19	03-JAN-20	R4959944
Pyrene	<0.000030	DLM	0.000030	mg/L	27-DEC-19	03-JAN-20	R4959944
Quinoline	<0.000060	DLM	0.000060	mg/L	27-DEC-19	03-JAN-20	R4959944
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	27-DEC-19	03-JAN-20	R4959944
Surrogate: Acenaphthene d10	108.6		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Acridine d9	111.9		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Chrysene d12	109.9		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Naphthalene d8	109.6		50-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Phenanthrene d10	120.9		60-130	%	27-DEC-19	03-JAN-20	R4959944
VOC plus F1 to F4							
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.50	DLM	0.50	mg/L	21-DEC-19	28-DEC-19	R4957846
F3 (C16-C34)	57.2	DLM	1.3	mg/L	21-DEC-19	28-DEC-19	R4957846
F4 (C34-C50)	74.0	DLM	1.3	mg/L	21-DEC-19	28-DEC-19	R4957846
Surrogate: 2-Bromobenzotrifluoride	100.1		60-140	%	21-DEC-19	28-DEC-19	R4957846
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		07-JAN-20	
F2-Naphth	<0.50		0.50	mg/L		07-JAN-20	
F3-PAH	57.2		1.3	mg/L		07-JAN-20	
Total Hydrocarbons (C6-C50)	131		1.8	mg/L		07-JAN-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		03-JAN-20	
Total Trihalomethanes (THMs)							
Total THMs	<0.0013		0.0013	mg/L		03-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.050		0.050	mg/L		31-DEC-19	R4958822
Benzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Bromobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromochloromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromodichloromethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Bromoform	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromomethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
n-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
sec-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
tert-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Carbon disulfide	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
Carbon Tetrachloride	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Chlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Chloroethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Chloroform	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Chloromethane	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
2-Chlorotoluene	<0.020		0.020	mg/L		31-DEC-19	R4958822
4-Chlorotoluene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-4 TH19-08							
Sampled By: CLIENT on 20-DEC-19 @ 13:30							
Matrix: GW							
VOC plus F1 by GCMS							
Dibromochloromethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2-Dibromo-3-chloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2-Dibromoethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dibromomethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dichlorodifluoromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1-dichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2-Dichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1-dichloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
cis-1,2-Dichloroethene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
trans-1,2-Dichloroethene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dichloromethane	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
1,2-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,3-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
2,2-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
cis-1,3-Dichloropropene	<0.0020	DLCI	0.0020	mg/L		31-DEC-19	R4958822
trans-1,3-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Ethylbenzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
F1	<0.10		0.10	mg/L		31-DEC-19	R4958822
Hexachlorobutadiene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Hexane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
2-Hexanone (Methyl butyl ketone)	<0.020		0.020	mg/L		31-DEC-19	R4958822
Isopropylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
4-Isopropyltoluene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
MEK	<0.020		0.020	mg/L		31-DEC-19	R4958822
MIBK	<0.020		0.020	mg/L		31-DEC-19	R4958822
MTBE	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Styrene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1,1,2-Tetrachloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1,2,2-Tetrachloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Tetrachloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Toluene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2,3-Trichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,4-Trichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1,1-Trichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Trichloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Trichlorofluoromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,3-Trichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,4-Trimethylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,3,5-Trimethylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Vinyl Chloride	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
M+P-Xylenes	<0.00040		0.00040	mg/L		31-DEC-19	R4958822
o-Xylene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Surrogate: 4-Bromofluorobenzene (SS)	87.8		70-130	%		31-DEC-19	R4958822
Surrogate: 1,4-Difluorobenzene (SS)	97.3		70-130	%		31-DEC-19	R4958822
Surrogate: 3,4-Dichlorotoluene (SS)	86.7		70-130	%		31-DEC-19	R4958822

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-5 TH19-07							
Sampled By: CLIENT on 20-DEC-19 @ 14:00							
Matrix: GW							
Miscellaneous Parameters							
Extractable Organic Halides (EOX)	See Attached					08-JAN-20	R4965448
Mercury (Hg)-Total	0.0000290		0.0000050	mg/L	03-JAN-20	03-JAN-20	R4958945
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	28.2	DLM	0.030	mg/L	09-JAN-20	09-JAN-20	R4966116
Antimony (Sb)-Total	<0.0010	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Arsenic (As)-Total	0.0246	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Barium (Ba)-Total	0.398	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Beryllium (Be)-Total	0.0017	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Bismuth (Bi)-Total	0.00052	DLM	0.00050	mg/L	09-JAN-20	09-JAN-20	R4966116
Boron (B)-Total	0.23	DLM	0.10	mg/L	09-JAN-20	09-JAN-20	R4966116
Cadmium (Cd)-Total	0.00117	DLM	0.000050	mg/L	09-JAN-20	09-JAN-20	R4966116
Calcium (Ca)-Total	859	DLM	0.50	mg/L	09-JAN-20	09-JAN-20	R4966116
Cesium (Cs)-Total	0.00401	DLM	0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Chromium (Cr)-Total	0.0598	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Cobalt (Co)-Total	0.0227	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Copper (Cu)-Total	0.0846	DLM	0.0050	mg/L	09-JAN-20	09-JAN-20	R4966116
Iron (Fe)-Total	58.6	DLM	0.10	mg/L	09-JAN-20	09-JAN-20	R4966116
Lead (Pb)-Total	0.0406	DLM	0.00050	mg/L	09-JAN-20	09-JAN-20	R4966116
Lithium (Li)-Total	0.638	DLM	0.010	mg/L	09-JAN-20	09-JAN-20	R4966116
Magnesium (Mg)-Total	551	DLM	0.050	mg/L	09-JAN-20	09-JAN-20	R4966116
Manganese (Mn)-Total	2.31	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Molybdenum (Mo)-Total	0.00379	DLM	0.00050	mg/L	09-JAN-20	09-JAN-20	R4966116
Nickel (Ni)-Total	0.0811	DLM	0.0050	mg/L	09-JAN-20	09-JAN-20	R4966116
Potassium (K)-Total	10.8	DLM	0.50	mg/L	09-JAN-20	09-JAN-20	R4966116
Phosphorus (P)-Total	1.86	DLM	0.30	mg/L	09-JAN-20	09-JAN-20	R4966116
Rubidium (Rb)-Total	0.0495	DLM	0.0020	mg/L	09-JAN-20	09-JAN-20	R4966116
Selenium (Se)-Total	0.00078	DLM	0.00050	mg/L	09-JAN-20	09-JAN-20	R4966116
Silicon (Si)-Total	67.4	DLM	1.0	mg/L	09-JAN-20	09-JAN-20	R4966116
Silver (Ag)-Total	0.00035	DLM	0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Sodium (Na)-Total	260	DLM	0.50	mg/L	09-JAN-20	09-JAN-20	R4966116
Strontium (Sr)-Total	2.61	DLM	0.0020	mg/L	09-JAN-20	09-JAN-20	R4966116
Sulfur (S)-Total	520	DLM	5.0	mg/L	09-JAN-20	09-JAN-20	R4966116
Tellurium (Te)-Total	<0.0020	DLM	0.0020	mg/L	09-JAN-20	09-JAN-20	R4966116
Thallium (Tl)-Total	0.00062	DLM	0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Thorium (Th)-Total	0.0150	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Tin (Sn)-Total	0.0017	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Titanium (Ti)-Total	0.321	DLM	0.0030	mg/L	09-JAN-20	09-JAN-20	R4966116
Tungsten (W)-Total	<0.0010	DLM	0.0010	mg/L	09-JAN-20	09-JAN-20	R4966116
Uranium (U)-Total	0.0977	DLM	0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Vanadium (V)-Total	0.0946	DLM	0.0050	mg/L	09-JAN-20	09-JAN-20	R4966116
Zinc (Zn)-Total	0.247	DLM	0.030	mg/L	09-JAN-20	09-JAN-20	R4966116
Zirconium (Zr)-Total	0.0051	DLM	0.0020	mg/L	09-JAN-20	09-JAN-20	R4966116
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Acenaphthene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Acenaphthylene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Anthracene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Acridine	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(a)anthracene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(a)pyrene	0.0000066		0.0000050	mg/L	27-DEC-19	03-JAN-20	R4959944

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-5 TH19-07							
Sampled By: CLIENT on 20-DEC-19 @ 14:00							
Matrix: GW							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Chrysene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Fluoranthene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Fluorene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Naphthalene	<0.000050		0.000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Phenanthrene	<0.000050		0.000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Pyrene	0.000022		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Quinoline	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	27-DEC-19	03-JAN-20	R4959944
Surrogate: Acenaphthene d10	85.8		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Acridine d9	91.5		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Chrysene d12	112.4		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Naphthalene d8	85.6		50-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Phenanthrene d10	100.8		60-130	%	27-DEC-19	03-JAN-20	R4959944
VOC plus F1 to F4							
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	21-DEC-19	28-DEC-19	R4957846
F3 (C16-C34)	0.98		0.25	mg/L	21-DEC-19	28-DEC-19	R4957846
F4 (C34-C50)	0.83		0.25	mg/L	21-DEC-19	28-DEC-19	R4957846
Surrogate: 2-Bromobenzotrifluoride	102.1		60-140	%	21-DEC-19	28-DEC-19	R4957846
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		07-JAN-20	
F2-Naphth	<0.10		0.10	mg/L		07-JAN-20	
F3-PAH	0.98		0.25	mg/L		07-JAN-20	
Total Hydrocarbons (C6-C50)	1.81		0.38	mg/L		07-JAN-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		03-JAN-20	
Total Trihalomethanes (THMs)							
Total THMs	<0.0013		0.0013	mg/L		03-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.050		0.050	mg/L		31-DEC-19	R4958822
Benzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Bromobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromochloromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromodichloromethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Bromoform	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromomethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
n-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
sec-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
tert-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Carbon disulfide	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
Carbon Tetrachloride	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Chlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Chloroethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Chloroform	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Chloromethane	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
2-Chlorotoluene	<0.020		0.020	mg/L		31-DEC-19	R4958822
4-Chlorotoluene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-5 TH19-07							
Sampled By: CLIENT on 20-DEC-19 @ 14:00							
Matrix: GW							
VOC plus F1 by GCMS							
Dibromochloromethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2-Dibromo-3-chloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2-Dibromoethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dibromomethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dichlorodifluoromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1-dichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2-Dichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1-dichloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
cis-1,2-Dichloroethene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
trans-1,2-Dichloroethene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dichloromethane	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
1,2-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,3-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
2,2-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
cis-1,3-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
trans-1,3-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Ethylbenzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
F1	<0.10		0.10	mg/L		31-DEC-19	R4958822
Hexachlorobutadiene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Hexane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
2-Hexanone (Methyl butyl ketone)	<0.020		0.020	mg/L		31-DEC-19	R4958822
Isopropylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
4-Isopropyltoluene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
MEK	<0.020		0.020	mg/L		31-DEC-19	R4958822
MIBK	<0.020		0.020	mg/L		31-DEC-19	R4958822
MTBE	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Styrene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1,1,2-Tetrachloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1,2,2-Tetrachloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Tetrachloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Toluene	0.00115		0.00050	mg/L		31-DEC-19	R4958822
1,2,3-Trichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,4-Trichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1,1-Trichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Trichloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Trichlorofluoromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,3-Trichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,4-Trimethylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,3,5-Trimethylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Vinyl Chloride	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
M+P-Xylenes	<0.00040		0.00040	mg/L		31-DEC-19	R4958822
o-Xylene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Surrogate: 4-Bromofluorobenzene (SS)	89.2		70-130	%		31-DEC-19	R4958822
Surrogate: 1,4-Difluorobenzene (SS)	98.2		70-130	%		31-DEC-19	R4958822
Surrogate: 3,4-Dichlorotoluene (SS)	87.1		70-130	%		31-DEC-19	R4958822

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-6 DUP1							
Sampled By: CLIENT on 20-DEC-19 @ 12:45							
Matrix: GW							
Miscellaneous Parameters							
Extractable Organic Halides (EOX)	See Attached					08-JAN-20	R4965448
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	03-JAN-20	03-JAN-20	R4958945
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.340		0.0030	mg/L	09-JAN-20	09-JAN-20	R4966116
Antimony (Sb)-Total	0.00051		0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Arsenic (As)-Total	0.00109		0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Barium (Ba)-Total	0.0436		0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	09-JAN-20	09-JAN-20	R4966116
Boron (B)-Total	0.177		0.010	mg/L	09-JAN-20	09-JAN-20	R4966116
Cadmium (Cd)-Total	0.000133		0.0000050	mg/L	09-JAN-20	09-JAN-20	R4966116
Calcium (Ca)-Total	342		0.50	mg/L	09-JAN-20	09-JAN-20	R4966116
Cesium (Cs)-Total	0.000053		0.000010	mg/L	09-JAN-20	09-JAN-20	R4966116
Chromium (Cr)-Total	0.00203		0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Cobalt (Co)-Total	0.00053		0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Copper (Cu)-Total	0.00786		0.00050	mg/L	09-JAN-20	09-JAN-20	R4966116
Iron (Fe)-Total	0.559		0.010	mg/L	09-JAN-20	09-JAN-20	R4966116
Lead (Pb)-Total	0.00110		0.000050	mg/L	09-JAN-20	09-JAN-20	R4966116
Lithium (Li)-Total	0.443		0.010	mg/L	09-JAN-20	09-JAN-20	R4966116
Magnesium (Mg)-Total	363		0.050	mg/L	09-JAN-20	09-JAN-20	R4966116
Manganese (Mn)-Total	0.100		0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Molybdenum (Mo)-Total	0.00538		0.000050	mg/L	09-JAN-20	09-JAN-20	R4966116
Nickel (Ni)-Total	0.0116		0.00050	mg/L	09-JAN-20	09-JAN-20	R4966116
Potassium (K)-Total	7.24		0.050	mg/L	09-JAN-20	09-JAN-20	R4966116
Phosphorus (P)-Total	0.098		0.030	mg/L	09-JAN-20	09-JAN-20	R4966116
Rubidium (Rb)-Total	0.00190		0.00020	mg/L	09-JAN-20	09-JAN-20	R4966116
Selenium (Se)-Total	0.00918		0.000050	mg/L	09-JAN-20	09-JAN-20	R4966116
Silicon (Si)-Total	11.4		0.10	mg/L	09-JAN-20	09-JAN-20	R4966116
Silver (Ag)-Total	0.000023		0.000010	mg/L	09-JAN-20	09-JAN-20	R4966116
Sodium (Na)-Total	169		0.050	mg/L	09-JAN-20	09-JAN-20	R4966116
Strontium (Sr)-Total	2.19		0.00020	mg/L	09-JAN-20	09-JAN-20	R4966116
Sulfur (S)-Total	557		5.0	mg/L	09-JAN-20	09-JAN-20	R4966116
Tellurium (Te)-Total	0.00021		0.00020	mg/L	09-JAN-20	09-JAN-20	R4966116
Thallium (Tl)-Total	0.000028		0.000010	mg/L	09-JAN-20	09-JAN-20	R4966116
Thorium (Th)-Total	0.00018		0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Tin (Sn)-Total	0.00166		0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Titanium (Ti)-Total	0.0149		0.00030	mg/L	09-JAN-20	09-JAN-20	R4966116
Tungsten (W)-Total	<0.00010		0.00010	mg/L	09-JAN-20	09-JAN-20	R4966116
Uranium (U)-Total	0.145		0.000010	mg/L	09-JAN-20	09-JAN-20	R4966116
Vanadium (V)-Total	0.00191		0.00050	mg/L	09-JAN-20	09-JAN-20	R4966116
Zinc (Zn)-Total	0.0187		0.0030	mg/L	09-JAN-20	09-JAN-20	R4966116
Zirconium (Zr)-Total	0.00143		0.00020	mg/L	09-JAN-20	09-JAN-20	R4966116
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Acenaphthene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Acenaphthylene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Anthracene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Acridine	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(a)anthracene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	27-DEC-19	03-JAN-20	R4959944

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-6 DUP1							
Sampled By: CLIENT on 20-DEC-19 @ 12:45							
Matrix: GW							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Chrysene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Fluoranthene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Fluorene	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Naphthalene	<0.000050		0.000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Phenanthrene	<0.000050		0.000050	mg/L	27-DEC-19	03-JAN-20	R4959944
Pyrene	<0.000010		0.000010	mg/L	27-DEC-19	03-JAN-20	R4959944
Quinoline	<0.000020		0.000020	mg/L	27-DEC-19	03-JAN-20	R4959944
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	27-DEC-19	03-JAN-20	R4959944
Surrogate: Acenaphthene d10	90.5		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Acridine d9	93.5		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Chrysene d12	108.8		60-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Naphthalene d8	93.4		50-130	%	27-DEC-19	03-JAN-20	R4959944
Surrogate: Phenanthrene d10	100.3		60-130	%	27-DEC-19	03-JAN-20	R4959944
VOC plus F1 to F4							
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	21-DEC-19	28-DEC-19	R4957846
F3 (C16-C34)	<0.25		0.25	mg/L	21-DEC-19	28-DEC-19	R4957846
F4 (C34-C50)	<0.25		0.25	mg/L	21-DEC-19	28-DEC-19	R4957846
Surrogate: 2-Bromobenzotrifluoride	102.9		60-140	%	21-DEC-19	28-DEC-19	R4957846
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		07-JAN-20	
F2-Naphth	<0.10		0.10	mg/L		07-JAN-20	
F3-PAH	<0.25		0.25	mg/L		07-JAN-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		07-JAN-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		03-JAN-20	
Total Trihalomethanes (THMs)							
Total THMs	<0.0013		0.0013	mg/L		03-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.050		0.050	mg/L		31-DEC-19	R4958822
Benzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Bromobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromochloromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromodichloromethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Bromoform	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Bromomethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
n-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
sec-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
tert-Butylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Carbon disulfide	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
Carbon Tetrachloride	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Chlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Chloroethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Chloroform	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Chloromethane	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
2-Chlorotoluene	<0.020		0.020	mg/L		31-DEC-19	R4958822
4-Chlorotoluene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2399352-6 DUP1							
Sampled By: CLIENT on 20-DEC-19 @ 12:45							
Matrix: GW							
VOC plus F1 by GCMS							
Dibromochloromethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2-Dibromo-3-chloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2-Dibromoethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dibromomethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dichlorodifluoromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1-dichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,2-Dichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1-dichloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
cis-1,2-Dichloroethene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
trans-1,2-Dichloroethene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Dichloromethane	<0.0050		0.0050	mg/L		31-DEC-19	R4958822
1,2-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,3-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
2,2-Dichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
cis-1,3-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
trans-1,3-Dichloropropene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Ethylbenzene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
F1	<0.10		0.10	mg/L		31-DEC-19	R4958822
Hexachlorobutadiene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Hexane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
2-Hexanone (Methyl butyl ketone)	<0.020		0.020	mg/L		31-DEC-19	R4958822
Isopropylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
4-Isopropyltoluene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
MEK	<0.020		0.020	mg/L		31-DEC-19	R4958822
MIBK	<0.020		0.020	mg/L		31-DEC-19	R4958822
MTBE	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Styrene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1,1,2-Tetrachloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1,2,2-Tetrachloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Tetrachloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Toluene	0.00070		0.00050	mg/L		31-DEC-19	R4958822
1,2,3-Trichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,4-Trichlorobenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,1,1-Trichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Trichloroethene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Trichlorofluoromethane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,3-Trichloropropane	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,2,4-Trimethylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
1,3,5-Trimethylbenzene	<0.0010		0.0010	mg/L		31-DEC-19	R4958822
Vinyl Chloride	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
M+P-Xylenes	<0.00040		0.00040	mg/L		31-DEC-19	R4958822
o-Xylene	<0.00050		0.00050	mg/L		31-DEC-19	R4958822
Surrogate: 4-Bromofluorobenzene (SS)	87.0		70-130	%		31-DEC-19	R4958822
Surrogate: 1,4-Difluorobenzene (SS)	90.7		70-130	%		31-DEC-19	R4958822
Surrogate: 3,4-Dichlorotoluene (SS)	90.7		70-130	%		31-DEC-19	R4958822

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic Interference due to co-elution.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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DX-1613B-HRMS-BU	Water	Dioxins and Furans HR 1613B	USEPA 1613B
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Samples are filtered if required. Solids are extracted by Soxhlet using toluene. The liquid portion is extracted by liquid/liquid extraction using dichloromethane. The extracts are prepared using column chromatography, reduced in volume and analyzed by isotope-dilution GC/HRMS

EOX-MP	Misc.	Extractable Organic Halides (EOX)	SEE SUBLET LAB REPORT
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The material is extracted with ethyl acetate then the extract is analyzed on the TOX (Total Organic Halides) instrument.

F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-L
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Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-FID-WP	Water	CCME PHC F2-F4 in Water	EPA 3511
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Petroleum hydrocarbons in water are determined by liquid-liquid micro-scale solvent extraction using a reciprocal shaker extraction apparatus prior to capillary column gas chromatography with flame ionization detection (GC-FID) analysis.

HG-T-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)
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Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)
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Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA 3511/8270D (mod)
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PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

THM-SUM-CALC-WP	Water	Total Trihalomethanes (THMs)	CALCULATION
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Total Trihalomethanes (THMs) represents the sum of bromodichloromethane, bromoform, chlorodibromomethane and chloroform. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.

VOC+F1-HSMS-WP	Water	VOC plus F1 by GCMS	EPA 8260C / EPA 5021A
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In this method samples are analyzed using a headspace autosampler interfaced to a dual column gas chromatograph with MS and Flame Ionization detectors.

XYLENES-SUM-CALC-	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
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Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
WP		Total xylenes represents the sum of o-xylene and m&p-xylene.	

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
BU	ALS ENVIRONMENTAL - BURLINGTON, ONTARIO, CANADA
MP	ALS ENVIRONMENTAL - MIDDLETOWN, PENNSYLVANIA, USA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg ww - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2399352

Report Date: 08-MAY-20

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Client: Wood Environment & Infrastructure Solutions (Winnipeg)

440 Dovercourt Drive

Winnipeg MB R3Y 1G4

Contact: JUSTIN HUBERDEAU

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-FID-WP		Water						
Batch	R4957846							
WG3247997-2	LCS							
F2 (C10-C16)			103.5		%		70-130	28-DEC-19
F3 (C16-C34)			95.7		%		70-130	28-DEC-19
F4 (C34-C50)			95.5		%		70-130	28-DEC-19
WG3247997-1	MB							
F2 (C10-C16)			<0.10		mg/L		0.1	28-DEC-19
F3 (C16-C34)			<0.25		mg/L		0.25	28-DEC-19
F4 (C34-C50)			<0.25		mg/L		0.25	28-DEC-19
Surrogate: 2-Bromobenzotrifluoride			104.1		%		60-140	28-DEC-19
HG-T-CVAA-WP		Water						
Batch	R4958945							
WG3252603-6	LCS							
Mercury (Hg)-Total			100.0		%		80-120	03-JAN-20
WG3252603-5	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	03-JAN-20
MET-T-CCMS-WP		Water						
Batch	R4965231							
WG3253967-2	LCS							
Aluminum (Al)-Total			104.5		%		80-120	08-JAN-20
Antimony (Sb)-Total			99.5		%		80-120	08-JAN-20
Arsenic (As)-Total			97.7		%		80-120	08-JAN-20
Barium (Ba)-Total			97.6		%		80-120	08-JAN-20
Beryllium (Be)-Total			97.5		%		80-120	08-JAN-20
Bismuth (Bi)-Total			96.8		%		80-120	08-JAN-20
Boron (B)-Total			88.6		%		80-120	08-JAN-20
Cadmium (Cd)-Total			97.9		%		80-120	08-JAN-20
Calcium (Ca)-Total			97.7		%		80-120	08-JAN-20
Cesium (Cs)-Total			99.6		%		80-120	08-JAN-20
Chromium (Cr)-Total			97.9		%		80-120	08-JAN-20
Cobalt (Co)-Total			97.8		%		80-120	08-JAN-20
Copper (Cu)-Total			95.2		%		80-120	08-JAN-20
Iron (Fe)-Total			88.2		%		80-120	08-JAN-20
Lead (Pb)-Total			98.5		%		80-120	08-JAN-20
Lithium (Li)-Total			95.5		%		80-120	08-JAN-20
Magnesium (Mg)-Total			114.4		%		80-120	08-JAN-20
Manganese (Mn)-Total			101.4		%		80-120	08-JAN-20

Quality Control Report

Workorder: L2399352

Report Date: 08-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R4965231							
WG3253967-2	LCS							
Molybdenum (Mo)-Total			97.9		%		80-120	08-JAN-20
Nickel (Ni)-Total			94.3		%		80-120	08-JAN-20
Potassium (K)-Total			92.0		%		80-120	08-JAN-20
Phosphorus (P)-Total			106.9		%		80-120	08-JAN-20
Rubidium (Rb)-Total			99.3		%		80-120	08-JAN-20
Selenium (Se)-Total			95.8		%		80-120	08-JAN-20
Silicon (Si)-Total			103.6		%		80-120	08-JAN-20
Silver (Ag)-Total			95.0		%		80-120	08-JAN-20
Sodium (Na)-Total			101.5		%		80-120	08-JAN-20
Strontium (Sr)-Total			98.2		%		80-120	08-JAN-20
Sulfur (S)-Total			96.4		%		80-120	08-JAN-20
Tellurium (Te)-Total			94.8		%		80-120	08-JAN-20
Thallium (Tl)-Total			96.5		%		80-120	08-JAN-20
Thorium (Th)-Total			97.3		%		80-120	08-JAN-20
Tin (Sn)-Total			96.2		%		80-120	08-JAN-20
Titanium (Ti)-Total			94.9		%		80-120	08-JAN-20
Tungsten (W)-Total			98.2		%		80-120	08-JAN-20
Uranium (U)-Total			98.4		%		80-120	08-JAN-20
Vanadium (V)-Total			98.2		%		80-120	08-JAN-20
Zinc (Zn)-Total			93.7		%		80-120	08-JAN-20
Zirconium (Zr)-Total			89.7		%		80-120	08-JAN-20
WG3253967-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	08-JAN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	08-JAN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	08-JAN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	08-JAN-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	08-JAN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	08-JAN-20
Boron (B)-Total			<0.010		mg/L		0.01	08-JAN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	08-JAN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	08-JAN-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	08-JAN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	08-JAN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	08-JAN-20

Quality Control Report

Workorder: L2399352

Report Date: 08-MAY-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch R4965231								
WG3253967-1 MB								
Copper (Cu)-Total			<0.00050		mg/L		0.0005	08-JAN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	08-JAN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	08-JAN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	08-JAN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	08-JAN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	08-JAN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	08-JAN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	08-JAN-20
Potassium (K)-Total			<0.050		mg/L		0.05	08-JAN-20
Phosphorus (P)-Total			<0.030		mg/L		0.03	08-JAN-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	08-JAN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	08-JAN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	08-JAN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	08-JAN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	08-JAN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	08-JAN-20
Sulfur (S)-Total			<0.50		mg/L		0.5	08-JAN-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	08-JAN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	08-JAN-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	08-JAN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	08-JAN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	08-JAN-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	08-JAN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	08-JAN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	08-JAN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	08-JAN-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	08-JAN-20
Batch R4966116								
WG3254563-2 LCS								
Aluminum (Al)-Total			93.0		%		80-120	09-JAN-20
Antimony (Sb)-Total			98.0		%		80-120	09-JAN-20
Arsenic (As)-Total			97.9		%		80-120	09-JAN-20
Barium (Ba)-Total			100.9		%		80-120	09-JAN-20
Beryllium (Be)-Total			84.6		%		80-120	09-JAN-20

Quality Control Report

Workorder: L2399352

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R4966116							
WG3254563-2	LCS							
Bismuth (Bi)-Total			96.7		%		80-120	09-JAN-20
Boron (B)-Total			81.8		%		80-120	09-JAN-20
Cadmium (Cd)-Total			103.0		%		80-120	09-JAN-20
Calcium (Ca)-Total			93.6		%		80-120	09-JAN-20
Cesium (Cs)-Total			100.1		%		80-120	09-JAN-20
Chromium (Cr)-Total			97.9		%		80-120	09-JAN-20
Cobalt (Co)-Total			100.7		%		80-120	09-JAN-20
Copper (Cu)-Total			98.4		%		80-120	09-JAN-20
Iron (Fe)-Total			93.1		%		80-120	09-JAN-20
Lead (Pb)-Total			95.7		%		80-120	09-JAN-20
Lithium (Li)-Total			85.3		%		80-120	09-JAN-20
Magnesium (Mg)-Total			104.5		%		80-120	09-JAN-20
Manganese (Mn)-Total			99.2		%		80-120	09-JAN-20
Molybdenum (Mo)-Total			96.4		%		80-120	09-JAN-20
Nickel (Ni)-Total			97.9		%		80-120	09-JAN-20
Potassium (K)-Total			98.0		%		80-120	09-JAN-20
Phosphorus (P)-Total			99.6		%		80-120	09-JAN-20
Rubidium (Rb)-Total			99.0		%		80-120	09-JAN-20
Selenium (Se)-Total			98.9		%		80-120	09-JAN-20
Silicon (Si)-Total			90.4		%		80-120	09-JAN-20
Silver (Ag)-Total			96.6		%		80-120	09-JAN-20
Sodium (Na)-Total			97.1		%		80-120	09-JAN-20
Strontium (Sr)-Total			99.5		%		80-120	09-JAN-20
Sulfur (S)-Total			91.0		%		80-120	09-JAN-20
Tellurium (Te)-Total			98.0		%		80-120	09-JAN-20
Thallium (Tl)-Total			94.3		%		80-120	09-JAN-20
Thorium (Th)-Total			99.0		%		80-120	09-JAN-20
Tin (Sn)-Total			96.4		%		80-120	09-JAN-20
Titanium (Ti)-Total			96.5		%		80-120	09-JAN-20
Tungsten (W)-Total			95.4		%		80-120	09-JAN-20
Uranium (U)-Total			104.4		%		80-120	09-JAN-20
Vanadium (V)-Total			95.6		%		80-120	09-JAN-20
Zinc (Zn)-Total			97.4		%		80-120	09-JAN-20
Zirconium (Zr)-Total			95.3		%		80-120	09-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R4966116							
WG3254563-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	09-JAN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	09-JAN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	09-JAN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	09-JAN-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	09-JAN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	09-JAN-20
Boron (B)-Total			<0.010		mg/L		0.01	09-JAN-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	09-JAN-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	09-JAN-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	09-JAN-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	09-JAN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	09-JAN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	09-JAN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	09-JAN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	09-JAN-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	09-JAN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	09-JAN-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	09-JAN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	09-JAN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	09-JAN-20
Potassium (K)-Total			<0.050		mg/L		0.05	09-JAN-20
Phosphorus (P)-Total			<0.030		mg/L		0.03	09-JAN-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	09-JAN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	09-JAN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	09-JAN-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	09-JAN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	09-JAN-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	09-JAN-20
Sulfur (S)-Total			<0.50		mg/L		0.5	09-JAN-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	09-JAN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	09-JAN-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	09-JAN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	09-JAN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	09-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R4966116							
WG3254563-1 MB								
Tungsten (W)-Total			<0.00010		mg/L		0.0001	09-JAN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	09-JAN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	09-JAN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	09-JAN-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	09-JAN-20
PAH,PANH-WP		Water						
Batch	R4959944							
WG3249948-2 LCS								
1-Methyl Naphthalene			111.2		%		60-130	03-JAN-20
2-Methyl Naphthalene			100.8		%		60-130	03-JAN-20
Acenaphthene			112.7		%		60-130	03-JAN-20
Acenaphthylene			98.6		%		60-130	03-JAN-20
Anthracene			86.7		%		60-130	03-JAN-20
Acridine			96.9		%		60-130	03-JAN-20
Benzo(a)anthracene			112.6		%		60-130	03-JAN-20
Benzo(a)pyrene			92.9		%		60-130	03-JAN-20
Benzo(b&j)fluoranthene			116.3		%		60-130	03-JAN-20
Benzo(g,h,i)perylene			112.8		%		60-130	03-JAN-20
Benzo(k)fluoranthene			109.4		%		60-130	03-JAN-20
Chrysene			113.3		%		60-130	03-JAN-20
Dibenzo(a,h)anthracene			108.7		%		60-130	03-JAN-20
Fluoranthene			114.0		%		60-130	03-JAN-20
Fluorene			98.6		%		60-130	03-JAN-20
Indeno(1,2,3-cd)pyrene			102.0		%		60-130	03-JAN-20
Naphthalene			113.8		%		50-130	03-JAN-20
Phenanthrene			117.3		%		60-130	03-JAN-20
Pyrene			112.8		%		60-130	03-JAN-20
Quinoline			107.9		%		60-130	03-JAN-20
WG3249948-1 MB								
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	03-JAN-20
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	03-JAN-20
Acenaphthene			<0.000020		mg/L		0.00002	03-JAN-20
Acenaphthylene			<0.000020		mg/L		0.00002	03-JAN-20
Anthracene			<0.000010		mg/L		0.00001	03-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP		Water						
Batch R4959944								
WG3249948-1 MB								
Acridine			<0.000020		mg/L		0.00002	03-JAN-20
Benzo(a)anthracene			<0.000010		mg/L		0.00001	03-JAN-20
Benzo(a)pyrene			<0.0000050		mg/L		0.000005	03-JAN-20
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	03-JAN-20
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	03-JAN-20
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	03-JAN-20
Chrysene			<0.000020		mg/L		0.00002	03-JAN-20
Dibenzo(a,h)anthracene			<0.0000050		mg/L		0.000005	03-JAN-20
Fluoranthene			<0.000020		mg/L		0.00002	03-JAN-20
Fluorene			<0.000020		mg/L		0.00002	03-JAN-20
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	03-JAN-20
Naphthalene			<0.000050		mg/L		0.00005	03-JAN-20
Phenanthrene			<0.000050		mg/L		0.00005	03-JAN-20
Pyrene			<0.000010		mg/L		0.00001	03-JAN-20
Quinoline			<0.000020		mg/L		0.00002	03-JAN-20
Surrogate: Acenaphthene d10			98.0		%		60-130	03-JAN-20
Surrogate: Acridine d9			88.1		%		60-130	03-JAN-20
Surrogate: Chrysene d12			99.6		%		60-130	03-JAN-20
Surrogate: Naphthalene d8			95.4		%		50-130	03-JAN-20
Surrogate: Phenanthrene d10			101.4		%		60-130	03-JAN-20
VOC+F1-HSMS-WP		Water						
Batch R4958822								
WG3250785-2 LCS								
Acetone			95.5		%		70-130	02-JAN-20
Benzene			96.9		%		70-130	02-JAN-20
Bromobenzene			104.0		%		70-130	02-JAN-20
Bromochloromethane			87.9		%		70-130	02-JAN-20
Bromodichloromethane			101.3		%		70-130	02-JAN-20
Bromoform			97.0		%		70-130	02-JAN-20
Bromomethane			97.9		%		60-140	02-JAN-20
n-Butylbenzene			120.9		%		70-130	02-JAN-20
sec-Butylbenzene			124.1		%		70-130	02-JAN-20
tert-Butylbenzene			121.4		%		70-130	02-JAN-20
Carbon disulfide			111.2		%		70-130	02-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4958822							
WG3250785-2	LCS							
Carbon Tetrachloride			111.6		%		70-130	02-JAN-20
Chlorobenzene			107.1		%		70-130	02-JAN-20
Chloroethane			99.1		%		60-140	02-JAN-20
Chloroform			90.9		%		70-130	02-JAN-20
Chloromethane			118.0		%		60-140	02-JAN-20
2-Chlorotoluene			117.5		%		70-130	02-JAN-20
4-Chlorotoluene			118.1		%		70-130	02-JAN-20
Dibromochloromethane			99.3		%		70-130	02-JAN-20
1,2-Dibromo-3-chloropropane			96.3		%		70-130	02-JAN-20
1,2-Dibromoethane			90.3		%		70-130	02-JAN-20
Dibromomethane			100.4		%		70-130	02-JAN-20
1,2-Dichlorobenzene			108.2		%		70-130	02-JAN-20
1,3-Dichlorobenzene			111.9		%		70-130	02-JAN-20
1,4-Dichlorobenzene			114.5		%		70-130	02-JAN-20
Dichlorodifluoromethane			132.0		%		60-140	02-JAN-20
1,1-dichloroethane			109.1		%		70-130	02-JAN-20
1,2-Dichloroethane			85.4		%		70-130	02-JAN-20
1,1-dichloroethene			106.6		%		70-130	02-JAN-20
cis-1,2-Dichloroethene			103.2		%		70-130	02-JAN-20
trans-1,2-Dichloroethene			112.5		%		70-130	02-JAN-20
Dichloromethane			105.0		%		70-130	02-JAN-20
1,2-Dichloropropane			98.9		%		70-130	02-JAN-20
1,3-Dichloropropane			90.9		%		70-130	02-JAN-20
2,2-Dichloropropane			118.8		%		70-130	02-JAN-20
1,1-Dichloropropene			113.0		%		70-130	02-JAN-20
cis-1,3-Dichloropropene			100.7		%		70-130	02-JAN-20
trans-1,3-Dichloropropene			94.0		%		70-130	02-JAN-20
Ethylbenzene			112.5		%		70-130	02-JAN-20
Hexachlorobutadiene			112.8		%		70-130	02-JAN-20
Hexane			115.9		%		70-130	02-JAN-20
2-Hexanone (Methyl butyl ketone)			108.9		%		70-130	02-JAN-20
Isopropylbenzene			119.7		%		70-130	02-JAN-20
4-Isopropyltoluene			121.6		%		70-130	02-JAN-20
MEK			114.1		%		70-130	02-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4958822							
WG3250785-2	LCS							
MIBK			108.2		%		70-130	02-JAN-20
MTBE			110.5		%		70-130	02-JAN-20
Styrene			111.6		%		70-130	02-JAN-20
1,1,1,2-Tetrachloroethane			105.9		%		70-130	02-JAN-20
1,1,2,2-Tetrachloroethane			90.8		%		70-130	02-JAN-20
Tetrachloroethene			106.0		%		70-130	02-JAN-20
Toluene			99.96		%		70-130	02-JAN-20
1,2,3-Trichlorobenzene			101.4		%		70-130	02-JAN-20
1,2,4-Trichlorobenzene			102.4		%		70-130	02-JAN-20
1,1,1-Trichloroethane			119.0		%		70-130	02-JAN-20
1,1,2-Trichloroethane			96.3		%		70-130	02-JAN-20
Trichloroethene			119.7		%		70-130	02-JAN-20
Trichlorofluoromethane			108.8		%		60-140	02-JAN-20
1,2,3-Trichloropropane			98.9		%		70-130	02-JAN-20
1,2,4-Trimethylbenzene			119.9		%		70-130	02-JAN-20
1,3,5-Trimethylbenzene			121.8		%		70-130	02-JAN-20
Vinyl Chloride			113.5		%		60-140	02-JAN-20
M+P-Xylenes			102.4		%		70-130	02-JAN-20
o-Xylene			110.4		%		70-130	02-JAN-20
WG3250785-4	LCS							
F1			92.0		%		70-130	02-JAN-20
WG3250785-1	MB							
Acetone			<0.050		mg/L		0.05	30-DEC-19
Benzene			<0.00050		mg/L		0.0005	30-DEC-19
Bromobenzene			<0.0010		mg/L		0.001	30-DEC-19
Bromochloromethane			<0.0010		mg/L		0.001	30-DEC-19
Bromodichloromethane			<0.00050		mg/L		0.0005	30-DEC-19
Bromoform			<0.0010		mg/L		0.001	30-DEC-19
Bromomethane			<0.0010		mg/L		0.001	30-DEC-19
n-Butylbenzene			<0.0010		mg/L		0.001	30-DEC-19
sec-Butylbenzene			<0.0010		mg/L		0.001	30-DEC-19
tert-Butylbenzene			<0.0010		mg/L		0.001	30-DEC-19
Carbon disulfide			<0.0050		mg/L		0.005	30-DEC-19
Carbon Tetrachloride			<0.00050		mg/L		0.0005	30-DEC-19
Chlorobenzene			<0.0010		mg/L		0.001	30-DEC-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4958822							
WG3250785-1	MB							
Chloroethane			<0.0010		mg/L		0.001	30-DEC-19
Chloroform			<0.00050		mg/L		0.0005	30-DEC-19
Chloromethane			<0.0050		mg/L		0.005	30-DEC-19
2-Chlorotoluene			<0.020		mg/L		0.02	30-DEC-19
4-Chlorotoluene			<0.0010		mg/L		0.001	30-DEC-19
Dibromochloromethane			<0.00050		mg/L		0.0005	30-DEC-19
1,2-Dibromo-3-chloropropane			<0.0010		mg/L		0.001	30-DEC-19
1,2-Dibromoethane			<0.0010		mg/L		0.001	30-DEC-19
Dibromomethane			<0.0010		mg/L		0.001	30-DEC-19
1,2-Dichlorobenzene			<0.00050		mg/L		0.0005	30-DEC-19
1,3-Dichlorobenzene			<0.0010		mg/L		0.001	30-DEC-19
1,4-Dichlorobenzene			<0.0010		mg/L		0.001	30-DEC-19
Dichlorodifluoromethane			<0.0010		mg/L		0.001	30-DEC-19
1,1-dichloroethane			<0.00050		mg/L		0.0005	30-DEC-19
1,2-Dichloroethane			<0.00050		mg/L		0.0005	30-DEC-19
1,1-dichloroethene			<0.00050		mg/L		0.0005	30-DEC-19
cis-1,2-Dichloroethene			<0.0010		mg/L		0.001	30-DEC-19
trans-1,2-Dichloroethene			<0.0010		mg/L		0.001	30-DEC-19
Dichloromethane			<0.0050		mg/L		0.005	30-DEC-19
1,2-Dichloropropane			<0.0010		mg/L		0.001	30-DEC-19
1,3-Dichloropropane			<0.0010		mg/L		0.001	30-DEC-19
2,2-Dichloropropane			<0.0020		mg/L		0.002	30-DEC-19
1,1-Dichloropropene			<0.0010		mg/L		0.001	30-DEC-19
cis-1,3-Dichloropropene			<0.0020		mg/L		0.002	30-DEC-19
trans-1,3-Dichloropropene			<0.0020		mg/L		0.002	30-DEC-19
Ethylbenzene			<0.00050		mg/L		0.0005	30-DEC-19
F1			<0.10		mg/L		0.1	30-DEC-19
Hexachlorobutadiene			<0.0020		mg/L		0.002	30-DEC-19
Hexane			<0.0010		mg/L		0.001	30-DEC-19
2-Hexanone (Methyl butyl ketone)			<0.020		mg/L		0.02	30-DEC-19
Isopropylbenzene			<0.0010		mg/L		0.001	30-DEC-19
4-Isopropyltoluene			<0.0010		mg/L		0.001	30-DEC-19
MEK			<0.020		mg/L		0.02	30-DEC-19
MIBK			<0.020		mg/L		0.02	30-DEC-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4958822							
WG3250785-1	MB							
MTBE			<0.00050		mg/L		0.0005	30-DEC-19
Styrene			<0.0010		mg/L		0.001	30-DEC-19
1,1,1,2-Tetrachloroethane			<0.00050		mg/L		0.0005	30-DEC-19
1,1,2,2-Tetrachloroethane			<0.00050		mg/L		0.0005	30-DEC-19
Tetrachloroethene			<0.00050		mg/L		0.0005	30-DEC-19
Toluene			<0.00050		mg/L		0.0005	30-DEC-19
1,2,3-Trichlorobenzene			<0.0010		mg/L		0.001	30-DEC-19
1,2,4-Trichlorobenzene			<0.0010		mg/L		0.001	30-DEC-19
1,1,1-Trichloroethane			<0.00050		mg/L		0.0005	30-DEC-19
1,1,2-Trichloroethane			<0.00050		mg/L		0.0005	30-DEC-19
Trichloroethene			<0.00050		mg/L		0.0005	30-DEC-19
Trichlorofluoromethane			<0.0010		mg/L		0.001	30-DEC-19
1,2,3-Trichloropropane			<0.0010		mg/L		0.001	30-DEC-19
1,2,4-Trimethylbenzene			<0.0010		mg/L		0.001	30-DEC-19
1,3,5-Trimethylbenzene			<0.0010		mg/L		0.001	30-DEC-19
Vinyl Chloride			<0.00050		mg/L		0.0005	30-DEC-19
M+P-Xylenes			<0.00040		mg/L		0.0004	30-DEC-19
o-Xylene			<0.00050		mg/L		0.0005	30-DEC-19
Surrogate: 4-Bromofluorobenzene (SS)			88.9		%		70-130	30-DEC-19
Surrogate: 1,4-Difluorobenzene (SS)			99.5		%		70-130	30-DEC-19
Surrogate: 3,4-Dichlorotoluene (SS)			103.0		%		70-130	30-DEC-19

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

January 8, 2020

Ms. Judy Dalmaijer
ALS Environmental-Winnipeg MB
Unit 12-1329 Niakwa Road East
Winnipeg, MB, R2J 3T4

Certificate of Analysis

Project Name: TOX	Workorder: 3077356
Purchase Order:	Workorder ID: L2399352

Dear Ms. Dalmaijer:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, December 24, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Sarah S Leung (Project Coordinator) at (717) 944-5541.

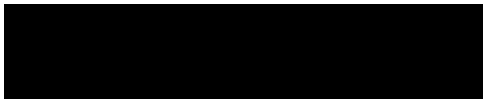
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Bea Ryback , Mr. Craig Riddell

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Ms. Sarah S Leung
Project Coordinator

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**SAMPLE SUMMARY**

Workorder: 3077356 L2399352

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3077356001	L2399352-1 TH19-04	Water	12/20/2019 00:00	12/24/2019 11:04	Collected by Client
3077356002	L2399352-2 TH19-03	Water	12/20/2019 00:00	12/24/2019 11:04	Collected by Client
3077356003	L2399352-3 TH19-10	Water	12/20/2019 00:00	12/24/2019 11:04	Collected by Client
3077356004	L2399352-4 TH19-08	Water	12/20/2019 00:00	12/24/2019 11:04	Collected by Client
3077356005	L2399352-5 TH19-07	Water	12/20/2019 00:00	12/24/2019 11:04	Collected by Client
3077356006	L2399352-6 DUP1	Water	12/20/2019 00:00	12/24/2019 11:04	Collected by Client

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SAMPLE SUMMARY

Workorder: 3077356 L2399352

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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**ANALYTICAL RESULTS**

Workorder: 3077356 L2399352

Lab ID: **3077356001**

Date Collected: 12/20/2019 00:00

Matrix: Water

Sample ID: **L2399352-1 TH19-04**

Date Received: 12/24/2019 11:04

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
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WET CHEMISTRYHalogen, Total Organic
(TOX)

58.4

ug/L

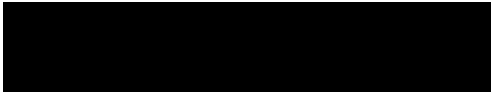
20.0

SW846 9020B

1/8/20 11:51

PAG

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Ms. Sarah S Leung
Project Coordinator**ALS Environmental Laboratory Locations Across North America**Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
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**ANALYTICAL RESULTS**

Workorder: 3077356 L2399352

Lab ID: **3077356002**

Date Collected: 12/20/2019 00:00

Matrix: Water

Sample ID: **L2399352-2 TH19-03**

Date Received: 12/24/2019 11:04

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
------------	---------	------	-------	-----	--------	----------	----	----------	----	------

WET CHEMISTRYHalogen, Total Organic
(TOX)

51.0

ug/L

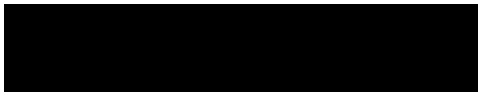
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SW846 9020B

1/8/20 12:18

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**ANALYTICAL RESULTS**

Workorder: 3077356 L2399352

Lab ID: **3077356003**

Date Collected: 12/20/2019 00:00

Matrix: Water

Sample ID: **L2399352-3 TH19-10**

Date Received: 12/24/2019 11:04

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
------------	---------	------	-------	-----	--------	----------	----	----------	----	------

WET CHEMISTRYHalogen, Total Organic
(TOX)

82.4

ug/L

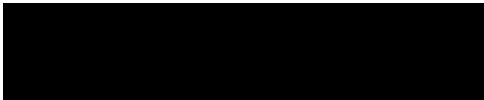
20.0

SW846 9020B

1/8/20 12:48

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**ANALYTICAL RESULTS**

Workorder: 3077356 L2399352

Lab ID: **3077356004**

Date Collected: 12/20/2019 00:00

Matrix: Water

Sample ID: **L2399352-4 TH19-08**

Date Received: 12/24/2019 11:04

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
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WET CHEMISTRYHalogen, Total Organic
(TOX)

ND

ug/L

20.0

SW846 9020B

1/8/20 14:26

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**ANALYTICAL RESULTS**

Workorder: 3077356 L2399352

Lab ID: **3077356005**

Date Collected: 12/20/2019 00:00

Matrix: Water

Sample ID: **L2399352-5 TH19-07**

Date Received: 12/24/2019 11:04

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
------------	---------	------	-------	-----	--------	----------	----	----------	----	------

WET CHEMISTRYHalogen, Total Organic
(TOX)

77.8

ug/L

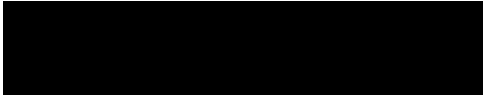
20.0

SW846 9020B

1/8/20 14:56

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**ANALYTICAL RESULTS**

Workorder: 3077356 L2399352

Lab ID: **3077356006**

Date Collected: 12/20/2019 00:00

Matrix: Water

Sample ID: **L2399352-6 DUP1**

Date Received: 12/24/2019 11:04

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
------------	---------	------	-------	-----	--------	----------	----	----------	----	------

WET CHEMISTRYHalogen, Total Organic
(TOX)

54.6

ug/L

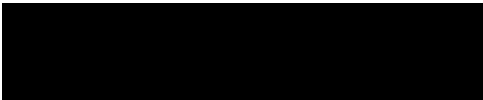
20.0

SW846 9020B

1/8/20 15:27

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**ANALYSIS - PREP METHOD CROSS REFERENCE TABLE**

Workorder: 3077356 L2399352

Lab ID	Sample ID	Analysis Method	Prep Method
3077356001	L2399352-1 TH19-04	SW846 9020B	
3077356002	L2399352-2 TH19-03	SW846 9020B	
3077356003	L2399352-3 TH19-10	SW846 9020B	
3077356004	L2399352-4 TH19-08	SW846 9020B	
3077356005	L2399352-5 TH19-07	SW846 9020B	
3077356006	L2399352-6 DUP1	SW846 9020B	

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QUALITY CONTROL DATA

Workorder: 3077356 L2399352

QC Batch: WETC/232874 **Analysis Method:** SW846 9020B

QC Batch Method: SW846 9020B

Associated Lab Samples: 3077356001, 3077356002, 3077356003, 3077356004, 3077356005, 3077356006

METHOD BLANK: 3070455

Parameter	Blank Result	Units	Reporting Limit
Halogen, Total Organic (TOX)	ND	ug/L	10.0

LABORATORY CONTROL SAMPLE: 3070456

Parameter	LCS % Rec	Units	Spike Conc.	LCS Result	% Rec Limit
Halogen, Total Organic (TOX)	107	ug/L	100	107	80 - 120

LABORATORY CONTROL SAMPLE: 3070457

Parameter	LCS % Rec	Units	Spike Conc.	LCS Result	% Rec Limit
Halogen, Total Organic (TOX)	97	ug/L	100	97.0	80 - 120

METHOD BLANK: 3070459

Parameter	Blank Result	Units	Reporting Limit
Halogen, Total Organic (TOX)	ND	ug/L	200

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 3077356 L2399352

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
3077356001	L2399352-1 TH19-04			SW846 9020B	WETC/232874
3077356002	L2399352-2 TH19-03			SW846 9020B	WETC/232874
3077356003	L2399352-3 TH19-10			SW846 9020B	WETC/232874
3077356004	L2399352-4 TH19-08			SW846 9020B	WETC/232874
3077356005	L2399352-5 TH19-07			SW846 9020B	WETC/232874
3077356006	L2399352-6 DUP1			SW846 9020B	WETC/232874

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3077356
L2399352

WINNIPEG

Subcontract Request Form

Subcontract To:

ALS ENVIRONMENTAL - MIDDLETOWN, PENNSYLVANIA, USA

34 DOGWOOD LANE
MIDDLETOWN, PENNSYLVANIA 17057

NOTES: Please reference on final report and invoice: PO# L2399
ALS requires QC data to be provided with your final results.

WP-SHIPTO-SU-MON

Please see enclosed 6 sample(s) in 6 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED DUE DATE	Priority Flag
x2 L2399352-1 TH19-04	Extractable Organic Halides (EOX) (EOX-MP 14)	12/ 20/ 2019 1/17/2020	
x2 L2399352-2 TH19-03	Extractable Organic Halides (EOX) (EOX-MP 14)	12/ 20/ 2019 1/17/2020	
x2 L2399352-3 TH19-10	Extractable Organic Halides (EOX) (EOX-MP 14)	12/ 20/ 2019 1/17/2020	
x2 L2399352-4 TH19-08	Extractable Organic Halides (EOX) (EOX-MP 14)	12/ 20/ 2019 1/17/2020	
x2 L2399352-5 TH19-07 [redacted] 12-18-19	Extractable Organic Halides (EOX) (EOX-MP 14)	12/ 20/ 2019 1/17/2020	
x2 L2399352-6 DUP1 [redacted] 12-20-19	Extractable Organic Halides (EOX) (EOX-MP 14)	12/ 20/ 2019 1/17/2020	

6' 3/8

Friday, December 20, 2019 2:43 PM

Wednesday, January 08, 2020 11:00:33 PM

Page 13 of 15

ALS



3077354
L2399352

WINNIPEG

Subcontract Request Form

Subcontract To:

ALS ENVIRONMENTAL - MIDDLETOWN, PENNSYLVANIA, USA

34 DOGWOOD LANE
MIDDLETOWN, PENNSYLVANIA 17057

Subcontract Info Contact: Judy Dalmaijer (204) 255-9749

Analysis and reporting info contact: Judy Dalmaijer
12-1329 NIAKWA ROAD E
WINNIPEG, MB R2J3T4

Phone: (204) 255-9749

Email: Judy.Dalmaijer@alsglobal.com

Please email confirmation of receipt to:

Judy.Dalmaijer@alsglobal.com

Shipped By:

Date Shipped:

23/12

Received By:

Fedex

Date Received:

Verified By:

[Redacted]

[Redacted]

MDT

Date Verified:

12-24-19 11:04

Sample Integrity Issues:



301 Fulling Mill Road
Middletown, PA 17057
P: (717) 944-5541
F: (717) 944-1430

Condition of Sample Receipt Form

Client: ALS Winnipeg Work Order #: 3077354 Initials: [redacted] Date: 12-24-19

1. Were airbills / tracking numbers present and recorded?..... NONE ☒ YES ☐ NO
Tracking number: 17662 F4515 6726 4576
2. Are Custody Seals on shipping containers intact?..... ☒ NONE ☐ YES ☐ NO
3. Are Custody Seals on sample containers intact?..... ☒ NONE ☐ YES ☐ NO
4. Is there a COC (Chain-of-Custody) present?..... ☒ YES ☐ NO
5. Are the COC and bottle labels complete, legible and in agreement?..... YES ☒ NO
- 5a. Does the COC contain sample locations?..... ☒ YES ☐ NO
- 5b. Does the COC contain date and time of sample collection for all samples?..... YES ☒ NO
- 5c. Does the COC contain sample collectors name?..... YES ☒ NO
- 5d. Does the COC note the type(s) of preservation for all bottles?..... YES ☒ NO
- 5e. Does the COC note the number of bottles submitted for each sample?..... YES ☒ NO
- 5f. Does the COC note the type of sample, composite or grab?..... YES ☒ NO
- 5g. Does the COC note the matrix of the sample(s)?..... YES ☒ NO
6. Are all aqueous samples requiring preservation preserved correctly?..... N/A ☒ YES ☐ NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... ☒ YES ☐ NO
8. Are all samples within holding times for the requested analyses?..... ☒ YES ☐ NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... ☒ YES ☐ NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... ☒ N/A ☐ YES ☐ NO
11. Were the samples received on ice?..... ☒ YES ☐ NO
12. Were sample temperatures measured at 0.0-6.0°C..... ☒ YES ☐ NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... YES ☒ NO
- 13a. Are the samples required for SDWA compliance reporting?..... N/A ☐ YES ☐ NO
- 13b. Did the client provide a SDWA PWS ID#?..... ☒ N/A ☐ YES ☐ NO
- 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... ☒ N/A ☐ YES ☐ NO
- 13d. Did the client provide the SDWA sample location ID/Description?..... ☒ N/A ☐ YES ☐ NO
- 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... ☒ N/A ☐ YES ☐ NO

Cooler #: 1

Temperature (°C): 6

Thermometer ID: 318

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

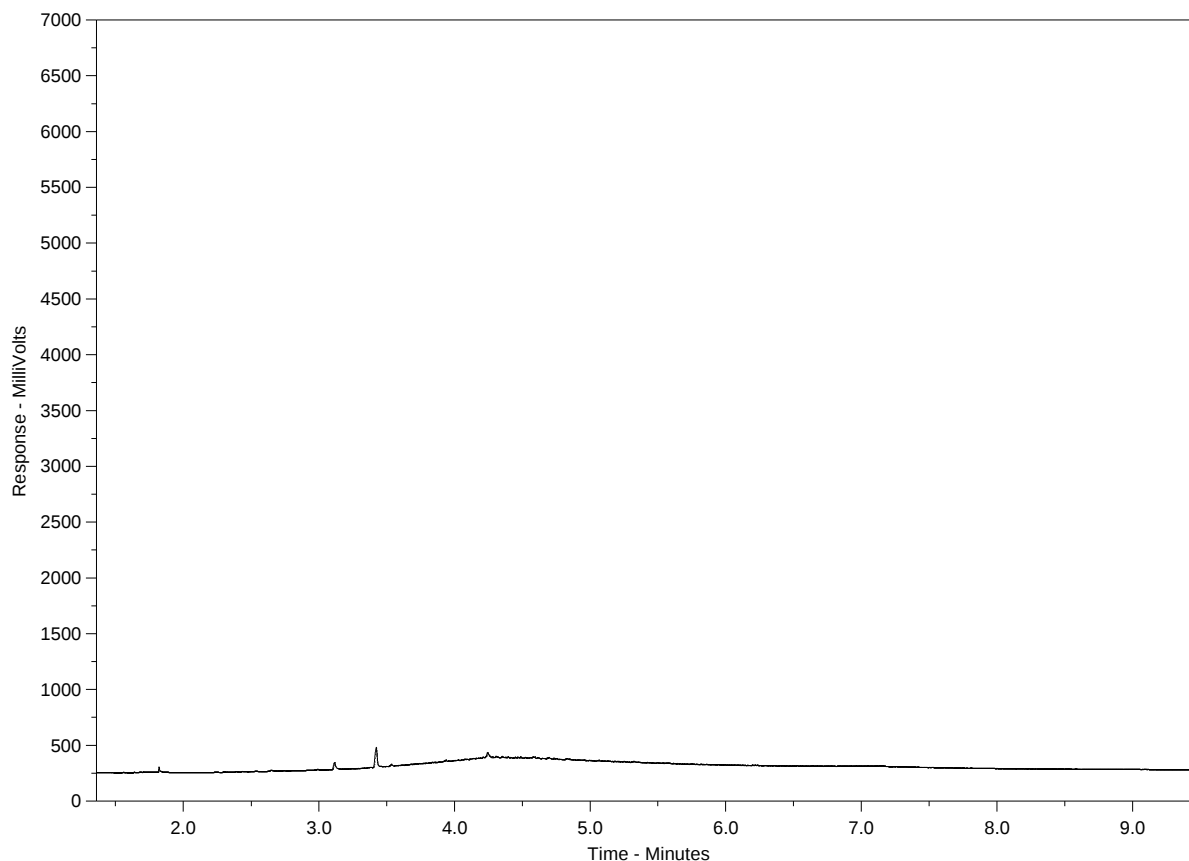
Added # bottles. Waters - not [redacted]. No c/c. No collector.
No times.

Rev. 4/29/2019

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2399352-1
Client Sample ID: TH19-04



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

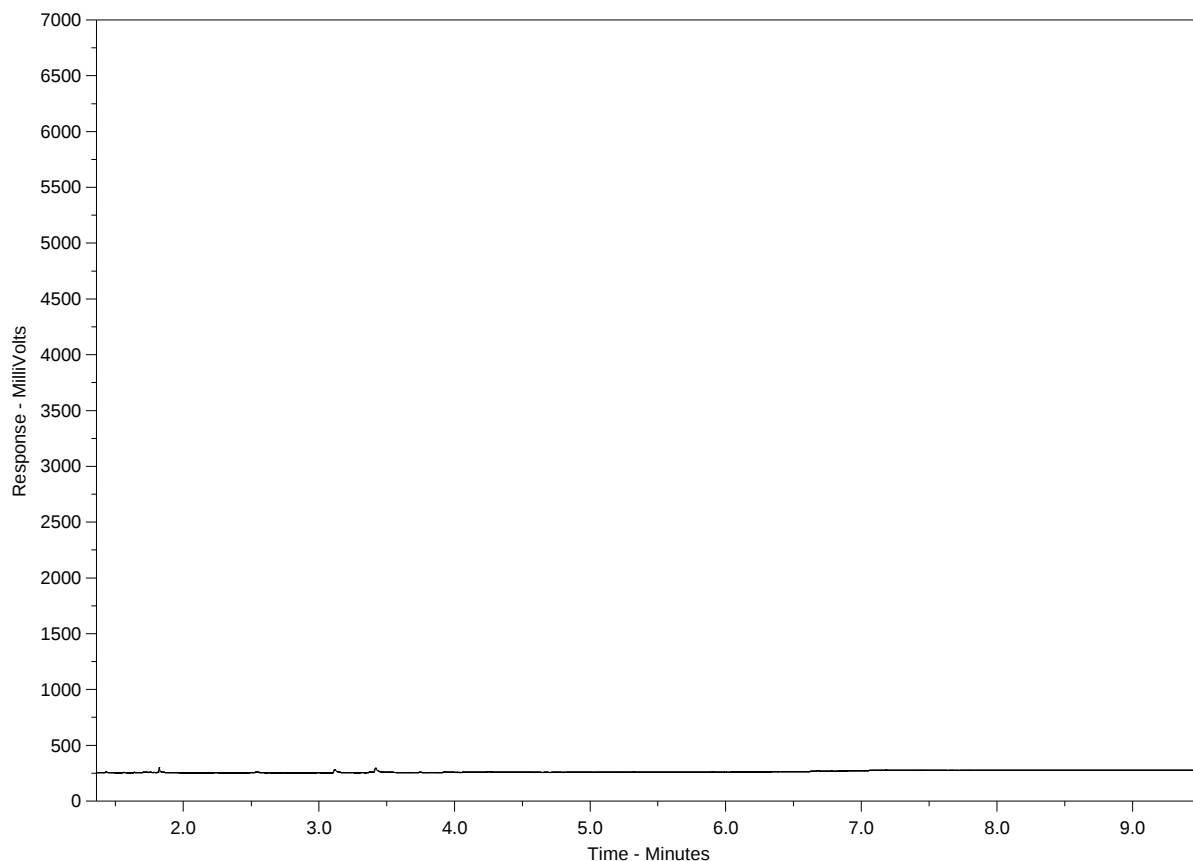
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2399352-2
Client Sample ID: TH19-03



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

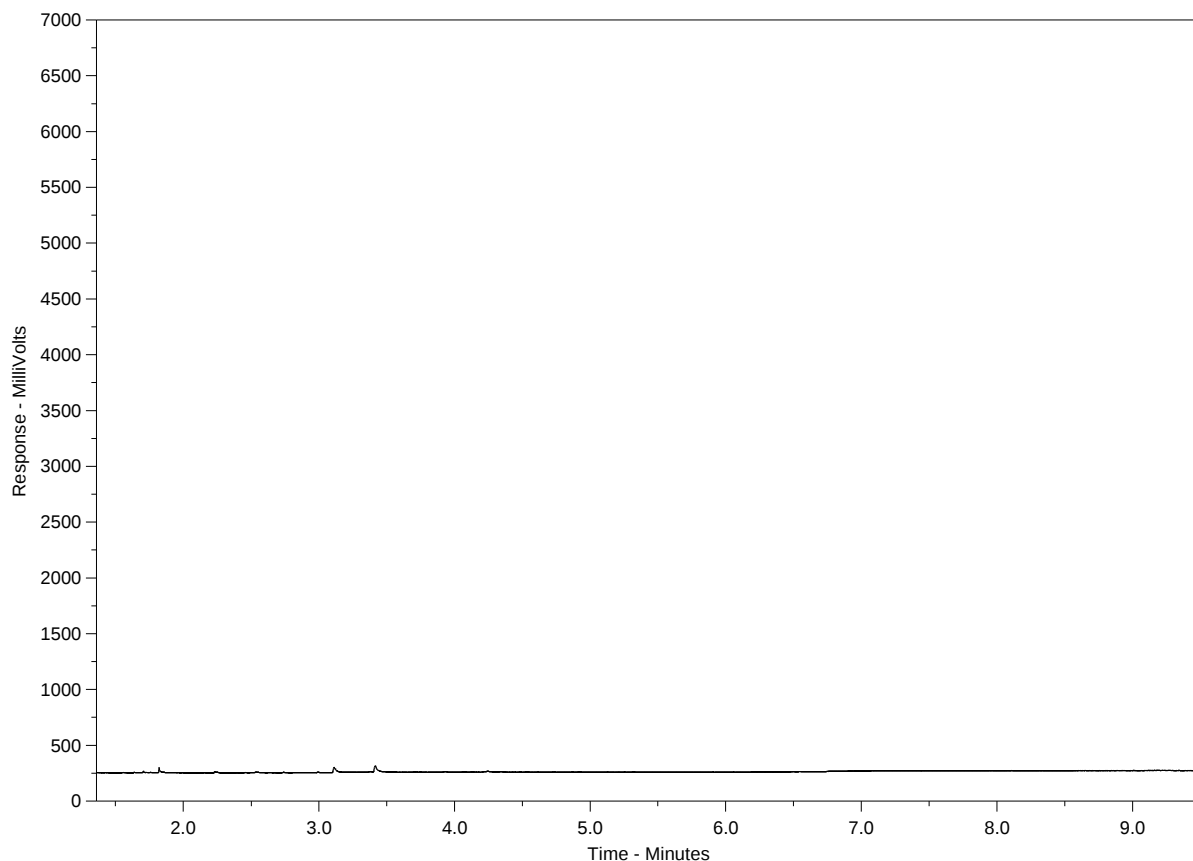
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2399352-3
Client Sample ID: TH19-10



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

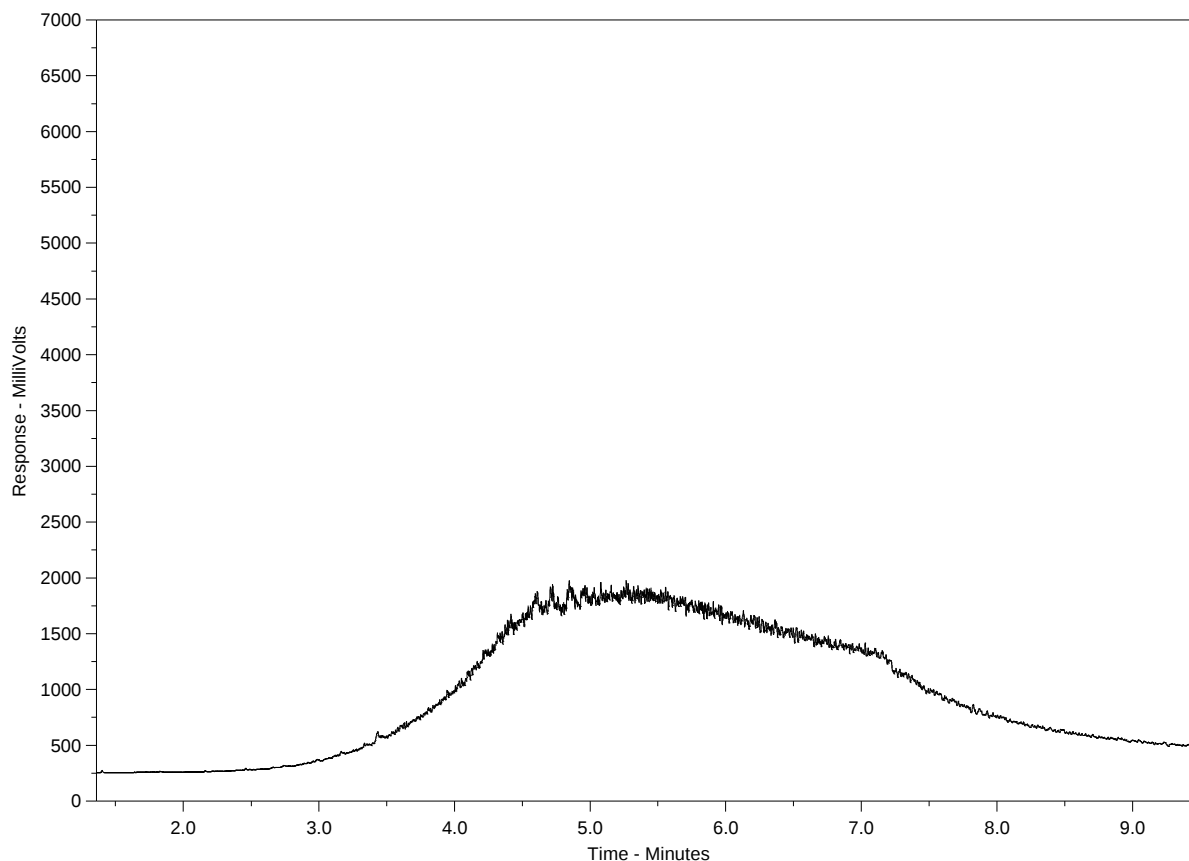
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2399352-4
Client Sample ID: TH19-08



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

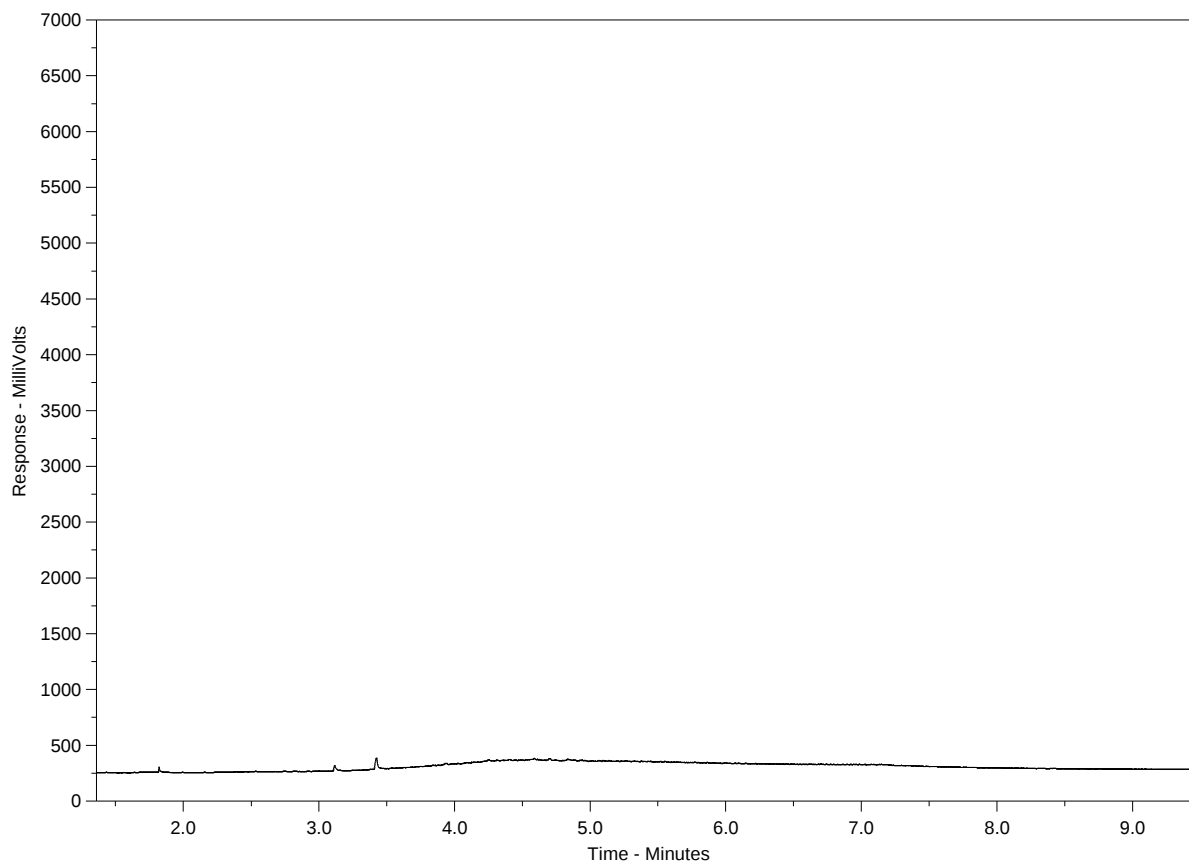
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2399352-5
Client Sample ID: TH19-07



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

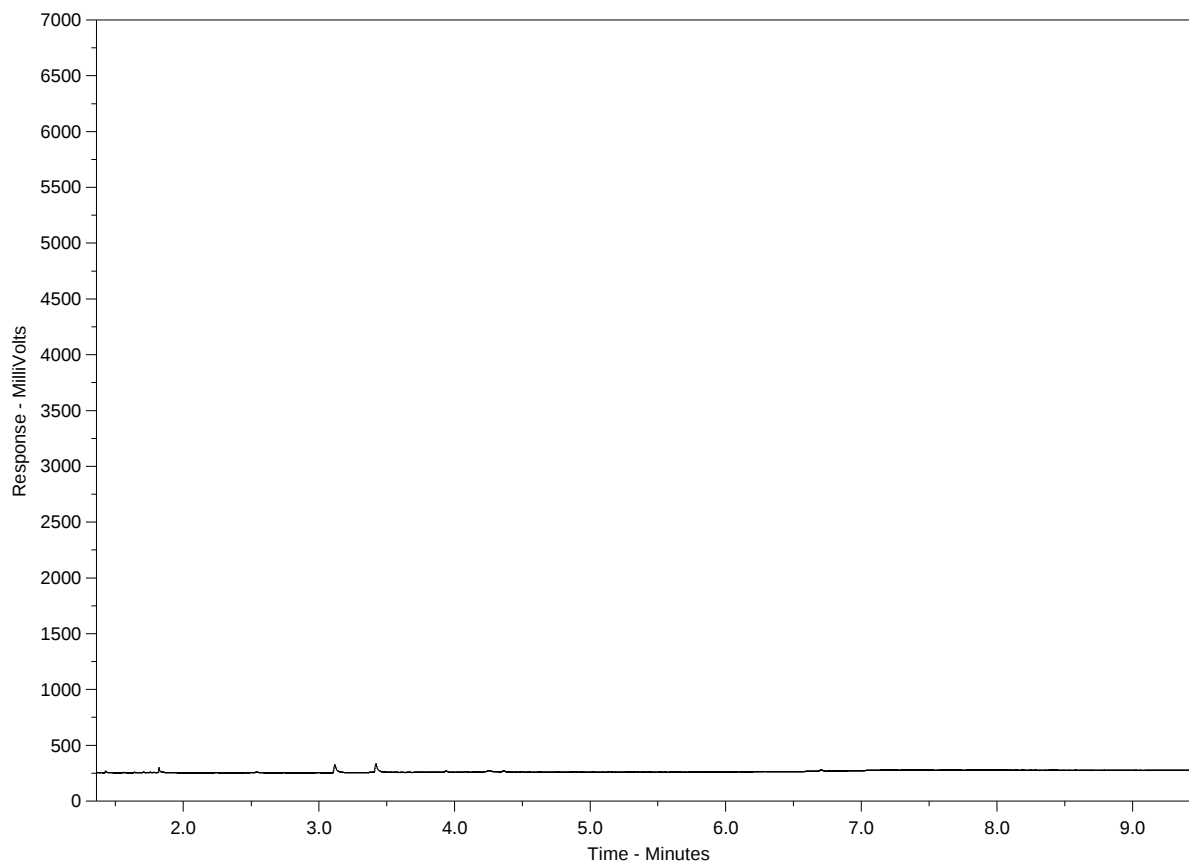
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2399352-6
Client Sample ID: DUP1



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.



Chain of Custody (COC) / Analytical Request Form



COC Number: 17 - 782615

Page 1 of 1

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

June 2014 EBC

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.



Wood Environment & Infrastructure
Solutions (Winnipeg)
ATTN: KEVIN BEECHINOR
440 Dovercourt Drive
Winnipeg MB R3Y 1G4

Date Received: 08-JAN-20
Report Date: 08-MAY-20 15:16 (MT)
Version: FINAL REV. 2

Client Phone: 204-488-2997

Certificate of Analysis

Lab Work Order #: L2403662
Project P.O. #: NOT SUBMITTED
Job Reference: WX18979
C of C Numbers:
Legal Site Desc:

Comments:

8-MAY-2020 AMENDED REPORT - Dioxin & Furan Results removed from report for frac -1 only


Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403662-1 TH19-01							
Sampled By: CLIENT on 08-JAN-20 @ 13:30							
Matrix: GW							
Miscellaneous Parameters							
Extractable Organic Halides (EOX)	See Attached					15-JAN-20	R4972120
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	14-JAN-20	14-JAN-20	R4969808
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.102		0.0030	mg/L	31-JAN-20	03-FEB-20	R4987627
Antimony (Sb)-Total	0.00026		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Arsenic (As)-Total	0.00093		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Barium (Ba)-Total	0.0315		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	31-JAN-20	03-FEB-20	R4987627
Boron (B)-Total	0.173		0.010	mg/L	31-JAN-20	03-FEB-20	R4987627
Cadmium (Cd)-Total	0.000196		0.0000050	mg/L	31-JAN-20	03-FEB-20	R4987627
Calcium (Ca)-Total	514		0.50	mg/L	31-JAN-20	05-FEB-20	R4990584
Cesium (Cs)-Total	0.000021		0.000010	mg/L	31-JAN-20	03-FEB-20	R4987627
Chromium (Cr)-Total	0.00078		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Cobalt (Co)-Total	0.00552		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Copper (Cu)-Total	0.00618		0.00050	mg/L	31-JAN-20	03-FEB-20	R4987627
Iron (Fe)-Total	0.187		0.010	mg/L	31-JAN-20	03-FEB-20	R4987627
Lead (Pb)-Total	0.000404		0.000050	mg/L	31-JAN-20	03-FEB-20	R4987627
Lithium (Li)-Total	0.612		0.0010	mg/L	31-JAN-20	03-FEB-20	R4987627
Magnesium (Mg)-Total	407		0.050	mg/L	31-JAN-20	05-FEB-20	R4990584
Manganese (Mn)-Total	3.56		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Molybdenum (Mo)-Total	0.00339		0.000050	mg/L	31-JAN-20	03-FEB-20	R4987627
Nickel (Ni)-Total	0.0208		0.00050	mg/L	31-JAN-20	03-FEB-20	R4987627
Potassium (K)-Total	11.4		0.050	mg/L	31-JAN-20	03-FEB-20	R4987627
Phosphorus (P)-Total	0.091		0.030	mg/L	31-JAN-20	03-FEB-20	R4987627
Rubidium (Rb)-Total	0.00177		0.00020	mg/L	31-JAN-20	03-FEB-20	R4987627
Selenium (Se)-Total	0.00214		0.000050	mg/L	31-JAN-20	03-FEB-20	R4987627
Silicon (Si)-Total	11.2		0.10	mg/L	31-JAN-20	03-FEB-20	R4987627
Silver (Ag)-Total	0.000019		0.000010	mg/L	31-JAN-20	03-FEB-20	R4987627
Sodium (Na)-Total	291		0.050	mg/L	31-JAN-20	03-FEB-20	R4987627
Strontium (Sr)-Total	3.37		0.00020	mg/L	31-JAN-20	03-FEB-20	R4987627
Sulfur (S)-Total	1010		5.0	mg/L	31-JAN-20	05-FEB-20	R4990584
Tellurium (Te)-Total	0.00022		0.00020	mg/L	31-JAN-20	03-FEB-20	R4987627
Thallium (Tl)-Total	0.000020		0.000010	mg/L	31-JAN-20	03-FEB-20	R4987627
Thorium (Th)-Total	<0.00010		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Tin (Sn)-Total	0.00841		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Titanium (Ti)-Total	0.00413		0.00030	mg/L	31-JAN-20	03-FEB-20	R4987627
Tungsten (W)-Total	<0.00010		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Uranium (U)-Total	0.110		0.000010	mg/L	31-JAN-20	03-FEB-20	R4987627
Vanadium (V)-Total	0.00158		0.00050	mg/L	31-JAN-20	03-FEB-20	R4987627
Zinc (Zn)-Total	0.0217		0.0030	mg/L	31-JAN-20	03-FEB-20	R4987627
Zirconium (Zr)-Total	0.00098		0.00020	mg/L	31-JAN-20	03-FEB-20	R4987627
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Acenaphthene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Acenaphthylene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Anthracene	<0.000010		0.000010	mg/L	13-JAN-20	13-JAN-20	R4964572
Acridine	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Benzo(a)anthracene	<0.000010		0.000010	mg/L	13-JAN-20	13-JAN-20	R4964572
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	13-JAN-20	13-JAN-20	R4964572

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403662-1 TH19-01							
Sampled By: CLIENT on 08-JAN-20 @ 13:30							
Matrix: GW							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	13-JAN-20	13-JAN-20	R4964572
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	13-JAN-20	13-JAN-20	R4964572
Chrysene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	13-JAN-20	13-JAN-20	R4964572
Fluoranthene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Fluorene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	13-JAN-20	13-JAN-20	R4964572
Naphthalene	<0.000050		0.000050	mg/L	13-JAN-20	13-JAN-20	R4964572
Phenanthrene	<0.000050		0.000050	mg/L	13-JAN-20	13-JAN-20	R4964572
Pyrene	<0.000010		0.000010	mg/L	13-JAN-20	13-JAN-20	R4964572
Quinoline	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	13-JAN-20	13-JAN-20	R4964572
Surrogate: Acenaphthene d10	89.3		60-130	%	13-JAN-20	13-JAN-20	R4964572
Surrogate: Acridine d9	100.2		60-130	%	13-JAN-20	13-JAN-20	R4964572
Surrogate: Chrysene d12	100.1		60-130	%	13-JAN-20	13-JAN-20	R4964572
Surrogate: Naphthalene d8	87.1		50-130	%	13-JAN-20	13-JAN-20	R4964572
Surrogate: Phenanthrene d10	101.9		60-130	%	13-JAN-20	13-JAN-20	R4964572
VOC plus F1 to F4							
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	09-JAN-20	09-JAN-20	R4965831
F3 (C16-C34)	0.38		0.25	mg/L	09-JAN-20	09-JAN-20	R4965831
F4 (C34-C50)	<0.25		0.25	mg/L	09-JAN-20	09-JAN-20	R4965831
Surrogate: 2-Bromobenzotrifluoride	104.6		60-140	%	09-JAN-20	09-JAN-20	R4965831
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		16-JAN-20	
F2-Naphth	<0.10		0.10	mg/L		16-JAN-20	
F3-PAH	0.38		0.25	mg/L		16-JAN-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		16-JAN-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		16-JAN-20	
Total Trihalomethanes (THMs)							
Total THMs	<0.0013		0.0013	mg/L		16-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.050		0.050	mg/L		13-JAN-20	R4971648
Benzene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Bromobenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Bromochloromethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Bromodichloromethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Bromoform	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Bromomethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
n-Butylbenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
sec-Butylbenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
tert-Butylbenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Carbon disulfide	<0.0050		0.0050	mg/L		13-JAN-20	R4971648
Carbon Tetrachloride	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Chlorobenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Chloroethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Chloroform	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Chloromethane	<0.0050		0.0050	mg/L		13-JAN-20	R4971648
2-Chlorotoluene	<0.020		0.020	mg/L		13-JAN-20	R4971648
4-Chlorotoluene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403662-1 TH19-01							
Sampled By: CLIENT on 08-JAN-20 @ 13:30							
Matrix: GW							
VOC plus F1 by GCMS							
Dibromochloromethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,2-Dibromo-3-chloropropane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,2-Dibromoethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Dibromomethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Dichlorodifluoromethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,1-dichloroethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,2-Dichloroethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,1-dichloroethene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
cis-1,2-Dichloroethene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
trans-1,2-Dichloroethene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Dichloromethane	<0.0050		0.0050	mg/L		13-JAN-20	R4971648
1,2-Dichloropropane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,3-Dichloropropane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
2,2-Dichloropropane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,1-Dichloropropene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
cis-1,3-Dichloropropene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
trans-1,3-Dichloropropene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Ethylbenzene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
F1	<0.10		0.10	mg/L		13-JAN-20	R4971648
Hexachlorobutadiene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Hexane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
2-Hexanone (Methyl butyl ketone)	<0.020		0.020	mg/L		13-JAN-20	R4971648
Isopropylbenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
4-Isopropyltoluene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
MEK	<0.020		0.020	mg/L		13-JAN-20	R4971648
MIBK	<0.020		0.020	mg/L		13-JAN-20	R4971648
MTBE	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Styrene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,1,1,2-Tetrachloroethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,1,2,2-Tetrachloroethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Tetrachloroethene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Toluene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,2,3-Trichlorobenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,2,4-Trichlorobenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,1,1-Trichloroethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Trichloroethene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Trichlorofluoromethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,2,3-Trichloropropane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,2,4-Trimethylbenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,3,5-Trimethylbenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Vinyl Chloride	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
M+P-Xylenes	<0.00040		0.00040	mg/L		13-JAN-20	R4971648
o-Xylene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Surrogate: 4-Bromofluorobenzene (SS)	85.8		70-130	%		13-JAN-20	R4971648
Surrogate: 1,4-Difluorobenzene (SS)	102.4		70-130	%		13-JAN-20	R4971648
Surrogate: 3,4-Dichlorotoluene (SS)	79.5		70-130	%		13-JAN-20	R4971648

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403662-2 WELL SHOP (TAP SOP ON BOTTLES) Sampled By: CLIENT on 08-JAN-20 @ 14:30 Matrix: GW							
Miscellaneous Parameters							
Extractable Organic Halides (EOX)	See Attached					15-JAN-20	R4972120
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	14-JAN-20	14-JAN-20	R4969808
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L	31-JAN-20	03-FEB-20	R4987627
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Arsenic (As)-Total	0.00017		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Barium (Ba)-Total	0.0181		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	31-JAN-20	03-FEB-20	R4987627
Boron (B)-Total	0.094		0.010	mg/L	31-JAN-20	03-FEB-20	R4987627
Cadmium (Cd)-Total	0.0000117		0.0000050	mg/L	31-JAN-20	03-FEB-20	R4987627
Calcium (Ca)-Total	42.9		0.050	mg/L	31-JAN-20	03-FEB-20	R4987627
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	31-JAN-20	03-FEB-20	R4987627
Chromium (Cr)-Total	<0.00010		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Cobalt (Co)-Total	0.00047		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Copper (Cu)-Total	0.0169		0.00050	mg/L	31-JAN-20	03-FEB-20	R4987627
Iron (Fe)-Total	2.26		0.010	mg/L	31-JAN-20	03-FEB-20	R4987627
Lead (Pb)-Total	0.00279		0.000050	mg/L	31-JAN-20	03-FEB-20	R4987627
Lithium (Li)-Total	0.0364		0.0010	mg/L	31-JAN-20	03-FEB-20	R4987627
Magnesium (Mg)-Total	46.0		0.0050	mg/L	31-JAN-20	03-FEB-20	R4987627
Manganese (Mn)-Total	0.0552		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Molybdenum (Mo)-Total	0.000607		0.000050	mg/L	31-JAN-20	03-FEB-20	R4987627
Nickel (Ni)-Total	0.00103		0.00050	mg/L	31-JAN-20	03-FEB-20	R4987627
Potassium (K)-Total	3.70		0.050	mg/L	31-JAN-20	03-FEB-20	R4987627
Phosphorus (P)-Total	<0.030		0.030	mg/L	31-JAN-20	03-FEB-20	R4987627
Rubidium (Rb)-Total	0.00138		0.00020	mg/L	31-JAN-20	03-FEB-20	R4987627
Selenium (Se)-Total	<0.000050		0.000050	mg/L	31-JAN-20	03-FEB-20	R4987627
Silicon (Si)-Total	3.89		0.10	mg/L	31-JAN-20	03-FEB-20	R4987627
Silver (Ag)-Total	<0.000010		0.000010	mg/L	31-JAN-20	03-FEB-20	R4987627
Sodium (Na)-Total	25.7		0.050	mg/L	31-JAN-20	03-FEB-20	R4987627
Strontium (Sr)-Total	0.211		0.00020	mg/L	31-JAN-20	03-FEB-20	R4987627
Sulfur (S)-Total	23.6		0.50	mg/L	31-JAN-20	03-FEB-20	R4987627
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	31-JAN-20	03-FEB-20	R4987627
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	31-JAN-20	03-FEB-20	R4987627
Thorium (Th)-Total	<0.00010		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Tin (Sn)-Total	<0.00010		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Titanium (Ti)-Total	<0.00030		0.00030	mg/L	31-JAN-20	03-FEB-20	R4987627
Tungsten (W)-Total	<0.00010		0.00010	mg/L	31-JAN-20	03-FEB-20	R4987627
Uranium (U)-Total	0.00103		0.000010	mg/L	31-JAN-20	03-FEB-20	R4987627
Vanadium (V)-Total	<0.00050		0.00050	mg/L	31-JAN-20	03-FEB-20	R4987627
Zinc (Zn)-Total	0.211		0.0030	mg/L	31-JAN-20	03-FEB-20	R4987627
Zirconium (Zr)-Total	0.00042		0.00020	mg/L	31-JAN-20	03-FEB-20	R4987627
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Acenaphthene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Acenaphthylene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Anthracene	<0.000010		0.000010	mg/L	13-JAN-20	13-JAN-20	R4964572
Acridine	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Benzo(a)anthracene	<0.000010		0.000010	mg/L	13-JAN-20	13-JAN-20	R4964572
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	13-JAN-20	13-JAN-20	R4964572

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403662-2 WELL SHOP (TAP SOP ON BOTTLES)							
Sampled By: CLIENT on 08-JAN-20 @ 14:30							
Matrix: GW							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	13-JAN-20	13-JAN-20	R4964572
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	13-JAN-20	13-JAN-20	R4964572
Chrysene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	13-JAN-20	13-JAN-20	R4964572
Fluoranthene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Fluorene	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	13-JAN-20	13-JAN-20	R4964572
Naphthalene	<0.000050		0.000050	mg/L	13-JAN-20	13-JAN-20	R4964572
Phenanthrene	<0.000050		0.000050	mg/L	13-JAN-20	13-JAN-20	R4964572
Pyrene	<0.000010		0.000010	mg/L	13-JAN-20	13-JAN-20	R4964572
Quinoline	<0.000020		0.000020	mg/L	13-JAN-20	13-JAN-20	R4964572
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	13-JAN-20	13-JAN-20	R4964572
Surrogate: Acenaphthene d10	95.6		60-130	%	13-JAN-20	13-JAN-20	R4964572
Surrogate: Acridine d9	93.8		60-130	%	13-JAN-20	13-JAN-20	R4964572
Surrogate: Chrysene d12	115.4		60-130	%	13-JAN-20	13-JAN-20	R4964572
Surrogate: Naphthalene d8	92.9		50-130	%	13-JAN-20	13-JAN-20	R4964572
Surrogate: Phenanthrene d10	102.1		60-130	%	13-JAN-20	13-JAN-20	R4964572
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.46	[U]	0.46	pg/L	21-JAN-20	23-JAN-20	R4976949
1,2,3,7,8-PeCDD	<0.26	[U]	0.26	pg/L	21-JAN-20	23-JAN-20	R4976949
1,2,3,4,7,8-HxCDD	<0.34	[U]	0.34	pg/L	21-JAN-20	23-JAN-20	R4976949
1,2,3,6,7,8-HxCDD	<0.34	[U]	0.34	pg/L	21-JAN-20	23-JAN-20	R4976949
1,2,3,7,8,9-HxCDD	<0.34	[U]	0.34	pg/L	21-JAN-20	23-JAN-20	R4976949
1,2,3,4,6,7,8-HpCDD	0.73	M,J,R	0.40	pg/L	21-JAN-20	23-JAN-20	R4976949
OCDD	3.11	M,J,B	0.49	pg/L	21-JAN-20	23-JAN-20	R4976949
2,3,7,8-TCDF	<0.32	[U]	0.32	pg/L	21-JAN-20	23-JAN-20	R4976949
1,2,3,7,8-PeCDF	0.34	M,J	0.20	pg/L	21-JAN-20	23-JAN-20	R4976949
2,3,4,7,8-PeCDF	<0.18	[U]	0.18	pg/L	21-JAN-20	23-JAN-20	R4976949
1,2,3,4,7,8-HxCDF	<0.19	[U]	0.19	pg/L	21-JAN-20	23-JAN-20	R4976949
1,2,3,6,7,8-HxCDF	<0.20	[U]	0.20	pg/L	21-JAN-20	23-JAN-20	R4976949
2,3,4,6,7,8-HxCDF	<0.19	[U]	0.19	pg/L	21-JAN-20	23-JAN-20	R4976949
1,2,3,7,8,9-HxCDF	0.56	M,J,B	0.24	pg/L	21-JAN-20	23-JAN-20	R4976949
1,2,3,4,6,7,8-HpCDF	<0.26	[U]	0.26	pg/L	21-JAN-20	23-JAN-20	R4976949
1,2,3,4,7,8,9-HpCDF	<0.31	M,U	0.31	pg/L	21-JAN-20	23-JAN-20	R4976949
OCDF	1.19	M,J	0.52	pg/L	21-JAN-20	23-JAN-20	R4976949
Total-TCDD	<0.46	[U]	0.46	pg/L	21-JAN-20	23-JAN-20	R4976949
Total TCDD # Homologues	0				21-JAN-20	23-JAN-20	R4976949
Total-PeCDD	<0.26	[U]	0.26	pg/L	21-JAN-20	23-JAN-20	R4976949
Total PeCDD # Homologues	0				21-JAN-20	23-JAN-20	R4976949
Total-HxCDD	<0.34	[U]	0.34	pg/L	21-JAN-20	23-JAN-20	R4976949
Total HxCDD # Homologues	0				21-JAN-20	23-JAN-20	R4976949
Total-HpCDD	<0.40	[U]	0.40	pg/L	21-JAN-20	23-JAN-20	R4976949
Total HpCDD # Homologues	0				21-JAN-20	23-JAN-20	R4976949
Total-TCDF	<0.32	[U]	0.32	pg/L	21-JAN-20	23-JAN-20	R4976949
Total TCDF # Homologues	0				21-JAN-20	23-JAN-20	R4976949
Total-PeCDF	0.34		0.20	pg/L	21-JAN-20	23-JAN-20	R4976949
Total PeCDF # Homologues	1				21-JAN-20	23-JAN-20	R4976949
Total-HxCDF	0.56		0.24	pg/L	21-JAN-20	23-JAN-20	R4976949
Total HxCDF # Homologues	1				21-JAN-20	23-JAN-20	R4976949
Total-HpCDF	<0.31	[U]	0.31	pg/L	21-JAN-20	23-JAN-20	R4976949

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403662-2 WELL SHOP (TAP SOP ON BOTTLES) Sampled By: CLIENT on 08-JAN-20 @ 14:30 Matrix: GW							
Dioxins and Furans HR 1613B							
Total HpCDF # Homologues	0				21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-2,3,7,8-TCDD	84.0		20-175	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-1,2,3,7,8-PeCDD	86.0		21-227	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	88.0		21-193	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	85.0		25-163	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	82.0		23-166	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-OCDD	49.0		13-138	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-2,3,7,8-TCDF	84.0		22-152	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-1,2,3,7,8-PeCDF	87.0		24-185	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-2,3,4,7,8-PeCDF	82.0		21-178	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	84.0		26-152	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	81.0		21-159	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	86.0		17-205	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	78.0		28-136	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	73.0		21-158	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	82.0		20-186	%	21-JAN-20	23-JAN-20	R4976949
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	96.0		31-191	%	21-JAN-20	23-JAN-20	R4976949
Lower Bound PCDD/F TEQ (WHO 2005)	0.0675			pg/L	21-JAN-20	23-JAN-20	R4976949
Mid Point PCDD/F TEQ (WHO 2005)	0.561			pg/L	21-JAN-20	23-JAN-20	R4976949
Upper Bound PCDD/F TEQ (WHO 2005)	1.05			pg/L	21-JAN-20	23-JAN-20	R4976949
VOC plus F1 to F4							
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	09-JAN-20	09-JAN-20	R4965831
F3 (C16-C34)	<0.25		0.25	mg/L	09-JAN-20	09-JAN-20	R4965831
F4 (C34-C50)	<0.25		0.25	mg/L	09-JAN-20	09-JAN-20	R4965831
Surrogate: 2-Bromobenzotrifluoride	105.1		60-140	%	09-JAN-20	09-JAN-20	R4965831
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		16-JAN-20	
F2-Naphth	<0.10		0.10	mg/L		16-JAN-20	
F3-PAH	<0.25		0.25	mg/L		16-JAN-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		16-JAN-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		16-JAN-20	
Total Trihalomethanes (THMs)							
Total THMs	<0.0013		0.0013	mg/L		16-JAN-20	
VOC plus F1 by GCMS							
Acetone	<0.050		0.050	mg/L		13-JAN-20	R4971648
Benzene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Bromobenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Bromochloromethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Bromodichloromethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Bromoform	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Bromomethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
n-Butylbenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
sec-Butylbenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
tert-Butylbenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Carbon disulfide	<0.0050		0.0050	mg/L		13-JAN-20	R4971648
Carbon Tetrachloride	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Chlorobenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Chloroethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Chloroform	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Chloromethane	<0.0050		0.0050	mg/L		13-JAN-20	R4971648

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403662-2 WELL SHOP (TAP SOP ON BOTTLES)							
Sampled By: CLIENT on 08-JAN-20 @ 14:30							
Matrix: GW							
VOC plus F1 by GCMS							
2-Chlorotoluene	<0.020		0.020	mg/L		13-JAN-20	R4971648
4-Chlorotoluene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Dibromochloromethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,2-Dibromo-3-chloropropane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,2-Dibromoethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Dibromomethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Dichlorodifluoromethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,1-dichloroethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,2-Dichloroethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,1-dichloroethene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
cis-1,2-Dichloroethene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
trans-1,2-Dichloroethene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Dichloromethane	<0.0050		0.0050	mg/L		13-JAN-20	R4971648
1,2-Dichloropropane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,3-Dichloropropane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
2,2-Dichloropropane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,1-Dichloropropene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
cis-1,3-Dichloropropene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
trans-1,3-Dichloropropene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Ethylbenzene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
F1	<0.10		0.10	mg/L		13-JAN-20	R4971648
Hexachlorobutadiene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Hexane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
2-Hexanone (Methyl butyl ketone)	<0.020		0.020	mg/L		13-JAN-20	R4971648
Isopropylbenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
4-Isopropyltoluene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
MEK	<0.020		0.020	mg/L		13-JAN-20	R4971648
MIBK	<0.020		0.020	mg/L		13-JAN-20	R4971648
MTBE	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Styrene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,1,1,2-Tetrachloroethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,1,2,2-Tetrachloroethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Tetrachloroethene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Toluene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,2,3-Trichlorobenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,2,4-Trichlorobenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,1,1-Trichloroethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Trichloroethene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Trichlorofluoromethane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,2,3-Trichloropropane	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,2,4-Trimethylbenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
1,3,5-Trimethylbenzene	<0.0010		0.0010	mg/L		13-JAN-20	R4971648
Vinyl Chloride	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
M+P-Xylenes	<0.00040		0.00040	mg/L		13-JAN-20	R4971648
o-Xylene	<0.00050		0.00050	mg/L		13-JAN-20	R4971648
Surrogate: 4-Bromofluorobenzene (SS)	86.6		70-130	%		13-JAN-20	R4971648
Surrogate: 1,4-Difluorobenzene (SS)	103.3		70-130	%		13-JAN-20	R4971648

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2403662-2 WELL SHOP (TAP SOP ON BOTTLES) Sampled By: CLIENT on 08-JAN-20 @ 14:30 Matrix: GW VOC plus F1 by GCMS Surrogate: 3,4-Dichlorotoluene (SS)	77.5		70-130	%		13-JAN-20	R4971648

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
A	Method Blank exceeds ALS DQO. Refer to narrative comments for further information.
M,J	A peak has been manually integrated, and the analyte was detected below the calibrated range but above the EDL.
M,J,B	A peak has been manually integrated. Target analyte was detected below the calibrated range but above the EDL. Compound was detected in the method blank at >10% of the sample concentration.
M,J,R	A peak has been manually integrated, the analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M,U	A peak has been manually integrated, and the analyte was not detected above the EDL.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
[U]	The analyte was not detected above the EDL.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
DX-1613B-HRMS-BU	Water	Dioxins and Furans HR 1613B	USEPA 1613B
Samples are filtered if required. Solids are extracted by Soxhlet using toluene. The liquid portion is extracted by liquid/liquid extraction using dichloromethane. The extracts are prepared using column chromatography, reduced in volume and analyzed by isotope-dilution GC/HRMS			
EOX-MP	Misc.	Extractable Organic Halides (EOX)	SEE SUBLET LAB REPORT
The material is extracted with ethyl acetate then the extract is analyzed on the TOX (Total Organic Halides) instrument.			
F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-L
Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.			
In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.			
In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.			
In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.			
Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.			
3. Linearity of gasoline response within 15% throughout the calibration range.			
Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.			
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.			
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.			
F2-F4-FID-WP	Water	CCME PHC F2-F4 in Water	EPA 3511
Petroleum hydrocarbons in water are determined by liquid-liquid micro-scale solvent extraction using a reciprocal shaker extraction apparatus prior to capillary column gas chromatography with flame ionization detection (GC-FID) analysis.			
HG-T-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA 3511/8270D (mod)
PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.			
THM-SUM-CALC-WP	Water	Total Trihalomethanes (THMs)	CALCULATION
Total Trihalomethanes (THMs) represents the sum of bromodichloromethane, bromoform, chlorodibromomethane and chloroform. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
VOC+F1-HSMS-WP	Water	VOC plus F1 by GCMS	EPA 8260C / EPA 5021A
In this method samples are analyzed using a headspace autosampler interfaced to a dual column gas chromatograph with MS and Flame Ionization detectors.			
XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
BU	ALS ENVIRONMENTAL - BURLINGTON, ONTARIO, CANADA
MP	ALS ENVIRONMENTAL - MIDDLETOWN, PENNSYLVANIA, USA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2403662

Report Date: 08-MAY-20

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Client: Wood Environment & Infrastructure Solutions (Winnipeg)

440 Dovercourt Drive

Winnipeg MB R3Y 1G4

Contact: KEVIN BEECHINOR

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU		Water						
Batch	R4976949							
WG3256723-2	LCS							
2,3,7,8-TCDD			108.0		%		67-158	23-JAN-20
1,2,3,7,8-PeCDD			104.0		%		70-142	23-JAN-20
1,2,3,4,7,8-HxCDD			100.0		%		70-164	23-JAN-20
1,2,3,6,7,8-HxCDD			98.0		%		76-134	23-JAN-20
1,2,3,7,8,9-HxCDD			99.0		%		64-162	23-JAN-20
1,2,3,4,6,7,8-HpCDD			102.0		%		70-140	23-JAN-20
OCDD			95.0		%		78-144	23-JAN-20
2,3,7,8-TCDF			97.0		%		75-158	23-JAN-20
1,2,3,7,8-PeCDF			101.0		%		80-134	23-JAN-20
2,3,4,7,8-PeCDF			97.0		%		68-160	23-JAN-20
1,2,3,4,7,8-HxCDF			97.0		%		72-134	23-JAN-20
1,2,3,6,7,8-HxCDF			101.0		%		84-130	23-JAN-20
2,3,4,6,7,8-HxCDF			99.0		%		70-156	23-JAN-20
1,2,3,7,8,9-HxCDF			104.0		%		78-130	23-JAN-20
1,2,3,4,6,7,8-HpCDF			108.0		%		82-122	23-JAN-20
1,2,3,4,7,8,9-HpCDF			89.0		%		78-138	23-JAN-20
OCDF			112.0		%		63-170	23-JAN-20
WG3256723-1	MB							
2,3,7,8-TCDD			<0.37	[U]	pg/L		0.37	23-JAN-20
1,2,3,7,8-PeCDD			<0.25	[U]	pg/L		0.25	23-JAN-20
1,2,3,4,7,8-HxCDD			<0.31	[U]	pg/L		0.31	23-JAN-20
1,2,3,6,7,8-HxCDD			<0.32	[U]	pg/L		0.32	23-JAN-20
1,2,3,7,8,9-HxCDD			0.41	M,J	pg/L		0.31	23-JAN-20
1,2,3,4,6,7,8-HpCDD			0.92	M,J,R	pg/L		0.48	23-JAN-20
OCDD			3.65	M,J	pg/L		0.69	23-JAN-20
2,3,7,8-TCDF			<0.34	[U]	pg/L		0.34	23-JAN-20
1,2,3,7,8-PeCDF			0.45	M,J,R	pg/L		0.25	23-JAN-20
2,3,4,7,8-PeCDF			0.32	M,J	pg/L		0.23	23-JAN-20
1,2,3,4,7,8-HxCDF			<0.27	[U]	pg/L		0.27	23-JAN-20
1,2,3,6,7,8-HxCDF			<0.28	[U]	pg/L		0.28	23-JAN-20
2,3,4,6,7,8-HxCDF			<0.30	[U]	pg/L		0.3	23-JAN-20
1,2,3,7,8,9-HxCDF			0.53	M,J	pg/L		0.38	23-JAN-20
1,2,3,4,6,7,8-HpCDF			<0.35	[U]	pg/L		0.35	23-JAN-20
1,2,3,4,7,8,9-HpCDF			<0.41	[U]	pg/L		0.41	23-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU		Water						
Batch R4976949								
WG3256723-1 MB								
OCDF			0.95	M,J,R	pg/L		0.73	23-JAN-20
Total-TCDD			<0.37	[U]	pg/L		0.37	23-JAN-20
Total-PeCDD			<0.25	[U]	pg/L		0.25	23-JAN-20
Total-HxCDD			0.41	A	pg/L		0.32	23-JAN-20
Total-HpCDD			<0.48	[U]	pg/L		0.48	23-JAN-20
Total-TCDF			<0.34	[U]	pg/L		0.34	23-JAN-20
Total-PeCDF			0.32	A	pg/L		0.25	23-JAN-20
Total-HxCDF			0.53	A	pg/L		0.38	23-JAN-20
Total-HpCDF			<0.41	[U]	pg/L		0.41	23-JAN-20
Surrogate: 13C12-2,3,7,8-TCDD			88.0		%		20-175	23-JAN-20
Surrogate: 13C12-1,2,3,7,8-PeCDD			80.0		%		21-227	23-JAN-20
Surrogate: 13C12-1,2,3,4,7,8-HxCDD			84.0		%		21-193	23-JAN-20
Surrogate: 13C12-1,2,3,6,7,8-HxCDD			84.0		%		25-163	23-JAN-20
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD			74.0		%		23-166	23-JAN-20
Surrogate: 13C12-OCDD			41.0		%		13-138	23-JAN-20
Surrogate: 13C12-2,3,7,8-TCDF			86.0		%		22-152	23-JAN-20
Surrogate: 13C12-1,2,3,7,8-PeCDF			83.0		%		24-185	23-JAN-20
Surrogate: 13C12-2,3,4,7,8-PeCDF			77.0		%		21-178	23-JAN-20
Surrogate: 13C12-1,2,3,4,7,8-HxCDF			82.0		%		26-152	23-JAN-20
Surrogate: 13C12-1,2,3,6,7,8-HxCDF			83.0		%		21-159	23-JAN-20
Surrogate: 13C12-2,3,4,6,7,8-HxCDF			81.0		%		17-205	23-JAN-20
Surrogate: 13C12-1,2,3,7,8,9-HxCDF			76.0		%		28-136	23-JAN-20
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF			67.0		%		21-158	23-JAN-20
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF			77.0		%		20-186	23-JAN-20
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)			97.0		%		31-191	23-JAN-20

COMMENTS: Blank has low levels of select targets that are within the reference method control limits

F2-F4-FID-WP Water

Batch R4965831

WG3254398-2 LCS

F2 (C10-C16)	98.4	%	70-130	08-JAN-20
F3 (C16-C34)	95.9	%	70-130	08-JAN-20
F4 (C34-C50)	102.7	%	70-130	08-JAN-20

WG3254398-1 MB

F2 (C10-C16)	<0.10	mg/L	0.1	08-JAN-20
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-FID-WP		Water						
Batch R4965831								
WG3254398-1 MB								
F3 (C16-C34)			<0.25		mg/L		0.25	08-JAN-20
F4 (C34-C50)			<0.25		mg/L		0.25	08-JAN-20
Surrogate: 2-Bromobenzotrifluoride			104.6		%		60-140	08-JAN-20
HG-T-CVAA-WP		Water						
Batch R4969808								
WG3258095-2 LCS								
Mercury (Hg)-Total			96.0		%		80-120	14-JAN-20
WG3258095-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-JAN-20
MET-T-CCMS-WP		Water						
Batch R4987627								
WG3267161-2 LCS								
Aluminum (Al)-Total			111.7		%		80-120	03-FEB-20
Antimony (Sb)-Total			109.0		%		80-120	03-FEB-20
Arsenic (As)-Total			109.9		%		80-120	03-FEB-20
Barium (Ba)-Total			109.8		%		80-120	03-FEB-20
Beryllium (Be)-Total			102.4		%		80-120	03-FEB-20
Bismuth (Bi)-Total			107.7		%		80-120	03-FEB-20
Boron (B)-Total			112.5		%		80-120	03-FEB-20
Cadmium (Cd)-Total			108.3		%		80-120	03-FEB-20
Calcium (Ca)-Total			105.8		%		80-120	03-FEB-20
Cesium (Cs)-Total			107.9		%		80-120	03-FEB-20
Chromium (Cr)-Total			110.4		%		80-120	03-FEB-20
Cobalt (Co)-Total			109.2		%		80-120	03-FEB-20
Copper (Cu)-Total			109.0		%		80-120	03-FEB-20
Iron (Fe)-Total			98.1		%		80-120	03-FEB-20
Lead (Pb)-Total			105.4		%		80-120	03-FEB-20
Lithium (Li)-Total			104.6		%		80-120	03-FEB-20
Magnesium (Mg)-Total			118.1		%		80-120	03-FEB-20
Manganese (Mn)-Total			110.0		%		80-120	03-FEB-20
Molybdenum (Mo)-Total			106.4		%		80-120	03-FEB-20
Nickel (Ni)-Total			107.2		%		80-120	03-FEB-20
Potassium (K)-Total			100.9		%		80-120	03-FEB-20
Phosphorus (P)-Total			110.8		%		80-120	03-FEB-20
Rubidium (Rb)-Total			110.8		%		80-120	03-FEB-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R4987627							
WG3267161-2		LCS						
Selenium (Se)-Total			106.8		%		80-120	03-FEB-20
Silicon (Si)-Total			104.5		%		80-120	03-FEB-20
Silver (Ag)-Total			108.8		%		80-120	03-FEB-20
Sodium (Na)-Total			110.6		%		80-120	03-FEB-20
Strontium (Sr)-Total			110.0		%		80-120	03-FEB-20
Sulfur (S)-Total			97.8		%		80-120	03-FEB-20
Tellurium (Te)-Total			99.1		%		80-120	03-FEB-20
Thallium (Tl)-Total			102.7		%		80-120	03-FEB-20
Thorium (Th)-Total			103.9		%		80-120	03-FEB-20
Tin (Sn)-Total			106.3		%		80-120	03-FEB-20
Titanium (Ti)-Total			106.8		%		80-120	03-FEB-20
Tungsten (W)-Total			104.4		%		80-120	03-FEB-20
Uranium (U)-Total			110.4		%		80-120	03-FEB-20
Vanadium (V)-Total			109.5		%		80-120	03-FEB-20
Zinc (Zn)-Total			109.2		%		80-120	03-FEB-20
Zirconium (Zr)-Total			103.0		%		80-120	03-FEB-20
WG3267161-1		MB						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	03-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	03-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	03-FEB-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	03-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	03-FEB-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	03-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	03-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	03-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	03-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	03-FEB-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R4987627							
WG3267161-1 MB								
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	03-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	03-FEB-20
Phosphorus (P)-Total			<0.030		mg/L		0.03	03-FEB-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	03-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	03-FEB-20
Silicon (Si)-Total			<0.10		mg/L		0.1	03-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	03-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	03-FEB-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	03-FEB-20
Sulfur (S)-Total			<0.50		mg/L		0.5	03-FEB-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	03-FEB-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	03-FEB-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-FEB-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	03-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	03-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-FEB-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	03-FEB-20
PAH,PANH-WP		Water						
Batch	R4964572							
WG3256843-2 LCS								
1-Methyl Naphthalene			120.6		%		60-130	13-JAN-20
2-Methyl Naphthalene			119.5		%		60-130	13-JAN-20
Acenaphthene			116.2		%		60-130	13-JAN-20
Acenaphthylene			113.8		%		60-130	13-JAN-20
Anthracene			90.8		%		60-130	13-JAN-20
Acridine			103.1		%		60-130	13-JAN-20
Benzo(a)anthracene			92.3		%		60-130	13-JAN-20
Benzo(a)pyrene			104.5		%		60-130	13-JAN-20
Benzo(b&j)fluoranthene			106.1		%		60-130	13-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP		Water						
Batch	R4964572							
WG3256843-2	LCS							
Benzo(g,h,i)perylene			120.7		%		60-130	13-JAN-20
Benzo(k)fluoranthene			118.0		%		60-130	13-JAN-20
Chrysene			92.1		%		60-130	13-JAN-20
Dibenzo(a,h)anthracene			118.2		%		60-130	13-JAN-20
Fluoranthene			117.6		%		60-130	13-JAN-20
Fluorene			110.0		%		60-130	13-JAN-20
Indeno(1,2,3-cd)pyrene			97.1		%		60-130	13-JAN-20
Naphthalene			120.0		%		50-130	13-JAN-20
Phenanthrene			109.7		%		60-130	13-JAN-20
Pyrene			120.9		%		60-130	13-JAN-20
Quinoline			119.0		%		60-130	13-JAN-20
WG3256843-1	MB							
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	13-JAN-20
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	13-JAN-20
Acenaphthene			<0.000020		mg/L		0.00002	13-JAN-20
Acenaphthylene			<0.000020		mg/L		0.00002	13-JAN-20
Anthracene			<0.000010		mg/L		0.00001	13-JAN-20
Acridine			<0.000020		mg/L		0.00002	13-JAN-20
Benzo(a)anthracene			<0.000010		mg/L		0.00001	13-JAN-20
Benzo(a)pyrene			<0.000005C		mg/L		0.000005	13-JAN-20
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	13-JAN-20
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	13-JAN-20
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	13-JAN-20
Chrysene			<0.000020		mg/L		0.00002	13-JAN-20
Dibenzo(a,h)anthracene			<0.000005C		mg/L		0.000005	13-JAN-20
Fluoranthene			<0.000020		mg/L		0.00002	13-JAN-20
Fluorene			<0.000020		mg/L		0.00002	13-JAN-20
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	13-JAN-20
Naphthalene			<0.000050		mg/L		0.00005	13-JAN-20
Phenanthrene			<0.000050		mg/L		0.00005	13-JAN-20
Pyrene			<0.000010		mg/L		0.00001	13-JAN-20
Quinoline			<0.000020		mg/L		0.00002	13-JAN-20
Surrogate: Acenaphthene d10			99.1		%		60-130	13-JAN-20
Surrogate: Acridine d9			91.9		%		60-130	13-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP		Water						
Batch	R4964572							
WG3256843-1 MB								
Surrogate: Chrysene d12			111.2		%		60-130	13-JAN-20
Surrogate: Naphthalene d8			97.4		%		50-130	13-JAN-20
Surrogate: Phenanthrene d10			99.8		%		60-130	13-JAN-20
VOC+F1-HSMS-WP		Water						
Batch	R4971648							
WG3257141-4 DUP		L2403662-2						
Acetone		<0.050	<0.050	RPD-NA	mg/L	N/A	30	13-JAN-20
Benzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
Bromobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
Bromochloromethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
Bromodichloromethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
Bromoform		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
Bromomethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	13-JAN-20
n-Butylbenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
sec-Butylbenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
tert-Butylbenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
Carbon disulfide		<0.0050	<0.0050	RPD-NA	mg/L	N/A	30	13-JAN-20
Carbon Tetrachloride		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
Chlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
Chloroethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	13-JAN-20
Chloroform		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
Chloromethane		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	13-JAN-20
2-Chlorotoluene		<0.020	<0.020	RPD-NA	mg/L	N/A	30	13-JAN-20
4-Chlorotoluene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
Dibromochloromethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
1,2-Dibromo-3-chloropropane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
1,2-Dibromoethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
Dibromomethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
1,2-Dichlorobenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
1,3-Dichlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
1,4-Dichlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
Dichlorodifluoromethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	13-JAN-20
1,1-dichloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
1,2-Dichloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4971648							
WG3257141-4	DUP	L2403662-2						
1,1-dichloroethene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
cis-1,2-Dichloroethene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
trans-1,2-Dichloroethene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
Dichloromethane		<0.0050	<0.0050	RPD-NA	mg/L	N/A	30	13-JAN-20
1,2-Dichloropropane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
1,3-Dichloropropane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
2,2-Dichloropropane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
1,1-Dichloropropene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
cis-1,3-Dichloropropene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
trans-1,3-Dichloropropene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
Ethylbenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
F1		<0.10	<0.10	RPD-NA	mg/L	N/A	30	13-JAN-20
Hexachlorobutadiene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
Hexane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
2-Hexanone (Methyl butyl ketone)		<0.020	<0.020	RPD-NA	mg/L	N/A	30	13-JAN-20
Isopropylbenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
4-Isopropyltoluene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
MEK		<0.020	<0.020	RPD-NA	mg/L	N/A	30	13-JAN-20
MIBK		<0.020	<0.020	RPD-NA	mg/L	N/A	30	13-JAN-20
MTBE		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
Styrene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
1,1,1,2-Tetrachloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
1,1,2,2-Tetrachloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
Tetrachloroethene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
Toluene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
1,2,3-Trichlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
1,2,4-Trichlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
1,1,1-Trichloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
1,1,2-Trichloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
Trichloroethene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
Trichlorofluoromethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	13-JAN-20
1,2,3-Trichloropropane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
1,2,4-Trimethylbenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20
1,3,5-Trimethylbenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	13-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4971648							
WG3257141-4	DUP	L2403662-2						
Vinyl Chloride		<0.00050	<0.00050	RPD-NA	mg/L	N/A	50	13-JAN-20
M+P-Xylenes		<0.00040	<0.00040	RPD-NA	mg/L	N/A	30	13-JAN-20
o-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	13-JAN-20
WG3257141-2	LCS							
Acetone			86.7		%		70-130	13-JAN-20
Benzene			85.7		%		70-130	13-JAN-20
Bromobenzene			86.4		%		70-130	13-JAN-20
Bromochloromethane			78.0		%		70-130	13-JAN-20
Bromodichloromethane			77.6		%		70-130	13-JAN-20
Bromoform			79.3		%		70-130	13-JAN-20
Bromomethane			99.9		%		60-140	13-JAN-20
n-Butylbenzene			111.1		%		70-130	13-JAN-20
sec-Butylbenzene			113.8		%		70-130	13-JAN-20
tert-Butylbenzene			118.7		%		70-130	13-JAN-20
Carbon disulfide			110.6		%		70-130	13-JAN-20
Carbon Tetrachloride			99.1		%		70-130	13-JAN-20
Chlorobenzene			87.0		%		70-130	13-JAN-20
Chloroethane			93.3		%		60-140	13-JAN-20
Chloroform			84.1		%		70-130	13-JAN-20
Chloromethane			124.7		%		60-140	13-JAN-20
2-Chlorotoluene			110.5		%		70-130	13-JAN-20
4-Chlorotoluene			104.4		%		70-130	13-JAN-20
Dibromochloromethane			77.2		%		70-130	13-JAN-20
1,2-Dibromo-3-chloropropane			72.3		%		70-130	13-JAN-20
1,2-Dibromoethane			71.2		%		70-130	13-JAN-20
Dibromomethane			75.1		%		70-130	13-JAN-20
1,2-Dichlorobenzene			84.5		%		70-130	13-JAN-20
1,3-Dichlorobenzene			92.3		%		70-130	13-JAN-20
1,4-Dichlorobenzene			95.7		%		70-130	13-JAN-20
Dichlorodifluoromethane			127.9		%		60-140	13-JAN-20
1,1-dichloroethane			85.7		%		70-130	13-JAN-20
1,2-Dichloroethane			72.9		%		70-130	13-JAN-20
1,1-dichloroethene			100.3		%		70-130	13-JAN-20
cis-1,2-Dichloroethene			84.6		%		70-130	13-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4971648							
WG3257141-2	LCS							
trans-1,2-Dichloroethene			95.3		%		70-130	13-JAN-20
Dichloromethane			81.6		%		70-130	13-JAN-20
1,2-Dichloropropane			73.4		%		70-130	13-JAN-20
1,3-Dichloropropane			72.5		%		70-130	13-JAN-20
2,2-Dichloropropane			91.8		%		70-130	13-JAN-20
1,1-Dichloropropene			100.2		%		70-130	13-JAN-20
cis-1,3-Dichloropropene			85.0		%		70-130	13-JAN-20
trans-1,3-Dichloropropene			86.0		%		70-130	13-JAN-20
Ethylbenzene			97.4		%		70-130	13-JAN-20
Hexachlorobutadiene			99.1		%		70-130	13-JAN-20
Hexane			88.6		%		70-130	13-JAN-20
2-Hexanone (Methyl butyl ketone)			72.2		%		70-130	13-JAN-20
Isopropylbenzene			108.1		%		70-130	13-JAN-20
4-Isopropyltoluene			121.8		%		70-130	13-JAN-20
MEK			73.6		%		70-130	13-JAN-20
MIBK			73.3		%		70-130	13-JAN-20
MTBE			87.2		%		70-130	13-JAN-20
Styrene			89.2		%		70-130	13-JAN-20
1,1,1,2-Tetrachloroethane			80.0		%		70-130	13-JAN-20
1,1,2,2-Tetrachloroethane			82.0		%		70-130	13-JAN-20
Tetrachloroethene			99.7		%		70-130	13-JAN-20
Toluene			91.8		%		70-130	13-JAN-20
1,2,3-Trichlorobenzene			79.6		%		70-130	13-JAN-20
1,2,4-Trichlorobenzene			78.3		%		70-130	13-JAN-20
1,1,1-Trichloroethane			98.3		%		70-130	13-JAN-20
1,1,2-Trichloroethane			73.6		%		70-130	13-JAN-20
Trichloroethene			93.5		%		70-130	13-JAN-20
Trichlorofluoromethane			127.1		%		60-140	13-JAN-20
1,2,3-Trichloropropane			73.3		%		70-130	13-JAN-20
1,2,4-Trimethylbenzene			104.5		%		70-130	13-JAN-20
1,3,5-Trimethylbenzene			107.4		%		70-130	13-JAN-20
Vinyl Chloride			120.6		%		60-140	13-JAN-20
M+P-Xylenes			105.5		%		70-130	13-JAN-20
o-Xylene			92.8		%		70-130	13-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4971648							
WG3257141-3	LCS							
F1			108.0		%		70-130	13-JAN-20
WG3257141-1	MB							
Acetone			<0.050		mg/L		0.05	13-JAN-20
Benzene			<0.00050		mg/L		0.0005	13-JAN-20
Bromobenzene			<0.0010		mg/L		0.001	13-JAN-20
Bromochloromethane			<0.0010		mg/L		0.001	13-JAN-20
Bromodichloromethane			<0.00050		mg/L		0.0005	13-JAN-20
Bromoform			<0.0010		mg/L		0.001	13-JAN-20
Bromomethane			<0.0010		mg/L		0.001	13-JAN-20
n-Butylbenzene			<0.0010		mg/L		0.001	13-JAN-20
sec-Butylbenzene			<0.0010		mg/L		0.001	13-JAN-20
tert-Butylbenzene			<0.0010		mg/L		0.001	13-JAN-20
Carbon disulfide			<0.0050		mg/L		0.005	13-JAN-20
Carbon Tetrachloride			<0.00050		mg/L		0.0005	13-JAN-20
Chlorobenzene			<0.0010		mg/L		0.001	13-JAN-20
Chloroethane			<0.0010		mg/L		0.001	13-JAN-20
Chloroform			<0.00050		mg/L		0.0005	13-JAN-20
Chloromethane			<0.0050		mg/L		0.005	13-JAN-20
2-Chlorotoluene			<0.020		mg/L		0.02	13-JAN-20
4-Chlorotoluene			<0.0010		mg/L		0.001	13-JAN-20
Dibromochloromethane			<0.00050		mg/L		0.0005	13-JAN-20
1,2-Dibromo-3-chloropropane			<0.0010		mg/L		0.001	13-JAN-20
1,2-Dibromoethane			<0.0010		mg/L		0.001	13-JAN-20
Dibromomethane			<0.0010		mg/L		0.001	13-JAN-20
1,2-Dichlorobenzene			<0.00050		mg/L		0.0005	13-JAN-20
1,3-Dichlorobenzene			<0.0010		mg/L		0.001	13-JAN-20
1,4-Dichlorobenzene			<0.0010		mg/L		0.001	13-JAN-20
Dichlorodifluoromethane			<0.0010		mg/L		0.001	13-JAN-20
1,1-dichloroethane			<0.00050		mg/L		0.0005	13-JAN-20
1,2-Dichloroethane			<0.00050		mg/L		0.0005	13-JAN-20
1,1-dichloroethene			<0.00050		mg/L		0.0005	13-JAN-20
cis-1,2-Dichloroethene			<0.0010		mg/L		0.001	13-JAN-20
trans-1,2-Dichloroethene			<0.0010		mg/L		0.001	13-JAN-20
Dichloromethane			<0.0050		mg/L		0.005	13-JAN-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4971648							
WG3257141-1 MB								
1,2-Dichloropropane			<0.0010		mg/L		0.001	13-JAN-20
1,3-Dichloropropane			<0.0010		mg/L		0.001	13-JAN-20
2,2-Dichloropropane			<0.0010		mg/L		0.001	13-JAN-20
1,1-Dichloropropene			<0.0010		mg/L		0.001	13-JAN-20
cis-1,3-Dichloropropene			<0.0010		mg/L		0.001	13-JAN-20
trans-1,3-Dichloropropene			<0.0010		mg/L		0.001	13-JAN-20
Ethylbenzene			<0.00050		mg/L		0.0005	13-JAN-20
F1			<0.10		mg/L		0.1	13-JAN-20
Hexachlorobutadiene			<0.0010		mg/L		0.001	13-JAN-20
Hexane			<0.0010		mg/L		0.001	13-JAN-20
2-Hexanone (Methyl butyl ketone)			<0.020		mg/L		0.02	13-JAN-20
Isopropylbenzene			<0.0010		mg/L		0.001	13-JAN-20
4-Isopropyltoluene			<0.0010		mg/L		0.001	13-JAN-20
MEK			<0.020		mg/L		0.02	13-JAN-20
MIBK			<0.020		mg/L		0.02	13-JAN-20
MTBE			<0.00050		mg/L		0.0005	13-JAN-20
Styrene			<0.0010		mg/L		0.001	13-JAN-20
1,1,1,2-Tetrachloroethane			<0.00050		mg/L		0.0005	13-JAN-20
1,1,2,2-Tetrachloroethane			<0.00050		mg/L		0.0005	13-JAN-20
Tetrachloroethene			<0.00050		mg/L		0.0005	13-JAN-20
Toluene			<0.00050		mg/L		0.0005	13-JAN-20
1,2,3-Trichlorobenzene			<0.0010		mg/L		0.001	13-JAN-20
1,2,4-Trichlorobenzene			<0.0010		mg/L		0.001	13-JAN-20
1,1,1-Trichloroethane			<0.00050		mg/L		0.0005	13-JAN-20
1,1,2-Trichloroethane			<0.00050		mg/L		0.0005	13-JAN-20
Trichloroethene			<0.00050		mg/L		0.0005	13-JAN-20
Trichlorofluoromethane			<0.0010		mg/L		0.001	13-JAN-20
1,2,3-Trichloropropane			<0.0010		mg/L		0.001	13-JAN-20
1,2,4-Trimethylbenzene			<0.0010		mg/L		0.001	13-JAN-20
1,3,5-Trimethylbenzene			<0.0010		mg/L		0.001	13-JAN-20
Vinyl Chloride			<0.00050		mg/L		0.0005	13-JAN-20
M+P-Xylenes			<0.00040		mg/L		0.0004	13-JAN-20
o-Xylene			<0.00050		mg/L		0.0005	13-JAN-20
Surrogate: 4-Bromofluorobenzene (SS)			88.9		%		70-130	13-JAN-20

Quality Control Report

Workorder: L2403662

Report Date: 08-MAY-20

Page 13 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	Water							
Batch	R4971648							
WG3257141-1	MB							
Surrogate: 1,4-Difluorobenzene (SS)			101.7		%		70-130	13-JAN-20
Surrogate: 3,4-Dichlorotoluene (SS)			75.4		%		70-130	13-JAN-20

Quality Control Report

Workorder: L2403662

Report Date: 08-MAY-20

Page 14 of 14

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
A	Method Blank exceeds ALS DQO. Refer to narrative comments for further information.
M,J	A peak has been manually integrated, and the analyte was detected below the calibrated range but above the EDL.
M,J,R	A peak has been manually integrated, the analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
[U]	The analyte was not detected above the EDL.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

January 17, 2020

Ms. Judy Dalmaijer
ALS Environmental-Winnipeg MB
Unit 12-1329 Niakwa Road East
Winnipeg, MB, R2J 3T4

Certificate of Analysis

Project Name: TOX	Workorder: 3079979
Purchase Order: L2403662	Workorder ID: L2403662

Dear Ms. Dalmaijer:

Enclosed are the analytical results for samples received by the laboratory on Friday, January 10, 2020.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Sarah S Leung (Project Coordinator) at (717) 944-5541.

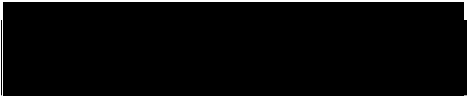
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Bea Ryback , Mr. Craig Riddell

*This page is included as part of the Analytical Report and
must be retained as a permanent record thereof.*


Ms. Sarah S Leung
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3079979 L2403662

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3079979001	L2403662-1	Water	1/8/2020 00:00	1/10/2020 10:19	Collected by Client
3079979002	L2403662-2	Water	1/8/2020 00:00	1/10/2020 10:19	Collected by Client

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SAMPLE SUMMARY

Workorder: 3079979 L2403662

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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**ANALYTICAL RESULTS**

Workorder: 3079979 L2403662

Lab ID: **3079979001**

Date Collected: 1/8/2020 00:00

Matrix: Water

Sample ID: **L2403662-1**

Date Received: 1/10/2020 10:19

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
------------	---------	------	-------	-----	--------	----------	----	----------	----	------

WET CHEMISTRYHalogen, Total Organic
(TOX)

ND

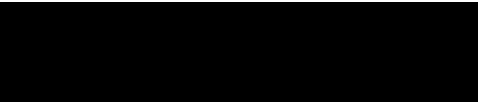
Y,Y

ug/L

20.0

SW846 9020B

1/15/20 12:56 PAG A


Ms. Sarah S Leung
Project Coordinator**ALS Environmental Laboratory Locations Across North America**Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
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**ANALYTICAL RESULTS**

Workorder: 3079979 L2403662

Lab ID: **3079979002**

Date Collected: 1/8/2020 00:00

Matrix: Water

Sample ID: **L2403662-2**

Date Received: 1/10/2020 10:19

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
------------	---------	------	-------	-----	--------	----------	----	----------	----	------

WET CHEMISTRYHalogen, Total Organic
(TOX)

ND

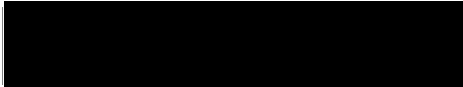
Y,Y

ug/L

20.0

SW846 9020B

1/15/20 14:15 PAG A


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ANALYTICAL RESULTS

Workorder: 3079979 L2403662

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3079979001	Y	L2403662-1	SW846 9020B	Halogen, Total Organic (TOX)
The laboratory analysis was from as unpreserved or improperly preserved sample.				
3079979002	Y	L2403662-2	SW846 9020B	Halogen, Total Organic (TOX)
The laboratory analysis was from as unpreserved or improperly preserved sample.				

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**ANALYSIS - PREP METHOD CROSS REFERENCE TABLE**

Workorder: 3079979 L2403662

Lab ID	Sample ID	Analysis Method	Prep Method
3079979001	L2403662-1	SW846 9020B	
3079979002	L2403662-2	SW846 9020B	

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QUALITY CONTROL DATA

Workorder: 3079979 L2403662

QC Batch: WETC/233170 **Analysis Method:** SW846 9020B
QC Batch Method: SW846 9020B
Associated Lab Samples: 3079979001, 3079979002

METHOD BLANK: 3073590

Parameter	Blank Result	Units	Reporting Limit
Halogen, Total Organic (TOX)	ND	ug/L	10.0

LABORATORY CONTROL SAMPLE: 3073591

Parameter	LCS % Rec	Units	Spike Conc.	LCS Result	% Rec Limit
Halogen, Total Organic (TOX)	103	ug/L	100	103	80 - 120

LABORATORY CONTROL SAMPLE: 3073592

Parameter	LCS % Rec	Units	Spike Conc.	LCS Result	% Rec Limit
Halogen, Total Organic (TOX)	102	ug/L	100	102	80 - 120

MATRIX SPIKE SAMPLE: 3073884 ORIGINAL: 3079765001

****NOTE - The Original Result shown below is a raw result and is only used for the purpose of calculating Matrix Spike percent recoveries. This result is not a final value and cannot be used as such.

Parameter	Original Result	Units	Spike Conc.	MS Result	MS % Rec	% Rec Limit
Halogen, Total Organic (TOX)	0	ug/L	200	212.04	106	80 - 120

METHOD BLANK: 3073594

Parameter	Blank Result	Units	Reporting Limit
Halogen, Total Organic (TOX)	ND	ug/L	10.0

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**Workorder: 3079979 L2403662

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
3079979001	L2403662-1			SW846 9020B	WETC/233170
3079979002	L2403662-2			SW846 9020B	WETC/233170

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3079979
L2403662

WINNIPEG

Subcontract Request Form

Subcontract To:

ALS ENVIRONMENTAL - MIDDLETOWN, PENNSYLVANIA, USA

34 DOGWOOD LANE
MIDDLETOWN, PENNSYLVANIA 17057

NOTES: Please reference on final report and invoice: PO# L2403662
ALS requires QC data to be provided with your final results.

Please see enclosed **2** sample(s) in **2** Container(s)

SAMPLE NUMBER

ANALYTICAL REQUIRED

DATE SAMPLED

DUE DATE

Priority Flag

L2403662-1 TH19-01

Extractable Organic Halides (EOX) (EOX-MP 14)

1/8/2020

1/31/2020

2 x A 250ml

**L2403662-2 WELL SHOP (TAP SOP
ON BOTTLES)**

Extractable Organic Halides (EOX) (EOX-MP 14)

1/8/2020

1/31/2020

2 x A 250ml

Subcontract Info Contact:

Judy Dalmaijer (204) 255-9749

Analysis and reporting info contact:

Judy Dalmaijer
12-1329 NIAKWA ROAD E
WINNIPEG, MB R2J3T4

Phone: (204) 255-9749

Email: Judy.Dalmaijer@alsglobal.com

cls 1/10/20

Please email confirmation of receipt to:

Judy.Dalmaijer@alsglobal.com

Shipped By: _____

Date Shipped: _____

Received By: _____

WPS

Date Received: _____

Verified By: _____

Date Verified: _____

1/10/20 10:19

Temperature: _____

11°

Sample Integrity Issues: _____

Wednesday, January 08, 2020 4:07 PM

Friday, January 17, 2020 6:39:44 AM

Page 10 of 11

ALS



301 Fulling Mill Road
Middletown, PA 17057
P: (717) 944-5541
F: (717) 944-1430

Condition of Sample Receipt Form

Client: As Wmipg Work Order #: 3079979 [Redacted] Date: 1/10

1. Were airbills / tracking numbers present and recorded?..... NONE YES NO
Tracking number: 12 662 P45 166 6727 3050
2. Are Custody Seals on shipping containers intact?..... NONE YES NO
3. Are Custody Seals on sample containers intact?..... NONE YES NO
4. Is there a COC (Chain-of-Custody) present?..... YES NO
5. Are the COC and bottle labels complete, legible and in agreement?..... YES NO
- 5a. Does the COC contain sample locations?..... YES NO
- 5b. Does the COC contain date and time of sample collection for all samples?..... YES NO
- 5c. Does the COC contain sample collectors name?..... YES NO
- 5d. Does the COC note the type(s) of preservation for all bottles?..... YES NO
- 5e. Does the COC note the number of bottles submitted for each sample?..... YES NO
- 5f. Does the COC note the type of sample, composite or grab?..... YES NO
- 5g. Does the COC note the matrix of the sample(s)?..... YES NO
6. Are all aqueous samples requiring preservation preserved correctly?..... N/A YES NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... YES NO
8. Are all samples within holding times for the requested analyses?..... YES NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... YES NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... N/A YES NO
11. Were the samples received on ice?..... YES NO
12. Were sample temperatures measured at 0.0-6.0°C..... YES NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... YES NO
- 13a. Are the samples required for SDWA compliance reporting?..... N/A YES NO
- 13b. Did the client provide a SDWA PWS ID#?..... N/A YES NO
- 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... N/A YES NO
- 13d. Did the client provide the SDWA sample location ID/Description?..... N/A YES NO
- 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... N/A YES NO

Cooler #: _____

Temperature (°C): 5 _____

Thermometer ID: 318 _____

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

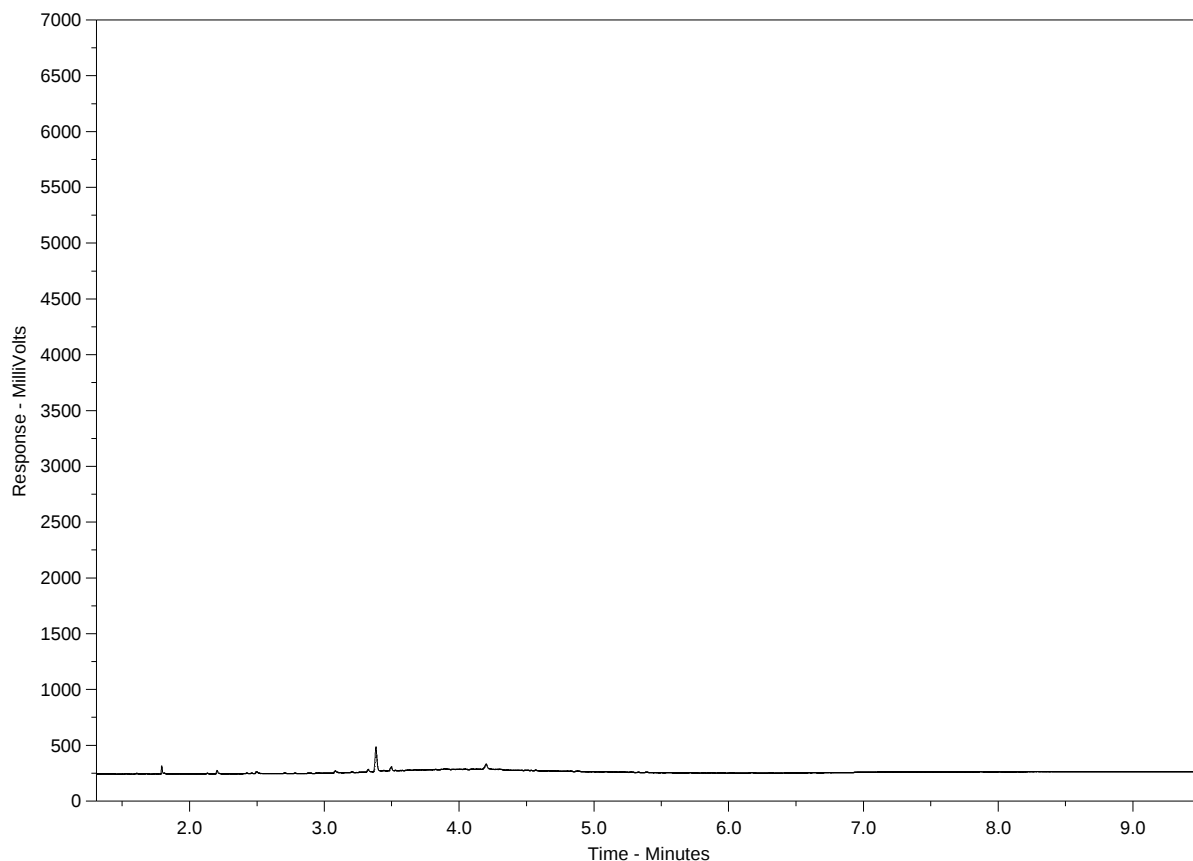
Bottle rec'd unsp. will need sulfuric added.

Rev. 4/29/2019

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2403662-1
Client Sample ID: TH19-01



← F2 →		F3		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

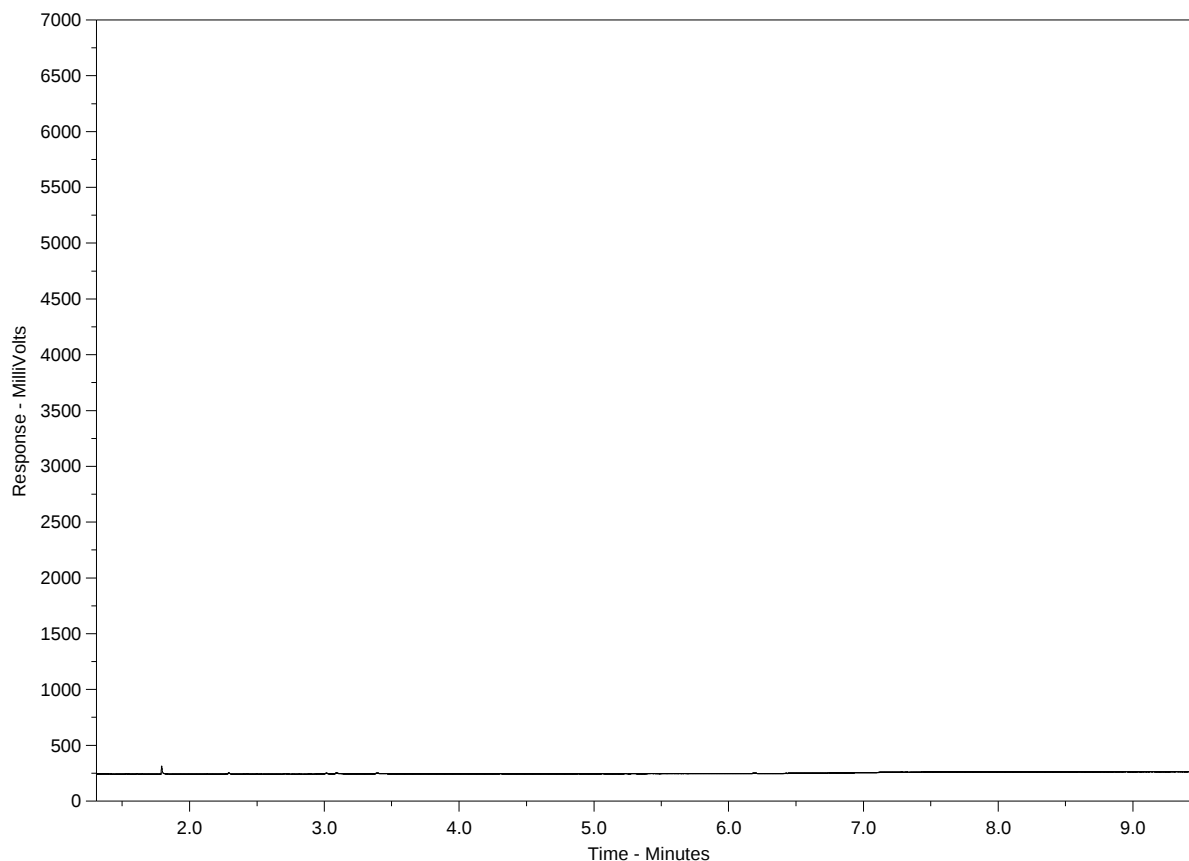
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2403662-2
 Client Sample ID: WELL SHOP (TAP SOP ON BOTTLES)



← F2 →		F3		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com



L2403662-COFC

COC Number: 17- 782776

Page 1 of 1 2403662

Report To		Report Format / Distribution		Contact your AM to confirm all E&P TATs (surcharges may apply)	
Company:	Wood	Select Report Format:	☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)	Regular [R]	☒ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Kevin Beechiner	Quality Control (QC) Report with Report	☐ YES ☐ NO	4 day [P4-20%]	☐ 1 Business day [E - 100%]
Phone:		☐ Compare Results to Criteria on Report - provide details below if box checked		3 day [P3-25%]	☐ Same Day, Weekend or Statutory holiday [E2 -200% Tiv. (Laboratory opening fees may apply)]
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	2 day [P2-50%]	
Street:	440 Dovercourt	Email 1 or Fax	Kevin.beechiner@woodcl.com	Emergency Time Required for all E&P TATs: dd-mm-yy hh:mm	
City/Province:	Wpg, MB	Email 2	angela.cerillite@woodcl.com	For tests that can not be performed according to the service level selected, you will be contacted.	
Postal Code:		Email 3	julian.huberman@woodcl.com	Analysis Request	
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below	
Copy of Invoice with Report	☐ YES ☒ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX		
Company:		Email 1 or Fax			
Contact:		Email 2			
Project Information		Oil and Gas Required Fields (client use)		NUMBER OF CONTAINERS	
ALS Account # / Quote #:		AFE/Cost Center:	PO#	Dioxans + Furans	
Job #:	WX18979	Major/Minor Code:	Routing Code:	EDX / Tot. Org. Halogens	
PO / AFE:		Requisitioner:		Mercury (BC)	
LSD:		Location:		Metals (BC; Tot.)	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:	PATHS	
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	VOC/BTEX, P1-P4
	TH19-01	08 Jan 20	13:30	GW	
	Well-Shop *	08 Jan 20	14:30	GW	
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)	
Are samples taken from a Regulated DW System?	☐ YES ☒ NO	* labelled as Tap-Shop on Containers → TH19-01 - limited sample size for Dioxans + Furans *		Frozen ☐ SIF Observations Yes ☐ No ☐	
Are samples for human consumption/ use?	☐ YES ☒ NO			Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐	
				Cooling Initiated ☐	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		INITIAL COOLER TEMPERATURES °C	
Date:	08 Jan 2020	Time:	3:20 PM	1.2	
RECEIVED BY		Date:	JAN 8	FINAL COOLER TEMPERATURES °C	
Time:		Time:	3:22		
ALS LOCATIONS AND SAMPLING INFORMATION		WHITE - LABORATORY COPY YELLOW - CLIENT COPY			

Appendix G

Limitations

LIMITATIONS

1. The work performed in the preparation of this report and the conclusions presented are subject to the following:
 - (a) The Standard Terms and Conditions which form a part of our Professional Services Contract;
 - (b) The Scope of Services;
 - (c) Time and Budgetary limitations as described in our Contract; and
 - (d) The Limitations stated herein.
2. No other warranties or representations, either expressed or implied, are made as to the professional services provided under the terms of our Contract, or the conclusions presented.
3. The conclusions presented in this report were based, in part, on visual observations of the Site and attendant structures. Our conclusions cannot and are not extended to include those portions of the Site or structures, which are not reasonably available, in Wood's opinion, for direct observation.
4. The environmental conditions at the Site were assessed, within the limitations set out above, having due regard for applicable environmental regulations as of the date of the inspection. A review of compliance by past owners or occupants of the Site with any applicable local, provincial or federal by-laws, orders-in-council, legislative enactments and regulations was not performed.
5. The Site history research included obtaining information from third parties and employees or agents of the owner. No attempt has been made to verify the accuracy of any information provided, unless specifically noted in our report.
6. Where testing was performed, it was carried out in accordance with the terms of our contract providing for testing. Other substances, or different quantities of substances testing for, may be present on Site and may be revealed by different or other testing not provided for in our contract.
7. Because of the limitations referred to above, different environmental conditions from those stated in our report may exist. Should such different conditions be encountered, Wood must be notified in order that it may determine if modifications to the conclusions in the report are necessary.
8. The utilization of Wood's services during the implementation of any remedial measures will allow Wood to observe compliance with the conclusions and recommendations contained in the report. Wood's involvement will also allow for changes to be made as necessary to suit field conditions as they are encountered.
9. This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or contract. Any use which any third party makes of the report, in whole or the part, or any reliance thereon or decisions made based on any information or conclusions in the report is the sole responsibility of such third party. Wood accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report or anything set out therein.
10. This report is not to be given over to any third party for any purpose whatsoever without the written permission of Wood.

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited

Appendix D – Transfer Station Clean-up Costs

Redonda Transfer Station Estimated Disposal Costs

Class 2							
	Drum	Pail	IBC	Bin	Tote	Cylinder	
Aerosols	20	30	0	0	0	0	Total
Cost	\$3,400.00	\$900.00	\$0.00	\$0.00	\$0.00	\$0.00	\$4,300.00
Propane / Butane / CO2	2	10	0	0	0	4	Total
Cost	\$380.00	\$300.00	\$0.00	\$0.00	\$0.00	\$120.00	\$800.00
Class 2 Total Cost							\$5,100.00

Class 3							
	Drum	Pail	IBC	Bin	Tote	Cylinder	
PRM	10	15	0	0	0	0	Total
Cost	\$1,100.00	\$375.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,475.00
Bulk Lab Pails	0	30	0	0	0	0	Total
Cost	\$0.00	\$750.00	\$0.00	\$0.00	\$0.00	\$0.00	\$750.00
Methanol Cuvettes	0	14	0	0	0	0	Total
Cost	\$0.00	\$350.00	\$0.00	\$0.00	\$0.00	\$0.00	\$350.00
Lab / Loose Packs	8	20	0	0	0	0	Total
Cost	\$1,240.00	\$500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,740.00
Fuel Drums	8	0	0	0	0	0	Total
Cost	\$640.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$640.00
Resin Class 3	4	4	0	0	0	0	Total
Cost	\$800.00	\$100.00	\$0.00	\$0.00	\$0.00	\$0.00	\$900.00
Solvent Misc	4	4	0	0	0	0	Total
Cost	\$360.00	\$100.00	\$0.00	\$0.00	\$0.00	\$0.00	\$460.00
Class 3 Total Cost							\$6,315.00

Class 4							
	Drum	Pail	IBC	Bin	Tote	Cylinder	
Lab Debris 4.1	0	20	0	0	0	0	Total
Cost	\$0.00	\$500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$500.00
Paint Filters	10	0	0	0	0	0	Total
Cost	\$1,850.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,850.00
Metal Catalyst	5	0	0	0	0	0	Total
Cost	\$925.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$925.00
Class 4 Total Cost							\$3,275.00

Class 5							
	Drum	Pail	IBC	Bin	Tote	Cylinder	
Oxidizer LP	2	12	0	0	0	0	Total
Cost	\$650.00	\$45.00	\$0.00	\$0.00	\$0.00	\$0.00	\$695.00
COD Vials	0	10	0	0	0	0	Total
Cost	\$0.00	\$450.00	\$0.00	\$0.00	\$0.00	\$0.00	\$450.00
Class 5 Total Cost							\$1,145.00

Class 6							
	Drum	Pail	IBC	Bin	Tote	Cylinder	
Lab Debris 6.1	8	20	0	0	0	0	Total
Cost	\$960.00	\$500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,460.00
Bulk Toxic Organic	2	10	0	0	0	0	Total
Cost	\$330.00	\$250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$580.00
LP Toxic	2	8	0	0	0	0	Total
Cost	\$330.00	\$200.00	\$0.00	\$0.00	\$0.00	\$0.00	\$530.00
Class 6 Total Cost							\$2,570.00

Class 8 - Acid							
	Drum	Pail	IBC / Pallet	Bin	Tote	Cylinder	
LP Acid	10	10	0	0	0	0	Total
Cost	\$2,050.00	\$250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2,300.00

Lab Debris Acid	0	8	0	0	0	0	Total
Cost	\$0.00	\$200.00	\$0.00	\$0.00	\$0.00	\$0.00	\$200.00
Bulk Acid	6	0	0	0	1	0	Total
Cost	\$840.00	\$0.00	\$0.00	\$0.00	\$450.00	\$0.00	\$1,290.00
Nitric Debris	4	0	0	0	0	0	Total
Cost	\$1,300.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,300.00
Batteries Acid	2	10	2	0	0	0	Total
Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Class 8 - Acid Total Cost							\$5,090.00

Class 8 - Base							
	Drum	Pail	IBC	Bin	Tote	Cylinder	
LP Base	10	10	0	0	0	0	Total
Cost	\$2,050.00	\$250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2,300.00
Lab Debris Base	0	8	0	0	0	0	Total
Cost	\$0.00	\$200.00	\$0.00	\$0.00	\$0.00	\$0.00	\$200.00
Resin Class 8	0	4	0	0	0	0	Total
Cost	\$0.00	\$100.00	\$0.00	\$0.00	\$0.00	\$0.00	\$100.00
Class 8 Base Total Cost							\$2,600.00

Class 9							
	Drum	Pail	IBC	Bin	Tote	Cylinder	
LP EHS	2	10	0	0	0	0	Total
Cost	\$330.00	\$250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$580.00
Resin Class 9	0	4	0	0	0	0	Total
Cost	\$0.00	\$100.00	\$0.00	\$0.00	\$0.00	\$0.00	\$100.00
Class 9 Total Cost							\$680.00

Leachable Toxic							
	Drum	Pail	IBC	Bin	Tote	Cylinder	
Used Oil	21	0	0	0	1	0	Total
Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Used Oil Filters	10	0	0	0	0	0	Total
Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Oil / Water	10	0	0	0	4	0	Total
Cost	\$700.00	\$0.00	\$0.00	\$0.00	\$1,000.00	\$0.00	\$1,700.00
Oily Debris	10	0	3	0	0	0	Total
Cost	\$1,500.00	\$0.00	\$1,560.00	\$0.00	\$0.00	\$0.00	\$3,060.00
Oil Sludge	8	0	0	0	0	0	Total
Cost	\$1,240.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,240.00
Leachable Toxic Total Cost							\$6,000.00

Non-Regulated Solids							
	Drum	Pail	IBC	Bin	Tote	Cylinder	
LP NRS	4	12	0	0	0	0	Total
Cost	\$620.00	\$300.00	\$0.00	\$0.00	\$0.00	\$0.00	\$920.00
Bulk Lab Waste NRS	0	10	0	0	0	0	Total
Cost	\$0.00	\$250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$250.00
Floor Dry	0	0	10	0	0	0	Total
Cost	\$0.00	\$0.00	\$1,000.00	\$0.00	\$0.00	\$0.00	\$1,000.00
Rags	0	0	0	4	0	0	Total
Cost	\$0.00	\$0.00	\$0.00	\$1,440.00	\$0.00	\$0.00	\$1,440.00
Resin Sticks	0	0	6	0	0	0	Total
Cost	\$0.00	\$0.00	\$4,248.00	\$0.00	\$0.00	\$0.00	\$4,248.00
Dicyandiamide	0	0	4	0	0	0	Total
Cost	\$0.00	\$0.00	\$1,800.00	\$0.00	\$0.00	\$0.00	\$1,800.00
Fluorescent Tubes	0	0	0	0	0	0	Total
Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,040.00
Crushed Bulbs	4	0	0	0	0	0	Total
Cost	\$504.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$504.00
Bulbs Other	0	0	0	0	0	0	Total

Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$605.00
Bulked Garbage	0	0	8	1	0	0	Total
Cost	\$0.00	\$0.00	\$106.00	\$212.00	\$0.00	\$0.00	\$318.00
Non-Regulated Solids Total Cost							\$12,125.00

Non-Regulated Liquids							
	Drum	Pail	IBC	Bin	Tote	Cylinder	
Grease	50	40	0	0	0	0	Total
Cost	\$6,500.00	\$1,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$7,500.00
LP NRL	4	10	0	0	0	0	Total
Cost	\$580.00	\$250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$830.00
Drill Coolant	0	0	0	0	6	0	Total
Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00
Bulk Lab Waste NRL	0	10	0	0	0	0	Total
Cost	\$0.00	\$250.00	\$0.00	\$0.00	\$0.00	\$0.00	\$250.00
Glycol	10	0	0	0	0	0	Total
Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Water Hydrocarbon	11	0	0	0	0	0	Total
Cost	\$770.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$770.00
Non-Regulated Liquids Total Cost							\$10,850.00

Total Waste Cost	\$55,750.00
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Transportation			
Type	Total Containers	Total skids	
Drums	261	65.25	
Pails	333	12	
IBC / Pallet	33	33	
Bins	5	10	
Totes	12	12	
Total Skids		133	
	Total Trucks	5	Cost
Total Loading Hours		38	\$1,325.83
Total Driver Hours		38	\$3,409.29

Total Transportation Cost	\$4,735.12
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TOTAL DISPOSAL COST	\$60,485.12
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Current Containment Capacity		
Type	Drum Equivalents	Litres (L)
Interior*	529	108,450
Exterior	50	10,250
Current Total	579	118,700
Approved Total	1500	307,500

*based on engineered recommendations