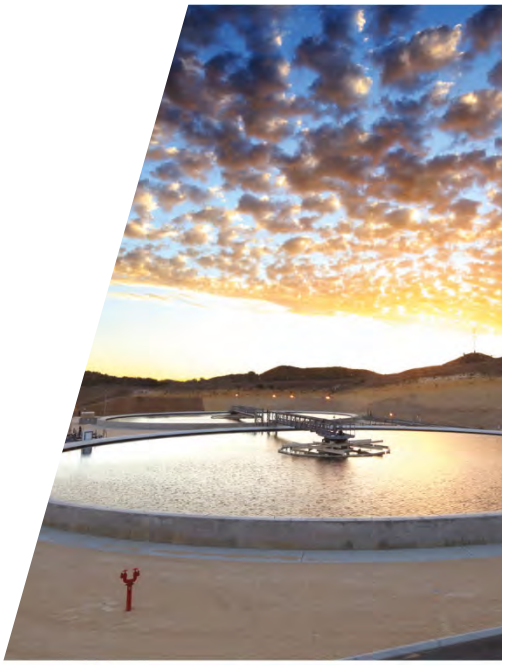

Phase II Environmental Site Assessment

Historical Landfill Sites 8 and 9
Guelph, Ontario

The Corporation of the City of Guelph

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1. Introduction

GHD Limited (GHD) was retained by the Corporation of the City of Guelph (City) to conduct a Phase II Environmental Site Assessment (ESA) of Historical Landfill Sites 8 and 9, in Guelph, Ontario (Site or Property). Compass directions (north, east, south, and west) described herein are referenced to "Project North", which is assumed to be perpendicular to Wellington Street West. A Site location map is provided on Figure 1 and a Site plan is provided on Figure 2.

This Phase II ESA was performed in general accordance with the Canadian Standards Association (CSA) Standard Z768-01. The purpose of the Phase II ESA was to confirm the presence or absence of environmental impairment associated with the potential areas of environmental concern identified during the Phase I ESA completed by GHD.

This report documents the Phase II ESA scope of work, including all field activities and laboratory analytical data generated therefrom. Conclusions regarding the environmental status of the Site are then presented based on the findings of the Phase II ESA.

1.1 Site Description

The Site, currently owned by the City, is comprised of Historical Landfill Sites 8 and 9.

Historical Landfill Site 8 is located between Wellington Street West and Bristol Street, west of Edinburgh Road South and is currently comprised of a municipal park and soccer field. The site was reportedly landfilled between 1959 and 1960. No information was provided detailing the origin or characteristics of the buried waste (e.g., municipal, industrial, etc.). Based on historical investigations and a geophysical survey completed by Gartner Lee Limited (GLL) in 1987, the approximate extent of fill is 10,000 square metres (m^2) and may extend below Wellington Street West.

Historical Landfill Site 9 is located north of the Speed River, east of Hanlon Expressway, and south of Waterloo Avenue and is currently comprised of municipal roads and undeveloped land. The site was reportedly landfilled with municipal solid waste between 1960 and 1962. Based on historical investigations and a geophysical survey completed by GLL in 1987, the approximate aerial extent of fill is 63,000 m^2. Historical investigations generally identified non hazardous waste (cobbles, plastic, wire, burnt debris, wood, glass, and cardboard) and/or fill to a maximum depth of 6.5 metres below ground surface (bgs) where bedrock was encountered sloping towards the Speed River. Based on the 2018 Phase I ESA inspection, no exposed debris or leachate seeps are known to exist at the site. A passive landfill gas venting system comprised of four air vent towers and turbines, in place since at least 1998, appeared to be functional during the 2018 inspection.

1.2 Previous Studies

The 2018 Phase I ESA completed by GHD identified the following potential areas of environmental concern associated with the Site:

- Two spills were identified in the Environmental Risk Information Services Ltd. (ERIS) Ontario Spills (SPL) database to be associated with the Site. One record was for a 400 litre spill of an unknown substance to the road and sewer on Waterloo Avenue within Historical Landfill Site 9 in

1994. One record is associated with the Wellington Street West Buried Drum Site when several buried drums were exposed during construction of the York Trunk Sewer Paisley-Clythe Watermain in 2014. These spills represent a potential for impairment to soil and groundwater quality at the Site, the nature and extent of which are not presently known.

- Fire insurance plans (FIPs) and historical city directories indicate that Sterling Rubber Co Ltd., a rubber manufacturing facility, was formerly located adjacent to/north of the Wellington Street West Buried Drum Site from at least the early 1900s until the mid 1970s. Releases, if any, associated with rubber manufacturing and processing on the adjacent northern property represent a potential for impairment to groundwater quality at the Site, the nature and extent of which is not presently known.
- The 1946 FIP indicates the former presence of one underground storage tank (UST) on the west portion of Historical Landfill Site 9. Releases, if any, associated with the storage and handling of bulk quantities of petroleum hydrocarbons on Site represent a potential impact to soil and groundwater quality at the Site, the nature and extent of which are not presently known.
- The 1946 FIP indicates the former presence of a gasoline service station with three USTs approximately 50 metres north of Historical Landfill Site 9 and a property with one UST approximately 45 metres north of Historical Landfill Site 8. Releases, if any, associated with the storage and handling of bulk quantities of petroleum hydrocarbons on these nearby properties represents a potential impact to groundwater quality at the Site, the nature and extent of which are not presently known.
- Historical city directories indicate Rifle Ranges was formerly located adjacent to/north of the Wellington Street West Buried Drum Site in 1945. Releases, if any, associated with Rifle Ranges on the adjacent northern property represent a potential impact to groundwater quality at the Site, the nature and extent of which are not presently known.
- Historical reports indicate that 41 buried drums of an unknown liquid were uncovered and removed in 2014 and 2015 during construction of the York Trunk Sewer Paisley-Clythe Watermain within the Wellington Street West Buried Drum Site (MMM Group Limited, September 2015). In addition, 800 tonnes of contaminated soil and 35,000 litres (L) of impacted groundwater were remediated at that time. Post-remediation confirmatory soil sample analytical data indicated that elevated concentrations of contaminants of concern remained in the base and/or sidewalls of the remediated area. The presence of impacted soil within and in the vicinity of the Wellington Street West Buried Drum Site represents a known environmental liability that, together with the former presence of buried drums, represents a potential impact to groundwater quality at the Site, the nature and extent of which are not presently known.
- Historical reports indicate that Historical Landfill Site 8 was operated on the east portion of the Site. Historical Landfill Site 8 was landfilled between 1959 and 1960 with waste of unknown origin and characteristics. The presence of buried waste of unknown origin beneath the east portion of the Site represents a liability with respect to potential requirements for waste relocation, groundwater monitoring/remediation and landfill gas monitoring/remediation. Further, the presence of buried waste of unknown origin or characteristics represents a potential for impact to soil and groundwater quality at the Site, the nature and extent of which are not presently known.

- Historical reports indicate that Historical Landfill Site 9 was operated on the west portion of the Site. Historical Landfill Site 9 was landfilled with municipal solid waste between 1960 and 1962. The presence of buried waste beneath the west portion of the Site represents a liability with respect to potential requirements for waste relocation, groundwater monitoring/remediation and landfill gas monitoring/remediation. Further, the presence of buried waste represents a potential impact to soil and groundwater quality at the Site, the nature and extent of which are not presently known.
- Evidence of current or former fuel oil tank operations were observed on the Ministry of Children and Youth Services property immediately east of the Site at 218 Bristol Street and on an adjacent residential property to the north of the Site fronting onto Bristol Street. Releases, if any, associated with the storage and handling of bulk quantities of petroleum hydrocarbons on adjacent properties represent a potential impact to groundwater quality at the Site, the nature and extent of which are not presently known.

1.3 Project Objectives and Scope of Work

The purpose of the Phase II ESA was to confirm the presence or absence of environmental impairment associated with the potential areas of environmental concern identified during the 2018 Phase I ESA. This report focuses on areas in and around Historical Landfill Sites 8 and 9. The findings from Phase II ESA activities associated with the adjoining section of Wellington Street West and the Wellington Street West Buried Drum Site will be provided under separate cover.

The following activities were completed as part of the Phase II ESA:

- Preparation for field work including subcontractor procurement, clearance of underground utilities and preparation of a Site-Specific Health and Safety Plan (HASP)
- Well inventory to determine the presence and condition of any existing monitoring wells
- Well gauging using an electronic oil/water interface probe to determine the depth to water and confirm the presence or absence of light non-aqueous phase liquid (LNAPL) and/or dense non-aqueous phase liquid (DNAPL)
- Soil gas monitoring at all accessible monitoring wells and passive vents
- Advancement of thirteen boreholes to facilitate the collection and screening of soil samples and to document geologic conditions at the Site
- Instrumentation of thirteen boreholes as monitoring wells to facilitate the collection of groundwater samples and to document hydrogeological conditions at the Site
- Submission of soil and groundwater samples to an accredited laboratory for analyses of selected parameters including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), petroleum hydrocarbons (PHCs), polychlorinated biphenyls (PCBs), metals, and/or general chemistry parameters (alkalinity, ammonia, chloride, conductivity, cyanide, dissolved organic carbon [DOC] , grain size, hardness, nitrate, nitrite, pH, sodium adsorption ratio [SARs], sulfate, total dissolved solids [TDS], total kjehdahl nitrogen [TKN], total phosphorus, and phenols).
- Assessment of the soil and groundwater analytical data with respect to current Ontario Ministry of the Environment, Conservation and Parks (MECP) Standards

Phase II ESA field activities were completed between April 4 and June 1, 2018. A complete description of the Phase II ESA field activities and the analytical data generated therefrom are provided in the following sections.

2. Field Investigation Methodology

2.1 Project Initiation

This task included preparation of a Site-specific HASP and utility clearances.

2.1.1 Site-Specific Health and Safety Plan

A vital element of GHD's health and safety procedures is the implementation of a HASP. The HASP specifies protective measures and procedures to be followed during field activities that minimize exposure of workers and the surrounding community to potentially hazardous materials and or activities.

A Site-specific HASP was developed prior to the initiation of the subsurface investigation. The HASP addressed the tasks to be performed and establish the methods and procedures to be implemented to safely conduct each task. For the completion of the work, GHD field staff followed all applicable safe work practices identified in the HASP.

2.1.2 Utility Investigation

Prior to initiating subsurface activities, all applicable utility companies (gas, telephone, water, and sewers) were contacted to demarcate the locations of their respective underground utilities. GHD also arranged for Down Under Pipe and Cable Locating Ltd., a private utility locating contractor, to demarcate any on-Site utilities within the proposed work areas.

2.2 Well Inventory

Based on GHD's review of historical reports, 13 monitoring wells have been known to exist at the Site. GHD conducted a well inventory on April 4, 2018 to determine the presence and condition of existing monitoring wells. Historical Landfill Site 8 monitoring wells 8-4 and 8-5 were found in good condition. Historical Landfill Site 9 monitoring wells BH4, BH30, MW1-13S/D, and MW2-13 through MW5-13 were found in good condition and monitoring well 9-1 was found damaged. Off-Site monitoring wells BH11, MW1-16 and MW2-16 were also located and found to be in good condition. No other monitoring wells including BH1 and 9-2were located during the April 4, 2018 event.

Monitoring well 9-2 was later located during a May 2018 Site visit and was found to be in good condition.

Borehole and monitoring well stratigraphic and instrumentation logs from existing monitoring wells (installed by others) are included in Appendix A.

2.3 Soil Quality Investigation

Altech Drilling and Investigative Services Ltd. of Cambridge, Ontario was retained by GHD to provide drilling services for the advancement of boreholes and installation of groundwater monitoring wells at the Site. In total, thirteen boreholes were advanced at the Site between May 1 and May 30, 2018 under GHD supervision to facilitate field screening of soils and the selection of soil samples for laboratory analyses to document the presence or absence of soil impairment. The approximate locations of the boreholes, identified as MW1-18 to MW4-18 and MW7-18 to MW15-18 are shown on Figure 2.

The locations of boreholes advanced as part of the Phase II ESA were selected to investigate the potential areas of environmental concern identified during the 2018 Phase I ESA. The thirteen boreholes were positioned to investigate on-Site historical landfilling activities.

A track mounted Diedrich D-120 was utilized to advance boreholes on-Site. Soil samples were collected continuously at each borehole. Non-dedicated in-hole equipment was decontaminated between each investigation location using Alconox and water. GHD personnel donned a new pair of disposable latex gloves prior to collecting each sample for field screening.

Soils encountered were classified in accordance with a modified Unified Soil Classification System and were qualitatively and quantitatively screened in the field for the presence of petroleum and/or chemical impact. Qualitative screening consisted of visual and olfactory observations while quantitative screening consisted of using a photoionization detector (PID) to measure the concentrations of undifferentiated VOCs in the headspace of collected soil samples. The stratigraphic logs included in Appendix A document the soil types encountered along with field screening observations and soil sample intervals selected for laboratory analyses.

Select soil samples were placed into pre-cleaned sample jars provided by the laboratory. Methanol field preservation was used for soil samples selected for analysis of volatile constituents (i.e., PHC fraction F1 and VOCs). The samples were packed on ice in a cooler, and submitted under chain-of-custody (COC) protocol to ALS Limited (ALS) in Waterloo, Ontario for analysis as described in the field sample key (Table 1).

2.4 Groundwater Quality Investigation

Groundwater samples were collected from pre-existing on-Site monitoring wells BH4, BH30, MW1-13S/D, MW2-13, MW3-13, MW5-13 and off-Site morning wells BH11, MW1-16, and MW2-16 on April 5 and 6, 2018 using low flow sampling techniques to document groundwater quality at and near the Site and refine the scope of the proposed monitoring well installation and groundwater sampling. Groundwater samples could not be collected from monitoring wells 8-4, 8-5, and MW4-13 due to insufficient water column. Groundwater samples were collected using low flow sampling techniques to reduce the volatilization of VOCs during sample collection and to minimize suspended solids being introduced into groundwater samples. A peristaltic pump or a pre-cleaned stainless steel bladder pump equipped with a Teflon™ bladder was utilized for low flow sampling. Prior to groundwater sampling, each monitoring well was purged, which consisted of the removal of sufficient well volumes to allow for the stabilization of field parameters including conductivity, dissolved oxygen (DO), oxygen reduction potential (ORP), pH, temperature, and turbidity. Well stabilization parameters are summarized in Table 2.

Once field parameters stabilized, samples were collected using low flow sampling techniques and placed directly into pre-cleaned laboratory supplied sample containers. Groundwater samples collected for metals analyses were field filtered using dedicated 0.45-micron, high capacity inline filters. Field duplicate and trip blank samples were also collected and submitted for quality assurance/quality control (QA/QC). A sample key is provided in Table 1.

Between May 1 and May 30, 2018, thirteen boreholes were instrumented as groundwater monitoring wells. The locations of the monitoring wells are shown on Figure 2 and the monitoring well instrumentation logs are included in Appendix A.

The locations of new monitoring wells advanced as part of the Phase II ESA were selected to determine groundwater flow direction, screen for the presence of environmental impairment and to investigate those potential areas of environmental concern identified in the 2018 Phase I ESA. The rationale for placement of the monitoring wells is provided below.

Sample Location	***Rationale***
MW1-18	Replacement of monitoring well 9-1, historical land use north of Site, and historical landfill activities at Landfill Site 9 (north boundary)
MW2-18	Replacement of monitoring well 9-2, historical landfill activities at Landfill Site 9 (east boundary)
MW3-18	Historical landfill activities at Landfill Site 9 (east area)
MW4-18	Historical landfill activities east of Landfill Site 9
MW7-18	Historical landfill activities west of Landfill Site 8
MW8-18	Historical landfill activities at Landfill Site 8 (west boundary)
MW9-18, MW11-18	Historical landfill activities at Landfill Site 8 (north boundary)
MW10-18, MW12-18	Historical landfill activities at Landfill Site 8 (south boundary)
MW13-18	Historical landfill activities at Landfill Site 8 (east boundary), historical land use east of the Site (UST)
MW14-18, MW15-18	Historical landfill activities at Landfill Site 9 (south boundary)

Monitoring wells MW1-18 through MW4-18 and monitoring wells MW7-18 through MW15-18 were installed under GHD supervision and were advanced through overburden and weathered bedrock soils using 10.8 centimetre (cm) (4.25-inch) inside diameter hollow stem augers (HSAs). Monitoring wells MW7-18 and MW10-18 installed within component bedrock were advanced using a 7.62 cm (3-inch) down-the-hole drill (DTH).

Each groundwater monitoring well was constructed with a 51-millimetre (mm) diameter polyvinyl chloride (PVC) riser pipe, and 51 mm diameter No. 10 slot, PVC well screen with No. 2 silica sand. Monitoring well screens were no more than 3.05 metres. The ground and top of riser elevations (i.e., reference elevations) of all monitoring wells were surveyed for horizontal and vertical control.

Following monitoring well installation, monitoring wells were monitored for groundwater recovery. Once monitoring wells recovered, the depth to groundwater was recorded and all monitoring wells were developed using inertial Waterra™ foot valves and dedicated tubing. In general, development was achieved through the removal of five times the volume of standing water in the well to achieve purged groundwater free of sediment and with stable field parameters (i.e., pH, conductivity, temperature, and turbidity) or until the well was purged dry.

Groundwater samples were collected from morning wells MW1-18 through MW4-18 and MW7-18 through MW11-18 on May 11, 2018 and groundwater samples were collected from MW14-18 and MW15-18 on June 1, 2018. Monitoring well MW12-18 was dry and therefore a groundwater sample could not be collected. Groundwater samples, including QA/QC samples, were collected as described above and submitted under COC protocol to ALS for analyses. A sample key is provided in Table 1.

2.5 Soil Gas Monitoring

Soil gas monitoring was conducted at all accessible pre-existing monitoring wells on April 4 and 5, 2018. Soil gas monitoring was also completed at all accessible pre-existing and newly installed monitoring wells on May 31 and June 1, 2018. Monitoring was consistent with GHD's standard operating procedures. Monitoring wells were assessed for pressure, combustible gas, carbon dioxide, oxygen and water level. The water level measurements were collected at each monitoring well to determine the monitoring wells operational status for soil gas (i.e. operational or flooded) based on the water level relative to the top of the screen. Only an open screen will allow soil gas from the surrounding soil to enter a monitoring well screen as water is generally considered a barrier to gas migration. Monitoring data collected from a monitoring well with a flooded screen is not representative of soil gas conditions in the soil surrounding the monitoring well screen.

While combustible gas detected in soil gas in the vicinity of municipal solid waste is likely methane produced by the anaerobic degradation of organic waste, field monitoring instruments do not differentiate methane from other combustible gases or sources that may be present in soil gas at and around the investigated areas. For consistency in this discussion, the terms soil gas and combustible gas are used to describe the findings of the soil gas monitoring events.

A Dwyer digital manometer was used by GHD to collect soil gas pressure measurements and a Solinst water level meter was used to determine the water level within each monitoring well.

The soil gas monitoring involved using a Landtec GEM 2000 instrument capable of detecting combustible gas, but not specifically methane gas. The instrument was calibrated to a methane standard. The accuracy for Landtec GEM 2000 is approximately 0.3 percent methane by volume (v/v) for concentrations of 0 to 5 percent v/v2.

During the monitoring event each soil gas probe was purged with the Landtec and approximately 110 percent of the probe (riser) and surrounding pack void space volume was removed at a rate of

4.0 litres per minute. The purpose of purging the monitoring wells was to provide a representative sample of soil gas surrounding the monitoring well.

3. Physical Characteristics of the Site

3.1 Regional Geology

The Site is located in the broad physiographic region known as the Guelph Drumlin Fields[1]. A review of published quaternary geologic mapping for the area of the Site indicates that the overburden consists predominantly of outwash gravel[2]. Beneath the overburden deposits is bedrock consisting of dolostone of the Eramosa Formation[3]. The thickness of the overburden deposits varies due to surficial topographic relief[4].

3.2 Local Geology

The stratigraphy encountered at the Site at monitoring wells MW1-18 through MW4-18 and MW7-18 through MW 15-18 generally consists of a fill layer (i.e., sand, gravel, and silt) varying in depths, underlain by gravelly sand, sand or silty sand, underlain by weathered bedrock. Topsoil/organic fill was also identified at some locations.

The stratigraphy of the Site is further described below.

- Fill: Fill is present across the Site and is most commonly comprised of sand, gravel, and silt. The fill contained varying amounts of brick, wood, glass, and asphalt debris. Fill was encountered at ground surface with varying thickness.
- Gravelly Sand, Sand and Gravel, or Sand: Beneath the fill layer, a well graded gravel/sand is present in all locations at the Site other than MW8-18, MW10-18, MW11-18, MW12-18, and MW13-18. The gravel/sand layer ranges in thickness from 0.61 to 1.68 metres. At MW8-18, MW10-18, MW11-18, MW12-18, and MW13-18 the fill layer extends to weathered bedrock.
- Weathered Bedrock: Weathered bedrock was encountered at all locations at the Site, with the exception of MW1-18, MW2-18, MW3-18, and MW4-18. The overburden/bedrock interface ranged in depth from 2.29 to 3.35 metres bgs, ranging in elevation from 301.89 to 304.40 metres above mean sea level (m AMSL).

3.3 Hydrology

There are no surface water bodies at the Site. Storm water generated on the Site either infiltrates the ground surface or flows overland towards on-Site catch basins or towards the Property boundaries. The catch basins ultimately discharge to the Speed River south of the Site. The closest water body to the Site is the Speed River which is approximately 3 metres south of the southern Site

1 Chapman, L. J., and D. F., Putnam (1984), "The Physiography of Southern Ontario", Ontario Geological Survey.

2 Karrow P. F. 1963. Pleistocene Geology of Guelph Area, Southern Ontario; Ontario Department of Mines. Map 2153. Scale 1:63, 360.

3 "Bedrock Geology of Ontario" [map]. Scale 1:250, 000. OGS Earth Geoscience Data [computer files]. Sudbury, Ontario: Ontario Geological Survey & Ministry of Northern Development and Mines, 2010.

4 Karrow, P. F., Miller R. F., and Farrell L. 1979. Guelph Area, Southern Ontario; Ontario Geological Survey, Preliminary Map P. 2224. Bedrock Topography Series. Scale 1:50,000. Compiled as of May 1978.

boundary at Historical Landfill Site 9. Howitt Creek is also located 40 metres east of Historical Landfill Site 9.

3.4 Hydrogeology

Prior to collection of groundwater samples, groundwater elevations were collected to determine groundwater elevations, evaluate the direction of groundwater flow at the Site, and confirm the presence or absence of non-aqueous phase liquid (NAPL). Groundwater level measurements were collected from monitoring wells on April 4 and 5, 2018 and on June 1, 2018. A summary of the recorded groundwater level measurements is presented in Table 3. NAPL was not detected in any of the gauged monitoring wells.

Groundwater levels measured ranged from 302.49 to 309.09 m AMSL in on- and off-Site monitoring wells. The groundwater flow direction is interpreted to be to the southeast. An illustration of groundwater elevation contours on June 1, 2018 is provided on Figure 3.

4. Analytical Data

4.1 General

Twenty-one soil and twenty-five groundwater samples were submitted to ALS for chemical analyses of select parameters as detailed in the field sample key (Table 1). The laboratory certificates of analysis are provided in Appendix B.

4.2 Assessment Criteria

To assess the soil and groundwater analytical results, GHD referenced the MECP document entitled *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, dated April 15, 2011 (hereinafter referred at as the MECP Standards).

The MECP Standards provide generic soil and groundwater quality standards for certain chemicals, based on combinations of the following Site-specific conditions:

- *Environmental sensitivity* – GHD reviewed the Ministry of Natural Resources and Forestry's – "Natural Heritage Information Centre" database to identify areas registered as Areas of Natural or Scientific Interest (ANSI) within 1 kilometre radius of the Site. The Site and surrounding area do not include an area of natural significance, although there is a provincially significant wetland approximately 350 metres southwest of the western portion of the Site. GHD does not anticipate an adverse effect on the wetland due to groundwater flow direction (southeast) and potential impacts on-Site. As such, the Site is not considered environmentally sensitive.
- *Shallow soil property or water body* – Greater than 2 metres of overburden soil exists across the Site, therefore the Site is not considered a shallow soil property. The Site is located within 30 metres of a water body (Speed River). However, only MW1-16, MW2-16, MW14-18, and MW15-18 are within 30 meters of the Speed River.
- Depth to groundwater – Groundwater at the Site at many locations is less than 3 metres bgs. As such, the Site is considered to have shallow groundwater conditions.

- *Property use* – The current property use for the Site is municipal/parkland.
- *Restoration of groundwater quality* – The City of Guelph obtains its water supply from groundwater. Therefore, a potable groundwater condition applies to the Site.
- *Restoration depth* – For comparative purposes, results were assessed with respect to shallow soil standards.
- Soil texture – Based on results of the soil grain size analyses completed by GHD as part of the Phase II ESA, the predominant soil texture at the Site is coarse grained. The results of the grain size analysis are provided in Table 4.

Based on the above, all soil and groundwater data has been compared to the generic Site Conditions Standards for Shallow Soils in a Potable Ground Water Condition for residential/parkland/institutional property use (Table 6 Standards). Though the Site is not considered a shallow soil property, the Table 6 standards take into account that there may not be sufficient space for biodegradation to occur within porous media between the shallow water table and a potential building above and are therefore more conservative than applying the Table 2 Standards.

The Site is located within 30 metres of a water body, however all areas investigated as part of the Phase II ESA are greater than 30 metres from the Speed River, with the exception of MW1-16, MW2-16, MW14-18 and MW15-18. As such, the data for MW1-16, MW2-16, MW14-18 and MW15-18 have been compared to the Table 6 Standards as well as the generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition for residential/parkland/institutional property use (Table 8 Standards).

In order to assess the potential for unacceptable exposure to soil and/or groundwater impacts, GHD also referenced MECP's component values incorporated into MECP's Table 6 and 8 Standards. A component value is developed to provide a receptor or group of receptors protection from a contaminant via a specific pathway. The lowest value of all the components that are relevant to a specific land use, potability, or depth class is then used to develop the Standards.

4.3 Quality Assurance/Quality Control

A QA/QC program was implemented during the sampling program to ensure quality data were generated.

Samples were collected in laboratory supplied sample containers with required preservative (if appropriate) and submitted under COC protocol to a Canadian Association of Laboratory Accreditation (CALA) accredited analytical laboratory for chemical analysis. From the time of collection to the time of submission to the laboratory, samples were stored in a cooler and packed on ice to maintain sample integrity.

The following additional measures were taken for quality assurance:

- Between collection of each sample, GHD field personnel donned a new pair of disposal nitrile gloves.
- Prior to use and between each borehole location, non-dedicated in-hole drilling and sampling equipment was thoroughly decontaminated using Alconox® soap and water rinse.
- Groundwater samples were collected using dedicated tubing.

- Groundwater samples collected for metals analysis were field filtered using a dedicated 0.45 micron inline filter.
- One field duplicate groundwater sample for every ten samples was collected and submitted for analysis per parameter.
- A trip blank accompanied sample containers and was submitted for analysis during the soil and groundwater investigation as VOCs were being assessed.

4.4 Soil Quality

Twenty one soil samples collected from boreholes advanced across the Site were submitted to ALS for analyses. These soil samples were selectively analyzed as described in the field sample key (Table 1).

The analytical laboratory data generated from the soil quality investigation are summarized in Table 4 (Metals and General Chemistry), Table 5 (PHCs and VOCs), Table 6 (SVOCs) and Table 7 (PCBs), along with MECP Table 6 and 8 Standards for comparative reference. Soil analytical results for parameters that exceed the standard at one or more location are also presented on Figure 4 (Metals and General Chemistry), Figure 5 (PCBs, PHCs and VOCs) and Figure 6 (SVOCs). Given that the Site is not used for residential purposes, the use of Table 6 and Table 8 Standards are likely overly conservative for the current land use (i.e., greenspace neighboring apartment buildings and soccer fields).

Review of Table 4 indicates that metals and general chemistry parameters, where detected, were not detected above the relevant MECP Standards, with the exception of barium, boron, cadmium, cobalt, mercury and zinc at MW1-18 (2.4 to 3.0 m bgs), conductivity and SAR at MW4-18 (1.2 to 1.8 m bgs), cadmium, mercury and zinc at MW7-18 (1.2 to 1.8 m bgs), mercury and zinc at MW8-18 (0.6 to 1.2 m bgs), cadmium, copper, lead, mercury, and zinc at MW9-18 (0.6 to 1.2 m bgs), zinc at MW11-18 (1.8 to 2.4 m bgs), conductivity, cadmium, and zinc at MW12-18 (2.4 to 3.0 m bgs), and conductivity, barium, cadmium, molybdenum, zinc and SAR at MW14-18 (0.6 to 1.2 m bgs).

Municipal solid waste is typically comprised of paper, food waste, yard waste, glass, metals, plastics and rubber but can also contain pesticide containers, paint cans, batteries, cleaning agents, grease and oils and other debris. As such, the metals impacts in Site soil may be a result of historical landfilling operations. The conductivity and SAR soil impacts may be a result of historical landfilling operations and/or de-icing at and/or near the Site. The concentrations of metals and general chemistry parameters have the potential to represent an unacceptable risk to ecological receptors (barium, boron, cadmium, conductivity, copper, lead, SAR, and zinc) and to humans as a result of the direct contact (cadmium, cobalt, and lead) and vapour inhalation (mercury only) pathways. As the majority of the impacts were detected at or below 1 m bgs, there would be limited or no direct contact with these soils by human or ecological receptors. Finally, the presence of grass cover will also reduce humans direct contact with the underlying soils. Finally, as there are no buildings on-Site, there is no current mercury vapour inhalation concern. As a result, the metals impacts are not anticipated to pose a current unacceptable risk to human and ecological receptors that may be present on Site.

Review of Table 5 indicates that VOC parameters were either not detected above the laboratory reporting limit or, where detected, were not detected above the relevant MECP Standards, with the

exception of 1,4-dichlorobenzene at MW1-18 (2.4 to 3.0 m bgs), MW8-18 (0.6 to 1.2m bgs) and MW12-18 (2.4 to 3.0 m bgs).

The 1,4-dichlorobenzene is most commonly used in space deodorizers, moths balls, and sulfide resins[5]. The 1,4-dichlorozenbene impacts may be a result of historical landfilling of these products. The concentrations of 1,4-dichlorobenzene have the potential to represent an unacceptable risk to humans as result of the vapour inhalation pathway only. However, as there are no buildings on-Site and impacts appear to be fairly localized, the 1,4-dichlorobenzene impacts do not pose a current unacceptable risk to human receptors via the vapour inhalation exposure pathway at or near the Site.

Review of Table 5 indicates PHC fractions were either not detected above the laboratory reporting limit or, where detected, were not detected above the relevant MECP Standards, with the exception of PHC fractions F1, F2 and F3 at MW1-18 (2.4 to 3.0 m bgs), PHC fractions F2 and F3 at MW8-18 (0.6 to 1.2 m bgs), PHC fraction F3 at MW9-18 (0.6 to 1.2 m bgs), PHC fraction F3 at MW12-18 (2.4 to 3.0 m bgs), and PHC Fraction F3 at MW13-18 (1.2 to 1.8 m bgs).

The PHC impacts to soil may be a result of historical landfilling operations. The concentrations of PHCs have the potential to represent an unacceptable risk to ecological receptors (plants and organisms) (PHC fractions F1, F2, and F3) and to humans as a result of vapour inhalation (PHC fractions F1 and F2). Based on the depth of the detected concentrations and the fact there are no buildings on-Site, the PHC impacts do not pose a current unacceptable risk to human and ecological receptors that may be present at the Site.

Review of Table 6 indicates that SVOCs were either not detected above the laboratory reporting limit, or where detected, were not detected above the relevant MECP Standards, with the exception of bis(2-ethylhexyl)phthalate at MW1-18 (2.4 to 3.0 m bgs), and select polycyclic aromatic hydrocarbons (PAHs) at MW1-18 (2.4 to 3.0 m bgs), MW3-18 (2.4 to 3.0 m bgs), MW4-18 (1.2 to 1.8 m bgs), MW7-18 (1.2 to 1.8 m bgs), MW8-18 (0.6 to 1.2 m bgs), MW9-18 (0.6 to 1.2 m bgs), MW12-18 (2.4 to 3.0 m bgs), MW13-18 (1.2 to 1.8 m bgs) and MW15-18 (0.6 to 1.2 m bgs).

The most common use of bis(2-ethylhexyl)phthalate is in the production of polyvinyl chloride (PVC) and vinyl chloride resins, where it is added to plastics to make them flexible[6]. Major sources of PAHs to Canadian soil include creosote-treated products (e.g., rail ties and utility poles), spills of petroleum products, metallurgical and coking plants and deposition of atmospheric PAHs[7]. The bis(2-ethylhexyl)phthalate and PAH impacts to soil may be a result of historical landfilling operations. The concentrations of bis(2-ethylhexyl)phthalate and PAHs have the potential to represent an unacceptable risk to ecological receptors through direct contact with soils. The concentrations of PAHs have the potential to represent an unacceptable risk to humans through direct soil contact and vapour inhalation exposure pathways. However, based on the depth of the detected concentrations, the fact there are no buildings on-Site and the presence of grass cover, the bis(2-ethylhexyl)phthalate and PAH impacts are not anticipated to pose a current unacceptable risk to the human and ecological receptors that may be present at the Site.

[5] http://www.ijc.org/rel/boards/iaqab/meyer/dcb.htm

[6] https://www.epa.gov/sites/production/files/2016-09/documents/bis-2-ethylhexyl-phthalate.pdf

[7] https://www.canada.ca/en/environment-climate-change/services/management-toxic-substances/list-canadian-environmental-protection-act/polycyclic-aromatic-hydrocarbons.html

Review of Table 7 indicates that PCBs were either not detected above the laboratory reporting limit, or where detected, were not detected above the relevant MECP Standards, with the exception of total PCBs at MW12-18 (2.4 to 3.0 m bgs).

The source of the PCB impact is not currently known, but may be a result of historical landfilling of electrical equipment containing PCB oil. The concentration of PCBs has the potential to represent an unacceptable risk to humans as a result of direct soil contact. However, as the impact is located deeper than 1.5 m bgs, the PCB impacted soil does not pose a current unacceptable risk to human receptors.

With the exception of boron, benzo(a)pyrene, and 1,4-dichlorobenzene, constituents detected in soil above relevant MECP Standards were not detected in groundwater above relevant MECP Standards (Section 4.5). As such, the majority of the soil impacts do not represent a significant source of groundwater impairment.

4.5 Groundwater Quality

Groundwater samples were collected from twenty two monitoring wells. The samples were analyzed for the parameters described in the field sample key (Table 1).

The analytical laboratory data generated from the groundwater quality investigation have been summarized in Table 8 (Metals and General Chemistry), Table 9 (PHCs and VOCs) and Table 10 (SVOCs), along with the MECP Table 6 and Table 8 Standards for comparative reference. Groundwater analytical results for parameters that exceed the standard at one or more location are also presented on Figure 7 (Metals and General Chemistry) and Figure 8 (VOCs and PAHs).

Review of Table 8 indicates that metals and general chemistry parameters in groundwater were either not detected above the laboratory reporting limit or, where detected, were detected below the relevant MECP Standards, with the exception of arsenic (MW1-13D), boron (MW1-18), cobalt (MW2-13), selenium (MW11-18), sodium (MW4-18, MW11-18, MW14-18, and MW15-18), and chloride (MW4-18 and MW11-18).

The source of the arsenic, boron, and cobalt impacts to groundwater is not known but may be a result of former landfilling operations at Historical Landfill Site 9. Given the absence of detectable concentrations of selenium in soil at MW11-18 and the direction of groundwater flow (southeast), Historical Landfill Site 8 does not appear to be the source of the selenium groundwater impacts and selenium groundwater impacts appear to be localized. Sodium and chloride impacts are most likely attributable to de-icing of City roadways.

Review of Table 9 indicates that VOCs in groundwater were either not detected above the laboratory reporting limit or, where detected, were detected below the relevant MECP Standards, with the exception of benzene (MW1-18), trichloroethene (MW1-16), and 1,4-dichlorobenzene (MW1-13D, MW1-18, MW2-18, and MW8-18). PHCs were not detected above the relevant MECP Standards.

The source of the benzene and 1,4-dichlorobenzene impacts to groundwater may be a result of historical landfilling operations. Trichloroethene was detected in soil at Historical Landfill Site 9 at a single monitoring well (MW2-18) and only marginally above the laboratory reporting limit. Trichloroethene was not detected in groundwater collected from monitoring well MW2-18 and/or monitoring wells along the flow path between MW2-18 and off-Site monitoring MW1-16. As such, it

is unlikely that Historical Landfill Site 9 is the source of trichloroethene detected at MW1-16, adjacent to the Speed River. Further, trichloroethene was not detected in soil or groundwater in the area of Historical Landfill Site 8 and Historical Landfill Site 8 is cross gradient to MW1-16. As such, Historical Landfill Site 8 is not believed to be the source of trichloroethene groundwater impacts at MW1-16.

Review of Table 10 indicates that SVOCs in groundwater were either not detected above the laboratory reporting limit or, where detected, were detected below the relevant MECP Standards, with the exception of PAHs (benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, and phenanthrene) at MW8-18.

The concentrations of some constituents in shallow groundwater have the potential to represent an unacceptable risk to human receptors as a result of exposure to potable groundwater (arsenic, boron, chloride, cobalt, selenium, sodium, 1,4-dichlorobenzene, and select PAHs). However, the shallow groundwater at and near the Site is not currently used for any purpose. While the vertical extent of groundwater impacts is not currently known, nearby municipal water supply wells are screened in the Upper-Middle Gasport Bedrock Formation at more than 55 metre bgs. Given the greater than 50 metre separation between the observed shallow groundwater impacts and the screen interval of the municipal water supply wells, groundwater impacts potentially attributable to the historical landfill sites are unlikely to pose an unacceptable risk to the municipal water supply wells.

The concentrations of benzene, 1,4-dichlorobenzene, and trichloroethene have the potential to represent an unacceptable risk to human receptors as a result of vapour intrusion to indoor air. However, residential buildings in proximity to the noted impacts are limited to apartment buildings constructed with below grade parking and equipped with adequate ventilation to mitigate the potential for groundwater water volatilization to residential indoor air.

Review of groundwater data from monitoring wells adjacent to the Speed River (i.e., BH11, MW1-16, MW2-16, MW14-18, and MW15-18) indicates that all concentrations are below the component value protective of the groundwater discharging to an aquatic environment. As such, groundwater does not represent an unacceptable risk to aquatic receptors.

4.5.1 Evaluation of Landfill-Related Impacts

The water quality samples collected as part of the investigation were evaluated for evidence of impacts related to buried municipal solid waste. This evaluation was completed primarily through reviewing the spatial and geochemical patterns in concentrations of parameters that are typically indicative of water quality impacts related to buried municipal solid waste. In order to understand the probability of landfill-related water quality impacts, samples from monitoring wells collected within or downgradient of the areas of known historical landfilling were compared to the water quality reported in samples collected from monitoring wells located in an upgradient or cross-gradient position relative to areas of historical landfilling.

More specifically, patterns in alkalinity, ammonia, chloride, conductivity, DOC, iron and manganese were examined as these parameters typically increase in groundwater affected by the presence of buried waste. In general, the probability that groundwater has been affected by buried waste is

higher at locations where groundwater quality samples contain elevated concentrations of these parameters.

Based on the available groundwater quality sample data, there is evidence of landfill-related impacts to groundwater quality at the Site. Concentrations of the indicator parameters referenced above are elevated at many of the locations monitored relative to upgradient or cross-gradient concentrations. The locations exhibiting the greatest evidence of landfill-related water quality impacts include: MW1-18, MW2-18, MW8-18, MW10-18, and BH-4. Numerous other monitoring well locations also exhibited evidence of landfill-related water quality although to a lesser extent. These locations include: MW1-13S, MW1-13D, MW2-13, MW3-13, MW3-18, MW4-18, MW13-18 and MW14-18.

It should be noted that although chloride is a useful landfill water quality indicator parameter, it is also commonly affected by road salting in shallow groundwater near roads and highways. Because of the proximity of the monitoring well locations to several roads where road salting has likely been in common practice for decades, the usefulness of chloride as an indicator parameter is questionable. The similarity in patterns of sodium and chloride concentrations further supports the interpretation that elevated chloride is most likely due in part to road salting, and not entirely landfill-related.

5. Soil Gas Monitoring Results

Soil gas monitoring results are presented in Table 11.

5.1 Monitoring Event #1 - April 4 and 5, 2018

During the April monitoring event, ten of the 13 located and functioning monitoring wells were considered operational. MW1-16, MW2-16 and MW1-13D were considered to be flooded.

Combustible gas was detected above the detection limit of the field monitoring equipment (e.g. above 0.1 percent v/v) at three monitoring wells (MW1-13S, MW3-13, MW4-13) during the monitoring event. MW1-13S and MW3-13 are located within the footprint of Historical Landfill Site 9. MW4-13 is located north of Historical Landfill Site 9.

The remaining operational monitoring wells did not exhibit detectable concentrations of combustible gas.

The four passive vents along the east boundary of Historical Landfill Site 9 were operational (i.e. turbines were moving freely), although the monitoring results at the four vents showed atmospheric conditions.

5.2 Monitoring Event #2 - May 31 and June 1, 2018

During the May/June event, 19 of the 24 located and functioning monitoring wells were considered operational. MW1-16, MW2-16, MW1-13D, MW14-18 and MW15-18 were considered flooded.

Combustible gas was detected above the detection limit of the field monitoring equipment (e.g. above 0.1 percent v/v) at nine monitoring wells (MW1-13S, MW3-13, MW4-13, MW1-18, MW2-18, MW3-18, MW4-18, MW8-18, MW13-18) during the monitoring event. MW1-13S, MW3-13, MW1-18,

MW2-18, MW3-18, MW4-18 are located within the footprint of Historical Landfill Site 9. MW4-13 is located north of Historical Landfill Site 9. MW8-18 and MW13-18 are located within the footprint of Historical Landfill Site 8.

The remaining operational monitoring wells did not exhibit detectable concentrations of combustible gas.

The four passive vents along the east boundary of Historical Landfill Site 9 were operational (i.e. turbines were moving freely), although the monitoring results at the four vents showed atmospheric conditions.

Based on the two monitoring events, combustible gas was detected at monitoring wells near off-Site buildings (i.e., MW4-13, MW1-18, MW3-18, MW8-18, and MW13-18), as such soil gas delineation should be considered.

6. Conclusions

Based on the Phase II ESA field activities and all field and laboratory analytical data generated therefrom, the following conclusions are provided:

- Metals, general chemistry, VOC, PHC, SVOC and PCB impacts were detected in soil. As the majority of the impacts were detected at or below 1 m bgs, there would be limited or no direct contact with these soils by human or ecological receptors. Further, the presence of grass cover will reduce humans direct contact with the underlying soils. Finally, as there are no buildings on-Site, there is no current soil vapour intrusion concern. As a result, the soil impacts are not anticipated to pose a current unacceptable risk to human and ecological receptors that may be present on Site.
- With the exception of boron, benzo(a)pyrene, and 1,4-dichlorobenzene, constituents detected in soil above relevant MECP Standards were not detected in groundwater above relevant MECP Standards. As such, the majority of the soil impacts do not represent a significant source of groundwater impairment.
- The concentrations of some constituents in shallow groundwater have the potential to represent an unacceptable risk to human receptors as a result of exposure to potable groundwater (arsenic, boron, chloride, cobalt, selenium, sodium, 1,4-dichlorobenzene, and select PAHs). However, the shallow groundwater at and near the Site is not currently used for any purpose. While the vertical extent of groundwater impacts is not currently known, nearby municipal water supply wells are screened in the Upper-Middle Gasport Bedrock Formation at more than 55 metre bgs. Given the greater than 50 metre separation between the observed shallow groundwater impacts and the screen interval of the municipal water supply wells, groundwater impacts potentially attributable to the historical landfill sites are unlikely to pose an unacceptable risk to the municipal water supply wells.
- The concentrations of benzene, 1,4-dichlorobenzene, and trichloroethene have the potential to represent an unacceptable risk to human receptors as a result of vapour intrusion to indoor air. However, residential buildings in proximity to the noted impacts are limited to apartment

buildings constructed with below grade parking and equipped with adequate ventilation to mitigate the potential for groundwater water volatilization to residential indoor air.

- Review of groundwater data from monitoring wells adjacent to the Speed River (i.e., BH11, MW1-16, MW2-16, MW14-18, and MW15-18) indicates that all concentrations are below the component value protective of the groundwater discharging to an aquatic environment. As such, groundwater does not represent an unacceptable risk to aquatic receptors.
- Based on the groundwater sampling results, there is evidence of landfill-related impacts to groundwater quality at the Site. Concentrations of indicator parameters are elevated at many of the locations monitored relative to upgradient or cross-gradient concentrations.
- Combustible gas was detected at monitoring wells near off-Site buildings (i.e., MW4-13, MW1-18, MW3-18, MW8-18, and MW13-18), as such soil gas delineation should be considered.

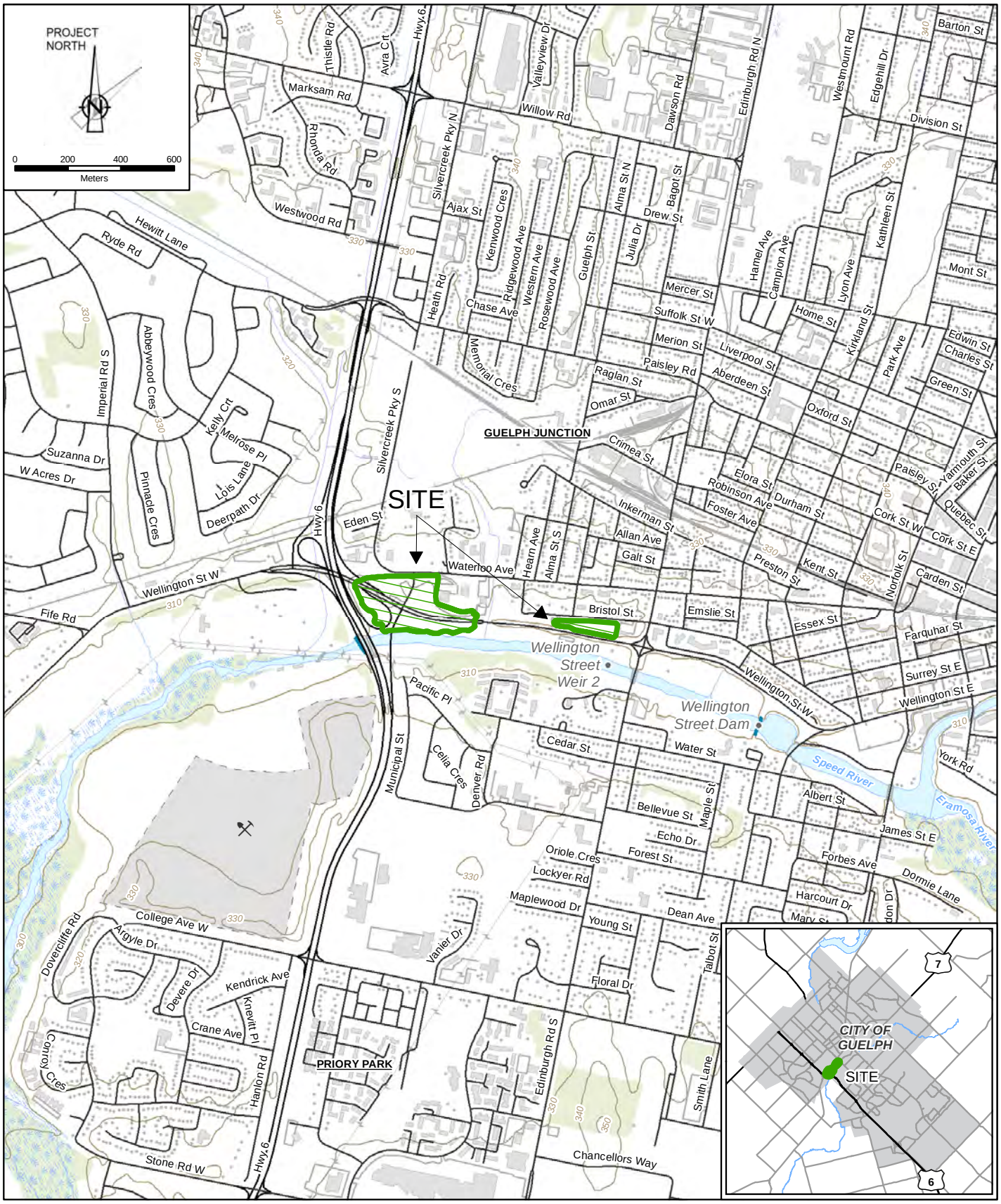
All of Which is Respectfully Submitted,

GHD

Robert Catallo, P. Eng.

Shannon Richardson, P. Eng.

Figures



Source: MNRF NRVIS, 2018. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2018.
Coordinate System: NAD 1983 UTM Zone 17N

THE CORPORATION OF THE CITY OF GUELPH
HISTORICAL LANDFILL SITES 8 AND 9, GUELPH, ONTARIO
PHASE II ENVIRONMENTAL SITE ASSESSMENT

11149990
Jun 21, 2018

SITE LOCATION MAP

FIGURE 1

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0 40 80 120m

PROJECT NORTH

THE CORPORATION OF THE CITY OF GUELPH
HISTORICAL LANDFILL SITES 8 AND 9, GUELPH, ONTARIO
PHASE II ENVIRONMENTAL SITE ASSESSMENT

SITE PLAN

11149990-00

Jun 26, 2018

FIGURE 2

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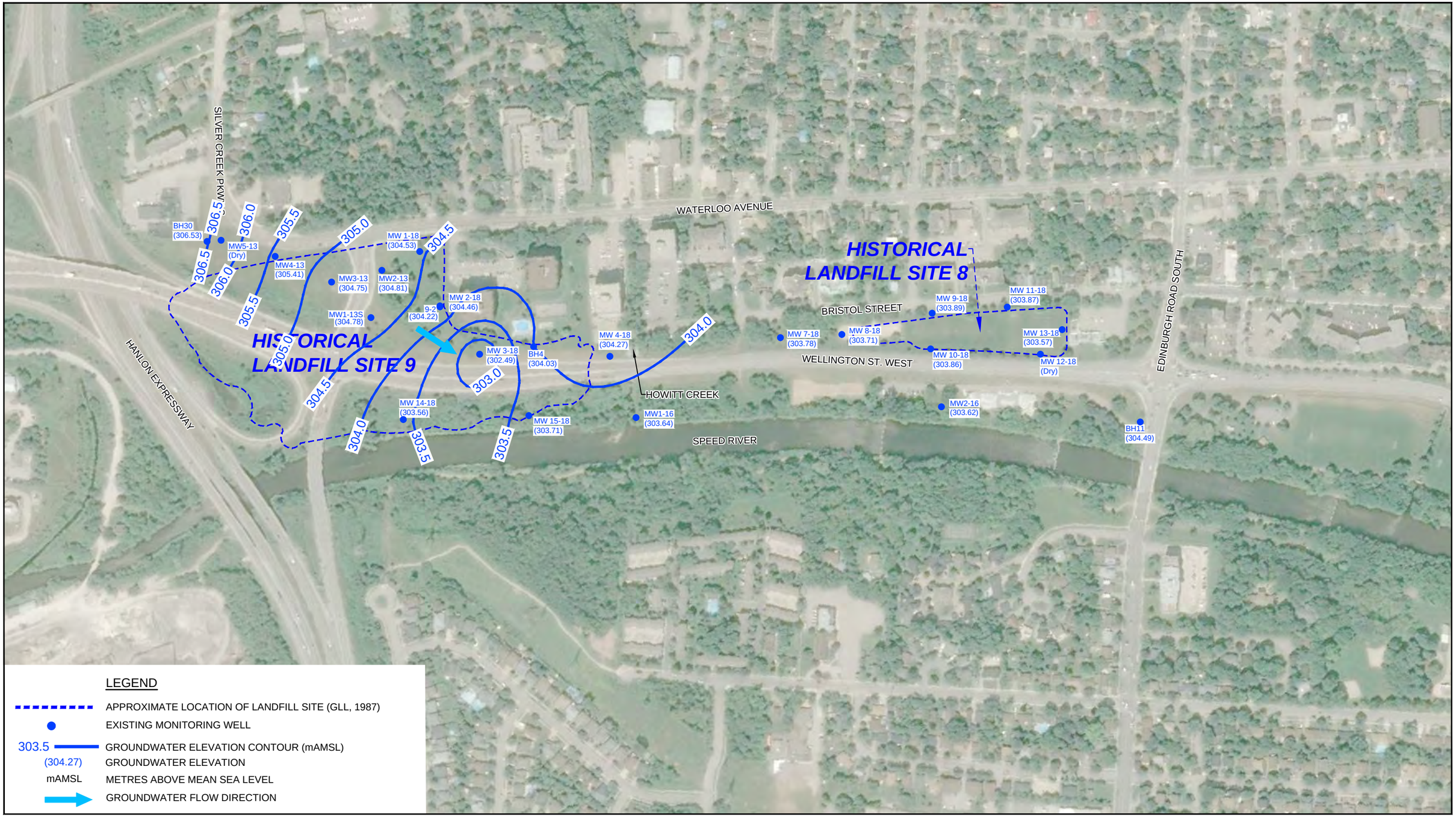

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PROJECT NORTH

THE CORPORATION OF THE CITY OF GUELPH
HISTORICAL LANDFILL SITES 8 AND 9, GUELPH, ONTARIO
PHASE II ENVIRONMENTAL SITE ASSESSMENT

GROUNDWATER CONTOUR ELEVATIONS (JUNE 1, 2018)

11149990-00

Jun 26, 2018

FIGURE 3

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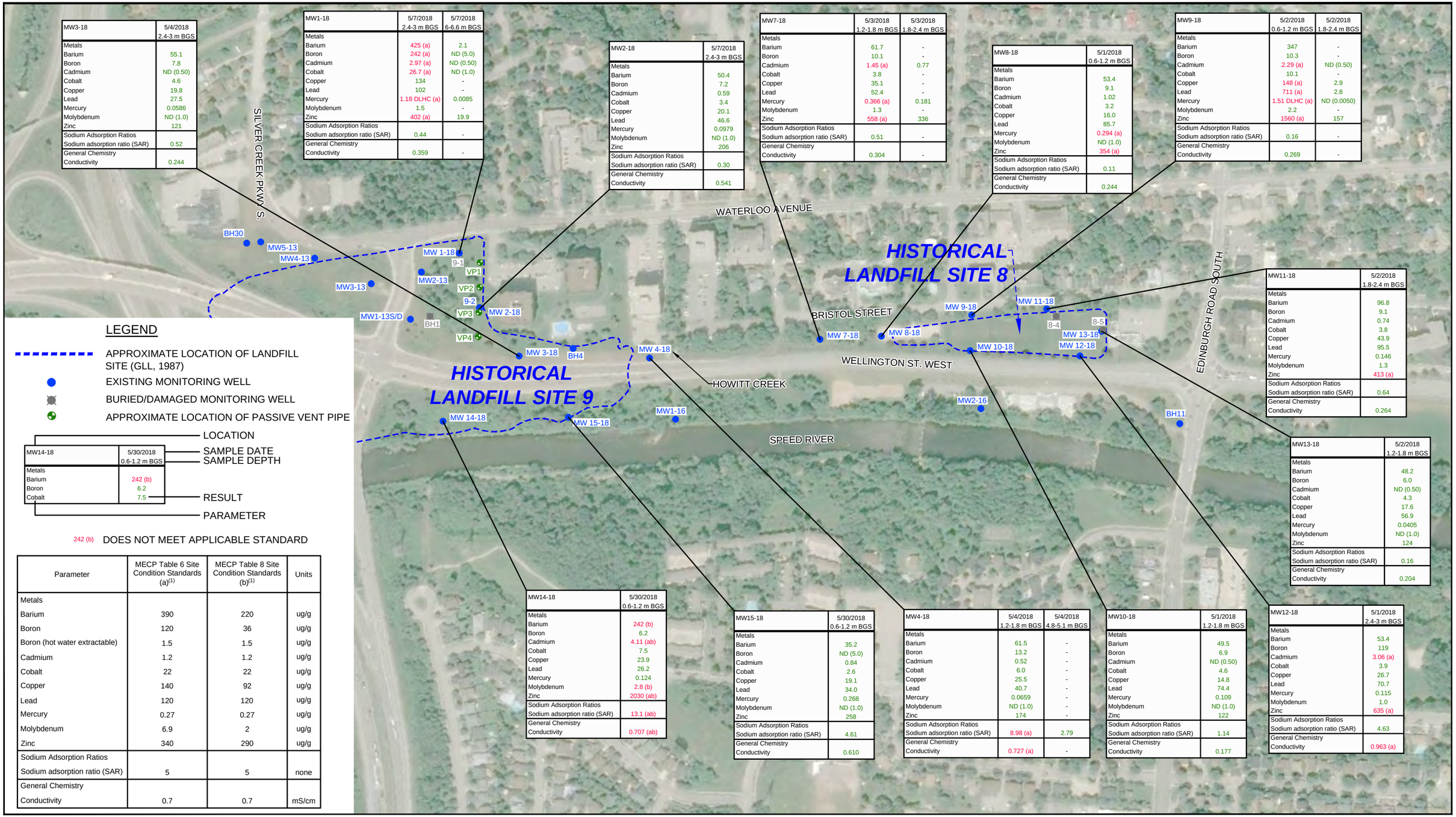

MW3-18	5/4/2018 2.4-3 m BGS
Metals	
Barium	55.1
Boron	7.8
Cadmium	ND (0.50)
Cobalt	4.6
Copper	19.8
Lead	27.5
Mercury	0.0586
Molybdenum	ND (1.0)
Zinc	121
Sodium Adsorption Ratios	
Sodium adsorption ratio (SAR)	0.52
General Chemistry	
Conductivity	0.244

MW1-18	5/7/2018 2.4-3 m BGS	5/7/2018 6-6.6 m BGS
Metals		
Barium	425 (a)	2.1
Boron	242 (a)	ND (5.0)
Cadmium	2.97 (a)	ND (0.50)
Cobalt	26.7 (a)	ND (1.0)
Copper	134	-
Lead	102	-
Mercury	1.18 DLHC (a)	0.0085
Molybdenum	1.5	-
Zinc	402 (a)	19.9
Sodium Adsorption Ratios		
Sodium adsorption ratio (SAR)	0.44	-
General Chemistry		
Conductivity	0.359	-

MW2-18	5/7/2018 2.4-3 m BGS
Metals	
Barium	50.4
Boron	7.2
Cadmium	0.59
Cobalt	3.4
Copper	20.1
Lead	46.6
Mercury	0.0979
Molybdenum	ND (1.0)
Zinc	206
Sodium Adsorption Ratios	
Sodium adsorption ratio (SAR)	0.30
General Chemistry	
Conductivity	0.541

MW7-18	5/3/2018 1.2-1.8 m BGS	5/3/2018 1.8-2.4 m BGS
Metals		
Barium	61.7	-
Boron	10.1	-
Cadmium	1.45 (a)	0.77
Cobalt	3.8	-
Copper	35.1	-
Lead	52.4	-
Mercury	0.366 (a)	0.181
Molybdenum	1.3	-
Zinc	558 (a)	336
Sodium Adsorption Ratios		
Sodium adsorption ratio (SAR)	0.51	-
General Chemistry		
Conductivity	0.304	-

MW8-18	5/1/2018 0.6-1.2 m BGS
Metals	
Barium	53.4
Boron	9.1
Cadmium	1.02
Cobalt	3.2
Copper	16.0
Lead	85.7
Mercury	0.294 (a)
Molybdenum	ND (1.0)
Zinc	354 (a)
Sodium Adsorption Ratios	
Sodium adsorption ratio (SAR)	0.11
General Chemistry	
Conductivity	0.244

MW9-18	5/2/2018 0.6-1.2 m BGS	5/2/2018 1.8-2.4 m BGS
Metals		
Barium	347	-
Boron	10.3	-
Cadmium	2.29 (a)	ND (0.50)
Cobalt	10.1	-
Copper	148 (a)	2.9
Lead	711 (a)	2.8
Mercury	1.51 DLHC (a)	ND (0.0050)
Molybdenum	2.2	-
Zinc	1560 (a)	157
Sodium Adsorption Ratios		
Sodium adsorption ratio (SAR)	0.16	-
General Chemistry		
Conductivity	0.269	-

MW11-18	5/2/2018 1.8-2.4 m BGS
Metals	
Barium	96.8
Boron	9.1
Cadmium	0.74
Cobalt	3.8
Copper	43.9
Lead	95.5
Mercury	0.146
Molybdenum	1.3
Zinc	413 (a)
Sodium Adsorption Ratios	
Sodium adsorption ratio (SAR)	0.64
General Chemistry	
Conductivity	0.264

MW13-18	5/2/2018 1.2-1.8 m BGS
Metals	
Barium	48.2
Boron	6.0
Cadmium	ND (0.50)
Cobalt	4.3
Copper	17.6
Lead	56.9
Mercury	0.0405
Molybdenum	ND (1.0)
Zinc	124
Sodium Adsorption Ratios	
Sodium adsorption ratio (SAR)	0.16
General Chemistry	
Conductivity	0.204

MW14-18	5/30/2018 0.6-1.2 m BGS
Metals	
Barium	242 (b)
Boron	6.2
Cadmium	4.11 (ab)
Cobalt	7.5
Copper	23.9
Lead	26.2
Mercury	0.124
Molybdenum	2.8 (b)
Zinc	2030 (ab)
Sodium Adsorption Ratios	
Sodium adsorption ratio (SAR)	13.1 (ab)
General Chemistry	
Conductivity	0.707 (ab)

MW15-18	5/30/2018 0.6-1.2 m BGS
Metals	
Barium	35.2
Boron	ND (5.0)
Cadmium	0.84
Cobalt	2.6
Copper	19.1
Lead	34.0
Mercury	0.268
Molybdenum	ND (1.0)
Zinc	258
Sodium Adsorption Ratios	
Sodium adsorption ratio (SAR)	4.61
General Chemistry	
Conductivity	0.610

MW4-18	5/4/2018 1.2-1.8 m BGS	5/4/2018 4.8-5.1 m BGS
Metals		
Barium	61.5	-
Boron	13.2	-
Cadmium	0.52	-
Cobalt	6.0	-
Copper	25.5	-
Lead	40.7	-
Mercury	0.0659	-
Molybdenum	ND (1.0)	-
Zinc	174	-
Sodium Adsorption Ratios		
Sodium adsorption ratio (SAR)	8.98 (a)	2.79
General Chemistry		
Conductivity	0.727 (a)	-

MW10-18	5/1/2018 1.2-1.8 m BGS
Metals	
Barium	49.5
Boron	6.9
Cadmium	ND (0.50)
Cobalt	4.6
Copper	14.8
Lead	74.4
Mercury	0.109
Molybdenum	ND (1.0)
Zinc	122
Sodium Adsorption Ratios	
Sodium adsorption ratio (SAR)	1.14
General Chemistry	
Conductivity	0.177

MW12-18	5/1/2018 2.4-3 m BGS
Metals	
Barium	53.4
Boron	119
Cadmium	3.06 (a)
Cobalt	3.9
Copper	26.7
Lead	70.7
Mercury	0.115
Molybdenum	1.0
Zinc	635 (a)
Sodium Adsorption Ratios	
Sodium adsorption ratio (SAR)	4.63
General Chemistry	
Conductivity	0.963 (a)

LEGEND

- APPROXIMATE LOCATION OF LANDFILL SITE (GLL, 1987)
- EXISTING MONITORING WELL
- BURIED/DAMAGED MONITORING WELL
- APPROXIMATE LOCATION OF PASSIVE VENT PIPE

MW14-18	5/30/2018 0.6-1.2 m BGS
Metals	
Barium	242 (b)
Boron	6.2
Cobalt	7.5

LOCATION; SAMPLE DATE; SAMPLE DEPTH; RESULT; PARAMETER

242 (b) DOES NOT MEET APPLICABLE STANDARD

Parameter	MECP Table 6 Site Condition Standards (a)(1)	MECP Table 8 Site Condition Standards (b)(1)	Units
Metals			
Barium	390	220	ug/g
Boron	120	36	ug/g
Boron (hot water extractable)	1.5	1.5	ug/g
Cadmium	1.2	1.2	ug/g
Cobalt	22	22	ug/g
Copper	140	92	ug/g
Lead	120	120	ug/g
Mercury	0.27	0.27	ug/g
Molybdenum	6.9	2	ug/g
Zinc	340	290	ug/g
Sodium Adsorption Ratios			
Sodium adsorption ratio (SAR)	5	5	none
General Chemistry			
Conductivity	0.7	0.7	mS/cm

Source: Microsoft Product Screen Shot(s) Reprinted with permission from Microsoft Corporation, Acquisition Date [unknown], Accessed: 2017

0 40 80 120m

PROJECT NORTH

NOTE:

(1) Coarse Grained Soils
(2) MW1-18, MW2-18, MW3-18, MW4-18, MW7-18, MW8-18, MW9-18, MW10-18, MW11-18, MW12-18, and MW13-18 SCREENED AGAINST MECP TABLE 6
(3) MW14-18, and MW15-18 SCREENED AGAINST MECP TABLE 6 AND MECP TABLE 8
DLHC - Detection limit raised: Dilution required due to high concentration of test analyte(s).

GHD

THE CORPORATION OF THE CITY OF GUELPH
HISTORICAL LANDFILL SITES 8 AND 9, GUELPH, ONTARIO
PHASE II ENVIRONMENTAL SITE ASSESSMENT

SOIL ANALYTICAL RESULTS METALS AND GENERAL CHEMISTRY

11149990-00

Aug 10, 2018

FIGURE 4

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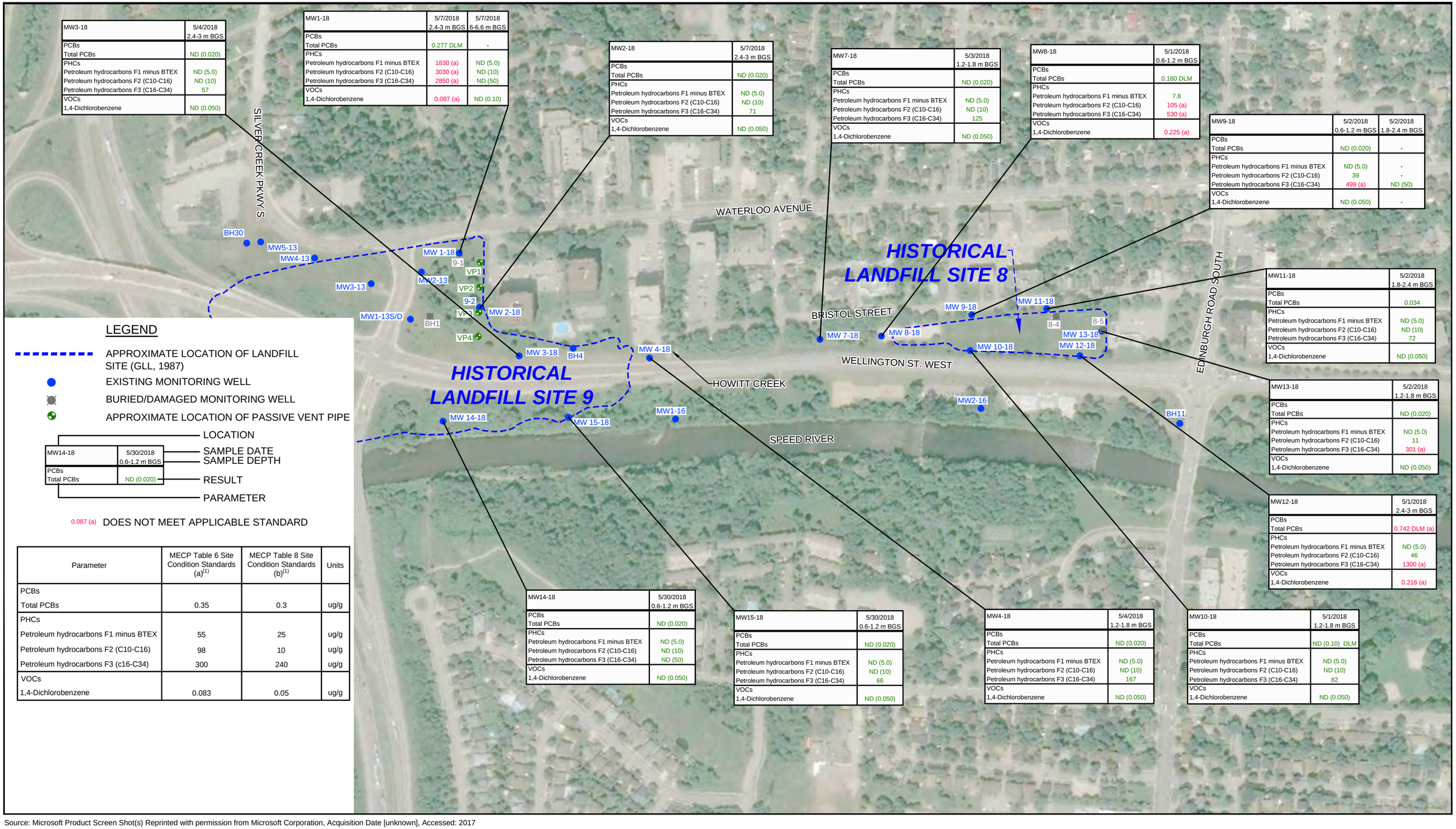


MW3-18	5/4/2018 2.4-3 m BGS
PCBs	
Total PCBs	ND (0.020)
PHCs	
Petroleum hydrocarbons F1 minus BTEX	ND (5.0)
Petroleum hydrocarbons F2 (C10-C16)	ND (10)
Petroleum hydrocarbons F3 (C16-C34)	57
VOCs	
1,4-Dichlorobenzene	ND (0.050)

MW1-18	5/7/2018 2.4-3 m BGS	5/7/2018 6-6.6 m BGS
PCBs		
Total PCBs	0.277 DLM	-
PHCs		
Petroleum hydrocarbons F1 minus BTEX	1830 (a)	ND (5.0)
Petroleum hydrocarbons F2 (C10-C16)	3030 (a)	ND (10)
Petroleum hydrocarbons F3 (C16-C34)	2850 (a)	ND (50)
VOCs		
1,4-Dichlorobenzene	0.087 (a)	ND (0.10)

MW2-18	5/7/2018 2.4-3 m BGS
PCBs	
Total PCBs	ND (0.020)
PHCs	
Petroleum hydrocarbons F1 minus BTEX	ND (5.0)
Petroleum hydrocarbons F2 (C10-C16)	ND (10)
Petroleum hydrocarbons F3 (C16-C34)	71
VOCs	
1,4-Dichlorobenzene	ND (0.050)

MW7-18	5/3/2018 1.2-1.8 m BGS
PCBs	
Total PCBs	ND (0.020)
PHCs	
Petroleum hydrocarbons F1 minus BTEX	ND (5.0)
Petroleum hydrocarbons F2 (C10-C16)	ND (10)
Petroleum hydrocarbons F3 (C16-C34)	125
VOCs	
1,4-Dichlorobenzene	ND (0.050)

MW8-18	5/1/2018 0.6-1.2 m BGS
PCBs	
Total PCBs	0.160 DLM
PHCs	
Petroleum hydrocarbons F1 minus BTEX	7.8
Petroleum hydrocarbons F2 (C10-C16)	105 (a)
Petroleum hydrocarbons F3 (C16-C34)	530 (a)
VOCs	
1,4-Dichlorobenzene	0.225 (a)

MW9-18	5/2/2018 0.6-1.2 m BGS	5/2/2018 1.8-2.4 m BGS
PCBs		
Total PCBs	ND (0.020)	-
PHCs		
Petroleum hydrocarbons F1 minus BTEX	ND (5.0)	-
Petroleum hydrocarbons F2 (C10-C16)	39	-
Petroleum hydrocarbons F3 (C16-C34)	499 (a)	ND (50)
VOCs		
1,4-Dichlorobenzene	ND (0.050)	-

MW11-18	5/2/2018 1.8-2.4 m BGS
PCBs	
Total PCBs	0.034
PHCs	
Petroleum hydrocarbons F1 minus BTEX	ND (5.0)
Petroleum hydrocarbons F2 (C10-C16)	ND (10)
Petroleum hydrocarbons F3 (C16-C34)	72
VOCs	
1,4-Dichlorobenzene	ND (0.050)

MW13-18	5/2/2018 1.2-1.8 m BGS
PCBs	
Total PCBs	ND (0.020)
PHCs	
Petroleum hydrocarbons F1 minus BTEX	ND (5.0)
Petroleum hydrocarbons F2 (C10-C16)	11
Petroleum hydrocarbons F3 (C16-C34)	301 (a)
VOCs	
1,4-Dichlorobenzene	ND (0.050)

MW12-18	5/1/2018 2.4-3 m BGS
PCBs	
Total PCBs	0.742 DLM (a)
PHCs	
Petroleum hydrocarbons F1 minus BTEX	ND (5.0)
Petroleum hydrocarbons F2 (C10-C16)	46
Petroleum hydrocarbons F3 (C16-C34)	1300 (a)
VOCs	
1,4-Dichlorobenzene	0.216 (a)

MW14-18	5/30/2018 0.6-1.2 m BGS
PCBs	
Total PCBs	ND (0.020)
PHCs	
Petroleum hydrocarbons F1 minus BTEX	ND (5.0)
Petroleum hydrocarbons F2 (C10-C16)	ND (10)
Petroleum hydrocarbons F3 (C16-C34)	ND (50)
VOCs	
1,4-Dichlorobenzene	ND (0.050)

MW15-18	5/30/2018 0.6-1.2 m BGS
PCBs	
Total PCBs	ND (0.020)
PHCs	
Petroleum hydrocarbons F1 minus BTEX	ND (5.0)
Petroleum hydrocarbons F2 (C10-C16)	ND (10)
Petroleum hydrocarbons F3 (C16-C34)	66
VOCs	
1,4-Dichlorobenzene	ND (0.050)

MW4-18	5/4/2018 1.2-1.8 m BGS
PCBs	
Total PCBs	ND (0.020)
PHCs	
Petroleum hydrocarbons F1 minus BTEX	ND (5.0)
Petroleum hydrocarbons F2 (C10-C16)	ND (10)
Petroleum hydrocarbons F3 (C16-C34)	167
VOCs	
1,4-Dichlorobenzene	ND (0.050)

MW10-18	5/1/2018 1.2-1.8 m BGS
PCBs	
Total PCBs	ND (0.10) DLM
PHCs	
Petroleum hydrocarbons F1 minus BTEX	ND (5.0)
Petroleum hydrocarbons F2 (C10-C16)	ND (10)
Petroleum hydrocarbons F3 (C16-C34)	82
VOCs	
1,4-Dichlorobenzene	ND (0.050)

LEGEND

- APPROXIMATE LOCATION OF LANDFILL SITE (GLL, 1987)
- EXISTING MONITORING WELL
- BURIED/DAMAGED MONITORING WELL
- APPROXIMATE LOCATION OF PASSIVE VENT PIPE

MW14-18	5/30/2018 0.6-1.2 m BGS
PCBs	
Total PCBs	ND (0.020)

LOCATION; SAMPLE DATE; SAMPLE DEPTH; RESULT; PARAMETER

0.087 (a) DOES NOT MEET APPLICABLE STANDARD

Parameter	MECP Table 6 Site Condition Standards (a)(1)	MECP Table 8 Site Condition Standards (b)(1)	Units
PCBs			
Total PCBs	0.35	0.3	ug/g
PHCs			
Petroleum hydrocarbons F1 minus BTEX	55	25	ug/g
Petroleum hydrocarbons F2 (C10-C16)	98	10	ug/g
Petroleum hydrocarbons F3 (c16-C34)	300	240	ug/g
VOCs			
1,4-Dichlorobenzene	0.083	0.05	ug/g

Source: Microsoft Product Screen Shot(s) Reprinted with permission from Microsoft Corporation, Acquisition Date [unknown], Accessed: 2017

0 40 80 120m

PROJECT NORTH

NOTE:

(1) Coarse Grained Soils
(2) MW1-18, MW2-18, MW3-18, MW4-18, MW7-18, MW8-18, MW9-18, MW10-18, MW11-18, MW12-18, and MW13-18 SCREENED AGAINST MECP TABLE 6
(3) MW14-18, and MW15-18 SCREENED AGAINST MECP TABLE 6 AND MECP TABLE 8
DLM - Detection limit adjusted due to sample matrix effects.

GHD

THE CORPORATION OF THE CITY OF GUELPH
HISTORICAL LANDFILL SITES 8 AND 9, GUELPH, ONTARIO
PHASE II ENVIRONMENTAL SITE ASSESSMENT

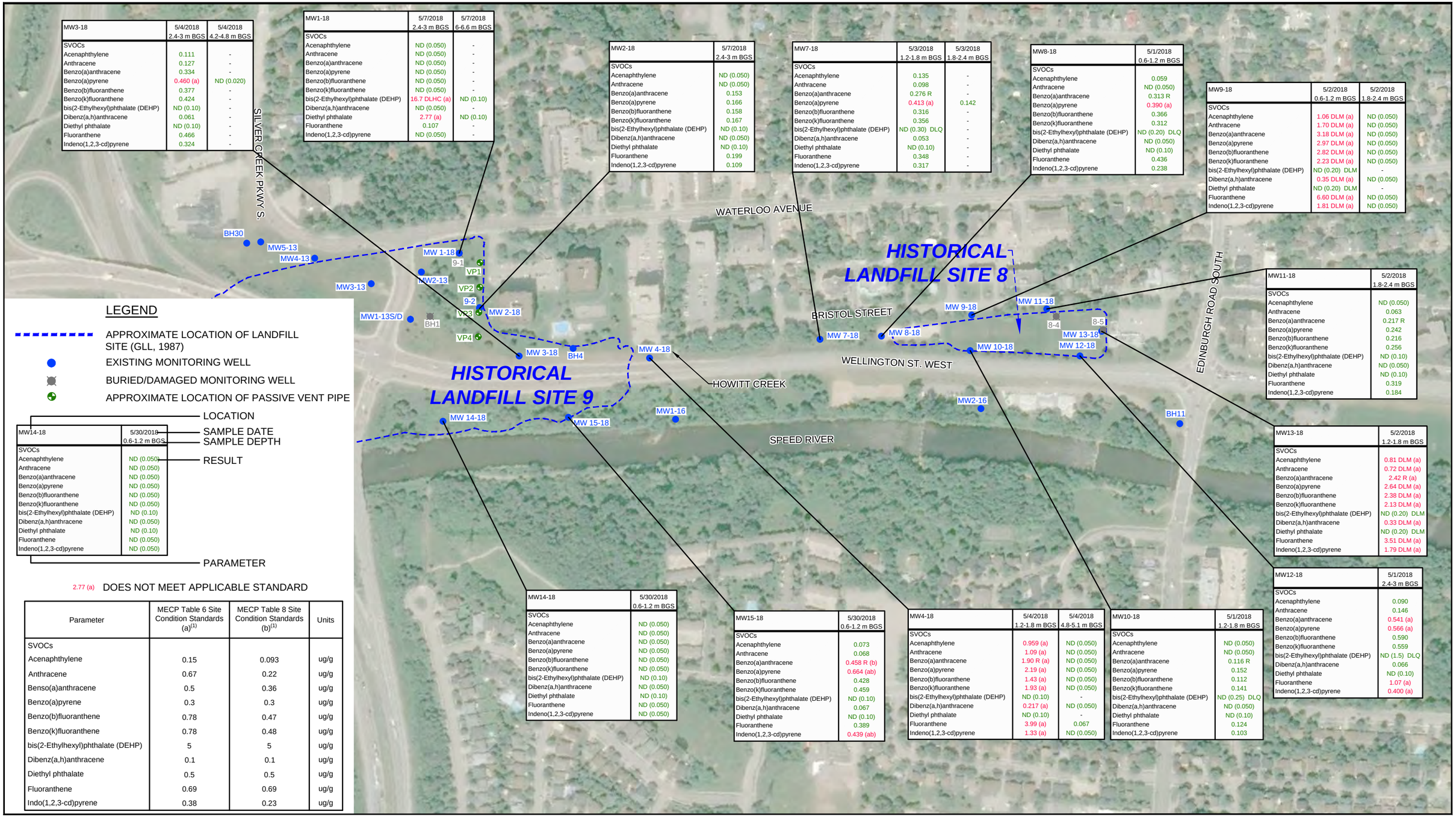
SOIL ANALYTICAL RESULTS - PCBs, PHCs, AND VOCs

11149990-00

Jul 12, 2018

FIGURE 5

CAD File: I:\DRAWINGS\11140000s\11149000s\11149990\11149990-REPORT\11149990-00(003)\11149990-00(003)GN\11149990-00(003)GN-SC004.DWG



MW3-18	5/4/2018 2.4-3 m BGS	5/4/2018 4.2-4.8 m BGS
SVOCs		
Acenaphthylene	0.111	-
Anthracene	0.127	-
Benzo(a)anthracene	0.334	-
Benzo(a)pyrene	0.460 (a)	ND (0.020)
Benzo(b)fluoranthene	0.377	-
Benzo(k)fluoranthene	0.424	-
bis(2-Ethylhexyl)phthalate (DEHP)	ND (0.10)	-
Dibenz(a,h)anthracene	0.061	-
Diethyl phthalate	ND (0.10)	-
Fluoranthene	0.466	-
Indeno(1,2,3-cd)pyrene	0.324	-

MW1-18	5/7/2018 2.4-3 m BGS	5/7/2018 6-6.6 m BGS
SVOCs		
Acenaphthylene	ND (0.050)	-
Anthracene	ND (0.050)	-
Benzo(a)anthracene	ND (0.050)	-
Benzo(a)pyrene	ND (0.050)	-
Benzo(b)fluoranthene	ND (0.050)	-
Benzo(k)fluoranthene	ND (0.050)	-
bis(2-Ethylhexyl)phthalate (DEHP)	16.7 DLHC (a)	ND (0.10)
Dibenz(a,h)anthracene	ND (0.050)	-
Diethyl phthalate	2.77 (a)	ND (0.10)
Fluoranthene	0.107	-
Indeno(1,2,3-cd)pyrene	ND (0.050)	-

MW2-18	5/7/2018 2.4-3 m BGS
SVOCs	
Acenaphthylene	ND (0.050)
Anthracene	ND (0.050)
Benzo(a)anthracene	0.153
Benzo(a)pyrene	0.166
Benzo(b)fluoranthene	0.158
Benzo(k)fluoranthene	0.167
bis(2-Ethylhexyl)phthalate (DEHP)	ND (0.10)
Dibenz(a,h)anthracene	ND (0.050)
Diethyl phthalate	ND (0.10)
Fluoranthene	0.199
Indeno(1,2,3-cd)pyrene	0.109

MW7-18	5/3/2018 1.2-1.8 m BGS	5/3/2018 1.8-2.4 m BGS
SVOCs		
Acenaphthylene	0.135	-
Anthracene	0.098	-
Benzo(a)anthracene	0.276 R	-
Benzo(a)pyrene	0.413 (a)	0.142
Benzo(b)fluoranthene	0.316	-
Benzo(k)fluoranthene	0.356	-
bis(2-Ethylhexyl)phthalate (DEHP)	ND (0.30) DLQ	-
Dibenz(a,h)anthracene	0.053	-
Diethyl phthalate	ND (0.10)	-
Fluoranthene	0.348	-
Indeno(1,2,3-cd)pyrene	0.317	-

MW8-18	5/1/2018 0.6-1.2 m BGS
SVOCs	
Acenaphthylene	0.059
Anthracene	ND (0.050)
Benzo(a)anthracene	0.313 R
Benzo(a)pyrene	0.390 (a)
Benzo(b)fluoranthene	0.366
Benzo(k)fluoranthene	0.312
bis(2-Ethylhexyl)phthalate (DEHP)	ND (0.20) DLQ
Dibenz(a,h)anthracene	ND (0.050)
Diethyl phthalate	ND (0.10)
Fluoranthene	0.436
Indeno(1,2,3-cd)pyrene	0.238

MW9-18	5/2/2018 0.6-1.2 m BGS	5/2/2018 1.8-2.4 m BGS
SVOCs		
Acenaphthylene	1.06 DLM (a)	ND (0.050)
Anthracene	1.70 DLM (a)	ND (0.050)
Benzo(a)anthracene	3.18 DLM (a)	ND (0.050)
Benzo(a)pyrene	2.97 DLM (a)	ND (0.050)
Benzo(b)fluoranthene	2.82 DLM (a)	ND (0.050)
Benzo(k)fluoranthene	2.23 DLM (a)	ND (0.050)
bis(2-Ethylhexyl)phthalate (DEHP)	ND (0.20) DLM	-
Dibenz(a,h)anthracene	0.35 DLM (a)	ND (0.050)
Diethyl phthalate	ND (0.20) DLM	-
Fluoranthene	6.60 DLM (a)	ND (0.050)
Indeno(1,2,3-cd)pyrene	1.81 DLM (a)	ND (0.050)

MW11-18	5/2/2018 1.8-2.4 m BGS
SVOCs	
Acenaphthylene	ND (0.050)
Anthracene	0.063
Benzo(a)anthracene	0.217 R
Benzo(a)pyrene	0.242
Benzo(b)fluoranthene	0.216
Benzo(k)fluoranthene	0.256
bis(2-Ethylhexyl)phthalate (DEHP)	ND (0.10)
Dibenz(a,h)anthracene	ND (0.050)
Diethyl phthalate	ND (0.10)
Fluoranthene	0.319
Indeno(1,2,3-cd)pyrene	0.184

MW13-18	5/2/2018 1.2-1.8 m BGS
SVOCs	
Acenaphthylene	0.81 DLM (a)
Anthracene	0.72 DLM (a)
Benzo(a)anthracene	2.42 R (a)
Benzo(a)pyrene	2.64 DLM (a)
Benzo(b)fluoranthene	2.38 DLM (a)
Benzo(k)fluoranthene	2.13 DLM (a)
bis(2-Ethylhexyl)phthalate (DEHP)	ND (0.20) DLM
Dibenz(a,h)anthracene	0.33 DLM (a)
Diethyl phthalate	ND (0.20) DLM
Fluoranthene	3.51 DLM (a)
Indeno(1,2,3-cd)pyrene	1.79 DLM (a)

MW12-18	5/1/2018 2.4-3 m BGS
SVOCs	
Acenaphthylene	0.090
Anthracene	0.146
Benzo(a)anthracene	0.541 (a)
Benzo(a)pyrene	0.566 (a)
Benzo(b)fluoranthene	0.590
Benzo(k)fluoranthene	0.559
bis(2-Ethylhexyl)phthalate (DEHP)	ND (1.5) DLQ
Dibenz(a,h)anthracene	0.066
Diethyl phthalate	ND (0.10)
Fluoranthene	1.07 (a)
Indeno(1,2,3-cd)pyrene	0.400 (a)

MW14-18	5/30/2018 0.6-1.2 m BGS
SVOCs	
Acenaphthylene	ND (0.050)
Anthracene	ND (0.050)
Benzo(a)anthracene	ND (0.050)
Benzo(a)pyrene	ND (0.050)
Benzo(b)fluoranthene	ND (0.050)
Benzo(k)fluoranthene	ND (0.050)
bis(2-Ethylhexyl)phthalate (DEHP)	ND (0.10)
Dibenz(a,h)anthracene	ND (0.050)
Diethyl phthalate	ND (0.10)
Fluoranthene	ND (0.050)
Indeno(1,2,3-cd)pyrene	ND (0.050)

MW15-18	5/30/2018 0.6-1.2 m BGS
SVOCs	
Acenaphthylene	0.073
Anthracene	0.068
Benzo(a)anthracene	0.458 R (b)
Benzo(a)pyrene	0.664 (ab)
Benzo(b)fluoranthene	0.428
Benzo(k)fluoranthene	0.459
bis(2-Ethylhexyl)phthalate (DEHP)	ND (0.10)
Dibenz(a,h)anthracene	0.067
Diethyl phthalate	ND (0.10)
Fluoranthene	0.389
Indeno(1,2,3-cd)pyrene	0.439 (ab)

MW4-18	5/4/2018 1.2-1.8 m BGS	5/4/2018 4.8-5.1 m BGS
SVOCs		
Acenaphthylene	0.959 (a)	ND (0.050)
Anthracene	1.09 (a)	ND (0.050)
Benzo(a)anthracene	1.90 R (a)	ND (0.050)
Benzo(a)pyrene	2.19 (a)	ND (0.050)
Benzo(b)fluoranthene	1.43 (a)	ND (0.050)
Benzo(k)fluoranthene	1.93 (a)	ND (0.050)
bis(2-Ethylhexyl)phthalate (DEHP)	ND (0.10)	-
Dibenz(a,h)anthracene	0.217 (a)	ND (0.050)
Diethyl phthalate	ND (0.10)	-
Fluoranthene	3.99 (a)	0.067
Indeno(1,2,3-cd)pyrene	1.33 (a)	ND (0.050)

MW10-18	5/1/2018 1.2-1.8 m BGS
SVOCs	
Acenaphthylene	ND (0.050)
Anthracene	ND (0.050)
Benzo(a)anthracene	0.116 R
Benzo(a)pyrene	0.152
Benzo(b)fluoranthene	0.112
Benzo(k)fluoranthene	0.141
bis(2-Ethylhexyl)phthalate (DEHP)	ND (0.25) DLQ
Dibenz(a,h)anthracene	ND (0.050)
Diethyl phthalate	ND (0.10)
Fluoranthene	0.124
Indeno(1,2,3-cd)pyrene	0.103

LEGEND

- APPROXIMATE LOCATION OF LANDFILL SITE (GLL, 1987)
- EXISTING MONITORING WELL
- BURIED/DAMAGED MONITORING WELL
- APPROXIMATE LOCATION OF PASSIVE VENT PIPE

MW14-18	5/30/2018 0.6-1.2 m BGS
SVOCs	
Acenaphthylene	ND (0.050)
Anthracene	ND (0.050)
Benzo(a)anthracene	ND (0.050)
Benzo(a)pyrene	ND (0.050)
Benzo(b)fluoranthene	ND (0.050)
Benzo(k)fluoranthene	ND (0.050)
bis(2-Ethylhexyl)phthalate (DEHP)	ND (0.10)
Dibenz(a,h)anthracene	ND (0.050)
Diethyl phthalate	ND (0.10)
Fluoranthene	ND (0.050)
Indeno(1,2,3-cd)pyrene	ND (0.050)

LOCATION
SAMPLE DATE
SAMPLE DEPTH
RESULT
PARAMETER

2.77 (a) DOES NOT MEET APPLICABLE STANDARD

Parameter	MECP Table 6 Site Condition Standards (a)[1]	MECP Table 8 Site Condition Standards (b)[1]	Units
SVOCs			
Acenaphthylene	0.15	0.093	ug/g
Anthracene	0.67	0.22	ug/g
Benso(a)anthracene	0.5	0.36	ug/g
Benzo(a)pyrene	0.3	0.3	ug/g
Benzo(b)fluoranthene	0.78	0.47	ug/g
Benzo(k)fluoranthene	0.78	0.48	ug/g
bis(2-Ethylhexyl)phthalate (DEHP)	5	5	ug/g
Dibenz(a,h)anthracene	0.1	0.1	ug/g
Diethyl phthalate	0.5	0.5	ug/g
Fluoranthene	0.69	0.69	ug/g
Indo(1,2,3-cd)pyrene	0.38	0.23	ug/g

Source: Microsoft Product Screen Shot(s) Reprinted with permission from Microsoft Corporation, Acquisition Date [unknown], Accessed: 2017

0 40 80 120m

PROJECT NORTH

NOTE:
(1) Coarse Grained Soils
(2) MW1-18, MW2-18, MW3-18, MW4-18, MW7-18, MW8-18, MW9-18, MW10-18, MW11-18, MW12-18, and MW13-18 SCREENED AGAINST MECP TABLE 6
(3) MW14-18, and MW15-18 SCREENED AGAINST MECP TABLE 6 AND MECP TABLE 8
DLHC - Detection limit raised: Dilution required due to high concentration of test analyte(s).
DLM - Detection limit adjusted due to sample matrix effects.
DLQ - Detection limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.
R - The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.

GHD

THE CORPORATION OF THE CITY OF GUELPH
HISTORICAL LANDFILL SITES 8 AND 9, GUELPH, ONTARIO
PHASE II ENVIRONMENTAL SITE ASSESSMENT

11149990-00

Aug 10, 2018

SOIL ANALYTICAL RESULTS - SVOCs

FIGURE 6

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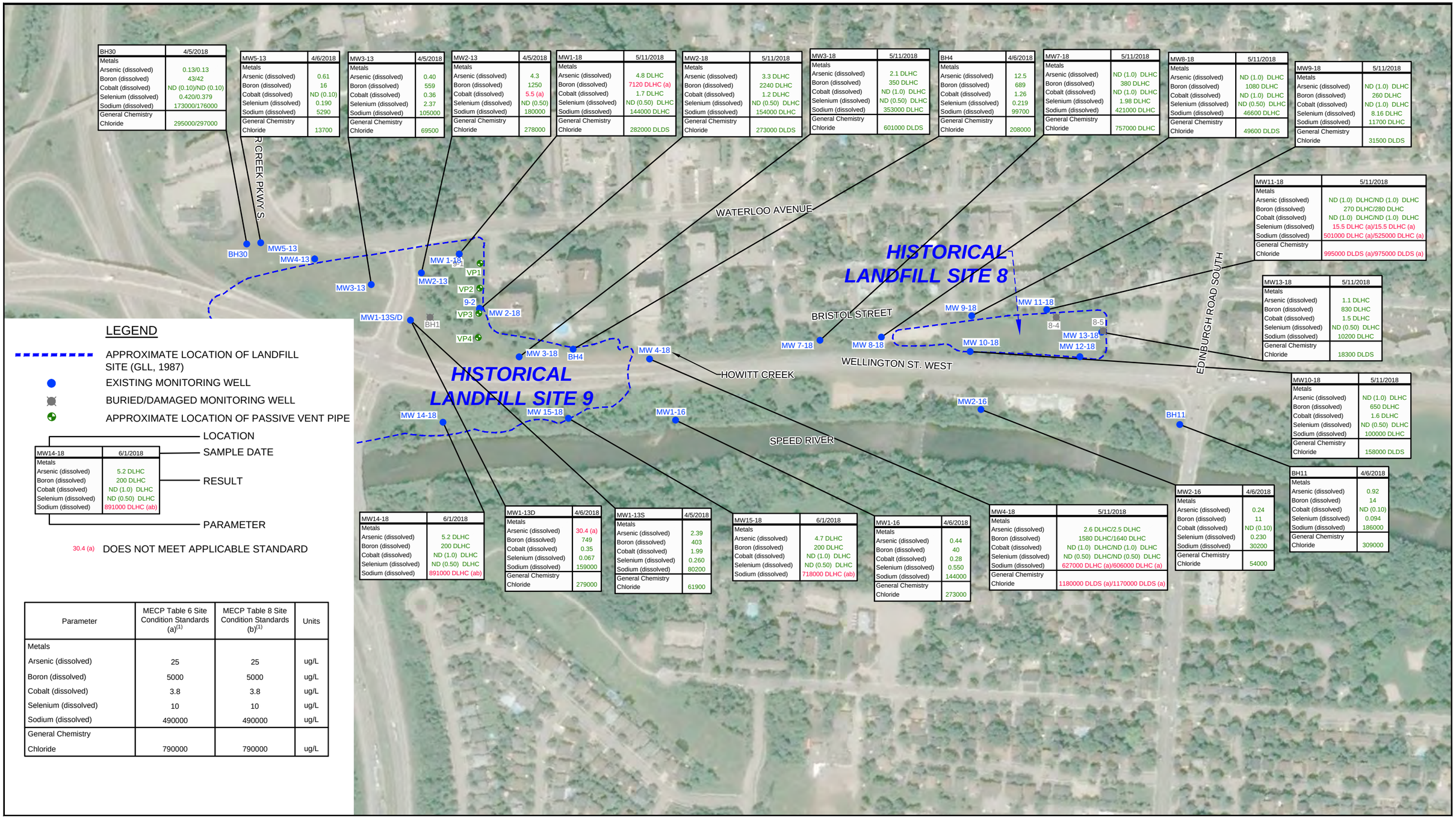


LEGEND

- APPROXIMATE LOCATION OF LANDFILL SITE (GLL, 1987)
- EXISTING MONITORING WELL
- BURIED/DAMAGED MONITORING WELL
- APPROXIMATE LOCATION OF PASSIVE VENT PIPE

MW14-18	6/1/2018
Metals	
Arsenic (dissolved)	5.2 DLHC
Boron (dissolved)	200 DLHC
Cobalt (dissolved)	ND (1.0) DLHC
Selenium (dissolved)	ND (0.50) DLHC
Sodium (dissolved)	891000 DLHC (ab)

LOCATION / SAMPLE DATE / RESULT / PARAMETER

30.4 (a) DOES NOT MEET APPLICABLE STANDARD

Parameter	MECP Table 6 Site Condition Standards (a)(1)	MECP Table 8 Site Condition Standards (b)(1)	Units
Metals			
Arsenic (dissolved)	25	25	ug/L
Boron (dissolved)	5000	5000	ug/L
Cobalt (dissolved)	3.8	3.8	ug/L
Selenium (dissolved)	10	10	ug/L
Sodium (dissolved)	490000	490000	ug/L
General Chemistry			
Chloride	790000	790000	ug/L

BH30	4/5/2018
Metals	
Arsenic (dissolved)	0.13/0.13
Boron (dissolved)	43/42
Cobalt (dissolved)	ND (0.10)/ND (0.10)
Selenium (dissolved)	0.420/0.379
Sodium (dissolved)	173000/176000
General Chemistry	
Chloride	295000/297000

MW5-13	4/6/2018
Metals	
Arsenic (dissolved)	0.61
Boron (dissolved)	16
Cobalt (dissolved)	ND (0.10)
Selenium (dissolved)	0.190
Sodium (dissolved)	5290
General Chemistry	
Chloride	13700

MW3-13	4/5/2018
Metals	
Arsenic (dissolved)	0.40
Boron (dissolved)	559
Cobalt (dissolved)	0.36
Selenium (dissolved)	2.37
Sodium (dissolved)	105000
General Chemistry	
Chloride	69500

MW2-13	4/5/2018
Metals	
Arsenic (dissolved)	4.3
Boron (dissolved)	1250
Cobalt (dissolved)	5.5 (a)
Selenium (dissolved)	ND (0.50)
Sodium (dissolved)	180000
General Chemistry	
Chloride	278000

MW1-18	5/11/2018
Metals	
Arsenic (dissolved)	4.8 DLHC
Boron (dissolved)	7120 DLHC (a)
Cobalt (dissolved)	1.7 DLHC
Selenium (dissolved)	ND (0.50) DLHC
Sodium (dissolved)	144000 DLHC
General Chemistry	
Chloride	282000 DLDS

MW2-18	5/11/2018
Metals	
Arsenic (dissolved)	3.3 DLHC
Boron (dissolved)	2240 DLHC
Cobalt (dissolved)	1.2 DLHC
Selenium (dissolved)	ND (0.50) DLHC
Sodium (dissolved)	154000 DLHC
General Chemistry	
Chloride	273000 DLDS

MW3-18	5/11/2018
Metals	
Arsenic (dissolved)	2.1 DLHC
Boron (dissolved)	350 DLHC
Cobalt (dissolved)	ND (1.0) DLHC
Selenium (dissolved)	ND (0.50) DLHC
Sodium (dissolved)	353000 DLHC
General Chemistry	
Chloride	601000 DLDS

BH4	4/6/2018
Metals	
Arsenic (dissolved)	12.5
Boron (dissolved)	689
Cobalt (dissolved)	1.26
Selenium (dissolved)	0.219
Sodium (dissolved)	99700
General Chemistry	
Chloride	208000

MW7-18	5/11/2018
Metals	
Arsenic (dissolved)	ND (1.0) DLHC
Boron (dissolved)	380 DLHC
Cobalt (dissolved)	ND (1.0) DLHC
Selenium (dissolved)	1.98 DLHC
Sodium (dissolved)	421000 DLHC
General Chemistry	
Chloride	757000 DLHC

MW8-18	5/11/2018
Metals	
Arsenic (dissolved)	ND (1.0) DLHC
Boron (dissolved)	1080 DLHC
Cobalt (dissolved)	ND (1.0) DLHC
Selenium (dissolved)	ND (0.50) DLHC
Sodium (dissolved)	46600 DLHC
General Chemistry	
Chloride	49600 DLDS

MW9-18	5/11/2018
Metals	
Arsenic (dissolved)	ND (1.0) DLHC
Boron (dissolved)	260 DLHC
Cobalt (dissolved)	ND (1.0) DLHC
Selenium (dissolved)	8.16 DLHC
Sodium (dissolved)	11700 DLHC
General Chemistry	
Chloride	31500 DLDS

MW11-18	5/11/2018
Metals	
Arsenic (dissolved)	ND (1.0) DLHC/ND (1.0) DLHC
Boron (dissolved)	270 DLHC/280 DLHC
Cobalt (dissolved)	ND (1.0) DLHC/ND (1.0) DLHC
Selenium (dissolved)	15.5 DLHC (a)/15.5 DLHC (a)
Sodium (dissolved)	501000 DLHC (a)/525000 DLHC (a)
General Chemistry	
Chloride	995000 DLDS (a)/975000 DLDS (a)

MW13-18	5/11/2018
Metals	
Arsenic (dissolved)	1.1 DLHC
Boron (dissolved)	830 DLHC
Cobalt (dissolved)	1.5 DLHC
Selenium (dissolved)	ND (0.50) DLHC
Sodium (dissolved)	10200 DLHC
General Chemistry	
Chloride	18300 DLDS

MW10-18	5/11/2018
Metals	
Arsenic (dissolved)	ND (1.0) DLHC
Boron (dissolved)	650 DLHC
Cobalt (dissolved)	1.6 DLHC
Selenium (dissolved)	ND (0.50) DLHC
Sodium (dissolved)	100000 DLHC
General Chemistry	
Chloride	158000 DLDS

BH11	4/6/2018
Metals	
Arsenic (dissolved)	0.92
Boron (dissolved)	14
Cobalt (dissolved)	ND (0.10)
Selenium (dissolved)	0.094
Sodium (dissolved)	186000
General Chemistry	
Chloride	309000

MW2-16	4/6/2018
Metals	
Arsenic (dissolved)	0.24
Boron (dissolved)	11
Cobalt (dissolved)	ND (0.10)
Selenium (dissolved)	0.230
Sodium (dissolved)	30200
General Chemistry	
Chloride	54000

MW4-18	5/11/2018
Metals	
Arsenic (dissolved)	2.6 DLHC/2.5 DLHC
Boron (dissolved)	1580 DLHC/1640 DLHC
Cobalt (dissolved)	ND (1.0) DLHC/ND (1.0) DLHC
Selenium (dissolved)	ND (0.50) DLHC/ND (0.50) DLHC
Sodium (dissolved)	627000 DLHC (a)/606000 DLHC (a)
General Chemistry	
Chloride	1180000 DLDS (a)/1170000 DLDS (a)

MW1-16	4/6/2018
Metals	
Arsenic (dissolved)	0.44
Boron (dissolved)	40
Cobalt (dissolved)	0.28
Selenium (dissolved)	0.550
Sodium (dissolved)	144000
General Chemistry	
Chloride	273000

MW15-18	6/1/2018
Metals	
Arsenic (dissolved)	4.7 DLHC
Boron (dissolved)	200 DLHC
Cobalt (dissolved)	ND (1.0) DLHC
Selenium (dissolved)	ND (0.50) DLHC
Sodium (dissolved)	718000 DLHC (ab)

MW1-13S	4/5/2018
Metals	
Arsenic (dissolved)	2.39
Boron (dissolved)	403
Cobalt (dissolved)	1.99
Selenium (dissolved)	0.260
Sodium (dissolved)	80200
General Chemistry	
Chloride	61900

MW1-13D	4/6/2018
Metals	
Arsenic (dissolved)	30.4 (a)
Boron (dissolved)	749
Cobalt (dissolved)	0.35
Selenium (dissolved)	0.067
Sodium (dissolved)	159000
General Chemistry	
Chloride	279000

MW14-18	6/1/2018
Metals	
Arsenic (dissolved)	5.2 DLHC
Boron (dissolved)	200 DLHC
Cobalt (dissolved)	ND (1.0) DLHC
Selenium (dissolved)	ND (0.50) DLHC
Sodium (dissolved)	891000 DLHC (ab)

Source: Microsoft Product Screen Shot(s) Reprinted with permission from Microsoft Corporation, Acquisition Date [unknown], Accessed: 2017

0 40 80 120m

PROJECT NORTH

NOTE:
(1) Coarse Grained Soils
(2) BH4, BH11, BH30, MW1-13D, MW1-13S,MW2-13, MW3-13, MW5-13, MW1-18, MW2-18, MW3-18, MW4-18, MW7-18, MW8-18, MW9-18, MW10-18, MW11-18, MW12-18, and MW13-18 SCREENED AGAINST MECP TABLE 6
(3) MW1-16, MW2-16, MW14-18, and MW15-18 SCREENED AGAINST MECP TABLE 6 AND MECP TABLE 8
DLDS - Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC - Detection limit raised: Dilution required due to high concentration of test analyte(s).

GHD

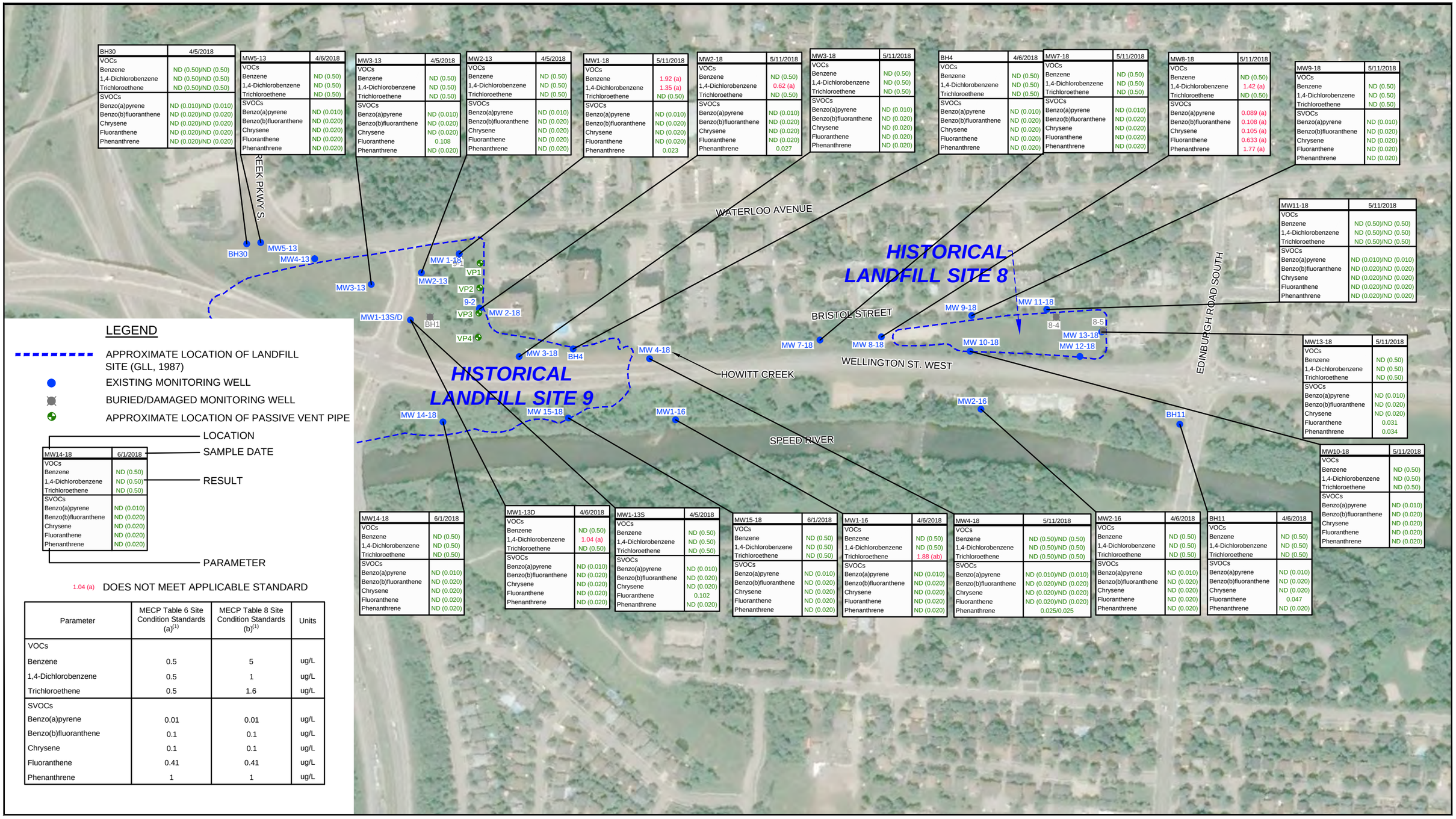
THE CORPORATION OF THE CITY OF GUELPH
HISTORICAL LANDFILL SITES 8 AND 9, GUELPH, ONTARIO
PHASE II ENVIRONMENTAL SITE ASSESSMENT

GROUNDWATER ANALYTICAL RESULTS METALS AND GENERAL CHEMISTRY

11149990-00
Aug 10, 2018

FIGURE 7

CAD File: I:\DRAWINGS\11140000s\11149000s\11149990\11149990-REPORT\11149990-00(003)\11149990-00(003)GN\11149990-00(003)GN-SC006.DWG



BH30	4/5/2018
VOCs	
Benzene	ND (0.50)/ND (0.50)
1,4-Dichlorobenzene	ND (0.50)/ND (0.50)
Trichloroethene	ND (0.50)/ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)/ND (0.010)
Benzo(b)fluoranthene	ND (0.020)/ND (0.020)
Chrysene	ND (0.020)/ND (0.020)
Fluoranthene	ND (0.020)/ND (0.020)
Phenanthrene	ND (0.020)/ND (0.020)

MW5-13	4/6/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	0.108
Phenanthrene	ND (0.020)

MW3-13	4/5/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	ND (0.020)

MW2-13	4/5/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	ND (0.020)

MW1-18	5/11/2018
VOCs	
Benzene	1.92 (a)
1,4-Dichlorobenzene	1.35 (a)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	0.023

MW2-18	5/11/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	0.62 (a)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	0.027

MW3-18	5/11/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	ND (0.020)

BH4	4/6/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	ND (0.020)

MW7-18	5/11/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	ND (0.020)

MW8-18	5/11/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	1.42 (a)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	0.089 (a)
Benzo(b)fluoranthene	0.108 (a)
Chrysene	0.105 (a)
Fluoranthene	0.633 (a)
Phenanthrene	1.77 (a)

MW9-18	5/11/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	ND (0.020)

MW11-18	5/11/2018
VOCs	
Benzene	ND (0.50)/ND (0.50)
1,4-Dichlorobenzene	ND (0.50)/ND (0.50)
Trichloroethene	ND (0.50)/ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)/ND (0.010)
Benzo(b)fluoranthene	ND (0.020)/ND (0.020)
Chrysene	ND (0.020)/ND (0.020)
Fluoranthene	ND (0.020)/ND (0.020)
Phenanthrene	ND (0.020)/ND (0.020)

MW13-18	5/11/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	0.031
Phenanthrene	0.034

MW10-18	5/11/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	ND (0.020)

MW14-18	6/1/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	ND (0.020)

MW1-13D	4/6/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	1.04 (a)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	ND (0.020)

MW1-13S	4/5/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	0.102
Phenanthrene	ND (0.020)

MW15-18	6/1/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	ND (0.020)

MW1-16	4/6/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	1.88 (ab)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	ND (0.020)

MW4-18	5/11/2018
VOCs	
Benzene	ND (0.50)/ND (0.50)
1,4-Dichlorobenzene	ND (0.50)/ND (0.50)
Trichloroethene	ND (0.50)/ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)/ND (0.010)
Benzo(b)fluoranthene	ND (0.020)/ND (0.020)
Chrysene	ND (0.020)/ND (0.020)
Fluoranthene	ND (0.020)/ND (0.020)
Phenanthrene	0.025/0.025

MW2-16	4/6/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	ND (0.020)
Phenanthrene	ND (0.020)

BH11	4/6/2018
VOCs	
Benzene	ND (0.50)
1,4-Dichlorobenzene	ND (0.50)
Trichloroethene	ND (0.50)
SVOCs	
Benzo(a)pyrene	ND (0.010)
Benzo(b)fluoranthene	ND (0.020)
Chrysene	ND (0.020)
Fluoranthene	0.047
Phenanthrene	ND (0.020)

LEGEND

- APPROXIMATE LOCATION OF LANDFILL SITE (GLL, 1987)
- EXISTING MONITORING WELL
- BURIED/DAMAGED MONITORING WELL
- APPROXIMATE LOCATION OF PASSIVE VENT PIPE

MW14-18 | 6/1/2018 — LOCATION; SAMPLE DATE; RESULT; PARAMETER

1.04 (a) DOES NOT MEET APPLICABLE STANDARD

Parameter	MECP Table 6 Site Condition Standards (a)(1)	MECP Table 8 Site Condition Standards (b)(1)	Units
VOCs			
Benzene	0.5	5	ug/L
1,4-Dichlorobenzene	0.5	1	ug/L
Trichloroethene	0.5	1.6	ug/L
SVOCs			
Benzo(a)pyrene	0.01	0.01	ug/L
Benzo(b)fluoranthene	0.1	0.1	ug/L
Chrysene	0.1	0.1	ug/L
Fluoranthene	0.41	0.41	ug/L
Phenanthrene	1	1	ug/L

Source: Microsoft Product Screen Shot(s) Reprinted with permission from Microsoft Corporation, Acquisition Date [unknown], Accessed: 2017

0 40 80 120m

PROJECT NORTH

NOTE:

(1) Coarse Grained Soils
(2) BH4, BH11, BH30, MW1-13D, MW1-13S,MW2-13, MW3-13, MW5-13, MW1-18, MW2-18, MW3-18, MW4-18, MW7-18, MW8-18, MW9-18, MW10-18, MW11-18, MW12-18, and MW13-18 SCREENED AGAINST MECP TABLE 6
(3) MW1-16, MW2-16, MW14-18, and MW15-18 SCREENED AGAINST MECP TABLE 6 AND MECP TABLE 8

THE CORPORATION OF THE CITY OF GUELPH
HISTORICAL LANDFILL SITES 8 AND 9, GUELPH, ONTARIO
PHASE II ENVIRONMENTAL SITE ASSESSMENT

GROUNDWATER ANALYTICAL RESULTS VOCs AND SVOCs

11149990-00

Aug 10, 2018

FIGURE 8

CAD File: I:\DRAWINGS\11140000s\11149000s\11149990\11149990-REPORT\11149990-00(003)\11149990-00(003)GN\11149990-00(003)GN-SC007.DWG

Tables

Table 1

Field Sample Key
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location	Depth (m)	Sample Identification	Sample Date	Sample Time	Matrix	Sample Type	Parent Sample	VOCs, PHC F1-F4	SVOCs	Metals and Inorganics	Phenols	Alkalinity	TKN	DOC	Ammonia	Anions (N_2N_3, SO_4)	Hardness, TDS	VOC,F1 (Trip Blank)	PCBs	PHC F3	PHC F1-F3	pH	Grainsize
MW1-18	2.4-3.0	S-11149990-050718-TW-17	05/07/18	11:00	SO	N	-	X	X	X									X				
MW1-18	6.0-6.6	S-11149990-050718-TW-18	05/07/18	11:30	SO	N	-		X	X											X		
MW2-18	2.4-3.0	S-11149990-050718-TW-15	05/07/18	9:05	SO	N	-	X	X	X									X				
MW2-18	1.2-1.8	S-11149990-050718-TW-19	05/07/18	9:00	SO	N	-															X	X
MW3-18	2.4-3.0	S-11149990-050418-TW-13	05/04/18	10:25	SO	N	-	X	X	X									X				
MW3-18	4.2-4.8	S-11149990-050418-TW-14	05/04/18	10:40	SO	N	-		X														
MW3-18	4.8-5.4	S-11149990-050418-TW-20	05/04/18	10:50	SO	N	-															X	X
MW4-18	1.2-1.8	S-11149990-050418-TW-11	05/04/18	8:15	SO	N	-	X	X	X									X				
MW4-18	4.8-5.1	S-11149990-050418-TW-12	05/04/18	8:30	SO	N	-		X	X													
MW4-18	0.6-1.2	S-11149990-050418-TW-21	05/04/18	8:10	SO	N	-															X	X
MW7-18	1.2-1.8	S-11149990-050318-TW-08	05/03/18	8:30	SO	N	-	X	X	X									X				
MW7-18	1.8-2.4	S-11149990-050318-TW-09	05/03/18	8:40	SO	N	-		X	X													
MW8-18	0.6-1.2	S-11149990-050118-TW-01	05/01/18	11:00	SO	N	-	X	X	X									X				
MW9-18	0.6-1.2	S-11149990-050218-TW-05	05/02/18	16:00	SO	N	-	X	X	X									X				
MW9-18	1.8-2.4	S-11149990-050218-TW-07	05/02/18	16:10	SO	N	-		X	X										X			
MW10-18	1.2-1.8	S-11149990-050118-TW-02	05/01/18	13:00	SO	N	-	X	X	X									X				
MW11-18	1.8-2.4	S-11149990-050218-TW-06	05/02/18	12:00	SO	N	-	X	X	X									X				
MW12-18	2.4-3.0	S-11149990-050118-TW-03	05/01/18	15:30	SO	N	-	X	X	X									X				
MW13-18	1.2-1.8	S-11149990-050218-TW-04	05/02/18	10:20	SO	N	-	X	X	X									X				
MW14-18	0.6-1.2	S-11149990-053018-TW-23	05/30/18	12:30	SO	N	-	X	X	X									X				
MW15-18	0.6-1.2	S-11149990-053018-TW-22	05/30/18	9:20	SO	N	-	X	X	X									X				
Trip Blank	n/a	TB-11149990-050118-TW-01	05/01/18	-	SO	TB	-											X					
Trip Blank	n/a	TB-11149990-053018-TW-02	05/30/18	-	SO	TB	-											X					
BH4	n/a	GW-11149990-040618-009	04/06/18	13:50	WG	N	-	X	X	X	X	X	X	X	X	X							
BH11	n/a	GW-11149990-040618-006	04/06/18	9:45	WG	N	-	X	X	X	X	X	X	X	X	X							
BH30	n/a	GW-11149990-040518-001	04/05/18	15:35	WG	N	-	X	X	X	X	X	X	X	X	X							
BH30	n/a	GW-11149990-040518-002	04/05/18	15:55	WG	FD	GW-11149990-040518-001	X	X	X	X	X	X	X	X	X							
MW1-13S	n/a	GW-11149990-040518-005	04/05/18	18:50	WG	N	-	X	X	X	X	X	X	X	X	X							
MW1-13D	n/a	GW-11149990-040618-010	04/06/18	15:10	WG	N	-	X	X	X	X	X	X	X	X	X							
MW2-13	n/a	GW-11149990-040518-004	04/05/18	18:25	WG	N	-	X	X	X	X	X	X	X	X	X							
MW3-13	n/a	GW-11149990-040518-003	04/05/18	17:25	WG	N	-	X	X	X	X	X	X	X	X	X							
MW5-13	n/a	GW-11149990-040618-011	04/06/18	15:55	WG	N	-	X	X	X	X	X	X	X	X	X							
MW1-16	n/a	GW-11149990-040618-008	04/06/18	12:40	WG	N	-	X	X	X	X	X	X	X	X	X							
MW2-16	n/a	GW-11149990-040618-007	04/06/18	11:00	WG	N	-	X	X	X	X	X	X	X	X	X							
Trip Blank	n/a	TB-11149990-040518-001	04/05/18	--	WG	TB	-											X					
MW1-18	n/a	GW-11149990-051118-TW-013	05/11/18	17:25	WG	N	-	X	X	X	X	X	X	X	X	X	X						
MW2-18	n/a	GW-11149990-051118-TW-004	05/11/18	16:05	WG	N	-	X	X	X	X	X	X	X	X	X	X						
MW3-18	n/a	GW-11149990-051118-TW-014	05/11/18	17:40	WG	N	-	X	X	X	X	X	X	X	X	X	X						
MW4-18	n/a	GW-11149990-051118-TW-005	05/11/18	12:50	WG	N	-	X	X	X	X	X	X	X	X	X	X						
MW4-18	n/a	GW-11149990-051118-TW-006	05/11/18	12:50	WG	FD	GW-11149990-051118-TW-005	X	X	X	X	X	X	X	X	X	X						
MW7-18	n/a	GW-11149990-051118-TW-001	05/11/18	10:00	WG	N	-	X	X	X													
MW8-18	n/a	GW-11149990-051118-TW-012	05/11/18	14:15	WG	N	-	X	X	X	X	X	X	X	X	X	X						

Table 1

Field Sample Key
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location	Depth (m)	Sample Identification	Sample Date	Sample Time	Matrix	Sample Type	Parent Sample	VOCs, PHC F1-F4	SVOCs	Metals and Inorganics	Phenols	Alkalinity	TKN	DOC	Ammonia	Anions (N_2N_3, SO_4)	Hardness, TDS	VOC,F1 (Trip Blank)	PCBs	PHC F3	PHC F1-F3	pH	Grainsize
MW9-18	n/a	GW-11149990-051118-TW-011	05/11/18	12:30	WG	N	-	X	X	X	X	X	X	X	X	X	X						
MW10-18	n/a	GW-11149990-051118-TW-009	05/11/18	11:35	WG	N	-	X	X	X	X	X	X	X	X	X	X						
MW11-18	n/a	GW-11149990-051118-TW-007	05/11/18	9:20	WG	N	-	X	X	X	X	X	X	X	X	X	X						
MW11-18	n/a	GW-11149990-051118-TW-008	05/11/18	9:20	WG	FD	GW-11149990-051118-TW-007	X	X	X	X	X	X	X	X	X	X						
MW13-18	n/a	GW-11149990-051118-TW-010	05/11/18	10:25	WG	N	-	X	X	X	X	X	X	X	X	X	X						
Trip Blank	n/a	TB-11149990-051118-TW-001	05/11/18	-	WG	TB	-											X					
MW14-18	n/a	GW-11149990-060118-TW-016	06/01/18	15:55	WG	N	-	X	X	X	X	X	X	X	X	X	X						
MW15-18	n/a	GW-11149990-060118-TW-015	06/01/18	14:40	WG	N	-	X	X	X	X	X	X	X	X	X	X						
Trip Blank	n/a	TB-11149990-060118-TW-002	06/01/18	-	WG	TB	-											X					

Notes:
FD - Field Duplicate
N - Normal
PCBs - Polychlorinated Biphenyls
PHCs - Petroleum Hydrocarbons
SO- Soil
SVOCs - Semi-Volatile Organic Compounds
TB - Trip Blank
TDS - Total Dissolved Solids
TKN - Total Kjehdahl Nitrogen
VOCs - Volatile Organic Compounds
WG - Groundwater
X - Sample analyzed for the noted parameters

Table 2

Well Stabilization Parameters
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Location	*Date*	*Depth to Water (m btor)*	*Well Volume (litres)*	*Time (24 hour)*	*Purge Rate (mL/min)*	*Volume Purged (litres)*	*Temperature (^{O}C)*	*Conductivity (mS/cm)*	*Turbidity (NTU)*	*pH (s.u.)*	*ORP (mV)*
MW1-13S	04/05/18	4.72	1.52	18:05	-	-	-	-	-	-	-
		4.81	1.34	18:20	100	1.5	7.46	1.48	9.4	6.75	-94
		4.83	1.30	18:25	100	2.0	6.85	1.49	9.3	6.73	-103
		4.85	1.26	18:35	100	3.0	6.35	1.47	12.0	6.73	-107
		4.87	1.22	18:45	100	4.0	6.17	1.48	11.7	6.75	-106
MW1-13D	4/6/2018	4.84	8.53	14:35	-	-	-	-	-	-	-
		4.87	8.47	14:55	150	3.0	7.46	1.77	35.9	6.95	-81
		4.87	8.47	15:00	150	3.8	7.23	1.76	25.2	6.95	-83
		4.87	8.47	15:05	150	4.5	7.25	1.77	22.4	6.94	-84
MW2-13	04/05/18	5.09	0.49	17:50	-	-	-	-	-	-	-
		5.15	0.37	18:00	100	1.0	5.78	1.72	45.5	6.64	-33
		5.15	0.37	18:05	100	1.5	5.57	1.73	41.8	6.67	-24
		5.15	0.37	18:10	100	2.0	5.84	1.79	45.7	6.62	-20
		5.15	0.37	18:20	100	2.5	5.91	1.79	42.3	6.62	-21
MW3-13	04/05/18	4.63	0.30	16:55	-	-	-	-	-	-	-
		4.65	0.26	17:05	200	2.0	8.37	1.45	46.5	6.6	-173
		4.65	0.26	17:10	200	3.0	8.34	1.45	48.6	6.61	-183
		4.65	0.26	17:15	200	4.0	8.42	1.46	41.4	6.64	-192
		4.65	0.26	17:20	200	5.0	8.48	1.46	42.3	6.65	-193
MW5-13	4/5/2018	2.77	0.73	15:15	-	-	-	-	-	-	-
		2.92	0.43	15:30	200	3.0	4.96	0.539	0.0	7.57	333
		3.05	0.16	15:35	100	3.5	4.99	0.531	0.0	7.59	325
		3.00	0.26	15:40	100	4.0	4.86	0.533	8.8	7.58	310
		Dry	--	15:45	--	--	--	--	--	--	--
BH4	4/6/2018	5.23	1.32	13:15	-	-	-	-	-	-	-
		5.43	0.91	13:25	80	0.8	5.55	1.36	109.0	7.04	-106
		5.47	0.83	13:30	80	1.2	5.94	1.35	103.0	7.04	-98
		5.48	0.81	13:35	80	1.6	6.1	1.33	47.4	7.04	-101
		5.51	0.75	13:40	80	2.0	6.73	1.33	31.2	7.05	-105
		5.52	0.73	13:45	80	2.5	6.43	1.34	32.3	--	-103

Table 2

Well Stabilization Parameters
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Location	*Date*	*Depth to Water (m btor)*	*Well Volume (litres)*	*Time (24 hour)*	*Purge Rate (mL/min)*	*Volume Purged (litres)*	*Temperature (^{O}C)*	*Conductivity (mS/cm)*	*Turbidity (NTU)*	*pH (s.u.)*	*ORP (mV)*
BH11	04/06/18	3.57	2.09	9:10	-	-	-	-	-	-	-
		3.60	2.03	9:15	200	1.0	6.24	1.73	122	6.91	-4
		3.59	2.05	9:20	200	2.0	6.47	1.64	36.4	7.29	-80
		3.60	2.03	9:25	200	3.0	6.39	1.62	24.6	7.32	-96
		3.60	2.03	9:30	200	4.0	6.35	1.60	10.5	7.37	-107
		3.60	2.03	9:35	200	5.0	6.15	1.59	5.5	7.38	-110
		3.60	2.03	9:40	200	6.0	6.05	1.59	4.3	7.39	-112
BH30	04/05/18	4.91	0.83	14:55	-	-	-	-	-	-	-
		5.00	0.65	15:10	100	1.5	7.18	1.48	6.1	7.16	282
		4.98	0.69	15:15	100	2.0	7.33	1.48	1.6	7.18	281
		4.98	0.69	15:20	100	2.5	7.35	1.51	0.0	7.20	279
		4.98	0.69	15:25	100	3.0	7.31	7.31	0.0	7.21	273
		4.98	0.69	15:30	100	3.5	7.32	7.32	0.0	7.2	275
MW1-16	4/6/2018	1.99	6.86	12:10	-	-	-	-	-	-	-
		2.05	6.74	12:15	100	0.5	3.58	1.26	0.0	7.28	110
		2.05	6.74	12:20	100	1.0	3.70	1.39	0.0	7.22	88
		2.04	6.76	12:25	100	1.5	3.39	1.42	0.0	7.2	66
		2.05	6.74	12:30	100	2.0	4.24	1.44	0.0	7.21	54
		2.04	6.76	12:35	100	2.5	4.26	1.44	0.0	7.21	53
MW2-16	4/6/2018	2.33	7.65	10:35	-	-	-	-	-	-	-
		2.36	7.59	10:40	200	1.0	4.78	0.643	0.0	7.52	82
		2.36	7.59	10:45	200	2.0	5.16	0.634	0.0	7.49	83
		2.36	7.59	10:50	200	3.0	5.14	0.625	0.0	7.49	87
		2.36	7.59	10:55	200	4.0	5.19	0.623	0.0	7.49	88
MW1-18	5/11/2018	3.86	5.08	16:45	-	-	-	-	-	-	-
		3.90	4.99	16:50	150	0.8	13.73	2.770	-	6.99	-69
		3.90	4.99	16:55	150	1.5	13.21	2.750	-	6.97	-72
		3.90	4.99	17:00	150	2.3	12.94	2.520	-	6.89	-80
		3.90	4.99	17:05	150	3.0	12.85	2.400	-	6.84	-82
		3.91	4.97	17:10	150	3.8	12.80	2.340	-	6.82	-84
		3.91	4.97	17:15	150	4.5	12.72	2.320	-	6.81	-85
		3.90	4.99	17:20	150	5.3	12.66	2.320	-	6.79	-85

Table 2

Well Stabilization Parameters
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Location	*Date*	*Depth to Water (m btor)*	*Well Volume (litres)*	*Time (24 hour)*	*Purge Rate (mL/min)*	*Volume Purged (litres)*	*Temperature (^{O}C)*	*Conductivity (mS/cm)*	*Turbidity (NTU)*	*pH (s.u.)*	*ORP (mV)*
MW2-18	5/11/2018	4.22	4.16	15:25	-	-	-	-	-	-	-
		4.25	4.10	15:35	100	1.0	18.04	1.860	-	6.77	-100
		4.23	4.14	15:40	200	2.0	17.11	1.910	-	6.77	-105
		4.23	4.14	15:45	200	3.0	15.34	2.030	-	6.81	-74
		4.23	4.14	15:50	200	4.0	14.75	2.070	-	6.75	-85
		4.23	4.14	15:55	200	5.0	14.70	2.070	-	6.75	-87
		4.23	4.14	16:00	200	6.0	14.16	2.080	-	6.74	-88
MW3-18	5/11/2018	4.91	3.02	17:00	-	-	-	-	-	-	-
		4.91	3.02	17:25	100	2.5	10.02	2.690	4.7	7.16	-76
		4.91	3.02	17:30	100	3.0	9.95	2.680	3.0	7.16	-79
		4.91	3.02	17:35	100	3.5	9.36	270.000	5.8	7.15	-78
MW4-18	5/11/2018	1.97	6.17	11:20	-	-	-	-	-	-	-
		1.98	6.15	11:50	200	6.0	10.82	5.140	800.0	7.24	-63
		2.02	6.07	12:00	200	8.0	8.11	5.250	600.0	7.28	-113
		2.03	6.05	12:05	200	9.0	8.07	5.110	427.0	7.28	-114
		2.03	6.05	12:10	200	10.0	7.94	5.000	196.0	7.3	-116
		2.03	6.05	12:15	200	11.0	7.97	4.880	135.0	7.31	-118
		2.03	6.05	12:20	200	12.0	7.98	4.750	101.0	7.32	-120
		2.03	6.05	12:25	200	13.0	7.96	4.690	82.1	7.33	-120
		2.03	6.05	12:30	200	14.0	7.89	4.670	72.1	7.33	-121
		2.03	6.05	12:35	200	15.0	7.89	4.620	61.3	7.33	-121
		2.03	6.05	12:40	200	16.0	7.92	4.560	50.1	7.34	-121
		2.03	6.05	12:45	200	17.0	7.92	4.560	42.8	7.34	-121
MW7-18	5/11/2018	2.03	3.47	8:30	-	-	-	-	-	-	-
		2.03	3.47	8:50	100	2.0	9.02	3.200	300.0	6.84	115
		2.03	3.47	8:55	100	2.5	8.53	3.260	278.0	6.86	102
		2.04	3.45	9:00	100	3.0	8.51	3.280	246.0	6.86	96
		2.04	3.45	9:15	100	4.5	8.58	3.340	130.0	6.88	91
		2.03	3.47	9:20	100	5.0	8.7	3.340	102.0	6.87	90
		2.03	3.47	9:25	100	5.5	8.63	3.360	69.1	6.87	89
		2.03	3.47	9:30	100	6.0	8.75	3.390	49.5	6.86	89
		2.03	3.47	9:35	100	6.5	8.82	3.390	40.5	6.86	88
		2.04	3.45	9:40	100	7.0	8.79	3.410	32.5	6.85	88
		2.03	3.47	9:45	100	7.5	8.85	3.420	24.8	6.85	88
		2.03	3.47	9:50	100	8.0	8.95	3.420	21.8	6.85	87
		2.03	3.47	9:55	100	8.5	8.92	3.450	18.7	6.85	87

Table 2

Well Stabilization Parameters
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Location	*Date*	*Depth to Water (m btor)*	*Well Volume (litres)*	*Time (24 hour)*	*Purge Rate (mL/min)*	*Volume Purged (litres)*	*Temperature (^{O}C)*	*Conductivity (mS/cm)*	*Turbidity (NTU)*	*pH (s.u.)*	*ORP (mV)*
MW8-18	5/11/2018	2.23	2.44	13:00	-	-	-	-	-	-	-
		2.30	2.29	13:05	80	0.4	14.94	1.070	682.0	6.67	-58
		2.34	2.21	13:10	80	0.8	13.52	1.060	753.0	6.62	-62
		2.37	2.15	13:15	80	1.2	13.14	1.060	684.0	6.61	-67
		2.39	2.11	13:20	80	1.6	13.09	1.070	665.0	6.61	-69
		2.42	2.05	13:25	80	2.0	12.80	1.100	570.0	6.62	-79
		2.41	2.07	13:40	80	3.2	13.33	1.130	566.0	6.63	-82
		2.42	2.05	13:50	80	4.0	13.2	1.140	850.0	6.67	-94
		2.42	2.05	13:55	80	4.4	13.13	1.140	>1000	6.68	-96
		2.41	2.07	14:00	80	4.8	12.81	1.260	734.0	6.66	-108
		2.42	2.05	14:10	80	5.6	12.78	1.270	699.0	6.66	-110
MW9-18	5/11/2018	2.01	2.84	11:55	-	-	-	-	-	-	-
		2.04	2.78	12:00	200	1.0	13.04	1.040	138.0	6.95	134
		2.04	2.78	12:05	200	2.0	12.59	1.030	131.0	6.92	144
		2.05	2.76	12:10	200	3.0	11.38	1.050	97.3	6.92	156
		2.06	2.74	12:15	200	4.0	10.28	1.160	56.5	6.91	160
		2.06	2.74	12:20	200	5.0	10.64	1.150	54.2	6.90	164
		2.06	2.74	12:25	200	6.0	10.94	1.160	49.9	6.89	165
MW10-18	5/11/2018	2.22	3.76	11:10	-	-	-	-	-	-	-
		2.26	3.67	11:15	100	0.5	10.99	1.530	9.1	6.76	46
		2.26	3.67	11:20	100	1.0	10.79	1.580	7.6	6.72	43
		2.25	3.69	11:25	100	1.5	11.00	1.580	4.6	6.71	40
		2.25	3.69	11:30	100	2.0	10.86	1.590	2.7	6.71	39
MW11-18	5/11/2018	2.09	2.98	8:40	-	-	-	-	-	-	-
		2.12	2.92	8:45	300	1.5	11.34	3.680	108.0	6.93	206
		2.13	2.90	8:50	200	2.5	10.51	3.720	53.6	6.99	196
		2.13	2.90	8:55	200	3.5	10.54	3.760	41.4	7.00	189
		2.13	2.90	9:00	200	4.5	10.46	3.830	28.8	7.01	181
		2.12	2.92	9:05	200	5.5	10.30	3.830	23.1	7.02	178
		2.12	2.92	9:10	200	6.5	10.48	3.850	21.3	7.02	176
		2.12	2.92	9:15	200	7.5	10.55	3.840	18.9	7.03	174
MW13-18	5/11/2018	3.77	0.73	10:00	-	-	-	-	-	-	-
		3.90	0.47	10:05	150	0.8	12.47	1.150	16.9	6.80	15
		3.92	0.43	10:10	80	1.2	12.99	1.140	15.1	6.77	3
		3.92	0.43	10:15	80	1.6	13.31	1.140	13.9	6.76	9
		3.93	0.41	10:20	80	2.0	13.13	1.150	9.4	6.76	10

Table 2

Well Stabilization Parameters
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Location	*Date*	*Depth to Water (m btor)*	*Well Volume (litres)*	*Time (24 hour)*	*Purge Rate (mL/min)*	*Volume Purged (litres)*	*Temperature (^{O}C)*	*Conductivity (mS/cm)*	*Turbidity (NTU)*	*pH (s.u.)*	*ORP (mV)*
MW14-18	6/1/2018	2.02	3.82	15:10	-	-	-	-	-	-	-
		2.05	3.76	15:20	300	3.0	16.17	6.03	374.0	7.16	-119
		2.09	3.68	15:25	300	4.5	15.58	5.94	193.0	7.16	-121
		2.05	3.76	15:30	300	6.0	14.97	5.85	93.4	7.17	-122
		2.05	3.76	15:35	300	7.5	14.30	5.83	54.5	7.17	-123
		2.05	3.76	15:40	300	9.0	14.58	5.78	47.3	7.17	-124
		2.05	3.76	15:45	300	10.5	14.72	5.70	53.2	7.17	-125
		2.05	3.76	15:50	300	12.0	14.54	5.70	56.7	7.18	-126
MW15-18	6/1/2018	1.74	3.63	13:55	-	-	-	-	-	-	-
		1.75	3.61	14:05	150	1.5	15.71	4.75	335.0	7.08	-105
		1.75	3.61	14:10	150	2.3	15.13	4.83	168.0	7.05	-114
		1.75	3.61	14:15	150	3.0	14.70	4.88	104.0	7.04	-117
		1.75	3.61	14:20	150	3.8	14.77	4.90	70.3	7.03	-120
		1.75	3.61	14:25	150	4.5	15.01	4.88	36.1	7.02	-121
		1.75	3.61	14:30	150	5.3	15.09	4.88	34.3	7.02	-125
		1.75	3.61	14:35	150	6.0	14.75	4.88	31.2	7.02	-124

Notes:
m btor - metres below top of riser
mS/cm - millisiemens per centimetre
mV - millivolts
NTU - Nephelometric Turbidity Units
ORP - Oxidation Reduction Potential
s.u. - Standard Units
^{o}C - degrees Celsius
mL/min - millilitres per minute

Table 3

Groundwater Elevations
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

			04/04/18			*06/01/18*		
Monitoring Well	***Reference Elevation***	***Ground Elevation***	***Depth to Water***	***Depth to Water***	***Groundwater Elevation***	***Depth to Water***	***Depth to Water***	***Groundwater Elevation***
	(m AMSL)	***(m AMSL)***	***(m btor)***	***(m bgs)***	***(m AMSL)***	***(m btor)***	***(m bgs)***	***(m AMSL)***
8-4	306.75	306.85	2.87	2.97	303.88	Monitoring Well Not Located		
8-5	307.61	307.70	3.11	3.20	304.50	Monitoring Well Not Located		
9-1	308.67	308.80	Monitoring Well Damaged			Monitoring Well Damaged		
9-2	308.92	308.96	Monitoring Well Not Located			4.70	4.74	304.22
BH1	307.98	308.12	Monitoring Well Not Located			Monitoring Well Not Located		
BH4	309.25	309.48	5.33	5.55	303.92	5.22	5.44	304.03
BH11	308.09	308.16	3.60	3.67	304.49	3.60	3.67	304.49
BH30	311.33	310.47	4.92	4.06	306.41	4.80	3.94	306.53
MW1-13S	309.31	308.34	4.72	3.75	304.59	4.53	3.56	304.78
MW1-13D	309.24	308.34	4.88	3.98	304.36	4.67	3.77	304.57
MW2-13	309.64	308.76	5.09	4.21	304.55	4.83	3.95	304.81
MW3-13	309.18	309.32	4.63	4.76	304.55	4.43	4.56	304.75
MW4-13	310.71	309.65	5.53	4.47	305.18	5.30	4.24	305.41
MW5-13	311.58	310.54	2.44	1.40	309.14	Dry	-	-
MW1-16	305.79	304.92	1.96	1.08	303.83	2.15	1.27	303.64
MW2-16	305.97	305.17	2.33	1.52	303.64	2.35	1.54	303.62
MW1-18	308.53	308.60	-	-	-	4.00	4.07	304.53
MW2-18	308.80	308.91	-	-	-	4.34	4.45	304.46
MW3-18	307.79	307.91	-	-	-	5.30	5.42	302.49
MW4-18	307.38	307.45	-	-	-	3.11	3.18	304.27
MW7-18	306.11	306.20	-	-	-	2.33	2.42	303.78
MW8-18	306.44	306.49	-	-	-	2.73	2.79	303.71
MW9-18	306.31	306.36	-	-	-	2.42	2.47	303.89
MW10-18	306.56	306.64	-	-	-	2.70	2.78	303.86
MW11-18	306.61	306.69	-	-	-	2.74	2.83	303.87
MW12-18	307.43	307.54	-	-	-	Dry	-	-
MW13-18	307.64	307.73	-	-	-	4.07	4.16	303.57
MW14-18	305.59	304.63	-	-	-	2.03	1.07	303.56
MW15-18	305.43	304.50	-	-	-	1.72	0.79	303.71

Notes:
m AMSL - metres above mean sea level
m btor - metres below top of riser (i.e., reference elevation)
m bgs - metres below ground surface

Table 4

Soil Analytical Results - Metals and General Chemistry
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW1-18**	**MW1-18**	**MW2-18**	**MW2-18**	**MW3-18**	**MW3-18**	**MW3-18**
Sample ID:				**S-11149990-050718-TW-17**	**S-11149990-050718-TW-18**	**S-11149990-050718-TW-19**	**S-11149990-050718-TW-15**	**S-11149990-050418-TW-13**	**S-11149990-050418-TW-14**	**S-11149990-050418-TW-20**
Sample Date:				**5/7/2018**	**5/7/2018**	**5/7/2018**	**5/7/2018**	**5/4/2018**	**5/4/2018**	**5/4/2018**
Sample Depth:				**2.4-3 m BGS**	**6-6.6 m BGS**	**1.2-1.8 m BGS**	**2.4-3 m BGS**	**2.4-3 m BGS**	**4.2-4.8 m BGS**	**4.8-5.4 m BGS**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**							
General Chemistry										
Conductivity	mS/cm	0.7	0.7	0.359	-	-	0.541	0.244	-	-
Cyanide, weak acid dissociable	ug/g	nc	nc	ND (0.050)	-	-	ND (0.050)	ND (0.050)	-	-
Grain size >75um	%	nc	nc	-	-	47.9	-	-	-	77.1
Moisture	%	nc	nc	20.6	16.3	-	15.2	12.6	25.2	-
pH, lab	s.u.	nc	nc	7.81	-	7.44	7.26	7.60	-	7.27
Sodium adsorption ratio (SAR)	none	5	5	0.44	-	-	0.30	0.52	-	-
Metals										
Antimony	ug/g	7.5	1.3	2.0	-	-	ND (1.0)	ND (1.0)	-	-
Arsenic	ug/g	18	18	5.1	-	-	4.0	3.1	-	-
Barium	ug/g	390	220	**425[a]**	2.1	-	50.4	55.1	-	-
Beryllium	ug/g	4	2.5	0.59	-	-	ND (0.50)	ND (0.50)	-	-
Boron	ug/g	120	36	**242[a]**	ND (5.0)	-	7.2	7.8	-	-
Cadmium	ug/g	1.2	1.2	**2.97[a]**	ND (0.50)	-	0.59	ND (0.50)	-	-
Chromium	ug/g	160	70	27.7	-	-	12.5	15.9	-	-
Chromium VI (hexavalent)	ug/g	8	0.66	ND (0.20)	-	-	ND (0.20)	0.20	-	-
Cobalt	ug/g	22	22	**26.7[a]**	ND (1.0)	-	3.4	4.6	-	-
Copper	ug/g	140	92	134	-	-	20.1	19.8	-	-
Lead	ug/g	120	120	102	-	-	46.6	27.5	-	-
Mercury	ug/g	0.27	0.27	**1.18 DLHC[a]**	0.0085	-	0.0979	0.0586	-	-
Molybdenum	ug/g	6.9	2	1.5	-	-	ND (1.0)	ND (1.0)	-	-
Nickel	ug/g	100	82	45.0	-	-	8.4	11.3	-	-
Selenium	ug/g	2.4	1.5	ND (1.0)	-	-	ND (1.0)	ND (1.0)	-	-
Silver	ug/g	20	0.5	0.46	-	-	ND (0.20)	ND (0.20)	-	-
Thallium	ug/g	1	1	ND (0.50)	-	-	ND (0.50)	ND (0.50)	-	-
Uranium	ug/g	23	2.5	ND (1.0)	-	-	ND (1.0)	ND (1.0)	-	-
Vanadium	ug/g	86	86	23.6	-	-	20.5	23.1	-	-
Zinc	ug/g	340	290	**402[a]**	19.9	-	206	121	-	-

Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained Soils.

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils.

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.

ND - Not present at or above the associated value
- Not analyzed
nc - No criteria
ug/g - micrograms per gram
BGS- Below ground surface
mS/cm - millesiemens per centimeter
s.u. - standard units
DLHC - Detection limit raised: Dilution required due to high concentration of test analyte(s).

26.7[a] Detected concentration exceeds noted criteria

Table 4

Soil Analytical Results - Metals and General Chemistry
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW4-18**	**MW4-18**	**MW4-18**	**MW7-18**	**MW7-18**	**MW8-18**	**MW9-18**
Sample ID:				**S-11149990-050418-TW-21**	**S-11149990-050418-TW-11**	**S-11149990-050418-TW-12**	**S-11149990-050318-TW-08**	**S-11149990-050318-TW-09**	**S-11149990-050118-TW-01**	**S-11149990-050218-TW-05**
Sample Date:				**5/4/2018**	**5/4/2018**	**5/4/2018**	**5/3/2018**	**5/3/2018**	**5/1/2018**	**5/2/2018**
Sample Depth:				**0.6-1.2 m BGS**	**1.2-1.8 m BGS**	**4.8-5.1 m BGS**	**1.2-1.8 m BGS**	**1.8-2.4 m BGS**	**0.6-1.2 m BGS**	**0.6-1.2 m BGS**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**							
General Chemistry										
Conductivity	mS/cm	0.7	0.7	-	**0.727[a]**	-	0.304	-	0.244	0.269
Cyanide, weak acid dissociable	ug/g	nc	nc	-	ND (0.050)	-	ND (0.050)	-	ND (0.050)	ND (0.050)
Grain size >75um	%	nc	nc	57.9	-	-	-	-	-	-
Moisture	%	nc	nc	-	9.53	10.5	14.9	13.0	22.4	16.2
pH, lab	s.u.	nc	nc	7.54	7.69	-	7.31	-	7.04	6.89
Sodium adsorption ratio (SAR)	none	5	5	-	**8.98[a]**	2.79	0.51	-	0.11	0.16
Metals										
Antimony	ug/g	7.5	1.3	-	ND (1.0)	-	ND (1.0)	-	ND (1.0)	3.6
Arsenic	ug/g	18	18	-	4.1	-	5.0	-	3.8	15.4
Barium	ug/g	390	220	-	61.5	-	61.7	-	53.4	347
Beryllium	ug/g	4	2.5	-	ND (0.50)	-	ND (0.50)	-	ND (0.50)	0.82
Boron	ug/g	120	36	-	13.2	-	10.1	-	9.1	10.3
Cadmium	ug/g	1.2	1.2	-	0.52	-	**1.45[a]**	0.77	1.02	**2.29[a]**
Chromium	ug/g	160	70	-	13.6	-	12.9	-	11.1	29.4
Chromium VI (hexavalent)	ug/g	8	0.66	-	0.27	-	ND (0.20)	-	ND (0.20)	ND (0.20)
Cobalt	ug/g	22	22	-	6.0	-	3.8	-	3.2	10.1
Copper	ug/g	140	92	-	25.5	-	35.1	-	16.0	**148[a]**
Lead	ug/g	120	120	-	40.7	-	52.4	-	85.7	**711[a]**
Mercury	ug/g	0.27	0.27	-	0.0659	-	**0.366[a]**	0.181	**0.294[a]**	**1.51 DLHC[a]**
Molybdenum	ug/g	6.9	2	-	ND (1.0)	-	1.3	-	ND (1.0)	2.2
Nickel	ug/g	100	82	-	11.6	-	39.4	-	7.8	65.9
Selenium	ug/g	2.4	1.5	-	ND (1.0)	-	ND (1.0)	-	ND (1.0)	1.6
Silver	ug/g	20	0.5	-	ND (0.20)	-	ND (0.20)	-	ND (0.20)	0.43
Thallium	ug/g	1	1	-	ND (0.50)	-	ND (0.50)	-	ND (0.50)	ND (0.50)
Uranium	ug/g	23	2.5	-	ND (1.0)	-	ND (1.0)	-	ND (1.0)	ND (1.0)
Vanadium	ug/g	86	86	-	20.1	-	14.3	-	18.6	28.0
Zinc	ug/g	340	290	-	174	-	**558[a]**	336	**354[a]**	**1560[a]**

Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained Soils.

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils.

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.

ND - Not present at or above the associated value
- Not analyzed
nc - No criteria
ug/g - micrograms per gram
BGS- Below ground surface
mS/cm - millesiemens per centimeter
s.u. - standard units
DLHC - Detection limit raised: Dilution required due to high concentration of test analyte(s).

26.7[a] Detected concentration exceeds noted criteria

Table 4

Soil Analytical Results - Metals and General Chemistry
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW9-18**	**MW10-18**	**MW11-18**	**MW12-18**	**MW13-18**	**MW14-18**	**MW15-18**
Sample ID:				**S-11149990-050218-TW-07**	**S-11149990-050118-TW-02**	**S-11149990-050218-TW-06**	**S-11149990-050118-TW-03**	**S-11149990-050218-TW-04**	**S-11149990-053018-TW-23**	**S-11149990-053018-TW-22**
Sample Date:				**5/2/2018**	**5/1/2018**	**5/2/2018**	**5/1/2018**	**5/2/2018**	**5/30/2018**	**5/30/2018**
Sample Depth:				**1.8-2.4 m BGS**	**1.2-1.8 m BGS**	**1.8-2.4 m BGS**	**2.4-3 m BGS**	**1.2-1.8 m BGS**	**0.6-1.2 m BGS**	**0.6-1.2 m BGS**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**							
General Chemistry										
Conductivity	mS/cm	0.7	0.7	-	0.177	0.264	**0.963[a]**	0.204	**0.707[ab]**	0.610
Cyanide, weak acid dissociable	ug/g	nc	nc	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Grain size >75um	%	nc	nc	-	-	-	-	-	-	-
Moisture	%	nc	nc	15.7	14.9	19.9	22.1	12.7	22.5	21.1
pH, lab	s.u.	nc	nc	-	7.59	7.39	7.08	7.41	7.50	7.34
Sodium adsorption ratio (SAR)	none	5	5	-	1.14	0.64	4.63	0.16	**13.1[ab]**	4.61
Metals										
Antimony	ug/g	7.5	1.3	-	ND (1.0)	1.4	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Arsenic	ug/g	18	18	-	3.7	6.4	4.5	4.4	7.5	2.7
Barium	ug/g	390	220	-	49.5	96.8	53.4	48.2	**242[b]**	35.2
Beryllium	ug/g	4	2.5	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Boron	ug/g	120	36	-	6.9	9.1	119	6.0	6.2	ND (5.0)
Cadmium	ug/g	1.2	1.2	ND (0.50)	ND (0.50)	0.74	**3.06[a]**	ND (0.50)	**4.11[ab]**	0.84
Chromium	ug/g	160	70	-	13.6	12.9	34.7	13.9	19.3	13.8
Chromium VI (hexavalent)	ug/g	8	0.66	-	0.30	ND (0.20)	ND (0.20)	ND (0.20)	0.29	ND (0.20)
Cobalt	ug/g	22	22	-	4.6	3.8	3.9	4.3	7.5	2.6
Copper	ug/g	140	92	2.9	14.8	43.9	26.7	17.6	23.9	19.1
Lead	ug/g	120	120	2.8	74.4	95.5	70.7	56.9	26.2	34.0
Mercury	ug/g	0.27	0.27	ND (0.0050)	0.109	0.146	0.115	0.0405	0.124	0.268
Molybdenum	ug/g	6.9	2	-	ND (1.0)	1.3	1.0	ND (1.0)	**2.8[b]**	ND (1.0)
Nickel	ug/g	100	82	-	10.2	10.3	17.4	8.9	13.5	6.1
Selenium	ug/g	2.4	1.5	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Silver	ug/g	20	0.5	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Thallium	ug/g	1	1	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Uranium	ug/g	23	2.5	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Vanadium	ug/g	86	86	-	24.5	17.2	19.6	30.1	27.8	19.5
Zinc	ug/g	340	290	157	122	**413[a]**	**635[a]**	124	**2030[ab]**	258

Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained Soils.

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils.

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.

ND - Not present at or above the associated value
- Not analyzed
nc - No criteria
ug/g - micrograms per gram
BGS- Below ground surface
mS/cm - millesiemens per centimeter
s.u. - standard units
DLHC - Detection limit raised: Dilution required due to high concentration of test analyte(s).

26.7[a] Detected concentration exceeds noted criteria

Table 5

Soil Analytical Results - PHCs and VOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW1-18**	**MW1-18**	**MW2-18**	**MW3-18**	**MW4-18**	**MW7-18**	**MW8-18**
Sample ID:				**S-11149990-050718-TW-17**	**S-11149990-050718-TW-18**	**S-11149990-050718-TW-15**	**S-11149990-050418-TW-13**	**S-11149990-050418-TW-11**	**S-11149990-050318-TW-08**	**S-11149990-050118-TW-01**
Sample Date:				**5/7/2018**	**5/7/2018**	**5/7/2018**	**5/4/2018**	**5/4/2018**	**5/3/2018**	**5/1/2018**
Sample Depth:				**2.4-3 m BGS**	**6-6.6 m BGS**	**2.4-3 m BGS**	**2.4-3 m BGS**	**1.2-1.8 m BGS**	**1.2-1.8 m BGS**	**0.6-1.2 m BGS**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**							
Petroleum Hydrocarbons										
Chromatogram to baseline at nC50	none	nc	nc	NO	YES	YES	YES	NO	NO	NO
Petroleum hydrocarbons F1 (C6-C10)	ug/g	nc	nc	1830 DLHC	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	7.9
Petroleum hydrocarbons F1 minus BTEX	ug/g	55	25	**1830[a]**	-	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	7.8
Petroleum hydrocarbons F2 (C10-C16)	ug/g	98	10	**3030[a]**	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	**105[a]**
Petroleum hydrocarbons F2 minus Naphthalene	ug/g	nc	nc	3030	-	ND (10)	ND (10)	ND (10)	ND (10)	105
Petroleum hydrocarbons F3 (C16-C34)	ug/g	300	240	**2850[a]**	ND (50)	71	57	167	125	**530[a]**
Petroleum hydrocarbons F3 minus PAH	ug/g	nc	nc	2850	-	69	54	147	122	527
Petroleum hydrocarbons F4 (C34-C50)	ug/g	2800	120	632	-	ND (50)	ND (50)	88	117	245
Petroleum hydrocarbons F4 gravimetric - silica gell (GHH)	ug/g	nc	nc	2170	-	-	-	270	500	660
Total Petroleum Hydrocarbons (C6-C50)	ug/g	-	-	8340	ND (72)	ND (72)	ND (72)	256	242	887
Volatile Organic Compounds										
Acetone	ug/g	16	0.5	ND (0.50)	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	0.55
Benzene	ug/g	0.21	0.02	0.0311	-	ND (0.0068)	ND (0.0068)	ND (0.0068)	ND (0.0068)	ND (0.0068)
Bromodichloromethane	ug/g	1.5	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Bromoform	ug/g	0.27	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Bromomethane (Methyl bromide)	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/g	16	0.5	ND (0.50)	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Carbon tetrachloride	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Chlorobenzene	ug/g	2.4	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	0.064
Chloroform (Trichloromethane)	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Dibromochloromethane	ug/g	2.3	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,2-Dibromoethane (Ethylene dibromide)	ug/g	0.05	0.05	ND (0.35) DLVH	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,2-Dichlorobenzene	ug/g	1.2	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,3-Dichlorobenzene	ug/g	4.8	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,4-Dichlorobenzene	ug/g	0.083	0.05	**0.087[a]**	ND (0.10)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	**0.225[a]**
Dichlorodifluoromethane (CFC-12)	ug/g	16	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,1-Dichloroethane	ug/g	0.47	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,2-Dichloroethane	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,1-Dichloroethene	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
cis-1,2-Dichloroethene	ug/g	1.9	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
trans-1,2-Dichloroethene	ug/g	0.084	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,2-Dichloropropane	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
cis-1,3-Dichloropropene	ug/g	nc	nc	ND (0.030)	-	ND (0.030)	ND (0.030)	ND (0.030)	ND (0.030)	ND (0.030)
trans-1,3-Dichloropropene	ug/g	nc	nc	ND (0.030)	-	ND (0.030)	ND (0.030)	ND (0.030)	ND (0.030)	ND (0.030)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene	ug/g	nc	nc	ND (0.042)	-	ND (0.042)	ND (0.042)	ND (0.042)	ND (0.042)	ND (0.042)
Ethylbenzene	ug/g	1.1	0.05	0.630	-	ND (0.018)	ND (0.018)	ND (0.018)	ND (0.018)	ND (0.018)
Hexane	ug/g	2.8	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Methyl tert butyl ether (MTBE)	ug/g	0.75	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/g	1.7	0.5	ND (0.50)	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Methylene chloride	ug/g	0.1	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Styrene	ug/g	0.7	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	ND (6.3) DLVH	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Tetrachloroethene	ug/g	0.28	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Toluene	ug/g	2.3	0.2	0.099	-	ND (0.080)	ND (0.080)	ND (0.080)	ND (0.080)	ND (0.080)
1,1,1-Trichloroethane	ug/g	0.38	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,1,2-Trichloroethane	ug/g	0.05	0.05	ND (4.7) DLVH	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Trichloroethene	ug/g	0.061	0.05	ND (0.010)	-	0.013	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Trichlorofluoromethane (CFC-11)	ug/g	4	0.25	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Vinyl chloride	ug/g	0.02	0.02	ND (0.020)	-	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Xylenes (total)	ug/g	3.1	0.05	2.16	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
m&p-Xylenes	ug/g	nc	nc	1.68	-	ND (0.030)	ND (0.030)	ND (0.030)	ND (0.030)	0.049
o-Xylene	ug/g	nc	nc	0.482	-	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)

Table 5

Soil Analytical Results - PHCs and VOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW9-18**	**MW9-18**	**MW10-18**	**MW11-18**	**MW12-18**	**MW13-18**	**MW14-18**
Sample ID:				**S-11149990-050218-TW-05**	**S-11149990-050218-TW-07**	**S-11149990-050118-TW-02**	**S-11149990-050218-TW-06**	**S-11149990-050118-TW-03**	**S-11149990-050218-TW-04**	**S-11149990-053018-TW-23**
Sample Date:				**5/2/2018**	**5/2/2018**	**5/1/2018**	**5/2/2018**	**5/1/2018**	**5/2/2018**	**5/30/2018**
Sample Depth:				**0.6-1.2 m BGS**	**1.8-2.4 m BGS**	**1.2-1.8 m BGS**	**1.8-2.4 m BGS**	**2.4-3 m BGS**	**1.2-1.8 m BGS**	**0.6-1.2 m BGS**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**							
Petroleum Hydrocarbons										
Chromatogram to baseline at nC50	none	nc	nc	NO	YES	NO	YES	NO	NO	YES
Petroleum hydrocarbons F1 (C6-C10)	ug/g	nc	nc	ND (5.0)	-	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Petroleum hydrocarbons F1 minus BTEX	ug/g	55	25	ND (5.0)	-	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Petroleum hydrocarbons F2 (C10-C16)	ug/g	98	10	39	-	ND (10)	ND (10)	46	11	ND (10)
Petroleum hydrocarbons F2 minus Naphthalene	ug/g	nc	nc	39	-	ND (10)	ND (10)	46	11	ND (10)
Petroleum hydrocarbons F3 (C16-C34)	ug/g	300	240	**499[a]**	ND (50)	82	72	**1300[a]**	**301[a]**	ND (50)
Petroleum hydrocarbons F3 minus PAH	ug/g	nc	nc	468	ND (50)	81	70	1290	280	ND (50)
Petroleum hydrocarbons F4 (C34-C50)	ug/g	2800	120	166	-	118	60	431	154	ND (50)
Petroleum hydrocarbons F4 gravimetric - silica gell (GHH)	ug/g	nc	nc	750	-	570	-	1630	780	-
Total Petroleum Hydrocarbons (C6-C50)	ug/g	-	-	704	-	200	132	1780	465	ND (72)
Volatile Organic Compounds										
Acetone	ug/g	16	0.5	ND (0.50)	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Benzene	ug/g	0.21	0.02	ND (0.0068)	-	ND (0.0068)	ND (0.0068)	ND (0.0068)	ND (0.0068)	ND (0.0068)
Bromodichloromethane	ug/g	1.5	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Bromoform	ug/g	0.27	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Bromomethane (Methyl bromide)	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/g	16	0.5	ND (0.50)	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Carbon tetrachloride	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Chlorobenzene	ug/g	2.4	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Chloroform (Trichloromethane)	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Dibromochloromethane	ug/g	2.3	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,2-Dibromoethane (Ethylene dibromide)	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,2-Dichlorobenzene	ug/g	1.2	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,3-Dichlorobenzene	ug/g	4.8	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,4-Dichlorobenzene	ug/g	0.083	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	**0.216[a]**	ND (0.050)	ND (0.050)
Dichlorodifluoromethane (CFC-12)	ug/g	16	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,1-Dichloroethane	ug/g	0.47	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,2-Dichloroethane	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,1-Dichloroethene	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
cis-1,2-Dichloroethene	ug/g	1.9	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
trans-1,2-Dichloroethene	ug/g	0.084	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,2-Dichloropropane	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
cis-1,3-Dichloropropene	ug/g	nc	nc	ND (0.030)	-	ND (0.030)	ND (0.030)	ND (0.030)	ND (0.030)	ND (0.030)
trans-1,3-Dichloropropene	ug/g	nc	nc	ND (0.030)	-	ND (0.030)	ND (0.030)	ND (0.030)	ND (0.030)	ND (0.030)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene	ug/g	nc	nc	ND (0.042)	-	ND (0.042)	ND (0.042)	ND (0.042)	ND (0.042)	ND (0.042)
Ethylbenzene	ug/g	1.1	0.05	ND (0.018)	-	ND (0.018)	ND (0.018)	0.058	ND (0.018)	ND (0.018)
Hexane	ug/g	2.8	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Methyl tert butyl ether (MTBE)	ug/g	0.75	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/g	1.7	0.5	ND (0.50)	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Methylene chloride	ug/g	0.1	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Styrene	ug/g	0.7	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Tetrachloroethene	ug/g	0.28	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Toluene	ug/g	2.3	0.2	ND (0.080)	-	ND (0.080)	ND (0.080)	ND (0.080)	ND (0.080)	ND (0.080)
1,1,1-Trichloroethane	ug/g	0.38	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
1,1,2-Trichloroethane	ug/g	0.05	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Trichloroethene	ug/g	0.061	0.05	ND (0.010)	-	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Trichlorofluoromethane (CFC-11)	ug/g	4	0.25	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Vinyl chloride	ug/g	0.02	0.02	ND (0.020)	-	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Xylenes (total)	ug/g	3.1	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
m&p-Xylenes	ug/g	nc	nc	ND (0.030)	-	ND (0.030)	ND (0.030)	ND (0.030)	ND (0.030)	ND (0.030)
o-Xylene	ug/g	nc	nc	ND (0.020)	-	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)

Table 5

Soil Analytical Results - PHCs and VOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW15-18**	**TRIP BLANK**	**TRIP BLANK**
Sample ID:				**S-11149990-053018-TW-22**	**TB-11149990-050118-TW-01**	**TB-11149990-053018-TW-02**
Sample Date:				**5/30/2018**	**5/1/2018**	**5/30/2018**
Sample Depth:				**0.6-1.2 m BGS**	**-**	**-**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**			
Petroleum Hydrocarbons						
Chromatogram to baseline at nC50	none	nc	nc	YES	-	-
Petroleum hydrocarbons F1 (C6-C10)	ug/g	nc	nc	ND (5.0)	ND (5.0)	ND (5.0)
Petroleum hydrocarbons F1 minus BTEX	ug/g	55	25	ND (5.0)	-	-
Petroleum hydrocarbons F2 (C10-C16)	ug/g	98	10	ND (10)	-	-
Petroleum hydrocarbons F2 minus Naphthalene	ug/g	nc	nc	ND (10)	-	-
Petroleum hydrocarbons F3 (C16-C34)	ug/g	300	240	66	-	-
Petroleum hydrocarbons F3 minus PAH	ug/g	nc	nc	63	-	-
Petroleum hydrocarbons F4 (C34-C50)	ug/g	2800	120	54	-	-
Petroleum hydrocarbons F4 gravimetric - silica gell (GHH)	ug/g	nc	nc	-	-	-
Total Petroleum Hydrocarbons (C6-C50)	ug/g	-	-	120	-	-
Volatile Organic Compounds						
Acetone	ug/g	16	0.5	ND (0.50)	ND (0.50)	ND (0.50)
Benzene	ug/g	0.21	0.02	ND (0.0068)	ND (0.0068)	ND (0.0068)
Bromodichloromethane	ug/g	1.5	0.05	ND (0.050)	ND (0.050)	ND (0.050)
Bromoform	ug/g	0.27	0.05	ND (0.050)	ND (0.050)	ND (0.050)
Bromomethane (Methyl bromide)	ug/g	0.05	0.05	ND (0.050)	ND (0.050)	ND (0.050)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/g	16	0.5	ND (0.50)	ND (0.50)	ND (0.50)
Carbon tetrachloride	ug/g	0.05	0.05	ND (0.050)	ND (0.050)	ND (0.050)
Chlorobenzene	ug/g	2.4	0.05	ND (0.050)	ND (0.050)	ND (0.050)
Chloroform (Trichloromethane)	ug/g	0.05	0.05	ND (0.050)	ND (0.050)	ND (0.050)
Dibromochloromethane	ug/g	2.3	0.05	ND (0.050)	ND (0.050)	ND (0.050)
1,2-Dibromoethane (Ethylene dibromide)	ug/g	0.05	0.05	ND (0.050)	ND (0.050)	ND (0.050)
1,2-Dichlorobenzene	ug/g	1.2	0.05	ND (0.050)	ND (0.050)	ND (0.050)
1,3-Dichlorobenzene	ug/g	4.8	0.05	ND (0.050)	ND (0.050)	ND (0.050)
1,4-Dichlorobenzene	ug/g	0.083	0.05	ND (0.050)	ND (0.050)	ND (0.050)
Dichlorodifluoromethane (CFC-12)	ug/g	16	0.05	ND (0.050)	ND (0.050)	ND (0.050)
1,1-Dichloroethane	ug/g	0.47	0.05	ND (0.050)	ND (0.050)	ND (0.050)
1,2-Dichloroethane	ug/g	0.05	0.05	ND (0.050)	ND (0.050)	ND (0.050)
1,1-Dichloroethene	ug/g	0.05	0.05	ND (0.050)	ND (0.050)	ND (0.050)
cis-1,2-Dichloroethene	ug/g	1.9	0.05	ND (0.050)	ND (0.050)	ND (0.050)
trans-1,2-Dichloroethene	ug/g	0.084	0.05	ND (0.050)	ND (0.050)	ND (0.050)
1,2-Dichloropropane	ug/g	0.05	0.05	ND (0.050)	ND (0.050)	ND (0.050)
cis-1,3-Dichloropropene	ug/g	nc	nc	ND (0.030)	ND (0.030)	ND (0.030)
trans-1,3-Dichloropropene	ug/g	nc	nc	ND (0.030)	ND (0.030)	ND (0.030)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene	ug/g	nc	nc	ND (0.042)	ND (0.042)	ND (0.042)
Ethylbenzene	ug/g	1.1	0.05	ND (0.018)	ND (0.018)	ND (0.018)
Hexane	ug/g	2.8	0.05	ND (0.050)	ND (0.050)	ND (0.050)
Methyl tert butyl ether (MTBE)	ug/g	0.75	0.05	ND (0.050)	ND (0.050)	ND (0.050)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/g	1.7	0.5	ND (0.50)	ND (0.50)	ND (0.50)
Methylene chloride	ug/g	0.1	0.05	ND (0.050)	ND (0.050)	ND (0.050)
Styrene	ug/g	0.7	0.05	ND (0.050)	ND (0.050)	ND (0.050)
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.05	ND (0.050)	ND (0.050)	ND (0.050)
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	ND (0.050)	ND (0.050)	ND (0.050)
Tetrachloroethene	ug/g	0.28	0.05	ND (0.050)	ND (0.050)	ND (0.050)
Toluene	ug/g	2.3	0.2	ND (0.080)	ND (0.080)	ND (0.080)
1,1,1-Trichloroethane	ug/g	0.38	0.05	ND (0.050)	ND (0.050)	ND (0.050)
1,1,2-Trichloroethane	ug/g	0.05	0.05	ND (0.050)	ND (0.050)	ND (0.050)
Trichloroethene	ug/g	0.061	0.05	ND (0.010)	ND (0.010)	ND (0.010)
Trichlorofluoromethane (CFC-11)	ug/g	4	0.25	ND (0.050)	ND (0.050)	ND (0.050)
Vinyl chloride	ug/g	0.02	0.02	ND (0.020)	ND (0.020)	ND (0.020)
Xylenes (total)	ug/g	3.1	0.05	ND (0.050)	ND (0.050)	ND (0.050)
m&p-Xylenes	ug/g	nc	nc	ND (0.030)	ND (0.030)	ND (0.030)
o-Xylene	ug/g	nc	nc	ND (0.020)	ND (0.020)	ND (0.020)

Soil Analytical Results - PHCs and VOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained Soils.

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils.

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.

ND - Not present at or above the associated value

\- Not analyzed

nc - No criteria

ug/g - micrograms per gram

BGS- Below ground surface

DLHC - Detection limit raised: Dilution required due to high concentration of test analyte(s).

DLVH - Detection limit raised due to interference from Volatile Hydrocarbons on VOC method. Chromatographic elution of interfering peaks in the same region as test analytes prevents a determination of whether VOC analyte is present or absent (above/below egular detection limits).

0.087[a] Detected concentration exceeds noted criteria

Table 6

Soil Analytical Results - SVOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW1-18**	**MW1-18**	**MW2-18**	**MW3-18**	**MW3-18**	**MW4-18**	**MW4-18**
Sample ID:				**S-11149990-050718-TW-17**	**S-11149990-050718-TW-18**	**S-11149990-050718-TW-15**	**S-11149990-050418-TW-13**	**S-11149990-050418-TW-14**	**S-11149990-050418-TW-11**	**S-11149990-050418-TW-12**
Sample Date:				**5/7/2018**	**5/7/2018**	**5/7/2018**	**5/4/2018**	**5/4/2018**	**5/4/2018**	**5/4/2018**
Sample Depth:				**2.4-3 m BGS**	**6-6.6 m BGS**	**2.4-3 m BGS**	**2.4-3 m BGS**	**4.2-4.8 m BGS**	**1.2-1.8 m BGS**	**4.8-5.1 m BGS**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**							
Semi-Volatile Organic Compounds										
Acenaphthene	ug/g	7.9	0.072	ND (0.050)	-	ND (0.050)	ND (0.050)	-	0.129	-
Acenaphthylene	ug/g	0.15	0.093	ND (0.050)	-	ND (0.050)	0.111	-	**0.959**[a]	ND (0.050)
Anthracene	ug/g	0.67	0.22	ND (0.050)	-	ND (0.050)	0.127	-	**1.09**[a]	ND (0.050)
Benzo(a)anthracene	ug/g	0.5	0.36	ND (0.050)	-	0.153	0.334	-	**1.90 R**[a]	ND (0.050)
Benzo(a)pyrene	ug/g	0.3	0.3	ND (0.050)	-	0.166	**0.460**[a]	ND (0.020)	**2.19**[a]	ND (0.050)
Benzo(b)fluoranthene	ug/g	0.78	0.47	ND (0.050)	-	0.158	0.377	-	**1.43**[a]	ND (0.050)
Benzo(g,h,i)perylene	ug/g	6.6	0.68	ND (0.050)	-	0.093	0.261	-	1.13	-
Benzo(k)fluoranthene	ug/g	0.78	0.48	ND (0.050)	-	0.167	0.424	-	**1.93**[a]	ND (0.050)
Biphenyl (1,1-Biphenyl)	ug/g	0.31	0.05	0.078	-	ND (0.050)	ND (0.050)	-	ND (0.050)	-
bis(2-Chloroethyl)ether	ug/g	0.5	0.5	ND (0.20) DLQ	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/g	5	5	**16.7 DLHC**[a]	ND (0.10)	ND (0.10)	ND (0.10)	-	ND (0.10)	-
4-Chloroaniline	ug/g	0.5	0.5	ND (0.10)	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
2-Chlorophenol	ug/g	1.6	0.1	ND (0.10)	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
Chrysene	ug/g	7	2.8	ND (0.050)	-	0.161	0.330	-	1.73	-
Dibenz(a,h)anthracene	ug/g	0.1	0.1	ND (0.050)	-	ND (0.050)	0.061	-	**0.217**[a]	ND (0.050)
3,3'-Dichlorobenzidine	ug/g	1	1	ND (0.10)	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
2,4-Dichlorophenol	ug/g	0.19	0.1	ND (0.10)	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
Diethyl phthalate	ug/g	0.5	0.5	**2.77**[a]	ND (0.10)	ND (0.10)	ND (0.10)	-	ND (0.10)	-
Dimethyl phthalate	ug/g	0.5	0.5	ND (0.10)	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
2,4-Dimethylphenol	ug/g	38	0.2	ND (0.20) DLQ	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
2,4-Dinitrophenol	ug/g	2	2	ND (1.0)	-	ND (1.0)	ND (1.0)	-	ND (1.0)	-
2,4-Dinitrotoluene	ug/g	0.5	0.5	ND (0.10)	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
2,4-Dinitrotoluene/2,6-Dinitrotoluene	ug/g	nc	nc	ND (0.14)	-	ND (0.14)	ND (0.14)	-	ND (0.14)	-
2,6-Dinitrotoluene	ug/g	nc	nc	ND (0.10)	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
Fluoranthene	ug/g	0.69	0.69	0.107	-	0.199	0.466	-	**3.99**[a]	0.067
Fluorene	ug/g	62	0.19	ND (0.050)	-	ND (0.050)	ND (0.050)	-	0.598	-
Indeno(1,2,3-cd)pyrene	ug/g	0.38	0.23	ND (0.050)	-	0.109	0.324	-	**1.33**[a]	ND (0.050)
1-Methylnaphthalene	ug/g	0.99	0.59	0.133	-	ND (0.030)	ND (0.030)	-	0.171	-
2-Methylnaphthalene	ug/g	nc	0.59	0.188	-	ND (0.030)	ND (0.030)	-	0.189	-
1-Methylnaphthalene/2-Methylnaphthalene	ug/g	nc	nc	0.322	-	ND (0.042)	ND (0.042)	-	0.360	ND (0.042)
Naphthalene	ug/g	0.6	0.09	0.563	-	ND (0.050)	ND (0.050)	-	0.275	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/g	0.67	0.5	ND (0.10)	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
Pentachlorophenol	ug/g	0.1	0.1	ND (0.10)	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
Phenanthrene	ug/g	6.2	0.69	0.120	-	0.124	0.318	-	3.58	-
Phenol	ug/g	9.4	0.5	ND (0.30) DLQ	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
Pyrene	ug/g	78	1	0.092	-	0.182	0.406	-	3.63	-
1,2,4-Trichlorobenzene	ug/g	0.36	0.05	ND (0.050)	-	ND (0.050)	ND (0.050)	-	ND (0.050)	-
2,4,5-Trichlorophenol	ug/g	4.4	0.1	ND (0.10)	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-
2,4,6-Trichlorophenol	ug/g	2.1	0.1	ND (0.10)	-	ND (0.10)	ND (0.10)	-	ND (0.10)	-

Table 6

Soil Analytical Results - SVOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW7-18**	**MW7-18**	**MW8-18**	**MW9-18**	**MW9-18**	**MW10-18**	**MW11-18**
Sample ID:				**S-11149990-050318-TW-08**	**S-11149990-050318-TW-09**	**S-11149990-050118-TW-01**	**S-11149990-050218-TW-05**	**S-11149990-050218-TW-07**	**S-11149990-050118-TW-02**	**S-11149990-050218-TW-06**
Sample Date:				**5/3/2018**	**5/3/2018**	**5/1/2018**	**5/2/2018**	**5/2/2018**	**5/1/2018**	**5/2/2018**
Sample Depth:				**1.2-1.8 m BGS**	**1.8-2.4 m BGS**	**0.6-1.2 m BGS**	**0.6-1.2 m BGS**	**1.8-2.4 m BGS**	**1.2-1.8 m BGS**	**1.8-2.4 m BGS**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**							
Semi-Volatile Organic Compounds										
Acenaphthene	ug/g	7.9	0.072	ND (0.050)	-	ND (0.050)	0.32 DLM	-	ND (0.050)	ND (0.050)
Acenaphthylene	ug/g	0.15	0.093	0.135	-	0.059	**1.06 DLM[a]**	ND (0.050)	ND (0.050)	ND (0.050)
Anthracene	ug/g	0.67	0.22	0.098	-	ND (0.050)	**1.70 DLM[a]**	ND (0.050)	ND (0.050)	0.063
Benzo(a)anthracene	ug/g	0.5	0.36	0.276 R	-	0.313 R	**3.18 DLM[a]**	ND (0.050)	0.116 R	0.217 R
Benzo(a)pyrene	ug/g	0.3	0.3	**0.413[a]**	0.142	**0.390[a]**	**2.97 DLM[a]**	ND (0.050)	0.152	0.242
Benzo(b)fluoranthene	ug/g	0.78	0.47	0.316	-	0.366	**2.82 DLM[a]**	ND (0.050)	0.112	0.216
Benzo(g,h,i)perylene	ug/g	6.6	0.68	0.274	-	0.216	1.41 DLM	-	0.088	0.143
Benzo(k)fluoranthene	ug/g	0.78	0.48	0.356	-	0.312	**2.23 DLM[a]**	ND (0.050)	0.141	0.256
Biphenyl (1,1-Biphenyl)	ug/g	0.31	0.05	ND (0.050)	-	ND (0.050)	ND (0.10) DLM	-	ND (0.050)	ND (0.050)
bis(2-Chloroethyl)ether	ug/g	0.5	0.5	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
bis(2-Ethylhexyl)phthalate (DEHP)	ug/g	5	5	ND (0.30) DLQ	-	ND (0.20) DLQ	ND (0.20) DLM	-	ND (0.25) DLQ	ND (0.10)
4-Chloroaniline	ug/g	0.5	0.5	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
2-Chlorophenol	ug/g	1.6	0.1	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
Chrysene	ug/g	7	2.8	0.259	-	0.364	2.85 DLM	-	0.119	0.213
Dibenz(a,h)anthracene	ug/g	0.1	0.1	0.053	-	ND (0.050)	**0.35 DLM[a]**	ND (0.050)	ND (0.050)	ND (0.050)
3,3'-Dichlorobenzidine	ug/g	1	1	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
2,4-Dichlorophenol	ug/g	0.19	0.1	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
Diethyl phthalate	ug/g	0.5	0.5	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
Dimethyl phthalate	ug/g	0.5	0.5	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
2,4-Dimethylphenol	ug/g	38	0.2	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
2,4-Dinitrophenol	ug/g	2	2	ND (1.0)	-	ND (1.0)	ND (2.0) DLM	-	ND (1.0)	ND (1.0)
2,4-Dinitrotoluene	ug/g	0.5	0.5	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
2,4-Dinitrotoluene/2,6-Dinitrotoluene	ug/g	nc	nc	ND (0.14)	-	ND (0.14)	ND (0.28)	-	ND (0.14)	ND (0.14)
2,6-Dinitrotoluene	ug/g	nc	nc	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
Fluoranthene	ug/g	0.69	0.69	0.348	-	0.436	**6.60 DLM[a]**	ND (0.050)	0.124	0.319
Fluorene	ug/g	62	0.19	ND (0.050)	-	ND (0.050)	0.87 DLM	-	ND (0.050)	ND (0.050)
Indeno(1,2,3-cd)pyrene	ug/g	0.38	0.23	0.317	-	0.238	**1.81 DLM[a]**	ND (0.050)	0.103	0.184
1-Methylnaphthalene	ug/g	0.99	0.59	0.036	-	ND (0.030)	0.305 DLM	-	ND (0.030)	ND (0.030)
2-Methylnaphthalene	ug/g	nc	0.59	0.049	-	ND (0.030)	0.307 DLM	-	ND (0.030)	ND (0.030)
1-Methylnaphthalene/2-Methylnaphthalene	ug/g	nc	nc	0.085	-	ND (0.042)	0.612	ND (0.042)	ND (0.042)	ND (0.042)
Naphthalene	ug/g	0.6	0.09	0.063	-	ND (0.050)	0.35 DLM	-	ND (0.050)	ND (0.050)
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/g	0.67	0.5	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
Pentachlorophenol	ug/g	0.1	0.1	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
Phenanthrene	ug/g	6.2	0.69	0.281	-	0.175	6.11 DLM	-	0.120	0.191
Phenol	ug/g	9.4	0.5	0.29	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
Pyrene	ug/g	78	1	0.319	-	0.472	4.81 DLM	-	0.153	0.248
1,2,4-Trichlorobenzene	ug/g	0.36	0.05	ND (0.050)	-	ND (0.050)	ND (0.10) DLM	-	ND (0.050)	ND (0.050)
2,4,5-Trichlorophenol	ug/g	4.4	0.1	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)
2,4,6-Trichlorophenol	ug/g	2.1	0.1	ND (0.10)	-	ND (0.10)	ND (0.20) DLM	-	ND (0.10)	ND (0.10)

Table 6

Soil Analytical Results - SVOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW12-18**	**MW13-18**	**MW14-18**	**MW15-18**
Sample ID:				**S-11149990-050118-TW-03**	**S-11149990-050218-TW-04**	**S-11149990-053018-TW-23**	**S-11149990-053018-TW-22**
Sample Date:				**5/1/2018**	**5/2/2018**	**5/30/2018**	**5/30/2018**
Sample Depth:				**2.4-3 m BGS**	**1.2-1.8 m BGS**	**0.6-1.2 m BGS**	**0.6-1.2 m BGS**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**				
Semi-Volatile Organic Compounds							
Acenaphthene	ug/g	7.9	0.072	0.076	ND (0.10) DLM	ND (0.050)	ND (0.050)
Acenaphthylene	ug/g	0.15	0.093	0.090	**0.81 DLM[a]**	ND (0.050)	0.073
Anthracene	ug/g	0.67	0.22	0.146	**0.72 DLM[a]**	ND (0.050)	0.068
Benzo(a)anthracene	ug/g	0.5	0.36	**0.541[a]**	**2.42 R[a]**	ND (0.050)	**0.458 R[b]**
Benzo(a)pyrene	ug/g	0.3	0.3	**0.566[a]**	**2.64 DLM[a]**	ND (0.050)	**0.664[ab]**
Benzo(b)fluoranthene	ug/g	0.78	0.47	0.590	**2.38 DLM[a]**	ND (0.050)	0.428
Benzo(g,h,i)perylene	ug/g	6.6	0.68	0.317	1.39 DLM	ND (0.050)	0.437
Benzo(k)fluoranthene	ug/g	0.78	0.48	0.559	**2.13 DLM[a]**	ND (0.050)	0.459
Biphenyl (1,1-Biphenyl)	ug/g	0.31	0.05	ND (0.050)	ND (0.10) DLM	ND (0.050)	ND (0.050)
bis(2-Chloroethyl)ether	ug/g	0.5	0.5	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
bis(2-Ethylhexyl)phthalate (DEHP)	ug/g	5	5	ND (1.5) DLQ	ND (0.20) DLM	ND (0.10)	ND (0.10)
4-Chloroaniline	ug/g	0.5	0.5	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
2-Chlorophenol	ug/g	1.6	0.1	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
Chrysene	ug/g	7	2.8	0.687	2.08 DLM	ND (0.050)	0.478
Dibenz(a,h)anthracene	ug/g	0.1	0.1	0.066	**0.33 DLM[a]**	ND (0.050)	0.067
3,3'-Dichlorobenzidine	ug/g	1	1	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
2,4-Dichlorophenol	ug/g	0.19	0.1	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
Diethyl phthalate	ug/g	0.5	0.5	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
Dimethyl phthalate	ug/g	0.5	0.5	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
2,4-Dimethylphenol	ug/g	38	0.2	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
2,4-Dinitrophenol	ug/g	2	2	ND (1.0)	ND (2.0) DLM	ND (1.0)	ND (1.0)
2,4-Dinitrotoluene	ug/g	0.5	0.5	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
2,4-Dinitrotoluene/2,6-Dinitrotoluene	ug/g	nc	nc	ND (0.14)	ND (0.28)	ND (0.14)	ND (0.14)
2,6-Dinitrotoluene	ug/g	nc	nc	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
Fluoranthene	ug/g	0.69	0.69	**1.07[a]**	**3.51 DLM[a]**	ND (0.050)	0.389
Fluorene	ug/g	62	0.19	0.115	0.23 DLM	ND (0.050)	ND (0.050)
Indeno(1,2,3-cd)pyrene	ug/g	0.38	0.23	**0.400[a]**	**1.79 DLM[a]**	ND (0.050)	**0.439[ab]**
1-Methylnaphthalene	ug/g	0.99	0.59	0.040	ND (0.060) DLM	ND (0.030)	ND (0.030)
2-Methylnaphthalene	ug/g	nc	0.59	0.037	ND (0.060) DLM	ND (0.030)	ND (0.030)
1-Methylnaphthalene/2-Methylnaphthalene	ug/g	nc	nc	0.077	ND (0.085)	ND (0.042)	ND (0.042)
Naphthalene	ug/g	0.6	0.09	0.072	ND (0.10) DLM	ND (0.050)	ND (0.050)
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/g	0.67	0.5	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
Pentachlorophenol	ug/g	0.1	0.1	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
Phenanthrene	ug/g	6.2	0.69	0.695	1.92 DLM	ND (0.050)	0.121
Phenol	ug/g	9.4	0.5	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
Pyrene	ug/g	78	1	0.926	3.12 DLM	ND (0.050)	0.525
1,2,4-Trichlorobenzene	ug/g	0.36	0.05	ND (0.050)	ND (0.10) DLM	ND (0.050)	ND (0.050)
2,4,5-Trichlorophenol	ug/g	4.4	0.1	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)
2,4,6-Trichlorophenol	ug/g	2.1	0.1	ND (0.10)	ND (0.20) DLM	ND (0.10)	ND (0.10)

Table 6

Soil Analytical Results - SVOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained Soils.

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils.

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.

ND - Not present at or above the associated value

\- Not analyzed

nc - No criteria

ug/g - micrograms per gram

BGS- Below ground surface

DLHC - Detection limit raised: Dilution required due to high concentration of test analyte(s).

DLM - Detection limit adjusted due to sample matrix effects.

R - The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.

DLQ - Detection limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance

0.460[a] Detected concentration exceeds noted criteria

Table 7

Soil Analytical Results - PCBs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW1-18**	**MW2-18**	**MW3-18**
Sample ID:				**S-11149990-050718-TW-17**	**S-11149990-050718-TW-15**	**S-11149990-050418-TW-13**
Sample Date:				**5/7/2018**	**5/7/2018**	**5/4/2018**
Sample Depth:				**2.4-3 m BGS**	**2.4-3 m BGS**	**2.4-3 m BGS**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**			
Polychlorinated Biphenyls						
Aroclor-1242 (PCB-1242)	ug/g	nc	nc	ND (0.15) DLM	ND (0.010)	ND (0.010)
Aroclor-1248 (PCB-1248)	ug/g	nc	nc	ND (0.010)	ND (0.010)	ND (0.010)
Aroclor-1254 (PCB-1254)	ug/g	nc	nc	ND (0.085) DLM	ND (0.010)	ND (0.010)
Aroclor-1260 (PCB-1260)	ug/g	nc	nc	0.277 PRAR	ND (0.010)	ND (0.010)
Total PCBs	ug/g	0.35	0.3	0.277 DLM	ND (0.020)	ND (0.020)

Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained Soils.

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils.

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.
ND - Not present at or above the associated value
nc - No criteria
ug/g - micrograms per gram
BGS- Below ground surface
DLM - Detection limit adjusted due to sample matrix effects.
PRAR - PCB pattern most closely resembles Aroclor reported.
0.742 DLM[a] Detected concentration exceeds noted criteria

Table 7

Soil Analytical Results - PCBs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW4-18**	**MW7-18**	**MW8-18**
Sample ID:				**S-11149990-050418-TW-11**	**S-11149990-050318-TW-08**	**S-11149990-050118-TW-01**
Sample Date:				**5/4/2018**	**5/3/2018**	**5/1/2018**
Sample Depth:				**1.2-1.8 m BGS**	**1.2-1.8 m BGS**	**0.6-1.2 m BGS**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**			
Polychlorinated Biphenyls						
Aroclor-1242 (PCB-1242)	ug/g	nc	nc	ND (0.010)	ND (0.010)	0.160 PRAR
Aroclor-1248 (PCB-1248)	ug/g	nc	nc	ND (0.010)	ND (0.010)	ND (0.010)
Aroclor-1254 (PCB-1254)	ug/g	nc	nc	ND (0.010)	0.016 PRAR	ND (0.060) DLM
Aroclor-1260 (PCB-1260)	ug/g	nc	nc	ND (0.010)	ND (0.010)	ND (0.070) DLM
Total PCBs	ug/g	0.35	0.3	ND (0.020)	ND (0.020)	0.160 DLM

Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained Soils.

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils.

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.
ND - Not present at or above the associated value
nc - No criteria
ug/g - micrograms per gram
BGS- Below ground surface
DLM - Detection limit adjusted due to sample matrix effects.
PRAR - PCB pattern most closely resembles Aroclor reported.
0.742 DLM[a] Detected concentration exceeds noted criteria

Table 7

Soil Analytical Results - PCBs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW9-18**	**MW10-18**	**MW11-18**
Sample ID:				**S-11149990-050218-TW-05**	**S-11149990-050118-TW-02**	**S-11149990-050218-TW-06**
Sample Date:				**5/2/2018**	**5/1/2018**	**5/2/2018**
Sample Depth:				**0.6-1.2 m BGS**	**1.2-1.8 m BGS**	**1.8-2.4 m BGS**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**			
Polychlorinated Biphenyls						
Aroclor-1242 (PCB-1242)	ug/g	nc	nc	ND (0.010)	ND (0.050) DLM	ND (0.010)
Aroclor-1248 (PCB-1248)	ug/g	nc	nc	ND (0.010)	ND (0.050) DLM	ND (0.010)
Aroclor-1254 (PCB-1254)	ug/g	nc	nc	ND (0.010)	ND (0.050) DLM	ND (0.010)
Aroclor-1260 (PCB-1260)	ug/g	nc	nc	ND (0.010)	ND (0.050) DLM	0.034 PRAR
Total PCBs	ug/g	0.35	0.3	ND (0.020)	ND (0.10) DLM	0.034

Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained Soils.

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils.

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.
ND - Not present at or above the associated value
nc - No criteria
ug/g - micrograms per gram
BGS- Below ground surface
DLM - Detection limit adjusted due to sample matrix effects.
PRAR - PCB pattern most closely resembles Aroclor reported.
0.742 DLM[a] Detected concentration exceeds noted criteria

Table 7

Soil Analytical Results - PCBs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW12-18**	**MW13-18**	**MW14-18**
Sample ID:				**S-11149990-050118-TW-03**	**S-11149990-050218-TW-04**	**S-11149990-053018-TW-23**
Sample Date:				**5/1/2018**	**5/2/2018**	**5/30/2018**
Sample Depth:				**2.4-3 m BGS**	**1.2-1.8 m BGS**	**0.6-1.2 m BGS**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**			
Polychlorinated Biphenyls						
Aroclor-1242 (PCB-1242)	ug/g	nc	nc	ND (0.040) DLM	ND (0.010)	ND (0.010)
Aroclor-1248 (PCB-1248)	ug/g	nc	nc	ND (0.010)	ND (0.010)	ND (0.010)
Aroclor-1254 (PCB-1254)	ug/g	nc	nc	ND (0.090) DLM	ND (0.010)	ND (0.010)
Aroclor-1260 (PCB-1260)	ug/g	nc	nc	0.742 PRAR	ND (0.010)	ND (0.010)
Total PCBs	ug/g	0.35	0.3	**0.742 DLM[a]**	ND (0.020)	ND (0.020)

Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained Soils.

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils.

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.
ND - Not present at or above the associated value
nc - No criteria
ug/g - micrograms per gram
BGS- Below ground surface
DLM - Detection limit adjusted due to sample matrix effects.
PRAR - PCB pattern most closely resembles Aroclor reported.
0.742 DLM[a] Detected concentration exceeds noted criteria

Table 7

Soil Analytical Results - PCBs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:	**MW15-18**
Sample ID:	**S-11149990-053018-TW-22**
Sample Date:	**5/30/2018**
Sample Depth:	**0.6-1.2 m BGS**

Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**	
Polychlorinated Biphenyls				
Aroclor-1242 (PCB-1242)	ug/g	nc	nc	ND (0.010)
Aroclor-1248 (PCB-1248)	ug/g	nc	nc	ND (0.010)
Aroclor-1254 (PCB-1254)	ug/g	nc	nc	ND (0.010)
Aroclor-1260 (PCB-1260)	ug/g	nc	nc	ND (0.010)
Total PCBs	ug/g	0.35	0.3	ND (0.020)

Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained Soils.

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils.

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.
ND - Not present at or above the associated value
nc - No criteria
ug/g - micrograms per gram
BGS- Below ground surface
DLM - Detection limit adjusted due to sample matrix effects.
PRAR - PCB pattern most closely resembles Aroclor reported.
0.742 DLM[a] Detected concentration exceeds noted criteria

Table 8

Groundwater Analytical Results - Metals and General Chemistry
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**BH4**	**BH11**	**BH30**	**BH30**	**MW1-13D**	**MW1-13S**	**MW1-16**
Sample ID:				**GW-11149990-040618-009**	**GW-11149990-040618-006**	**GW-11149990-040518-001**	**GW-11149990-040518-002**	**GW-11149990-040618-010**	**GW-11149990-040518-005**	**GW-11149990-040618-008**
Sample Date:				**4/6/2018**	**4/6/2018**	**4/5/2018**	**4/5/2018**	**4/6/2018**	**4/5/2018**	**4/6/2018**
							Duplicate			
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**							
Metals										
Antimony (dissolved)	ug/L	6	6	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	0.11
Arsenic (dissolved)	ug/L	25	25	12.5	0.92	0.13	0.13	**30.4**[a]	2.39	0.44
Barium (dissolved)	ug/L	1000	1000	177	58.5	58.3	58.0	138	241	50.1
Beryllium (dissolved)	ug/L	4	4	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Boron (dissolved)	ug/L	5000	5000	689	14	43	42	749	403	40
Cadmium (dissolved)	ug/L	2.1	2.1	ND (0.010)	ND (0.010)	0.070	0.073	ND (0.010)	ND (0.010)	0.056
Calcium (dissolved)	ug/L	nc	nc	-	-	-	-	-	-	-
Chromium (dissolved)	ug/L	50	50	ND (0.50)	ND (0.50)	ND (0.50)	0.65	ND (0.50)	3.46	ND (0.50)
Cobalt (dissolved)	ug/L	3.8	3.8	1.26	ND (0.10)	ND (0.10)	ND (0.10)	0.35	1.99	0.28
Copper (dissolved)	ug/L	69	69	ND (0.20)	0.27	1.26 J	0.79 J	ND (0.20)	0.25	0.93
Iron (dissolved)	ug/L	nc	nc	-	-	-	-	-	-	-
Lead (dissolved)	ug/L	10	10	ND (0.050)	0.066	0.051	ND (0.050)	ND (0.050)	0.053	2.00
Magnesium (dissolved)	ug/L	nc	nc	-	-	-	-	-	-	-
Manganese (dissolved)	ug/L	nc	nc	-	-	-	-	-	-	-
Mercury (dissolved)	ug/L	0.1	0.29	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Molybdenum (dissolved)	ug/L	70	70	0.821	1.24	0.428	0.431	3.37	1.18	2.20
Nickel (dissolved)	ug/L	100	100	1.79	0.51	1.64 J	0.98 J	0.83	3.83	5.96
Selenium (dissolved)	ug/L	10	10	0.219	0.094	0.420	0.379	0.067	0.260	0.550
Silver (dissolved)	ug/L	1.2	1.2	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Sodium (dissolved)	ug/L	490000	490000	99700	186000	173000	176000	159000	80200	144000
Thallium (dissolved)	ug/L	2	2	ND (0.010)	ND (0.010)	0.053	0.048	ND (0.010)	ND (0.010)	0.168
Uranium (dissolved)	ug/L	20	20	0.091	0.371	0.628	0.619	0.132	2.52	2.19
Vanadium (dissolved)	ug/L	6.2	6.2	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	1.20	ND (0.50)
Zinc (dissolved)	ug/L	890	890	1.5	5.2	53.9	52.9	ND (1.0)	4.8	227
General Chemistry										
Alkalinity, total (as CaCO3)	ug/L	nc	nc	475000	248000	322000	328000	455000	601000	298000
Ammonia-N	ug/L	nc	nc	10000 J	832 J	ND (20) J	182 J	3430 J	6360 J	149 J
Chloride	ug/L	790000	790000	208000	309000	295000	297000	279000	61900	273000
Chromium VI (hexavalent)	ug/L	25	25	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Conductivity	mS/cm	nc	nc	1.13	1.49	1.55	1.55	1.71	1.36	1.13
Cyanide, weak acid dissociable	ug/L	nc	nc	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Dissolved organic carbon (DOC) (dissolved)	ug/L	nc	nc	10500	7700	2200	1900	9700	10700	3600
Hardness	ug/L	nc	nc	-	-	-	-	-	-	-
Nitrate (as N)	ug/L	nc	nc	ND (100)	ND (20)	5290	5330	ND (100)	ND (100)	ND (100)
Nitrite (as N)	ug/L	nc	nc	ND (50)	ND (10)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)
pH, lab	s.u.	nc	nc	8.12	7.87	7.67	7.70	7.39	7.15	8.13
Phenolics (total)	ug/L	nc	nc	2.9	ND (1)	ND (1)	ND (1)	2.6	8.8	ND (1)
Phosphorus	ug/L	nc	nc	52.4	106	6.5	5.6	93.9	293	3.7
Sulfate	ug/L	nc	nc	5000	30400	33800	34100	2900	32800	29300
Total dissolved solids (TDS)	ug/L	nc	nc	-	-	-	-	-	-	-
Total kjeldahl nitrogen (TKN)	ug/L	nc	nc	12300	980	310	360	4520	8400	210

Table 8

Groundwater Analytical Results - Metals and General Chemistry
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW1-18**	**MW2-13**	**MW2-16**	**MW2-18**	**MW3-13**	**MW3-18**	**MW4-18**
Sample ID:				**GW-11149990-051118-TW-013**	**GW-11149990-040518-004**	**GW-11149990-040618-007**	**GW-11149990-051118-TW-004**	**GW-11149990-040518-003**	**GW-11149990-051118-TW-014**	**GW-11149990-051118-TW-005**
Sample Date:				**5/11/2018**	**4/5/2018**	**4/6/2018**	**5/11/2018**	**4/5/2018**	**5/11/2018**	**5/11/2018**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**							
Metals										
Antimony (dissolved)	ug/L	6	6	ND (1.0) DLHC	ND (1.0)	0.16	ND (1.0) DLHC	ND (0.10)	ND (1.0) DLHC	ND (1.0) DLHC
Arsenic (dissolved)	ug/L	25	25	4.8 DLHC	4.3	0.24	3.3 DLHC	0.40	2.1 DLHC	2.6 DLHC
Barium (dissolved)	ug/L	1000	1000	209 DLHC	253	24.5	240 DLHC	216	126 DLHC	411 DLHC
Beryllium (dissolved)	ug/L	4	4	ND (1.0) DLHC	ND (1.0)	ND (0.10)	ND (1.0) DLHC	ND (0.10)	ND (1.0) DLHC	ND (1.0) DLHC
Boron (dissolved)	ug/L	5000	5000	**7120 DLHC[a]**	1250	11	2240 DLHC	559	350 DLHC	1580 DLHC
Cadmium (dissolved)	ug/L	2.1	2.1	ND (0.050) DLHC	ND (0.050)	0.046	ND (0.050) DLHC	ND (0.010)	ND (0.050) DLHC	ND (0.050) DLHC
Calcium (dissolved)	ug/L	nc	nc	152000 DLHC	-	-	183000 DLHC	-	133000 DLHC	158000 DLHC
Chromium (dissolved)	ug/L	50	50	ND (5.0) DLHC	ND (5.0)	ND (0.50)	ND (5.0) DLHC	1.03	ND (5.0) DLHC	ND (5.0) DLHC
Cobalt (dissolved)	ug/L	3.8	3.8	1.7 DLHC	**5.5[a]**	ND (0.10)	1.2 DLHC	0.36	ND (1.0) DLHC	ND (1.0) DLHC
Copper (dissolved)	ug/L	69	69	ND (2.0) DLHC	ND (2.0)	3.25	ND (2.0) DLHC	ND (0.20)	ND (2.0) DLHC	2.0 DLHC
Iron (dissolved)	ug/L	nc	nc	15000 DLHC	-	-	22800 DLHC	-	3820 DLHC	6060 DLHC
Lead (dissolved)	ug/L	10	10	ND (0.50) DLHC	ND (0.50)	0.123	ND (0.50) DLHC	ND (0.050)	0.81 DLHC	ND (0.50) DLHC
Magnesium (dissolved)	ug/L	nc	nc	93000 DLHC	-	-	64900 DLHC	-	39000 DLHC	38700 DLHC
Manganese (dissolved)	ug/L	nc	nc	248 DLHC	-	-	321 DLHC	-	390 DLHC	1380 DLHC
Mercury (dissolved)	ug/L	0.1	0.29	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Molybdenum (dissolved)	ug/L	70	70	3.49 DLHC	2.12	0.419	1.24 DLHC	0.658	1.62 DLHC	2.56 DLHC
Nickel (dissolved)	ug/L	100	100	ND (5.0) DLHC	6.9	0.65	ND (5.0) DLHC	0.64	ND (5.0) DLHC	ND (5.0) DLHC
Selenium (dissolved)	ug/L	10	10	ND (0.50) DLHC	ND (0.50)	0.230	ND (0.50) DLHC	2.37	ND (0.50) DLHC	ND (0.50) DLHC
Silver (dissolved)	ug/L	1.2	1.2	ND (0.50) DLHC	ND (0.50)	ND (0.050)	ND (0.50) DLHC	ND (0.050)	ND (0.50) DLHC	ND (0.50) DLHC
Sodium (dissolved)	ug/L	490000	490000	144000 DLHC	180000	30200	154000 DLHC	105000	353000 DLHC	**627000 DLHC[a]**
Thallium (dissolved)	ug/L	2	2	ND (0.10) DLHC	ND (0.10)	ND (0.010)	ND (0.10) DLHC	ND (0.010)	ND (0.10) DLHC	ND (0.10) DLHC
Uranium (dissolved)	ug/L	20	20	0.52 DLHC	2.03	0.598	0.45 DLHC	0.749	0.82 DLHC	0.53 DLHC
Vanadium (dissolved)	ug/L	6.2	6.2	ND (5.0) DLHC	ND (5.0)	ND (0.50)	ND (5.0) DLHC	0.53	ND (5.0) DLHC	ND (5.0) DLHC
Zinc (dissolved)	ug/L	890	890	ND (10) DLHC	13	22.6	ND (10) DLHC	ND (1.0)	12 DLHC	ND (10) DLHC
General Chemistry										
Alkalinity, total (as CaCO3)	ug/L	nc	nc	790000 DLM	636000	202000	764000 DLHC	695000	449000	310000
Ammonia-N	ug/L	nc	nc	30300 DLHC	3220 J	414 J	27100 DLHC	3630 J	4420 DLHC	3250 DLHC
Chloride	ug/L	790000	790000	282000 DLDS	278000	54000	273000 DLDS	69500	601000 DLDS	**1180000 DLDS[a]**
Chromium VI (hexavalent)	ug/L	25	25	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Conductivity	mS/cm	nc	nc	2.08	2.19	0.607	2.15	1.50	2.52	4.10
Cyanide, weak acid dissociable	ug/L	nc	nc	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Dissolved organic carbon (DOC) (dissolved)	ug/L	nc	nc	14600 DLHC	11700	5300	23600 DLHC	16700	8900 DLM	7700 DLM
Hardness	ug/L	nc	nc	763000	-	-	724000	-	494000	553000
Nitrate (as N)	ug/L	nc	nc	190 DLDS	490	600	ND (100) DLDS	ND (100)	170 DLDS	ND (100) DLDS
Nitrite (as N)	ug/L	nc	nc	65 DLDS	ND (50)	ND (50)	ND (50) DLDS	ND (50)	ND (50) DLDS	ND (50) DLDS
pH, lab	s.u.	nc	nc	7.46	7.25	7.96	7.34	7.09	7.72	7.69
Phenolics (total)	ug/L	nc	nc	6.7	ND (1)	ND (1)	5.3	1.1	2.4	1.6
Phosphorus	ug/L	nc	nc	40.6	146	22.7	150	73.5	15.4	26.5
Sulfate	ug/L	nc	nc	11400 DLDS	94800	22900	2400 DLDS	27900	49200 DLDS	97100 DLDS
Total dissolved solids (TDS)	ug/L	nc	nc	1090000	-	-	1210000	-	1390000	2410000 DLDS
Total kjeldahl nitrogen (TKN)	ug/L	nc	nc	39100 DLHC	4720	1360	33300 DLHC	4820	4980	3770

Table 8

Groundwater Analytical Results - Metals and General Chemistry
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW4-18**	**MW5-13**	**MW7-18**	**MW8-18**	**MW9-18**	**MW10-18**
Sample ID:				**GW-11149990-051118-TW-006**	**GW-11149990-040618-011**	**GW-11149990-051118-TW-001**	**GW-11149990-051118-TW-012**	**GW-11149990-051118-TW-011**	**GW-11149990-051118-TW-009**
Sample Date:				**5/11/2018**	**4/6/2018**	**5/11/2018**	**5/11/2018**	**5/11/2018**	**5/11/2018**
				Duplicate					
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**						
Metals									
Antimony (dissolved)	ug/L	6	6	ND (1.0) DLHC	0.37	ND (1.0) DLHC	ND (1.0) DLHC	ND (1.0) DLHC	2.4 DLHC
Arsenic (dissolved)	ug/L	25	25	2.5 DLHC	0.61	ND (1.0) DLHC	ND (1.0) DLHC	ND (1.0) DLHC	ND (1.0) DLHC
Barium (dissolved)	ug/L	1000	1000	416 DLHC	22.1	118 DLHC	271 DLHC	91.5 DLHC	111 DLHC
Beryllium (dissolved)	ug/L	4	4	ND (1.0) DLHC	ND (0.10)	ND (1.0) DLHC	ND (1.0) DLHC	ND (1.0) DLHC	ND (1.0) DLHC
Boron (dissolved)	ug/L	5000	5000	1640 DLHC	16	380 DLHC	1080 DLHC	260 DLHC	650 DLHC
Cadmium (dissolved)	ug/L	2.1	2.1	ND (0.050) DLHC	ND (0.010)	0.153 DLHC	ND (0.050) DLHC	0.309 DLHC	0.116 DLHC
Calcium (dissolved)	ug/L	nc	nc	156000 DLHC	-	-	156000 DLHC	179000 DLHC	192000 DLHC
Chromium (dissolved)	ug/L	50	50	ND (5.0) DLHC	3.02	ND (5.0) DLHC	ND (5.0) DLHC	ND (5.0) DLHC	ND (5.0) DLHC
Cobalt (dissolved)	ug/L	3.8	3.8	ND (1.0) DLHC	ND (0.10)	ND (1.0) DLHC	ND (1.0) DLHC	ND (1.0) DLHC	1.6 DLHC
Copper (dissolved)	ug/L	69	69	ND (2.0) DLHC	5.55	5.7 DLHC	ND (2.0) DLHC	3.6 DLHC	2.3 DLHC
Iron (dissolved)	ug/L	nc	nc	5980 DLHC	-	-	28400 DLHC	ND (100) DLHC	980 DLHC
Lead (dissolved)	ug/L	10	10	ND (0.50) DLHC	0.062	ND (0.50) DLHC	ND (0.50) DLHC	ND (0.50) DLHC	ND (0.50) DLHC
Magnesium (dissolved)	ug/L	nc	nc	36200 DLHC	-	-	25300 DLHC	44700 DLHC	47300 DLHC
Manganese (dissolved)	ug/L	nc	nc	1360 DLHC	-	-	608 DLHC	13.2 DLHC	550 DLHC
Mercury (dissolved)	ug/L	0.1	0.29	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Molybdenum (dissolved)	ug/L	70	70	2.52 DLHC	1.40	0.96 DLHC	ND (0.50) DLHC	1.23 DLHC	0.95 DLHC
Nickel (dissolved)	ug/L	100	100	ND (5.0) DLHC	ND (0.50)	ND (5.0) DLHC	ND (5.0) DLHC	ND (5.0) DLHC	7.9 DLHC
Selenium (dissolved)	ug/L	10	10	ND (0.50) DLHC	0.190	1.98 DLHC	ND (0.50) DLHC	8.16 DLHC	ND (0.50) DLHC
Silver (dissolved)	ug/L	1.2	1.2	ND (0.50) DLHC	ND (0.050)	ND (0.50) DLHC	ND (0.50) DLHC	ND (0.50) DLHC	ND (0.50) DLHC
Sodium (dissolved)	ug/L	490000	490000	**606000 DLHC[a]**	5290	421000 DLHC	46600 DLHC	11700 DLHC	100000 DLHC
Thallium (dissolved)	ug/L	2	2	ND (0.10) DLHC	ND (0.010)	ND (0.10) DLHC	ND (0.10) DLHC	ND (0.10) DLHC	ND (0.10) DLHC
Uranium (dissolved)	ug/L	20	20	0.55 DLHC	1.21	3.08 DLHC	0.13 DLHC	2.50 DLHC	2.48 DLHC
Vanadium (dissolved)	ug/L	6.2	6.2	ND (5.0) DLHC	0.60	ND (5.0) DLHC	ND (5.0) DLHC	ND (5.0) DLHC	ND (5.0) DLHC
Zinc (dissolved)	ug/L	890	890	ND (10) DLHC	1.0	95 DLHC	ND (10) DLHC	187 DLHC	296 DLHC
General Chemistry									
Alkalinity, total (as CaCO3)	ug/L	nc	nc	310000	222000	-	556000 DLHC	473000 DLHC	538000 DLHC
Ammonia-N	ug/L	nc	nc	3130 DLHC	ND (20) J	-	17400 DLHC	1900 DLHC	10600 DLHC
Chloride	ug/L	790000	790000	**1170000 DLDS[a]**	13700	757000 DLHC	49600 DLDS	31500 DLDS	158000 DLDS
Chromium VI (hexavalent)	ug/L	25	25	ND (1.0)	2.8	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Conductivity	mS/cm	nc	nc	4.13	0.517	3.20	1.24	1.23	1.59
Cyanide, weak acid dissociable	ug/L	nc	nc	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Dissolved organic carbon (DOC) (dissolved)	ug/L	nc	nc	5200 DLM	7200	-	12900 DLHC	8400	11500
Hardness	ug/L	nc	nc	540000	-	-	494000	631000	673000
Nitrate (as N)	ug/L	nc	nc	ND (100) DLDS	5730	-	ND (100) DLDS	23700 DLDS	2280 DLDS
Nitrite (as N)	ug/L	nc	nc	ND (50) DLDS	ND (10)	-	ND (50) DLDS	ND (50) DLDS	60 DLDS
pH, lab	s.u.	nc	nc	7.72	8.13	7.26	7.18	7.69	7.46
Phenolics (total)	ug/L	nc	nc	2.1	ND (1)	-	4.6	3.8	2.6
Phosphorus	ug/L	nc	nc	34.3	28.1	-	426	12.4	16.4
Sulfate	ug/L	nc	nc	96700 DLDS	5320	-	12100 DLDS	61100 DLDS	122000 DLDS
Total dissolved solids (TDS)	ug/L	nc	nc	2380000 DLDS	-	-	716000	779000 DLDS	999000 DLDS
Total kjeldahl nitrogen (TKN)	ug/L	nc	nc	3400	740	-	22400 DLHC	2300 TKNI	9950

Table 8

Groundwater Analytical Results - Metals and General Chemistry
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW11-18**	**MW11-18**	**MW13-18**	**MW14-18**	**MW15-18**
Sample ID:				**GW-11149990-051118-TW-007**	**GW-11149990-051118-TW-008**	**GW-11149990-051118-TW-010**	**GW-11149990-060118-TW-016**	**GW-11149990-060118-TW-015**
Sample Date:				**5/11/2018**	**5/11/2018 Duplicate**	**5/11/2018**	**6/1/2018**	**6/1/2018**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**					
Metals								
Antimony (dissolved)	ug/L	6	6	ND (1.0) DLHC	ND (1.0) DLHC	1.8 DLHC	ND (1.0) DLHC	ND (1.0) DLHC
Arsenic (dissolved)	ug/L	25	25	ND (1.0) DLHC	ND (1.0) DLHC	1.1 DLHC	5.2 DLHC	4.7 DLHC
Barium (dissolved)	ug/L	1000	1000	107 DLHC	109 DLHC	220 DLHC	292 DLHC	395 DLHC
Beryllium (dissolved)	ug/L	4	4	ND (1.0) DLHC	ND (1.0) DLHC	ND (1.0) DLHC	ND (1.0) DLHC	ND (1.0) DLHC
Boron (dissolved)	ug/L	5000	5000	270 DLHC	280 DLHC	830 DLHC	200 DLHC	200 DLHC
Cadmium (dissolved)	ug/L	2.1	2.1	0.356 DLHC	0.325 DLHC	ND (0.050) DLHC	ND (0.050) DLHC	ND (0.050) DLHC
Calcium (dissolved)	ug/L	nc	nc	211000 DLHC	220000 DLHC	193000 DLHC	160000 DLHC	194000 DLHC
Chromium (dissolved)	ug/L	50	50	ND (5.0) DLHC	ND (5.0) DLHC	ND (5.0) DLHC	ND (5.0) DLHC	ND (5.0) DLHC
Cobalt (dissolved)	ug/L	3.8	3.8	ND (1.0) DLHC	ND (1.0) DLHC	1.5 DLHC	ND (1.0) DLHC	ND (1.0) DLHC
Copper (dissolved)	ug/L	69	69	5.7 DLHC	5.7 DLHC	ND (2.0) DLHC	ND (2.0) DLHC	ND (2.0) DLHC
Iron (dissolved)	ug/L	nc	nc	ND (100) DLHC	ND (100) DLHC	470 DLHC	5950 DLHC	11000 DLHC
Lead (dissolved)	ug/L	10	10	ND (0.50) DLHC	ND (0.50) DLHC	ND (0.50) DLHC	ND (0.50) DLHC	ND (0.50) DLHC
Magnesium (dissolved)	ug/L	nc	nc	34900 DLHC	37300 DLHC	44100 DLHC	86600 DLHC	34300 DLHC
Manganese (dissolved)	ug/L	nc	nc	ND (5.0) DLHC	ND (5.0) DLHC	352 DLHC	635 DLHC	953 DLHC
Mercury (dissolved)	ug/L	0.1	0.29	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Molybdenum (dissolved)	ug/L	70	70	2.10 DLHC	2.30 DLHC	2.13 DLHC	2.94 DLHC	2.72 DLHC
Nickel (dissolved)	ug/L	100	100	ND (5.0) DLHC	ND (5.0) DLHC	30.4 DLHC	ND (5.0) DLHC	ND (5.0) DLHC
Selenium (dissolved)	ug/L	10	10	**15.5 DLHC[a]**	**15.5 DLHC[a]**	ND (0.50) DLHC	ND (0.50) DLHC	ND (0.50) DLHC
Silver (dissolved)	ug/L	1.2	1.2	ND (0.50) DLHC	ND (0.50) DLHC	ND (0.50) DLHC	ND (0.50) DLHC	ND (0.50) DLHC
Sodium (dissolved)	ug/L	490000	490000	**501000 DLHC[a]**	**525000 DLHC[a]**	10200 DLHC	**891000 DLHC[ab]**	**718000 DLHC[ab]**
Thallium (dissolved)	ug/L	2	2	0.11 DLHC	0.13 DLHC	ND (0.10) DLHC	ND (0.10) DLHC	ND (0.10) DLHC
Uranium (dissolved)	ug/L	20	20	6.42 DLHC	7.07 DLHC	1.10 DLHC	0.68 DLHC	0.42 DLHC
Vanadium (dissolved)	ug/L	6.2	6.2	ND (5.0) DLHC	ND (5.0) DLHC	ND (5.0) DLHC	ND (5.0) DLHC	ND (5.0) DLHC
Zinc (dissolved)	ug/L	890	890	174 DLHC	179 DLHC	40 DLHC	ND (10) DLHC	ND (10) DLHC
General Chemistry								
Alkalinity, total (as CaCO3)	ug/L	nc	nc	414000	408000	602000 DLHC	467000	376000
Ammonia-N	ug/L	nc	nc	1880 DLHC	7450 DLHC	5740 DLHC	4000 DLHC	5880 DLHC
Chloride	ug/L	790000	790000	**995000 DLDS[a]**	**975000 DLDS[a]**	18300 DLDS	-	-
Chromium VI (hexavalent)	ug/L	25	25	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Conductivity	mS/cm	nc	nc	3.60	3.64	1.15	5.45	4.60
Cyanide, weak acid dissociable	ug/L	nc	nc	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Dissolved organic carbon (DOC) (dissolved)	ug/L	nc	nc	11200	11600	11000	7000	6100
Hardness	ug/L	nc	nc	670000	703000	664000	756000	625000
Nitrate (as N)	ug/L	nc	nc	28900 DLDS	28300 DLDS	ND (100) DLDS	ND (200) DLDS	ND (200) DLDS
Nitrite (as N)	ug/L	nc	nc	209 DLDS	214 DLDS	ND (50) DLDS	ND (100) DLDS	ND (100) DLDS
pH, lab	s.u.	nc	nc	7.51	7.61	7.36	7.78	7.72
Phenolics (total)	ug/L	nc	nc	1.7	1.9	4	2.9	4.5
Phosphorus	ug/L	nc	nc	14.1	12.2	15.8	40.3	58.8
Sulfate	ug/L	nc	nc	110000 DLDS	108000 DLDS	32800 DLDS	40600 DLDS	42900 DLDS
Total dissolved solids (TDS)	ug/L	nc	nc	2240000 DLDS	2260000 DLDS	711000 DLDS	3170000 DLDS	2700000 DLDS
Total kjeldahl nitrogen (TKN)	ug/L	nc	nc	1990 TKNI	6490	5080 RRV	4980	6760

Groundwater Analytical Results - Metals and General Chemistry
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained Soils.

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.

ND - Not present at or above the associated value
- Not analyzed
nc - No criteria
ug/L - micrograms per litre
mS/cm - millesiemens per centimeter
s.u. - standard units
DLDS - Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.

DLHC - Detection limit raised: Dilution required due to high concentration of test analyte(s).

DLM - Detection limit adjusted due to sample matrix effects.
J - Estimated concentration.
RRV - Reported Result Verified By Repeat Analysis
TKNI - TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

30.4[a] Detected concentration exceeds noted criteria

Table 9

Groundwater Analytical Results - PHCs and VOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**BH4**	**BH11**	**BH30**	**BH30**	**MW1-13D**	**MW1-13S**	**MW1-16**
Sample ID:				**GW-11149990-040618-009**	**GW-11149990-040618-006**	**GW-11149990-040518-001**	**GW-11149990-040518-002**	**GW-11149990-040618-010**	**GW-11149990-040518-005**	**GW-11149990-040618-008**
Sample Date:				**4/6/2018**	**4/6/2018**	**4/5/2018**	**4/5/2018**	**4/6/2018**	**4/5/2018**	**4/6/2018**
							Duplicate			
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**							
Petroleum Hydrocarbons										
Chromatogram to baseline at nC50	none	nc	nc	YES	YES	YES	YES	YES	YES	YES
Petroleum hydrocarbons F1 (C6-C10)	ug/L	420	420	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)
Petroleum hydrocarbons F1 minus BTEX	ug/L	420	420	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)
Petroleum hydrocarbons F2 (C10-C16)	ug/L	150	150	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Petroleum hydrocarbons F2 minus Naphthalene	ug/L	150	150	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Petroleum hydrocarbons F3 (C16-C34)	ug/L	500	500	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)
Petroleum hydrocarbons F3 minus PAH	ug/L	500	500	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)
Petroleum hydrocarbons F4 (C34-C50)	ug/L	500	500	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)
Total Petroleum Hydrocarbons (C6-C50)	ug/L	nc	nc	ND (370)	ND (370)	ND (370)	ND (370)	ND (370)	ND (370)	ND (370)
Volatile Organic Compounds										
Acetone	ug/L	2700	2700	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Benzene	ug/L	0.5	5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Bromodichloromethane	ug/L	16	16	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Bromoform	ug/L	5	25	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Bromomethane (Methyl bromide)	ug/L	0.89	0.89	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	1800	1800	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Carbon tetrachloride	ug/L	0.2	0.79	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Chlorobenzene	ug/L	30	30	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	1.41	ND (0.50)	ND (0.50)
Chloroform (Trichloromethane)	ug/L	2	2.4	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Dibromochloromethane	ug/L	25	25	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.2	0.2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
1,2-Dichlorobenzene	ug/L	3	3	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,3-Dichlorobenzene	ug/L	59	59	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,4-Dichlorobenzene	ug/L	0.5	1	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	**1.04[a]**	ND (0.50)	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	590	590	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
1,1-Dichloroethane	ug/L	5	5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloroethane	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1-Dichloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,2-Dichloroethene	ug/L	1.6	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	0.54
trans-1,2-Dichloroethene	ug/L	1.6	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloropropane	ug/L	0.58	5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,3-Dichloropropene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
trans-1,3-Dichloropropene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene	ug/L	0.5	0.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Ethylbenzene	ug/L	2.4	2.4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Hexane	ug/L	5	51	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Methyl tert butyl ether (MTBE)	ug/L	15	15	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	640	640	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Methylene chloride	ug/L	26	50	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Styrene	ug/L	5.4	5.4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1,2-Tetrachloroethane	ug/L	1.1	1.1	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2,2-Tetrachloroethane	ug/L	0.5	1	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Tetrachloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Toluene	ug/L	24	22	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1-Trichloroethane	ug/L	23	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2-Trichloroethane	ug/L	0.5	4.7	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	**1.88[ab]**
Trichlorofluoromethane (CFC-11)	ug/L	150	150	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Vinyl chloride	ug/L	0.5	0.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Xylenes (total)	ug/L	72	300	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
m&p-Xylenes	ug/L	nc	nc	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
o-Xylene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)

Table 9

Groundwater Analytical Results - PHCs and VOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW1-18**	**MW2-13**	**MW2-16**	**MW2-18**	**MW3-13**	**MW3-18**
Sample ID:				**GW-11149990-051118-TW-013**	**GW-11149990-040518-004**	**GW-11149990-040618-007**	**GW-11149990-051118-TW-004**	**GW-11149990-040518-003**	**GW-11149990-051118-TW-014**
Sample Date:				**5/11/2018**	**4/5/2018**	**4/6/2018**	**5/11/2018**	**4/5/2018**	**5/11/2018**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**						
Petroleum Hydrocarbons									
Chromatogram to baseline at nC50	none	nc	nc	YES	YES	YES	YES	YES	YES
Petroleum hydrocarbons F1 (C6-C10)	ug/L	420	420	35	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)
Petroleum hydrocarbons F1 minus BTEX	ug/L	420	420	25	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)
Petroleum hydrocarbons F2 (C10-C16)	ug/L	150	150	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Petroleum hydrocarbons F2 minus Naphthalene	ug/L	150	150	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Petroleum hydrocarbons F3 (C16-C34)	ug/L	500	500	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)
Petroleum hydrocarbons F3 minus PAH	ug/L	500	500	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)
Petroleum hydrocarbons F4 (C34-C50)	ug/L	500	500	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)
Total Petroleum Hydrocarbons (C6-C50)	ug/L	nc	nc	ND (370)	ND (370)	ND (370)	ND (370)	ND (370)	ND (370)
Volatile Organic Compounds									
Acetone	ug/L	2700	2700	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Benzene	ug/L	0.5	5	**1.92**[a]	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Bromodichloromethane	ug/L	16	16	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Bromoform	ug/L	5	25	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Bromomethane (Methyl bromide)	ug/L	0.89	0.89	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	1800	1800	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Carbon tetrachloride	ug/L	0.2	0.79	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Chlorobenzene	ug/L	30	30	0.76	0.87	ND (0.50)	3.09	1.26	ND (0.50)
Chloroform (Trichloromethane)	ug/L	2	2.4	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Dibromochloromethane	ug/L	25	25	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.2	0.2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
1,2-Dichlorobenzene	ug/L	3	3	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,3-Dichlorobenzene	ug/L	59	59	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,4-Dichlorobenzene	ug/L	0.5	1	**1.35**[a]	ND (0.50)	ND (0.50)	**0.62**[a]	ND (0.50)	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	590	590	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
1,1-Dichloroethane	ug/L	5	5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloroethane	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1-Dichloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,2-Dichloroethene	ug/L	1.6	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
trans-1,2-Dichloroethene	ug/L	1.6	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloropropane	ug/L	0.58	5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,3-Dichloropropene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
trans-1,3-Dichloropropene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene	ug/L	0.5	0.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Ethylbenzene	ug/L	2.4	2.4	0.86	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Hexane	ug/L	5	51	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Methyl tert butyl ether (MTBE)	ug/L	15	15	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	640	640	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Methylene chloride	ug/L	26	50	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Styrene	ug/L	5.4	5.4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1,2-Tetrachloroethane	ug/L	1.1	1.1	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2,2-Tetrachloroethane	ug/L	0.5	1	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Tetrachloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Toluene	ug/L	24	22	4.18	ND (0.50)	ND (0.50)	0.58	ND (0.50)	ND (0.50)
1,1,1-Trichloroethane	ug/L	23	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2-Trichloroethane	ug/L	0.5	4.7	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichlorofluoromethane (CFC-11)	ug/L	150	150	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Vinyl chloride	ug/L	0.5	0.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Xylenes (total)	ug/L	72	300	2.67	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
m&p-Xylenes	ug/L	nc	nc	1.92	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
o-Xylene	ug/L	nc	nc	0.75	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)

Table 9

Groundwater Analytical Results - PHCs and VOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW4-18**	**MW4-18**	**MW5-13**	**MW7-18**	**MW8-18**	**MW9-18**
Sample ID:				**GW-11149990-051118-TW-005**	**GW-11149990-051118-TW-006**	**GW-11149990-040618-011**	**GW-11149990-051118-TW-001**	**GW-11149990-051118-TW-012**	**GW-11149990-051118-TW-011**
Sample Date:				**5/11/2018**	**5/11/2018**	**4/6/2018**	**5/11/2018**	**5/11/2018**	**5/11/2018**
					Duplicate				
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**						
Petroleum Hydrocarbons									
Chromatogram to baseline at nC50	none	nc	nc	YES	YES	YES	YES	YES	YES
Petroleum hydrocarbons F1 (C6-C10)	ug/L	420	420	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)
Petroleum hydrocarbons F1 minus BTEX	ug/L	420	420	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)
Petroleum hydrocarbons F2 (C10-C16)	ug/L	150	150	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Petroleum hydrocarbons F2 minus Naphthalene	ug/L	150	150	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Petroleum hydrocarbons F3 (C16-C34)	ug/L	500	500	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)
Petroleum hydrocarbons F3 minus PAH	ug/L	500	500	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)
Petroleum hydrocarbons F4 (C34-C50)	ug/L	500	500	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)
Total Petroleum Hydrocarbons (C6-C50)	ug/L	nc	nc	ND (370)	ND (370)	ND (370)	ND (370)	ND (370)	ND (370)
Volatile Organic Compounds									
Acetone	ug/L	2700	2700	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Benzene	ug/L	0.5	5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Bromodichloromethane	ug/L	16	16	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Bromoform	ug/L	5	25	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Bromomethane (Methyl bromide)	ug/L	0.89	0.89	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	1800	1800	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Carbon tetrachloride	ug/L	0.2	0.79	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Chlorobenzene	ug/L	30	30	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	4.63	ND (0.50)
Chloroform (Trichloromethane)	ug/L	2	2.4	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Dibromochloromethane	ug/L	25	25	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.2	0.2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
1,2-Dichlorobenzene	ug/L	3	3	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,3-Dichlorobenzene	ug/L	59	59	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,4-Dichlorobenzene	ug/L	0.5	1	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	**1.42**[a]	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	590	590	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
1,1-Dichloroethane	ug/L	5	5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloroethane	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1-Dichloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,2-Dichloroethene	ug/L	1.6	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
trans-1,2-Dichloroethene	ug/L	1.6	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloropropane	ug/L	0.58	5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,3-Dichloropropene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
trans-1,3-Dichloropropene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene	ug/L	0.5	0.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Ethylbenzene	ug/L	2.4	2.4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Hexane	ug/L	5	51	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Methyl tert butyl ether (MTBE)	ug/L	15	15	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	640	640	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Methylene chloride	ug/L	26	50	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Styrene	ug/L	5.4	5.4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1,2-Tetrachloroethane	ug/L	1.1	1.1	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2,2-Tetrachloroethane	ug/L	0.5	1	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Tetrachloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Toluene	ug/L	24	22	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1-Trichloroethane	ug/L	23	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2-Trichloroethane	ug/L	0.5	4.7	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichlorofluoromethane (CFC-11)	ug/L	150	150	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Vinyl chloride	ug/L	0.5	0.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Xylenes (total)	ug/L	72	300	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
m&p-Xylenes	ug/L	nc	nc	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
o-Xylene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)

Table 9

Groundwater Analytical Results - PHCs and VOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**MW10-18**	**MW11-18**	**MW11-18**	**MW13-18**	**MW14-18**	**MW15-18**
Sample ID:				**GW-11149990-051118-TW-009**	**GW-11149990-051118-TW-007**	**GW-11149990-051118-TW-008**	**GW-11149990-051118-TW-010**	**GW-11149990-060118-TW-016**	**GW-11149990-060118-TW-015**
Sample Date:				**5/11/2018**	**5/11/2018**	**5/11/2018**	**5/11/2018**	**6/1/2018**	**6/1/2018**
						Duplicate			
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**						
Petroleum Hydrocarbons									
Chromatogram to baseline at nC50	none	nc	nc	YES	YES	YES	YES	YES	YES
Petroleum hydrocarbons F1 (C6-C10)	ug/L	420	420	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)
Petroleum hydrocarbons F1 minus BTEX	ug/L	420	420	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)
Petroleum hydrocarbons F2 (C10-C16)	ug/L	150	150	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Petroleum hydrocarbons F2 minus Naphthalene	ug/L	150	150	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Petroleum hydrocarbons F3 (C16-C34)	ug/L	500	500	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)
Petroleum hydrocarbons F3 minus PAH	ug/L	500	500	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)
Petroleum hydrocarbons F4 (C34-C50)	ug/L	500	500	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)
Total Petroleum Hydrocarbons (C6-C50)	ug/L	nc	nc	ND (370)	ND (370)	ND (370)	ND (370)	ND (370)	ND (370)
Volatile Organic Compounds									
Acetone	ug/L	2700	2700	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Benzene	ug/L	0.5	5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Bromodichloromethane	ug/L	16	16	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Bromoform	ug/L	5	25	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Bromomethane (Methyl bromide)	ug/L	0.89	0.89	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	1800	1800	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Carbon tetrachloride	ug/L	0.2	0.79	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Chlorobenzene	ug/L	30	30	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chloroform (Trichloromethane)	ug/L	2	2.4	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Dibromochloromethane	ug/L	25	25	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.2	0.2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
1,2-Dichlorobenzene	ug/L	3	3	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,3-Dichlorobenzene	ug/L	59	59	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,4-Dichlorobenzene	ug/L	0.5	1	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	590	590	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
1,1-Dichloroethane	ug/L	5	5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloroethane	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1-Dichloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,2-Dichloroethene	ug/L	1.6	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
trans-1,2-Dichloroethene	ug/L	1.6	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloropropane	ug/L	0.58	5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,3-Dichloropropene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
trans-1,3-Dichloropropene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene	ug/L	0.5	0.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Ethylbenzene	ug/L	2.4	2.4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Hexane	ug/L	5	51	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Methyl tert butyl ether (MTBE)	ug/L	15	15	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	640	640	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Methylene chloride	ug/L	26	50	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Styrene	ug/L	5.4	5.4	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1,2-Tetrachloroethane	ug/L	1.1	1.1	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2,2-Tetrachloroethane	ug/L	0.5	1	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Tetrachloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Toluene	ug/L	24	22	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1-Trichloroethane	ug/L	23	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2-Trichloroethane	ug/L	0.5	4.7	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Trichlorofluoromethane (CFC-11)	ug/L	150	150	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Vinyl chloride	ug/L	0.5	0.5	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Xylenes (total)	ug/L	72	300	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
m&p-Xylenes	ug/L	nc	nc	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
o-Xylene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)

Table 9

Groundwater Analytical Results - PHCs and VOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				**TRIP BLANK**	**TRIP BLANK**	**TRIP BLANK**
Sample ID:				**TB-11149990-040518-001**	**TB-11149990-051118-TW-001**	**TB-11149990-060118-TW-002**
Sample Date:				**4/5/2018**	**5/11/2018**	**6/1/2018**
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**			
Petroleum Hydrocarbons						
Chromatogram to baseline at nC50	none	nc	nc	-	-	-
Petroleum hydrocarbons F1 (C6-C10)	ug/L	420	420	ND (25)	ND (25)	ND (25)
Petroleum hydrocarbons F1 minus BTEX	ug/L	420	420	ND (25)	ND (25)	ND (25)
Petroleum hydrocarbons F2 (C10-C16)	ug/L	150	150	-	-	-
Petroleum hydrocarbons F2 minus Naphthalene	ug/L	150	150	-	-	-
Petroleum hydrocarbons F3 (C16-C34)	ug/L	500	500	-	-	-
Petroleum hydrocarbons F3 minus PAH	ug/L	500	500	-	-	-
Petroleum hydrocarbons F4 (C34-C50)	ug/L	500	500	-	-	-
Total Petroleum Hydrocarbons (C6-C50)	ug/L	nc	nc	-	-	-
Volatile Organic Compounds						
Acetone	ug/L	2700	2700	ND (30)	ND (30)	ND (30)
Benzene	ug/L	0.5	5	ND (0.50)	ND (0.50)	ND (0.50)
Bromodichloromethane	ug/L	16	16	ND (2.0)	ND (2.0)	ND (2.0)
Bromoform	ug/L	5	25	ND (5.0)	ND (5.0)	ND (5.0)
Bromomethane (Methyl bromide)	ug/L	0.89	0.89	ND (0.50)	ND (0.50)	ND (0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	1800	1800	ND (20)	ND (20)	ND (20)
Carbon tetrachloride	ug/L	0.2	0.79	ND (0.20)	ND (0.20)	ND (0.20)
Chlorobenzene	ug/L	30	30	ND (0.50)	ND (0.50)	ND (0.50)
Chloroform (Trichloromethane)	ug/L	2	2.4	ND (1.0)	ND (1.0)	ND (1.0)
Dibromochloromethane	ug/L	25	25	ND (2.0)	ND (2.0)	ND (2.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.2	0.2	ND (0.20)	ND (0.20)	ND (0.20)
1,2-Dichlorobenzene	ug/L	3	3	ND (0.50)	ND (0.50)	ND (0.50)
1,3-Dichlorobenzene	ug/L	59	59	ND (0.50)	ND (0.50)	ND (0.50)
1,4-Dichlorobenzene	ug/L	0.5	1	ND (0.50)	ND (0.50)	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	590	590	ND (2.0)	ND (2.0)	ND (2.0)
1,1-Dichloroethane	ug/L	5	5	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloroethane	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)
1,1-Dichloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,2-Dichloroethene	ug/L	1.6	1.6	ND (0.50)	ND (0.50)	ND (0.50)
trans-1,2-Dichloroethene	ug/L	1.6	1.6	ND (0.50)	ND (0.50)	ND (0.50)
1,2-Dichloropropane	ug/L	0.58	5	ND (0.50)	ND (0.50)	ND (0.50)
cis-1,3-Dichloropropene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)
trans-1,3-Dichloropropene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene	ug/L	0.5	0.5	ND (0.50)	ND (0.50)	ND (0.50)
Ethylbenzene	ug/L	2.4	2.4	ND (0.50)	ND (0.50)	ND (0.50)
Hexane	ug/L	5	51	ND (0.50)	ND (0.50)	ND (0.50)
Methyl tert butyl ether (MTBE)	ug/L	15	15	ND (2.0)	ND (2.0)	ND (2.0)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	640	640	ND (20)	ND (20)	ND (20)
Methylene chloride	ug/L	26	50	ND (5.0)	ND (5.0)	ND (5.0)
Styrene	ug/L	5.4	5.4	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1,2-Tetrachloroethane	ug/L	1.1	1.1	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2,2-Tetrachloroethane	ug/L	0.5	1	ND (0.50)	ND (0.50)	ND (0.50)
Tetrachloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)
Toluene	ug/L	24	22	ND (0.50)	ND (0.50)	ND (0.50)
1,1,1-Trichloroethane	ug/L	23	200	ND (0.50)	ND (0.50)	ND (0.50)
1,1,2-Trichloroethane	ug/L	0.5	4.7	ND (0.50)	ND (0.50)	ND (0.50)
Trichloroethene	ug/L	0.5	1.6	ND (0.50)	ND (0.50)	ND (0.50)
Trichlorofluoromethane (CFC-11)	ug/L	150	150	ND (5.0)	ND (5.0)	ND (5.0)
Vinyl chloride	ug/L	0.5	0.5	ND (0.50)	ND (0.50)	ND (0.50)
Xylenes (total)	ug/L	72	300	ND (0.50)	ND (0.50)	ND (0.50)
m&p-Xylenes	ug/L	nc	nc	ND (0.40)	ND (0.40)	ND (0.40)
o-Xylene	ug/L	nc	nc	ND (0.30)	ND (0.30)	ND (0.30)

Groundwater Analytical Results - PHCs and VOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained Soils.

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils.

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.

ND - Not present at or above the associated value

nc - No criteria

ug/L - micrograms per litre

1.88[ab] Detected concentration exceeds noted criteria

Table 10

Groundwater Analytical Results - SVOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				***BH4***	***BH11***	***BH30***	***BH30***	***MW1-13D***	***MW1-13S***	***MW1-16***
Sample ID:				***GW-11149990-040618-009***	***GW-11149990-040618-006***	***GW-11149990-040518-001***	***GW-11149990-040518-002***	***GW-11149990-040618-010***	***GW-11149990-040518-005***	***GW-11149990-040618-008***
Sample Date:				***4/6/2018***	***4/6/2018***	***4/5/2018***	***4/5/2018***	***4/6/2018***	***4/5/2018***	***4/6/2018***
							Duplicate			
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**							
Semi-Volatile Organic Compounds										
Acenaphthene	ug/L	4.1	4.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.838	ND (0.020)
Acenaphthylene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.036	ND (0.020)
Anthracene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.023	ND (0.020)
Benzo(a)anthracene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Benzo(a)pyrene	ug/L	0.01	0.01	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Benzo(b)fluoranthene	ug/L	0.1	0.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Benzo(g,h,i)perylene	ug/L	0.2	0.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Benzo(k)fluoranthene	ug/L	0.1	0.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Biphenyl (1,1-Biphenyl)	ug/L	0.5	0.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
bis(2-Chloroethyl)ether	ug/L	5	5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	10	10	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
4-Chloroaniline	ug/L	10	10	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2-Chlorophenol	ug/L	8.9	8.9	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
Chrysene	ug/L	0.1	0.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Dibenz(a,h)anthracene	ug/L	0.2	0.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
3,3'-Dichlorobenzidine	ug/L	0.5	0.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,4-Dichlorophenol	ug/L	20	20	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
Diethyl phthalate	ug/L	30	30	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	0.25	ND (0.20)	ND (0.20)
Dimethyl phthalate	ug/L	30	30	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
2,4-Dimethylphenol	ug/L	59	59	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4-Dinitrophenol	ug/L	10	10	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
2,4-Dinitrotoluene	ug/L	5	5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,4-Dinitrotoluene/2,6-Dinitrotoluene	ug/L	nc	nc	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)
2,6-Dinitrotoluene	ug/L	5	5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Fluoranthene	ug/L	0.41	0.41	ND (0.020)	0.047	ND (0.020)	ND (0.020)	ND (0.020)	0.102	ND (0.020)
Fluorene	ug/L	120	120	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.389	ND (0.020)
Indeno(1,2,3-cd)pyrene	ug/L	0.2	0.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
1-Methylnaphthalene	ug/L	3.2	3.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.029	ND (0.020)
2-Methylnaphthalene	ug/L	3.2	3.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
1-Methylnaphthalene/2-Methylnaphthalene	ug/L	3.2	3.2	ND (0.028)	ND (0.028)	ND (0.028)	ND (0.028)	ND (0.028)	0.029	ND (0.028)
Naphthalene	ug/L	7	11	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	120	120	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Pentachlorophenol	ug/L	30	30	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Phenanthrene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Phenol	ug/L	890	890	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Pyrene	ug/L	4.1	4.1	ND (0.020)	0.063	ND (0.020)	ND (0.020)	ND (0.020)	0.097	ND (0.020)
1,2,4-Trichlorobenzene	ug/L	3	70	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,4,5-Trichlorophenol	ug/L	8.9	8.9	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
2,4,6-Trichlorophenol	ug/L	2	2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)

Table 10

Groundwater Analytical Results - SVOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				***MW1-18***	***MW2-13***	***MW2-16***	***MW2-18***	***MW3-13***	***MW3-18***
Sample ID:				***GW-11149990-051118-TW-013***	***GW-11149990-040518-004***	***GW-11149990-040618-007***	***GW-11149990-051118-TW-004***	***GW-11149990-040518-003***	***GW-11149990-051118-TW-014***
Sample Date:				***5/11/2018***	***4/5/2018***	***4/6/2018***	***5/11/2018***	***4/5/2018***	***5/11/2018***
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**						
Semi-Volatile Organic Compounds									
Acenaphthene	ug/L	4.1	4.1	0.038	ND (0.020)	ND (0.020)	0.140	1.07	ND (0.020)
Acenaphthylene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.161	ND (0.020)
Anthracene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.118	ND (0.020)
Benzo(a)anthracene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Benzo(a)pyrene	ug/L	0.01	0.01	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Benzo(b)fluoranthene	ug/L	0.1	0.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Benzo(g,h,i)perylene	ug/L	0.2	0.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Benzo(k)fluoranthene	ug/L	0.1	0.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Biphenyl (1,1-Biphenyl)	ug/L	0.5	0.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
bis(2-Chloroethyl)ether	ug/L	5	5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	10	10	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
4-Chloroaniline	ug/L	10	10	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2-Chlorophenol	ug/L	8.9	8.9	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
Chrysene	ug/L	0.1	0.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Dibenz(a,h)anthracene	ug/L	0.2	0.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
3,3'-Dichlorobenzidine	ug/L	0.5	0.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,4-Dichlorophenol	ug/L	20	20	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
Diethyl phthalate	ug/L	30	30	0.81	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Dimethyl phthalate	ug/L	30	30	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
2,4-Dimethylphenol	ug/L	59	59	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4-Dinitrophenol	ug/L	10	10	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
2,4-Dinitrotoluene	ug/L	5	5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,4-Dinitrotoluene/2,6-Dinitrotoluene	ug/L	nc	nc	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)
2,6-Dinitrotoluene	ug/L	5	5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Fluoranthene	ug/L	0.41	0.41	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.108	ND (0.020)
Fluorene	ug/L	120	120	0.026	ND (0.020)	ND (0.020)	ND (0.020)	0.825	ND (0.020)
Indeno(1,2,3-cd)pyrene	ug/L	0.2	0.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
1-Methylnaphthalene	ug/L	3.2	3.2	0.184	ND (0.020)	ND (0.020)	0.040	ND (0.020)	ND (0.020)
2-Methylnaphthalene	ug/L	3.2	3.2	0.175	ND (0.020)	ND (0.020)	0.029	ND (0.020)	ND (0.020)
1-Methylnaphthalene/2-Methylnaphthalene	ug/L	3.2	3.2	0.359	ND (0.028)	ND (0.028)	0.069	ND (0.028)	ND (0.028)
Naphthalene	ug/L	7	11	0.491	ND (0.050)	ND (0.050)	0.082	ND (0.050)	ND (0.050)
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	120	120	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Pentachlorophenol	ug/L	30	30	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Phenanthrene	ug/L	1	1	0.023	ND (0.020)	ND (0.020)	0.027	ND (0.020)	ND (0.020)
Phenol	ug/L	890	890	0.55	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Pyrene	ug/L	4.1	4.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.061	ND (0.020)
1,2,4-Trichlorobenzene	ug/L	3	70	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,4,5-Trichlorophenol	ug/L	8.9	8.9	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
2,4,6-Trichlorophenol	ug/L	2	2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)

Table 10

Groundwater Analytical Results - SVOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				***MW4-18***	***MW4-18***	***MW5-13***	***MW7-18***	***MW8-18***	***MW9-18***
Sample ID:				***GW-11149990-051118-TW-005***	***GW-11149990-051118-TW-006***	***GW-11149990-040618-011***	***GW-11149990-051118-TW-001***	***GW-11149990-051118-TW-012***	***GW-11149990-051118-TW-011***
Sample Date:				***5/11/2018***	***5/11/2018***	***4/6/2018***	***5/11/2018***	***5/11/2018***	***5/11/2018***
					Duplicate				
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**						
Semi-Volatile Organic Compounds									
Acenaphthene	ug/L	4.1	4.1	0.139	0.144	ND (0.020)	ND (0.020)	1.57	ND (0.020)
Acenaphthylene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.246	ND (0.020)
Anthracene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.321	ND (0.020)
Benzo(a)anthracene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.125	ND (0.020)
Benzo(a)pyrene	ug/L	0.01	0.01	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	**0.089**[a]	ND (0.010)
Benzo(b)fluoranthene	ug/L	0.1	0.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	**0.108**[a]	ND (0.020)
Benzo(g,h,i)perylene	ug/L	0.2	0.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.050	ND (0.020)
Benzo(k)fluoranthene	ug/L	0.1	0.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.045	ND (0.020)
Biphenyl (1,1-Biphenyl)	ug/L	0.5	0.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
bis(2-Chloroethyl)ether	ug/L	5	5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	10	10	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
4-Chloroaniline	ug/L	10	10	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2-Chlorophenol	ug/L	8.9	8.9	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
Chrysene	ug/L	0.1	0.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	**0.105**[a]	ND (0.020)
Dibenz(a,h)anthracene	ug/L	0.2	0.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
3,3'-Dichlorobenzidine	ug/L	0.5	0.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,4-Dichlorophenol	ug/L	20	20	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
Diethyl phthalate	ug/L	30	30	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Dimethyl phthalate	ug/L	30	30	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
2,4-Dimethylphenol	ug/L	59	59	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4-Dinitrophenol	ug/L	10	10	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
2,4-Dinitrotoluene	ug/L	5	5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,4-Dinitrotoluene/2,6-Dinitrotoluene	ug/L	nc	nc	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)
2,6-Dinitrotoluene	ug/L	5	5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Fluoranthene	ug/L	0.41	0.41	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	**0.633**[a]	ND (0.020)
Fluorene	ug/L	120	120	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	1.12	ND (0.020)
Indeno(1,2,3-cd)pyrene	ug/L	0.2	0.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.064	ND (0.020)
1-Methylnaphthalene	ug/L	3.2	3.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	1.37	ND (0.020)
2-Methylnaphthalene	ug/L	3.2	3.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.852	ND (0.020)
1-Methylnaphthalene/2-Methylnaphthalene	ug/L	3.2	3.2	ND (0.028)	ND (0.028)	ND (0.028)	ND (0.028)	2.22	ND (0.028)
Naphthalene	ug/L	7	11	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	0.747	ND (0.050)
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	120	120	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Pentachlorophenol	ug/L	30	30	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Phenanthrene	ug/L	1	1	0.025	0.025	ND (0.020)	ND (0.020)	**1.77**[a]	ND (0.020)
Phenol	ug/L	890	890	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Pyrene	ug/L	4.1	4.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.494	ND (0.020)
1,2,4-Trichlorobenzene	ug/L	3	70	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,4,5-Trichlorophenol	ug/L	8.9	8.9	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
2,4,6-Trichlorophenol	ug/L	2	2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)

Table 10

Groundwater Analytical Results - SVOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

Sample Location:				***MW10-18***	***MW11-18***	***MW11-18***	***MW13-18***	***MW14-18***	***MW15-18***
Sample ID:				***GW-11149990-051118-TW-009***	***GW-11149990-051118-TW-007***	***GW-11149990-051118-TW-008***	***GW-11149990-051118-TW-010***	***GW-11149990-060118-TW-016***	***GW-11149990-060118-TW-015***
Sample Date:				***5/11/2018***	***5/11/2018***	***5/11/2018***	***5/11/2018***	***6/1/2018***	***6/1/2018***
						Duplicate			
Parameters	***Units***	**MECP Table 6 Site Condition Standards(a)**	**MECP Table 8 Site Condition Standards(b)**						
Semi-Volatile Organic Compounds									
Acenaphthene	ug/L	4.1	4.1	ND (0.020)	ND (0.020)	ND (0.020)	0.107	ND (0.020)	ND (0.020)
Acenaphthylene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Anthracene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Benzo(a)anthracene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Benzo(a)pyrene	ug/L	0.01	0.01	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Benzo(b)fluoranthene	ug/L	0.1	0.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Benzo(g,h,i)perylene	ug/L	0.2	0.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Benzo(k)fluoranthene	ug/L	0.1	0.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Biphenyl (1,1-Biphenyl)	ug/L	0.5	0.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
bis(2-Chloroethyl)ether	ug/L	5	5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	10	10	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
4-Chloroaniline	ug/L	10	10	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2-Chlorophenol	ug/L	8.9	8.9	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
Chrysene	ug/L	0.1	0.1	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Dibenz(a,h)anthracene	ug/L	0.2	0.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
3,3'-Dichlorobenzidine	ug/L	0.5	0.5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,4-Dichlorophenol	ug/L	20	20	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.30)
Diethyl phthalate	ug/L	30	30	ND (0.20)	ND (0.20)	ND (0.20)	1.83	ND (0.20)	ND (0.20)
Dimethyl phthalate	ug/L	30	30	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
2,4-Dimethylphenol	ug/L	59	59	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
2,4-Dinitrophenol	ug/L	10	10	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
2,4-Dinitrotoluene	ug/L	5	5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,4-Dinitrotoluene/2,6-Dinitrotoluene	ug/L	nc	nc	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)	ND (0.57)
2,6-Dinitrotoluene	ug/L	5	5	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Fluoranthene	ug/L	0.41	0.41	ND (0.020)	ND (0.020)	ND (0.020)	0.031	ND (0.020)	ND (0.020)
Fluorene	ug/L	120	120	ND (0.020)	ND (0.020)	ND (0.020)	0.042	ND (0.020)	ND (0.020)
Indeno(1,2,3-cd)pyrene	ug/L	0.2	0.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
1-Methylnaphthalene	ug/L	3.2	3.2	ND (0.020)	ND (0.020)	ND (0.020)	0.022	0.020	ND (0.020)
2-Methylnaphthalene	ug/L	3.2	3.2	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	0.022	ND (0.020)
1-Methylnaphthalene/2-Methylnaphthalene	ug/L	3.2	3.2	ND (0.028)	ND (0.028)	ND (0.028)	ND (0.028)	0.042	ND (0.028)
Naphthalene	ug/L	7	11	ND (0.050)	ND (0.050)	ND (0.050)	0.083	ND (0.050)	ND (0.050)
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	120	120	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Pentachlorophenol	ug/L	30	30	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Phenanthrene	ug/L	1	1	ND (0.020)	ND (0.020)	ND (0.020)	0.034	ND (0.020)	ND (0.020)
Phenol	ug/L	890	890	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (2.0) RRR	ND (2.0) RRR
Pyrene	ug/L	4.1	4.1	ND (0.020)	ND (0.020)	ND (0.020)	0.025	ND (0.020)	ND (0.020)
1,2,4-Trichlorobenzene	ug/L	3	70	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2,4,5-Trichlorophenol	ug/L	8.9	8.9	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
2,4,6-Trichlorophenol	ug/L	2	2	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)

Table 10

Groundwater Analytical Results - SVOCs
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
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Notes:

(a) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 6 Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, Coarse Grained

(b) Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, Residential/Parkland/Institutional/Industrial/Commercial Property Use, Coarse Grained Soils.

MW1-16, MW2-16, MW14-18 and MW15-18 screened against MECP Table 6 and MECP Table 8, all other wells screened against MECP Table 6.

ND - Not present at or above the associated value
ug/L - micrograms per litre
nc - No criteria

0.633[a] Detected concentration exceeds noted criteria

Table 11

Soil Gas Monitoring Results
Phase II Environmental Site Assessment
Historical Landfill Sites 8 and 9
Guelph, Ontario

04/04/2018 and 04/05/2018

Gas Probe Location	Pressure (in W.C.)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	Bal (% v/v)	Water Level (m btor)	Probe Status
8-4	0.00	0.0	5.2	16.0	78.8	2.87	Operational
8-5	0.00	0.0	1.7	19.3	79.0	3.11	Operational
MW1-13S	0.00	1.1	11.0	0.0	87.9	4.72	Operational
MW1-13D	-	-	-	-	-	4.88	Flooded
MW2-13	0.00	0.0	11.8	3.7	84.5	5.09	Operational
MW3-13	0.00	21.2	12.7	0.0	66.1	4.63	Operational
MW4-13	0.00	47.7	18.3	0.0	34.0	5.53	Operational
MW5-13	0.00	0.0	0.3	20.3	79.4	2.44	Operational
BH4	0.00	0.0	0.1	20.8	79.1	5.33	Operational
BH11	0.00	0.0	2.1	18.7	79.2	3.60	Operational
BH30	0.00	0.0	4.5	3.7	91.8	4.92	Operational
MW1-16	-	-	-	-	-	1.96	Flooded
MW2-16	-	-	-	-	-	2.33	Flooded

05/31/2018 and 06/01/2018

Gas Probe Location	Pressure (in W.C.)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	Bal (% v/v)	Water Level (m btor)	Probe Status
MW1-13S	0.00	1.2	9.8	0.0	89.0	4.53	Operational
MW1-13D	-	-	-	-	-	4.67	Flooded
MW2-13	0.00	0.0	13.2	3.9	82.9	4.83	Operational
MW3-13	0.00	13.8	7.2	0.0	79.0	4.43	Operational
MW4-13	0.00	40.3	19.0	0.0	40.7	5.30	Operational
MW5-13	0.00	0.0	1.5	18.2	80.3	3.14	Operational
9-2	0.00	0.0	3.4	18.2	78.4	4.47	Operational
BH4	0.00	0.0	1.6	19.0	79.4	5.22	Operational
BH11	0.00	0.0	1.7	18.8	79.5	3.60	Operational
BH30	0.00	0.0	4.8	3.0	92.2	4.80	Operational
MW1-16	-	-	-	-	-	2.15	Flooded
MW2-16	-	-	-	-	-	2.35	Flooded
MW1-18	0	16.4	20.0	0.3	63.3	4.00	Operational
MW2-18	0	0.2	2.9	16.9	80.0	4.34	Operational
MW3-18	0.2	9.4	6.0	0.0	84.6	5.30	Operational
MW4-18	0	0.4	6.9	4.4	88.3	3.11	Operational
MW8-18	0	2.5	15.5	0.0	82.0	2.71	Operational
MW9-18	0	0.0	4.0	15.8	80.2	2.41	Operational
MW10-18	0	0.0	1.3	4.0	94.7	2.70	Operational
MW11-18	0	0.0	4.7	13.8	81.5	2.68	Operational
MW12-18	0	0.0	13.7	0.2	86.1	Dry	Operational
MW13-18	0	1.9	9.6	0.0	88.5	4.07	Operational
MW14-18	-	-	-	-	-	2.03	Flooded
MW15-18	-	-	-	-	-	1.72	Flooded

Notes:
% v/v - Percentage volume over volume
m btor - metres below top of riser (i.e., reference elevation)

Appendices

Appendix A
Borehole and Monitoring Well Stratigraphic and Instrumentation Logs

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW1-18
DATE COMPLETED: 7 May 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE P.I.D. (ppm)
	GROUND SURFACE TOP OF RISER	308.60 308.53						
0.5	SILTY SAND TOPSOIL, loose, fine grained, brown, dry	308.22				50	16	10.2
1.0	FILL-SAND, with gravel, trace silt, compact, well graded, brown, dry, orange mottling					54	15	14.4
1.5	- trace plastic, wood, rubber and asphalt debris at 1.22m BGS		BENTONITE			42	34	65.3
2.0	- glass debris at 2.29m BGS					38	6	23.3
2.5	- moist at 2.74m BGS			TW-17		42	8	404.7
3.0	- rubber and fiberglass debris at 3.35m BGS					50	13	133.7
3.5								
4.0						46	12	202.9
4.5	- decomposed rubber debris at 4.72m BGS					50	21	112.8
5.0	- metal and rubber debris, wet at 4.88m BGS	303.57	SAND					
5.5	GW-SANDY GRAVEL, trace silt, compact, well graded, grey, wet - fine sand seam from 5.18 to 5.33m BGS					58	24	33.7
6.0	- fine grained, light brown sand seam from 6.10 to 6.25m BGS					13	50+	12.2
6.5				TW-18		25	50+	14.4
7.0	END OF BOREHOLE @ 6.71m BGS	301.89						
7.5								
8.0								
8.5								
9.0								
9.5								

WELL DETAILS
Screened interval:
304.94 to 301.89m AMSL
3.66 to 6.71m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
308.29 to 305.55m AMSL
0.30 to 3.05m BGS
Material: BENTONITE
Sand Pack:
305.55 to 301.89m AMSL
3.05 to 6.71m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STATIC WATER LEVEL ▼ June 1, 2018

CHEMICAL ANALYSIS (TW-17, TW-18)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW2-18
DATE COMPLETED: 7 May 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' VALUE	P.I.D. (ppm)
	GROUND SURFACE	308.91						
	TOP OF RISER	308.80						
0.0	SAND TOPSOIL, trace silt and gravel, very loose, well graded, brown, dry, rootlets	308.61				58	10	6.2
0.5	FILL-SAND, with silt, trace gravel, loose, well graded, brown, dry, orange mottling							
1.0						33	14	4.9
1.5			BENTONITE	TW-19		67	18	7.4
2.0	- moist at 1.83m BGS					63	8	6.5
2.5								
3.0	- decompossing wood debris from 2.74 to 2.90m BGS			TW-15		50	9	5.2
3.5						58	8	5.5
4.0						42	6	6.1
4.5						8	6	4.2
5.0	- wood debris from 4.88 to 5.33m BGS - wet at 5.18m BGS		SAND			83	9	8.1
5.5	SW-GRAVELLY SAND, with silt, dense, well graded, grey, wet	303.58				83	32	5.7
6.0								
6.5						83	39	5.9
7.0	END OF BOREHOLE @ 6.71m BGS	302.20						
7.5								
8.0								
8.5								
9.0								
9.5								

WELL DETAILS
Screened interval:
305.25 to 302.20m AMSL
3.66 to 6.71m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
308.61 to 305.86m AMSL
0.30 to 3.05m BGS
Material: BENTONITE
Sand Pack:
305.86 to 302.20m AMSL
3.05 to 6.71m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STATIC WATER LEVEL ▼ June 1, 2018

CHEMICAL ANALYSIS (TW-19, TW-15)

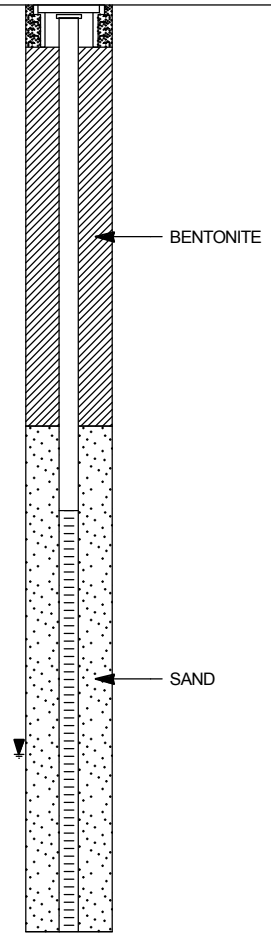
STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW3-18
DATE COMPLETED: 4 May 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL
	GROUND SURFACE	307.91
	TOP OF RISER	307.79
0.0	SILTY SAND TOPSOIL, trace clay, soft, fine grained, brown, moist, rootlets	307.68
0.5	FILL-SAND, with gravel, trace silt, light brown and dark brown, moist, trace asphalt	
1.0		
1.5	- with silt at 1.22m BGS	
2.0	FILL-SANDY SILT, with gravel, trace clay, light grey, moist, trace asphalt	306.08
2.5		
3.0		
3.5	- large asphalt piece at 3.35m BGS	
4.0	FILL-SAND, with silt, trace gravel, loose, well graded, dark brown, moist	304.25
4.5		
5.0		
5.5	SW-GRAVELLY SAND, trace silt, very dense, well graded, light grey, wet	302.57
6.0		
6.5	END OF BOREHOLE @ 6.71m BGS	301.20
7.0		
7.5		
8.0		
8.5		
9.0		
9.5		

MONITORING WELL



WELL DETAILS
Screened interval:
304.25 to 301.20m AMSL
3.66 to 6.71m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
307.60 to 304.86m AMSL
0.30 to 3.05m BGS
Material: BENTONITE
Sand Pack:
304.86 to 301.20m AMSL
3.05 to 6.71m BGS
Material: No. 2 SAND

SAMPLE NUMBER	INTERVAL	REC (%)	'N' VALUE	P.I.D. (ppm)
		75	30	11.2
		79	10	6.4
		75	13	8.7
		54	5	13.4
TW-13		50	19	15.7
		63	50+	8.6
		75	6	11.4
TW-14		83	5	14.1
TW-20		92	11	18.7
		13	50+	18.9
		13	50+	17.1

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STATIC WATER LEVEL ▼ June 1, 2018

CHEMICAL ANALYSIS (TW)

OVERBURDEN LOG 11149990-SC.GPJ GHD_Corp 29/6/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW4-18
DATE COMPLETED: 4 May 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' VALUE	P.I.D. (ppm)
	GROUND SURFACE	307.45						
	TOP OF RISER	307.38						
0.0	SAND TOPSOIL, with clay, loose, fine grained, brown, moist, rootlets	307.15				67	12	4.7
0.5	FILL-SAND, with silt and gravel, compact, well graded, brown, dry, trace brick debris		BENTONITE	TW-21		63	12	11.1
1.0		306.23						
1.5	FILL-SILT, with sand, with gravel, stiff, low plasticity, brown, to greyish brown, moist, trace wood and brick debris			TW-11		75	13	13.4
2.0						67	14	8.7
2.5	- with clay at 2.44m BGS					75	8	7.6
3.0	- wet at 3.05m BGS		SAND			58	6	9.6
3.5		303.79						
4.0	FILL-SAND, with gravel and silt, compact, well graded, light brown, wet	303.18				75	18	12.1
4.5	SW-GRAVELLY SAND, with silt, compact, well graded, grey, wet - large cobble from 4.42 to 4.72m BGS					75	50+	11.5
5.0		302.27		TW-12		100	-	11.8
5.5	END OF BOREHOLE @ 5.18m BGS							
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

WELL DETAILS
Screened interval:
305.32 to 302.27m AMSL
2.13 to 5.18m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
307.15 to 305.93m AMSL
0.30 to 1.52m BGS
Material: BENTONITE
Sand Pack:
305.93 to 302.27m AMSL
1.52 to 5.18m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STATIC WATER LEVEL ▼ June 1, 2018

CHEMICAL ANALYSIS (TW-21, TW-11, TW-12)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW7-18
DATE COMPLETED: 3 May 2018
DRILLING METHOD: HSA/DTH
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' VALUE	P.I.D. (ppm)
	GROUND SURFACE TOP OF RISER	306.20 306.11						
0.5	SILTY SAND TOPSOIL, loose, fine grained, brown, moist, trace rootlets	305.82	BENTONITE			67	6	5.4
1.0	FILL-SILTY SAND, with gravel, loose, fine grained, brown, moist, trace brick and wood debris, orange mottling					50	4	17.6
1.5				TW-08		50	4	16.6
2.0	SM-SAND, with gravel and silt, compact, well graded, light brown, moist - wet at 2.13m BGS	304.45		TW-09		58	10	6.9
2.5	BEDROCK, weathered	303.84	SAND					
3.0	BEDROCK	303.76				0	50+	-
3.5								
4.0	END OF BOREHOLE @ 3.89m BGS	302.32						
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

WELL DETAILS
Screened interval:
304.98 to 302.32m AMSL
1.22 to 3.89m BGS
Length: 2.67m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
305.90 to 305.29m AMSL
0.30 to 0.91m BGS
Material: BENTONITE
Sand Pack:
305.29 to 302.32m AMSL
0.91 to 3.89m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STATIC WATER LEVEL ▼ June 1, 2018

CHEMICAL ANALYSIS (TW-08, TW-09)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW8-18
DATE COMPLETED: 1 May 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' VALUE	P.I.D. (ppm)
	GROUND SURFACE 306.49 TOP OF RISER 306.43							
0.5	FILL-SAND, with gravel, compact, well graded, brown, dry					67	16	15.0
1.0	FILL-SILTY SAND, trace gravel, very loose, fine grained, dark brown, dry, trace brick and metal debris, slight decomposing odour	305.73	BENTONITE	TW-01		17	4	32.4
1.5	- trace wood debris at 1.52m BGS					58	14	25.0
2.0	- with gravel at 1.83m BGS							
2.5	- no silt, trace fiberglass at 2.13m BGS					33	8	35.9
3.0	BEDROCK, weathered	304.05	SAND			29	50+	22.5
3.5						21	50+	-
4.0	END OF BOREHOLE @ 3.81m BGS	302.68						
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

WELL DETAILS
Screened interval:
305.27 to 302.68m AMSL
1.22 to 3.81m BGS
Length: 2.59m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
306.19 to 305.58m AMSL
0.30 to 0.91m BGS
Material: BENTONITE
Sand Pack:
305.58 to 302.68m AMSL
0.91 to 3.81m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STATIC WATER LEVEL ▼ June 1, 2018

CHEMICAL ANALYSIS (TW-01)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW9-18
DATE COMPLETED: 2 May 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' VALUE	P.I.D. (ppm)
	GROUND SURFACE TOP OF RISER	306.36 306.31						
0.5	SANDY TOPSOIL, with silt, loose, fine grained, brown, dry, rootlets - large tree root at 0.15m BGS	305.90	BENTONITE			42	8	14.2
1.0	FILL-SAND, with silt, trace gravel, loose, well graded, dark brown, dry, trace brick and wood debris, trace asphalt			TW-05		58	7	13.7
1.5	SP-SAND, trace silt, compact, fine grained, light brown, moist	304.84				71	12	13.0
2.0	- wet at 2.29m BGS			TW-07		67	12	16.0
2.5			SAND					
3.0						63	22	14.9
3.5	BEDROCK, weathered	303.31				0	50+	-
4.0	END OF BOREHOLE @ 3.96m BGS	302.40						
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

WELL DETAILS
Screened interval:
305.14 to 302.40m AMSL
1.22 to 3.96m BGS
Length: 2.74m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
306.06 to 305.45m AMSL
0.30 to 0.91m BGS
Material: BENTONITE
Sand Pack:
305.45 to 302.40m AMSL
0.91 to 3.96m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STATIC WATER LEVEL ▼ June 1, 2018

CHEMICAL ANALYSIS (TW-05, TW-07)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW10-18
DATE COMPLETED: 1 May 2018
DRILLING METHOD: HSA/DTH
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE P.I.D. (ppm)
	GROUND SURFACE TOP OF RISER	306.63 306.56						
0.5	SILTY SAND TOPSOIL, loose, fine grained, brown, dry, rootlets					75	9	12.7
1.0	FILL-SILTY SAND, trace gravel, compact, fine grained, light brown, dry, trace dark brown inclusions, trace brick debris	306.18	BENTONITE			58	17	14.5
1.5	- very loose, moist at 1.22m BGS			TW-02		50	3	14.4
2.0	FILL-SILT, with sand and clay, soft, low plasticity, dark brown, moist, wood debris, trace organics	304.96				83	5	13.0
2.5	- wet at 2.44m BGS		SAND					
3.0	BEDROCK, weathered	303.89	▼			42	50+	15.2
3.5	BEDROCK	303.43						
4.0								
4.5	END OF BOREHOLE @ 4.27m BGS	302.37						
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

WELL DETAILS
Screened interval:
305.42 to 302.37m AMSL
1.22 to 4.27m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
306.33 to 305.72m AMSL
0.30 to 0.91m BGS
Material: BENTONITE
Sand Pack:
305.72 to 302.37m AMSL
0.91 to 4.27m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STATIC WATER LEVEL ▼ June 1, 2018

CHEMICAL ANALYSIS (TW-02)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW11-18
DATE COMPLETED: 2 May 2018
DRILLING METHOD: HSA/DTH
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' VALUE	P.I.D. (ppm)
	GROUND SURFACE TOP OF RISER	306.69 306.61						
0.5	SAND TOPSOIL, with silt, trace gravel, loose, well graded, brown, dry, trace rootlets	306.24	BENTONITE			50	5	14.8
	FILL-SAND, with gravel, trace silt, very loose, well graded, light brown, dry	306.01						
1.0	FILL-SILTY SAND, with gravel, very loose, brown, trace brick and wood debris, moist					42	2	15.7
1.5						67	2	14.9
2.0	- wet at 2.13m BGS			TW-06		58	50+	15.8
	BEDROCK, weathered	304.41	SAND					
2.5								
3.0						13	50+	-
3.5	BEDROCK	303.34						
4.0	END OF BOREHOLE @ 3.96m BGS	302.73						
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

WELL DETAILS
Screened interval:
305.47 to 302.73m AMSL
1.22 to 3.96m BGS
Length: 2.74m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
306.39 to 305.78m AMSL
0.30 to 0.91m BGS
Material: BENTONITE
Sand Pack:
305.78 to 302.73m AMSL
0.91 to 3.96m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STATIC WATER LEVEL ▼ June 1, 2018

CHEMICAL ANALYSIS (TW-06)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW12-18
DATE COMPLETED: 2 May 2018
DRILLING METHOD: HSA/DTH
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE P.I.D. (ppm)
	GROUND SURFACE TOP OF RISER	307.54 307.43						
0.5	SILT TOPSOIL, with sand, trace gravel, firm, low plasticity, dark brown, dry	307.38	BENTONITE			67	8	4.5
	FILL-SAND, with silt and gravel, compact, fine grained, light brown, moist							
1.0	FILL-SILTY SAND, with gravel, compact, fine grained, dark brown, moist, trace brick debris	306.70				83	20	4.8
1.5	- with silt, moist at 1.52m BGS					25	11	4.9
2.0	- wet, trace glass and fiberglass debris at 2.13m BGS					0	4	-
						100	12	3.7
2.5			SAND	TW-03		50	12	6.1
3.0								
	BEDROCK, weathered	304.34						
3.5	BEDROCK	304.26				25	50+	4.8
4.0	END OF BOREHOLE @ 3.96m BGS	303.57						
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

WELL DETAILS
Screened interval:
306.32 to 303.57m AMSL
1.22 to 3.96m BGS
Length: 2.74m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
307.23 to 306.62m AMSL
0.30 to 0.91m BGS
Material: BENTONITE
Sand Pack:
306.62 to 303.57m AMSL
0.91 to 3.96m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (TW-03)

OVERBURDEN LOG 11149990-SC.GPJ GHD_Corp 29/6/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW13-18
DATE COMPLETED: 2 May 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE P.I.D. (ppm)
	GROUND SURFACE TOP OF RISER	307.73 307.64						
0.5	SILTY SAND TOPSOIL, trace gravel, loose, fine grained, brown, dry, trace rootlets	307.27	BENTONITE			75	10	13.8
1.0	FILL-SILTY SAND, trace gravel, compact, fine to medium grained, brown, dry, trace orange mottling					79	13	14.8
1.5				TW-04		71	21	15.6
2.0	- fiberglass debris at 1.83m BGS					21	29	10.8
2.5			SAND					
3.0	- with gravel, wet at 2.74m BGS					17	10	16.6
3.5	BEDROCK, weathered	304.38				29	50+	25.0
4.0								
4.5	END OF BOREHOLE @ 4.42m BGS	303.31						
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

WELL DETAILS
Screened interval:
306.36 to 303.31m AMSL
1.37 to 4.42m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
307.43 to 306.82m AMSL
0.30 to 0.91m BGS
Material: BENTONITE
Sand Pack:
306.82 to 303.31m AMSL
0.91 to 4.42m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STATIC WATER LEVEL ▼ June 1, 2018

CHEMICAL ANALYSIS (TW-04)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW14-18
DATE COMPLETED: 30 May 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' VALUE	P.I.D. (ppm)
	TOP OF RISER GROUND SURFACE	305.59 304.63						
0.5	SILTY SAND TOPSOIL, silty sand, loose, well graded, brown, dry, trace rootlets					71	8	6.1
1.0	SILTY SAND, loose, well graded, brown, dry, orange and dark brown mottling	304.17	BENTONITE	TW-23		75	12	7.2
1.5	SAND AND GRAVEL, trace silt, compact, light brown to grey, wet	303.11	SAND			50	15	7.1
2.0						79	25	6.9
2.5								
3.0	BEDROCK, weathered	301.89				25	50+	5.1
	END OF BOREHOLE @ 2.90m BGS	301.74						

WELL DETAILS
Screened interval:
303.41 to 301.74m AMSL
1.22 to 2.90m BGS
Length: 1.68m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
304.33 to 303.72m AMSL
0.30 to 0.91m BGS
Material: BENTONITE
Sand Pack:
303.72 to 301.74m AMSL
0.91 to 2.90m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STATIC WATER LEVEL ▼ June 1, 2018

CHEMICAL ANALYSIS (TW-23)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase II ESA
PROJECT NUMBER: 11149990
CLIENT: City of Guelph
LOCATION: Wellington Street West, Guelph, Ontario

HOLE DESIGNATION: MW15-18
DATE COMPLETED: 30 May 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: T. Wittmaier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m AMSL	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE P.I.D. (ppm)
	TOP OF RISER GROUND SURFACE	305.43 304.92						
0.5	SILTY SAND TOPSOIL, silty sand, trace gravel, loose, well graded, brown, dry, trace rootlets	304.61	BENTONITE			67	9	3.0
1.0	SILTY SAND, trace gravel, loose, fine grained, brown, moist			TW-22		58	11	4.9
1.5	- wet at 1.52m BGS					17	9	5.7
2.0	SAND AND GRAVEL, trace silt, compact, well graded, light brown, wet	303.09	SAND			58	19	7.6
2.5	BEDROCK, weathered	302.48				33	50+	7.3
3.0	END OF BOREHOLE @ 2.90m BGS	302.02						

WELL DETAILS
Screened interval:
303.70 to 302.02m AMSL
1.22 to 2.90m BGS
Length: 1.68m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
304.61 to 304.00m AMSL
0.30 to 0.91m BGS
Material: BENTONITE
Sand Pack:
304.00 to 302.02m AMSL
0.91 to 2.90m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
STATIC WATER LEVEL ▼ June 1, 2018
CHEMICAL ANALYSIS (TW-22)

BOREHOLE LOG	PROJECT: 89-188	BOREHOLE: 8-4
GUELPH ABANDONED LANDFILL STUDIES GUELPH, ONTARIO **FOR:** City of Guelph		**DATE:** 5 June 1989 **GEOLOGIST** B.T.J. **ELEVATION** 306.8 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % REC	SAMPLE % RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.3		**TOPSOIL**										
1		**REFUSE** Burnt and rust stained debris with wood and medium brown to black gravelly sand fill, moist, loose to compact.		1		SS	12		100		■	
2				2		SS	6		100		■	
2.3		**SAND** Medium brown medium sand with some gravel, black stained laminations present from about 2.3 m to 2.6 m, moist, becoming saturated below about 2.35 m, compact.		3		SS	24		100		■	
3												
3.3				4		SS	50/0.02m		0			

Refusal at 3.3 m on assumed dolostone bedrock.

Gartner Lee Limited

BOREHOLE LOG

PROJECT: 89-188

BOREHOLE: 8-5

GUELPH ABANDONED LANDFILL STUDIES
GUELPH, ONTARIO
FOR: City of Guelph

DATE: 7 July 1989
GEOLOGIST B.T.J.
ELEVATION 307.6 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.3		**TOPSOIL**										
1		**GRAVELLY SAND FILL** Medium brown gravelly sand fill with some silt, roots and minor rust staining present from about 0.3 m to 1.2 m,becomes grey at about 1.8 m, moist, compact to dense.		1		SS	21		70		■	
2		- black zone from about 1.9 m to 1.95 m. Possibly an asphalt fragment.		2		SS	37		100		■	
2.4				3		SS	18		100		■	
3		**SAND** Medium grey fine sand with increasing gravel content from about 3.1 m to 3.3 m, wet.		4		SS	38/ 0.01m		100			
3.4		Refusal at 3.35 m on assumed dolostone bedrock.										

Gartner Lee Limited

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 42 / MW 1-13

PROJECT Silvercreek Parkway Expansion
LOCATION Guelph, Ontario
BORING METHOD Continuous Flight Hollow Stem Augers and NQ Rock Core
BORING DATE: 14/02/2013

PML REF.: 11KF046
ENGINEER W. Loghrin
TECHNICIAN D. Brice

DEPTH in METRES	DESCRIPTION	LEGEND	NUMBER	TYPE	BLOWS/0.3m N - VALUES	ELEVATION SCALE	SHEAR STRENGTH C_u (kPa) 50 100 150 200 / DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ● BLOWS/0.3M 20 40 60 80	LIQUID LIMIT W_L / PLASTIC LIMIT W_P / WATER CONTENT W (W_P — W — W_L) WATER CONTENT % 10 20 30	UNIT WEIGHT γ kN/m³	GROUND WATER OBSERVATIONS AND REMARKS
	GROUND ELEVATION 308.47									
0.15 / 308.32	FILL: Dark brown silt topsoil, some sand, trace clay, rootlets, moist		1	SS	27	308				Stick up with J-Plug and Concrete
1.20	becoming brown sand and gravel some silt, occasional cobbles, moist		2	SS	12					50 mm PVC Riser (Upper Pipe)
307.27 / 2.00	becoming wet		3	SS	64-250mm	307				
306.47	becoming black and dark grey, broken dolostone throughout		4	SS	22					
			5	SS	13	306				50 mm Slotted Screen
3.7			6	SS	14					
304.8	becoming grey silty sand, saturated		7	SS	9	305				
			8	SS	11					
			9	SS	59-275mm	304				
5.8						303				
302.7	BEDROCK: Medium Strong, fair to very poor quality with depth, light grey to buff dolostone, vuggy		10	RC						30 mm PVC Riser (Lower Pipe)
							5.74 / 6.15	410	49	0 / 50		Bentonite Seal
			11	RC		302		1550	98	75 / 0		
						301	7.70					Filter Sand
			12	RC		300		1450	100	0 / 0		30 mm Slotted Screen
9.2							9.15				
299.3	BOREHOLE TERMINATED AT 9.2 m						DEPTH (m)	RUN (mm)	RECOVERY (%)	R.Q.D.* (%) / DRILL WATER RETURN (%)		

Water Levels:

Initial:
Upper - 4.65 m
Lower - 4.95 m

03/13/2013:
Upper - 3.80 m
Lower - 3.85 m

04/26/2013:
Upper - 3.52 m
Lower - 3.78 m

NOTES: * R.Q.D. (Rock Quality Designation) is the total length of those pieces of sound core which are 10 cm or greater in length in a core run expressed as a percentage of the total length of that core run. RQD is measured on minimum NQ size (nominal 50 mm diameter) cores.

WATER LEVEL OBSERVED DURING / UPON COMPLETION OF DRILLING
WATER LEVEL MEASURED IN MONITORING WELL

UNDISTURBED FIELD VANE
REMOLDED FIELD VANE
LAB SHEAR TEST
POCKET PENETROMETER
POCKET TORVANE

CHECKED BY WL

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 44 / MW 2-13

PROJECT Silvercreek Parkway Expansion
LOCATION Guelph, Ontario
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE: 2/14/2013

PML REF.: 11KF046
ENGINEER W. Loghrin
TECHNICIAN D. Brice

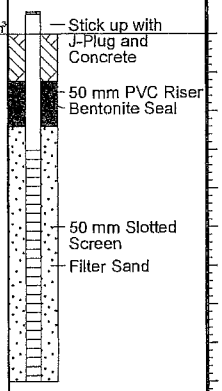
DEPTH in METRES	DESCRIPTION	LEGEND	NUMBER	TYPE	BLOWS/0.3m N - VALUES	ELEVATION SCALE
	GROUND ELEVATION 308.76					
0.10 / 308.66	FILL: Dark brown silt topsoil, some sand, trace gravel, rootlets, moist		1	SS	11	
	becoming grey / brown / black sand and gravel, some silt, damp, strong chemical odour present, contains mixed debris (wood, glass, roots, wire, metal, etc.)		2	SS	9	
			3	SS	8	
2.00 / 306.76	becoming wet		4	SS	6	
			5	SS	5	
			6	SS	3	
4.3 / 304.5	becoming saturated		7	SS	8	
4.9 / 303.9	GRAVELLY SAND: Dense grey gravelly sand, some silt, saturated (possible weathered bedrock)		8	SS	7	
5.5 / 303.3	BOREHOLE TERMINATED AT 5.5 m No further progress due to auger refusal on probable bedrock		9	SS	33	

SHEAR STRENGTH C_u (kPa) 50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
BLOWS/0.3M 20 40 60 80

LIQUID LIMIT ——— W_L
PLASTIC LIMIT ——— W_P
WATER CONTENT ——— W
W_P W W_L
WATER CONTENT % 10 20 30

UNIT WEIGHT γ kN/m³

GROUND WATER OBSERVATIONS AND REMARKS



Water Levels

Initial: 4.20 m
03/13/2013: 4.10 m
04/26/2013: 3.87 m

NOTES:

WATER LEVEL OBSERVED DURING / UPON COMPLETION OF DRILLING
WATER LEVEL MEASURED IN MONITORING WELL

UNDISTURBED FIELD VANE
REMOLDED FIELD VANE
LAB SHEAR TEST
POCKET PENETROMETER
POCKET TORVANE

CHECKED BY WL

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 36 / MW 3-13

PROJECT Silvercreek Parkway Expansion
LOCATION Guelph, Ontario
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE: 2/19/2013
PML REF.: 11KF046
ENGINEER W. Loghrin
TECHNICIAN D. Brice

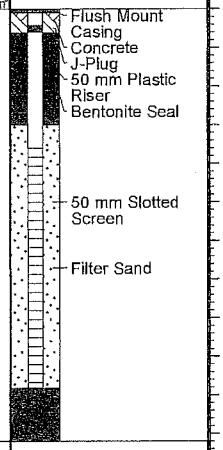
DEPTH in METRES	DESCRIPTION	LEGEND	NUMBER	TYPE	BLOWS/0.3m N - VALUES	ELEVATION SCALE
	GROUND ELEVATION 309.36					
0.0	FILL: Brown gravelly sand, some silt moist contains debris (dark grey sand bricks) slight chemical odour		1	SS	78	309
1.0			2	SS	63	
1.90			3	SS	21	308
2.0	307.46 becoming dark grey silty sand, some gravel, moist, contains, debris (metal shards, black sand) strong chemical odour		4	SS	15	
			5	SS	50-125mm	307
3.0						
3.7			6	SS	6	306
4.0	305.7 becoming wet, grey, includes wood debris		7	SS	2	
4.9			8	SS	5	305
5.0	304.5 TOPSOIL: Dark brown silt, rootlets, wood, wet		9	SS	6	
5.5						304
5.6	BEDROCK: Grey weathered dolostone		10	SS	50-150mm	
	303.8 BOREHOLE TERMINATED AT 5.6 m No further progress due to auger refusal on probable bedrock					
6.0						
7.0						
8.0						
9.0						
10.0						
11.0						
12.0						
13.0						
14.0						
15.0						
16.0						
17.0						

SHEAR STRENGTH C_u (kPa) 50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
BLOWS/0.3M 20 40 60 80

LIQUID LIMIT ____ W_L
PLASTIC LIMIT ____ W_P
WATER CONTENT ____ W
W_P W W_L
WATER CONTENT % 10 20 30

UNIT WEIGHT γ kN/m³

GROUND WATER OBSERVATIONS AND REMARKS



Water Levels
Initial: 4.80 m
03/12/2013: 4.60 m
04/26/2013: 4.39 m

NOTES:

WATER LEVEL OBSERVED DURING / UPON COMPLETION OF DRILLING
WATER LEVEL MEASURED IN MONITORING WELL
UNDISTURBED FIELD VANE
REMOLDED FIELD VANE
LAB SHEAR TEST
POCKET PENETROMETER
POCKET TORVANE

CHECKED BY WL

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 33 / MW 4-13

PROJECT Silvercreek Parkway Expansion
LOCATION Guelph, Ontario
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE: 2/15/2013
PML REF.: 11KF046
ENGINEER W. Loghrin
TECHNICIAN D. Brice

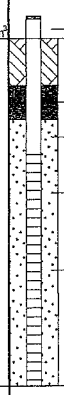
DEPTH in METRES	DESCRIPTION	LEGEND	NUMBER	TYPE	BLOWS/0.3m N - VALUES	ELEVATION SCALE
	GROUND ELEVATION 309.69					
0.25 / 309.44	FILL: Dark brown sandy silt topsoil, rootlets, moist		1	SS	53	
	becoming brown sand and gravel, trace silt, occasional cobbles, damp		2	SS	54	
1.50 / 308.19	becoming dark grey, dirty sand, some gravel, mixed debris (wood, fiber glass, plastic, metal), very moist		3	SS	17	
			4	SS	7	
			5	SS	11	
3.7 / 306.0	BEDROCK: Light grey weathered dolostone		6	SS	17	
4.5 / 305.2	BOREHOLE TERMINATED AT 4.5 m No further progress due to auger refusal on probable bedrock		7	SS	60	

SHEAR STRENGTH C_u (kPa) 50 100 150 200
DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST
BLOWS/0.3M 20 40 60 80

LIQUID LIMIT ____ W_L
PLASTIC LIMIT ____ W_P
WATER CONTENT ____ W
W_P W W_L
WATER CONTENT % 10 20 30

UNIT WEIGHT γ kN/m³

GROUND WATER OBSERVATIONS AND REMARKS



Water Levels:

Initial: Dry
03/13/2013: 3.99 m
04/26/2013: 3.92 m

NOTES:

▽ WATER LEVEL OBSERVED DURING / UPON COMPLETION OF DRILLING
▼ WATER LEVEL MEASURED IN MONITORING WELL

\+ UNDISTURBED FIELD VANE
⊕ REMOLDED FIELD VANE
⊛ LAB SHEAR TEST
▲ POCKET PENETROMETER
◆ POCKET TORVANE

CHECKED BY WL

Peto MacCallum Ltd.
CONSULTING ENGINEERS

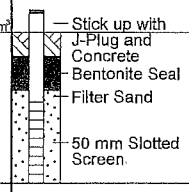
LOG OF BOREHOLE NO. 31 / MW 5-13

PROJECT Silvercreek Parkway Expansion
LOCATION Guelph, Ontario
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE: 2/15/2013
PML REF.: 11KF046
ENGINEER W. Loghrin
TECHNICIAN D. Brice

DEPTH in METRES	DESCRIPTION	LEGEND	NUMBER	TYPE	BLOWS/0.3m N - VALUES	ELEVATION SCALE
	GROUND ELEVATION 310.55					
0.10 / 310.45	TOPSOIL: Dark brown silty sand, some gravel, rootlets, moist		1	SS	13	310
	SAND AND GRAVEL: Dense brown sand and gravel, some silt, very moist		2	SS	37	
1.5 / 309.1	GRAVELLY SAND: Dense light brown gravelly sand, damp		3	SS	37	309
2.0 / 308.6	BOREHOLE TERMINATED AT 2.0 m No further progress due to auger refusal on probable bedrock		4	SS	50-125mm	

SHEAR STRENGTH C_u (kPa): 50 100 150 200
DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●
BLOWS/0.3M: 20 40 60 80
LIQUID LIMIT ____ W_L
PLASTIC LIMIT ____ W_P
WATER CONTENT ____ W
W_P — W — W_L
WATER CONTENT %: 10 20 30
UNIT WEIGHT γ kN/m³

GROUND WATER OBSERVATIONS AND REMARKS



Water Levels:

Initial: Dry
03/13/2013: 1.60 m
04/26/2013: Dry

NOTES:

WATER LEVEL OBSERVED DURING / UPON COMPLETION OF DRILLING
WATER LEVEL MEASURED IN MONITORING WELL
UNDISTURBED FIELD VANE
REMOLDED FIELD VANE
LAB SHEAR TEST
POCKET PENETROMETER
POCKET TORVANE

CHECKED BY WL

BOREHOLE LOG

PROJECT: 89-188

BOREHOLE: 9-1

GUELPH ABANDONED LANDFILL STUDIES
GUELPH, ONTARIO
FOR: City of Guelph

DATE: 1 June 1989
GEOLOGIST B.T.J.
ELEVATION 308.7 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % REC	SAMPLE % RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.3		**TOPSOIL**										
1		**REFUSE** Burnt debris, wood, glass, with sand fill layers, moist becoming saturated at about 4.6 m, compact.		1		SS	7		30			
2		- medium to light grey silty sand fill with gravel from 1.8 m to 2.0 m.		2		SS	14		100			
3		- medium brown gravelly sand fill from 3.05 m to 3.15 m.		3		SS	15		24			
4		- limestone cobble from 3.9 m to 3.95 m.		4		SS	21		22			
4.7				5		SS	28		30			
5		**GRAVEL** Light brown limestone gravel, saturated, dense.		6		SS	48		100			
5.2		Refusal at 5.18 m on assumed bedrock.										

Gartner Lee Limited

BOREHOLE LOG

PROJECT: 89-188

BOREHOLE: 9-2

GUELPH ABANDONED LANDFILL STUDIES
GUELPH, ONTARIO
FOR: City of Guelph

DATE: 1 June 1989
GEOLOGIST B.T.J.
ELEVATION 309.0 m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	N VALUE	% WATER	% REC	% RQD	N VALUE (15 30 45 60)	WATER CONTENT (%) (10 20 30 40)
0.3		**TOPSOIL**										
1.1	1	**SAND FILL** Medium brown sand fill, moist, loose.		1		SS	12		100			
		SILTY SAND FILL Medium grey silty sand fill, moist, loose to compact.		2		SS	8		100			
	2			3		SS	4		100			
	3			4		SS	22		100			
		- cobbles from 3.4 m to 3.5 m.										
	4			5		SS	6		100			
		- burnt debris from 4.6 m to 5.0 m.		6		SS	16		100			
	5											
5.4				7		SS	63		100		>	
		GRAVELLY SAND Medium grey gravelly sand, saturated, very dense.										
6.1	6			8		SS	54		100			
6.6		**GRAVEL** Light brown limestone gravel, saturated, dense.										
		Borehole terminated at 6.55 m in gravel.										

Gartner Lee Limited

LOG OF BOREHOLE BH1

Project Name: GUELPH-YORK TRUNK SEWER
Client: THE CORPOATION OF THE CITY OF GUELPH
Northing: 4819814 m

Project No.: GEOTETOB21912AA
Drilling Method Used: POWER AUGER BORING
Easting: 559674 m

Project Location: CITY OF GUELPH, ONTARIO
Date: 24 May 2013
Ground Surface Elevation: 308.12 m

Depth Scale (m)	Stratigraphic Symbol	Depth / Elevation (m)	Description	Number	Type	Blow Counts / 150mm	N Value
0		308.0	100 mm **TOPSOIL**			3	
		0.1	**FILL:** silty sand and gravel, trace clay, dark brown/brown, moist, loose to compact	1	SS	5 5 6	10
0.5		307.4					
		0.8	**FILL:** clayey silt, with sand and gravel/crusher run limestone, dark brown/brown, moist, hard	2	SS	21 23 25 22	48
1.0		306.6					
1.5		1.5	**FILL:** sandy silt to silty sand, some gravel, trace clay, trace wood/plastic/glass pieces, dark brown/brown, moist, compact	3	SS	7 5 6 4	11
2.0		305.8					
		2.3	**FILL:** clayey silt, with sand and gravel, trace wood/plastic piece, trace organics, dark brown/brown, very moist, firm	4	SS	3 5 2 2	7
2.5							
3.0		305.1					
		3.0	**FILL:** sandy silt to silty sand, some gravel, trace clay, trace wood/plastic/glass pieces, dark brown/brown, moist, compact	5	SS	13 11 8 9	19
3.5							
4.0		303.9		6	SS	4 5 25 12	30
		4.3	**GRAVELLY SAND:** some silt, trace clay, grey, wet, compact				
4.5				7	SS	16 13 12 12	25
5.0		302.9					
		5.2	BOREHOLE BH1 TERMINATED AT 5.2m BGL				

Penetration / Strength Results: Penetration Test Values (Blows / 0.3m); × N Values; ◆ Dynamic Cone; + Becker Hammer Test (BPT); 20 40 60 80
Undrained Shear Strength Values (kPa): □ Field Vane; ○ Unconfined; ■ Lab Vane; ● Quick Triaxial; ▲ Pocket Penetrometer; 40 80 120 160

Moisture / Plasticity: Plastic Limit; Natural Water Content; Liquid Limit; PL MC LL; 10 20 30 40

Instrumentation Details; Groundwater Conditions; Headspace Vapor (ppm) [LEL(%)]

Elevation Scale (m): 308.0 307.5 307.0 306.5 306.0 305.5 305.0 304.5 304.0 303.5 303.0

Comments: Borehole was advanced by 175 mm diameter Hollow Stem Auger

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL: 24 56 15 5

spoon wet

	Date / Time	Water Depth (m)	Elevation (m)
At completion	24 May 2013	4.3	303.9
50 mm dia. Monitoring well	4 June 2013	3.5	304.6
50 mm dia. Monitoring well	2 August 2013	3.4	304.8

coffey

Additional Notes:
This log is to be read in conjunction with accompanying general notes and borehole log symbols sheet. Stratification lines represent approximate boundary lines between material types, vertical and lateral transitions may be gradual. Water level readings were made at time(s) noted, fluctuations of groundwater levels may occur and should be expected.

Coffey Representatives

D.P.	Originated By
SSH	Prepared By
A.P.	Checked By

LOG OF BOREHOLE BH4

Project Name: GUELPH-YORK TRUNK SEWER
Client: THE CORPOATION OF THE CITY OF GUELPH
Northing: 4819925 m

Project No.: GEOTETOB21912AA
Drilling Method Used: POWER AUGER BORING
Easting: 559809 m

Project Location: CITY OF GUELPH, ONTARIO
Date: 27 May 2013
Ground Surface Elevation: 309.56 m

Depth Scale (m)	Stratigraphic Symbol	Depth / Elevation (m)	Description	Number	Type	Blow Counts / 150mm	N Value	Penetration / Strength Results	Moisture / Plasticity	Instrumentation Details	Groundwater Conditions	Headspace Vapor (ppm) [LEL(%)]	Elevation Scale (m)	Comments
		309.4	150 mm thick **TOPSOIL**										309.5	Borehole was advanced by 175 mm diameter Hollow Stem Auger
0.5		0.2	**FILL:** sandy silt, some clay, trace gravel, trace organics, dark brown/brown, moist, compact	1	SS	3 6 5 4	11							
		308.8											309.0	
1.0		0.8	**FILL:** clayey silt, with sand, trace gravel, trace wood/brick/glass pieces, dark brown/brown, moist, firm to hard	2	SS	3 16 15 12	31						308.5	
1.5													308.0	
2.0				3	SS	3 4 4 4	8						307.5	
2.5			100 mm thick silty sand at 2.3 m 100 mm thick crusher run limestone at 2.4 m	4	SS	8 18 27 22	45						307.0	
3.0													306.5	
3.5				5	SS	3 10 12 8	22						306.0	
4.0													305.5	
4.5		305.0											305.0	
		4.6	**FILL:** sandy silt, trace clay, trace gravel, dark brown/blackish, moist, loose	6	SS	6 4 4 3	8							
5.0													304.5	
5.5			AUGER										304.0	
6.0		303.5											303.5	
		6.1	Rock Coring Started											

Penetration Test Values (Blows / 0.3m): ✕ N Values, ◆ Dynamic Cone, + Becker Hammer Test (BPT); 20 40 60 80
Undrained Shear Strength Values (kPa): □ Field Vane, ○ Unconfined, ■ Lab Vane, ● Quick Triaxial, ▲ Pocket Penetrometer; 40 80 120 160
Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30 40
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

	Date / Time	Water Depth (m)	Elevation (m)
At completion	27 May 2013	6.0	303.5
50 mm dia. Monitoring well	4 June 2013	4.6	305.0
50 mm dia. Monitoring well	2 August 2013	5.5	304.1

Rock Core Log Next Page

Additional Notes:
This log is to be read in conjunction with accompanying general notes and borehole log symbols sheet. Stratification lines represent approximate boundary lines between material types, vertical and lateral transitions may be gradual. Water level readings were made at time(s) noted, fluctuations of groundwater levels may occur and should be expected.

Coffey Representatives

D.P.	Originated By
SSH	Prepared By
K.S.	Checked By

LOG OF BOREHOLE BH4

Project Name: GUELPH-YORK TRUNK SEWER
Client: THE CORPOATION OF THE CITY OF GUELPH
Date: 27 May 2013
Project No.: GEOTETOB21912AA
Drilling Method Used: HQ
Northing: 4819925 m
Project Location: CITY OF GUELPH, ONTARIO
Ground Surface Elevation: 309.6 m
Easting: 559809 m
Borehole Location: N 4819925; E 559809
Datum Elevation: AHD
Diameter: 175/63.5 mm

(m) STRATA ELEV / DEPTH	Stratigraphic Symbol	ROCK DESCRIPTION	(m) CORE ELEV / DEPTH	CORE SAMPLE NUMBER	CORE SAMPLE SIZE	CORE SAMPLE CORE RATE (m/mm)	TOTAL CORE RECOVERY (%)	SOLID CORE RECOVERY (%)	HARD LAYER (%)	RQD (%)	FRACTURE INDEX (per 0.3m) 5 10 15 20	DISCONTINUITIES AND WEATHERING	GROUND WATER CONDITIONS	Groundwater Conditions	HYDRAULIC CONDUCTIVITY K (cm/sec) [P (kPa)]	POINT LOAD TEST UCS AXIAL (MPa)*	POINT LOAD TEST UCS DIAMETRAL (MPa)*	UNIAXIAL COMPRESSION (MPa)	DENSITY (g/cc) [E (MPa)]
303.5			303.5																
6.1		Slightly weathered to fresh, grey, medium strong, DOLOMITE LIMESTONE very thinly bedded to medium	6.1	C-1	HQ		93	77		58		6.60m: JN, 5°, UN, R3, C 6.80m: JN, 0-5°, UN, R3,O- C 6.90m: 3JN, 10-15-30°, UN, R3, O 7.40m: 2JN, 5-10°, UN, R3, O 7.60m: JN, 15°, UN, R3, modedly closed 7.60m: JN, 5°, UN, R3				36.7 30.2	26.4 37.5		
301.9 7.6		BH4 TERMINATED AT 7.6m BGL	301.9 7.6																

	Date / Time	Water Depth (m)	Elevation (m)
At completion	27 May 2013	6.0	303.5
50 mm dia. Monitoring well	4 June 2013	4.6	305.0
50 mm dia. Monitoring well	2 August 2013	5.5	304.1

E = Modulus of Elasticity

coffey

Additional Notes:
This log is to be read in conjunction with accompanying general notes and borehole log symbols sheet. Stratification lines represent approximate boundary lines between material types, vertical and lateral transitions may be gradual. Water level readings were made at time(s) noted, fluctuations of groundwater levels may occur and should be expected.

Coffey Representatives

D.P.	Originated By
SSH	Prepared By
K.S.	Checked By

COFFEY ROCK CORE LOG GEOTETOB21912AA.GPJ COFFEY STANDARD.GDT 4/11/13

LOG OF BOREHOLE BH11

Project Name: GUELPH-YORK TRUNK SEWER
Client: THE CORPOATION OF THE CITY OF GUELPH
Northing: 4820381 m

Project No.: GEOTETOB21912AA
Drilling Method Used: POWER AUGER BORING
Easting: 560315 m

Project Location: CITY OF GUELPH, ONTARIO
Date: 5 June 2013
Ground Surface Elevation: 308.17 m

Depth Scale (m)	Stratigraphic Symbol	Depth / Elevation (m)	Description	Number	Type	Blow Counts / 150mm	N Value
0		307.9	250 mm thick **TOPSOIL**				
		0.3	**FILL:** clayey silt, with sand, trace gravel, trace organics, dark brown/brown, moist, stiff	1	SS	2 4 9 7	13
0.5		307.4					
		0.8	**FILL:** silty sand and gravel, trace organics, dark brown/brown, moist to very moist, loose	2	SS	3 3 3 4	6
1.0							
1.5				3	SS	3 3 4 4	7
2.0							
2.5				4	SS	4 2 3 4	5
3.0			---------- mix with peat, blackish, compact below 3 m	5	SS	2 2 8 8	10
		304.7					
3.5		3.5	**SAND and GRAVEL:** some silt, greyish brown, wet, compact to dense				
4.0							
4.5				6	SS	7 12 18 50	30
5.0		303.1					
		5.0					

Penetration / Strength Results: Penetration Test Values (Blows / 0.3m) — × N Values, ◆ Dynamic Cone, + Becker Hammer Test (BPT); scale 20 40 60 80. Undrained Shear Strength Values (kPa) — □ Field Vane, ○ Unconfined, ■ Lab Vane, ● Quick Triaxial, ▲ Pocket Penetrometer; scale 40 80 120 160.

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; scale 10 20 30 40.

Instrumentation Details | Groundwater Conditions | Headspace Vapor (ppm) [*LEL(%)*]

Elevation Scale (m): 308.0, 307.5, 307.0, 306.5, 306.0, 305.5, 305.0, 304.5, 304.0, 303.5

Comments — GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Rock Coring Started

	Date / Time	Water Depth (m)	Elevation (m)
At completion	5 June 2013	4.0	304.2
50 mm dia. Monitoring well	11 June 2013	2.5	305.6
50 mm dia. Monitoring well	2 August 2013	3.4	304.8

Rock Core Log Next Page

Additional Notes:
This log is to be read in conjunction with accompanying general notes and borehole log symbols sheet. Stratification lines represent approximate boundary lines between material types, vertical and lateral transitions may be gradual. Water level readings were made at time(s) noted, fluctuations of groundwater levels may occur and should be expected.

Coffey Representatives

D.P.	Originated By
A.P.	Prepared By
K.S.	Checked By

LOG OF BOREHOLE BH11

Project Name: GUELPH-YORK TRUNK SEWER
Project No.: GEOTETOB21912AA
Project Location: CITY OF GUELPH, ONTARIO
Borehole Location: N 4820381; E 560315

Client: THE CORPOATION OF THE CITY OF GUELPH
Drilling Method Used: NQ
Ground Surface Elevation: 308.2 m
Datum Elevation: AHD

Date: 5 June 2013
Northing: 4820381 m
Easting: 560315 m
Diameter: 175/47 6 mm

(m) STRATA ELEV / DEPTH	Stratigraphic Symbol	ROCK DESCRIPTION	(m) CORE ELEV / DEPTH	CORE SAMPLE NUMBER	CORE SAMPLE SIZE	CORE SAMPLE CORE RATE (mm/mm)	TOTAL CORE RECOVERY (%)	SOLID CORE RECOVERY (%)	HARD LAYER (%)	RQD (%)	FRACTURE INDEX (per 0.3m) 5 10 15 20	DISCONTINUITIES AND WEATHERING	GROUND WATER CONDITIONS Groundwater Conditions	HYDRAULIC CONDUCTIVITY k (cm/sec) P (kPa)	POINT LOAD TEST UCS AXIAL (MPa)*	POINT LOAD TEST UCS DIAMETRAL (MPa)*	UNIAXIAL COMPRESSION (MPa)	DENSITY (g/cc) [E (MPa)]
303.1			303.1															
5.0		Slightly weathered to fresh, grey, medium strong to strong, DOLOMITE LIMESTONE very thinly bedded to thinly	5.0	C-1	NQ		97	87		13		5.00-5.10m: 100 mm (fragmented zone) 5.20m: 2JN, 0 -15°, UN, R3, C 5.30m: JN, 0 -10°, UN, R3, O 5.40m: JN, 0 -10°, UN, R3, O 5.50m: 2JN, 0 -15°, UN, R3, O 5.60m: 2JN, 0 -15°, UN, R3, O 5.70m: 2JN, 0-5-10°, UN, R3, O				83.1			
302.4			302.4													68.8		
5.8		Slightly weathered to fresh, grey, medium strong, DOLOMITE LIMESTONE very thinly bedded to thinly	5.8	C-2	NQ		100	73		22		5.90m: JN, 0-5-10°, UN, R3-R2, O 6.10m: JN, 0 -5, 20°, PL-UN, R3, O 6.20m: JN, 10°, UN, R3, O 6.30m: 2JN, 25-40°, UN, R3, O-C 6.40m: JN, 5°, PL, R3, O 6.50-6.50m: 25 mm (fragmented zone) 6.60m: CN, 5°, UN, R3, O, sand 6.70m: JN, 15°, UN, R3, O 6.80m: JN, 25°, UN, R3, O 6.90m: JN, 25°, UN, R3, O 6.90-7.00m: 100 mm (fragmented zone) 7.10m: JN, 15°, UN, R3, O 7.10m: 2JN, 10-15°, UN, R3, O 7.30m: CN, 0°, PL, R3, C, clay fill				39.7			
300.9			300.9													51.5		
7.3		Slightly weathered to fresh, grey, medium strong to strong, DOLOMITE LIMESTONE very thinly bedded to thinly	7.3	C-3	NQ		75	0		0								
300.6			300.6															
7.6		BH11 TERMINATED AT 7.6m BGL	7.6															

	Date / Time	Water Depth (m)	Elevation (m)
At completion	5 June 2013	4.0	304.2
50 mm dia. Monitoring well	11 June 2013	2.5	305.6
50 mm dia. Monitoring well	2 August 2013	3.4	304.8

E = Modulus of Elasticity

coffey

Additional Notes:
This log is to be read in conjunction with accompanying general notes and borehole log symbols sheet. Stratification lines represent approximate boundary lines between material types, vertical and lateral transitions may be gradual. Water level readings were made at time(s) noted, fluctuations of groundwater levels may occur and should be expected.

Coffey Representatives	
D.P.	Originated By
A.P.	Prepared By
K.S.	Checked By

COFFEY ROCK CORE LOG GEOTETOB21912AA.GPJ COFFEY STANDARD.GDT 4/11/13

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 30

PROJECT Silvercreek Parkway Expansion — *PML REF.:* 11KF046
LOCATION Guelph, Ontario — *BORING DATE:* 2/15/2013 — *ENGINEER* W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers & NQ Rock Coring — *TECHNICIAN* D. Brice

DEPTH in METRES	DESCRIPTION	NUMBER	TYPE	BLOWS/0.3m N - VALUES	ELEVATION SCALE	SHEAR STRENGTH C_u (kPa) 50 100 150 200 / DYNAMIC CONE PENETRATION × / STANDARD PENETRATION TEST ⊖ BLOWS/0.3M 20 40 60 80	LIQUID LIMIT W_L / PLASTIC LIMIT W_P / WATER CONTENT W (W_P W W_L) WATER CONTENT % 10 20 30	UNIT WEIGHT γ kN/m³	GROUND WATER OBSERVATIONS AND REMARKS
	GROUND ELEVATION 310.47								
0.13 / 310.35	TOPSOIL: Dark brown clayey silt rootlets, moist	1	SS	24	310				Stick up with J-Plug and Concrete
0.95 / 1.3 / 309.2	SAND AND GRAVEL: Compact brown sand and gravel, some silt, numerous cobbles damp	2	SS	57-275mm					
	SILTY SAND: Brown silty sand, some clay, very moist	3	RC		309	1.50 / 1.52 — 200 — 100	0 — 100		Bentonite Seal
	BEDROCK: Medium strong, poor quality light grey to grey, dolostone, vuggy	4	RC		308	1570 — 100	40 — 100		Filter Sand
						3.05 / 3.07			
		5	RC		307	1570 — 100	26 — 100		30 mm Slotted Screen
4.6 / 305.9	BOREHOLE TERMINATED AT 4.6 m				306	4.62			

DEPTH (m)	RUN (mm)	RECOVERY (%)	R.Q.D.* (%)	DRILL WATER RETURN (%)

Water Levels:
Intial: N/A
03/13/2013: 2.93 m
04/26/2013: 3.30 m

NOTES: * R.Q.D. (Rock Quality Designation) is the total length of those pieces of sound core which are 10 cm or greater in length in a core run expressed as a percentage of the total length of that core run. RQD is measured on minimum NQ size (nominal 50 mm diameter) cores.

WL — WATER LEVEL OBSERVED DURING / UPON COMPLETION OF DRILLING
WL — WATER LEVEL MEASURED IN MONITORING WELL

+ UNDISTURBED FIELD VANE
⊕ REMOLDED FIELD VANE
⊗ LAB SHEAR TEST
▲ POCKET PENETROMETER
◆ POCKET TORVANE

CHECKED BY WL

Monitoring Well: MW1-16

Project:	Membro Replacement Well	**Drilling method:**	CME 55, Hollow Stem Auger and Air Rotary
Client:	City of Guelph	**Date started/completed:**	11-May-2016
Location:	36 Wellington Street West, Guelph ON	**Ground surface elevation:**	304.93 m AMSL
Number:	160900824	**Top of casing elevation:**	305.81 m AMSL
Field investigator:	N.Spina	**Easting:**	4819960
Contractor:	Aardvark Drilling Inc.	**Northing:**	559944

SUBSURFACE PROFILE				HYDROGEOLOGY		SAMPLE DETAILS				INSTALLATION DETAILS	
Depth (ft)	Depth (m)	Graphic Log	Lithologic Description	Elevation (m AMSL) Depth (m BGS)	Hydro Stratigraphic Unit	Description	Sample Number	Sample Type	Recovery	N Value	Diagram	Description
				305.75								Above Ground Casing Stick-Up: 0.83 m
0	0		Ground Surface	304.93								
			TOPSOIL (SILTY SAND) fine grained sand, trace fine grained gravel, trace organics (roots), subrounded gravel, very dark brown (7.5 YR 2.5/2), moist	0.00 304.72								Cement Surface Seal 0 to 0.3 m
				0.20			1	SS	14.5" 60%	1-3-5->50/5.5" (>8)		
			SAND fine grained sand, some coarse grained sand,trace to some silt, trace medium grained sand, trace fine grained gravel, subrounded gravel, well graded, loose, yellowish brown (10YR 5/6), moist broken cobble at 0.36 m BGS transition to compact at 0.76 m BGS trace subrounded to subangular coarse grained gravel from 0.76 m to 1.4 m BGS			Overburden					210 mm diameter borehole 0 to 1.5 m
5	1						2	SS	15.5" 86%	10-11->50/5.5" (>11)		Bentonite Chips 0.3 to 1.5 m
				303.40								Static Water Level 1.26 m 12-May-2016
			LIMESTONE white	1.52			3	SS	1" 100%	>50/1"/1.0" (50/1"/1.0")		51 mm diameter Schedule 40 PVC Riser
	2											98.4 mm diameter borehole 1.5 to 4.6 m
							4	GB	n/a	n/a		Coated Bentonite Pellets 1.5 to 3.0 m
10	3				Bedrock	Guelph Formation						No. 2 Silica Sand 2.7 to 4.6 m
							5	GB	n/a	n/a		Schedule 40 No. 10 slot PVC Screen 3.0 to 4.6 m
	4			300.51								
15			LIMESTONE very dark brown	4.42 300.36	Bedrock	Eramosa Formation	6	GB	n/a	n/a		
	5		End of Borehole	4.57								
20	6											

Screen Interval: 3.02 - 4.54 m BGS
Sand Pack Interval: 2.74 - 4.57 m BGS
Well Seal Interval: 0.30 - 2.74 m BGS

Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
SS - split-spoon sample
GB - grab sample
n/a - not available

MOECC WWR Tag No. A201605

Stantec

Drawn By/Checked By: N.Spina/M. Fraser

STANTEC BOREHOLE AND WELL V2 160900824_MEMBRO_BHLOGS.GPJ STANTEC - DATA TEMPLATE.GDT 6/20/16 MJFRASER

Monitoring Well: MW2-16

Project:	Membro Replacement Well	**Drilling method:**	CME 55, Hollow Stem Auger and Air Rotary
Client:	City of Guelph	**Date started/completed:**	11-May-2016
Location:	36 Wellington Street West, Guelph ON	**Ground surface elevation:**	305.23 m AMSL
Number:	160900824	**Top of casing elevation:**	306.04 m AMSL
Field investigator:	N.Spina	**Easting:**	4820224
Contractor:	Aardvark Drilling Inc.	**Northing:**	560158

SUBSURFACE PROFILE				HYDROGEOLOGY		SAMPLE DETAILS				INSTALLATION DETAILS	
Depth (ft)	Depth (m)	Graphic Log	Lithologic Description	Elevation (m AMSL) Depth (m BGS)	Hydro Stratigraphic Unit	Description	Sample Number	Sample Type	Recovery	N Value	Diagram / Description
				306.02							Above Ground Casing Stick-Up: 0.79 m
0	0		Ground Surface	305.23							
			TOPSOIL (SILTY SAND) fine grained sand, trace fine and coarse grained gravel, subangular gravel, trace organics (roots), dark brown (10 YR 3/3), moist, loose	0.00			1	SS	12" 50%	0-2-2-4 (4)	Cement Surface Seal 0 to 0.30 m
				304.47							210 mm diameter borehole 0 to 2.3 m
			CLAYEY SILT trace fine grained sabnd, trace organics, dark greyish brown (2.5 Y 4/2), rusty brown oxidation staining, moist, stiff	0.76 304.31							
5	1		SAND and GRAVEL fine to medium grained sand, fine to coarse grained gravel, rounded gravel, some silt, olive-brown (2.5Y 4/4), moist, well graded	0.91 303.71		Overburden	2	SS	15.5" 65%	1-7-7-6 (14)	Bentonite Chips 0.3 to 2.3 m
											Static Water Level 1.30 m 12-May-2016
			SILTY SAND fine to medium grained sand, trace coarse grained sand, trace fine grained gravel, subrounded gravel, trace clay,dark greyish brown (2.5 Y 4/2), rusty brown oxidation staining at 1.6 m BGS, moist	1.52 303.63 1.60			3	SS	14" 58%	4-6-8-9 (14)	
10	2		SAND and GRAVEL fine to medium grained sand, fine to coarse grained gravel, subrounded gravel, trace coarse grained sand, trace to some silt, greyish brown (2.5Y 5/2), wet, loose, well graded	302.94 2.29			4	SS	0" 0%	>50/0"/0.0" (50/0"/0.0")	51 mm diameter Schedule 40 PVC Riser
			LIMESTONE dark brown		Bedrock	Eramosa Formation	5	GB	n/a	n/a	98.4 mm diameter borehole 2.3 to 5.3 m
											Coated Bentonite Pellets 2.3 to 3.4 m
15	3										No. 2 Silica Sand 3.4 to 5.3 m
							6	GB	n/a	n/a	
											Schedule 40 No. 10 slot PVC Screen 3.8 to 5.3 m
	4										
20	5										
	6			299.90			7	GB	n/a	n/a	
			End of Borehole	5.33							

Screen Interval: 3.78 - 5.30 m BGS
Sand Pack Interval: 3.35 - 5.33 m BGS
Well Seal Interval: 0.30 - 3.35 m BGS

Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
SS - split-spoon sample
GB - grab sample
n/a - not available

MOECC WWR Tag No. A201603

Stantec

Drawn By/Checked By: N.Spina/M. Fraser

Sheet 1 of 1

STANTEC BOREHOLE AND WELL V2 160900824_MEMBRO_BHLOGS.GPJ STANTEC - DATA TEMPLATE.GDT 6/20/16 MJFRASER

Appendix B
Laboratory Analytical Reports

GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 06-APR-18
Report Date: 25-JUL-18 12:02 (MT)
Version: FINAL REV. 2

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L2077097

Project P.O. #: 73511036
Job Reference: 11149990-04
C of C Numbers:
Legal Site Desc:

Comments: WS/WT 17-APR-18 DOC samples lab filtered on April 8, 2018.

Report #2

Rick Hawthorne
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-1 GW-11149990-040518-001 Sampled By: T. WITTMAIER on 05-APR-18 @ 15:35 Matrix: WATER							
Physical Tests							
Conductivity	1.55		0.0030	mS/cm		07-APR-18	R4007280
pH	7.67		0.10	pH units		07-APR-18	R4007280
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	322		10	mg/L		11-APR-18	R4008410
Ammonia, Total (as N)	<0.020		0.020	mg/L		09-APR-18	R4007184
Chloride (Cl)	295	DLDS	2.5	mg/L		11-APR-18	R4009126
Nitrate (as N)	5.29	DLDS	0.10	mg/L		11-APR-18	R4009126
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		11-APR-18	R4009126
Total Kjeldahl Nitrogen	0.31		0.15	mg/L	11-APR-18	11-APR-18	R4008601
Phosphorus, Total	0.0065		0.0030	mg/L	11-APR-18	12-APR-18	R4008707
Sulfate (SO4)	33.8	DLDS	1.5	mg/L		11-APR-18	R4009126
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		13-APR-18	R4014554
Organic / Inorganic Carbon							
Dissolved Organic Carbon	2.2		1.0	mg/L		09-APR-18	R4007873
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					09-APR-18	R4006771
Dissolved Metals Filtration Location	FIELD					09-APR-18	R4006710
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Arsenic (As)-Dissolved	0.13		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Barium (Ba)-Dissolved	58.3		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Boron (B)-Dissolved	43		10	ug/L	09-APR-18	09-APR-18	R4007206
Cadmium (Cd)-Dissolved	0.070		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Copper (Cu)-Dissolved	1.26		0.20	ug/L	09-APR-18	09-APR-18	R4007206
Lead (Pb)-Dissolved	0.051		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4006952
Molybdenum (Mo)-Dissolved	0.428		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Nickel (Ni)-Dissolved	1.64		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Selenium (Se)-Dissolved	0.420		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Sodium (Na)-Dissolved	173000	DLHC	5000	ug/L	09-APR-18	09-APR-18	R4007206
Thallium (Tl)-Dissolved	0.053		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Uranium (U)-Dissolved	0.628		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Zinc (Zn)-Dissolved	53.9		1.0	ug/L	09-APR-18	09-APR-18	R4007206
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		09-APR-18	R4007515
Aggregate Organics							
Phenols (4AAP)	<0.0010		0.0010	mg/L		09-APR-18	R4007047

* 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
L2077097-1 GW-11149990-040518-001 Sampled By: T. WITTMAIER on 05-APR-18 @ 15:35 Matrix: WATER							
Aggregate Organics **Volatile Organic Compounds**							
Acetone	<30		30	ug/L		10-APR-18	R4007413
Benzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Bromodichloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Bromoform	<5.0		5.0	ug/L		10-APR-18	R4007413
Bromomethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Carbon tetrachloride	<0.20		0.20	ug/L		10-APR-18	R4007413
Chlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dibromochloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Chloroform	<1.0		1.0	ug/L		10-APR-18	R4007413
1,2-Dibromoethane	<0.20		0.20	ug/L		10-APR-18	R4007413
1,2-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,3-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,4-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dichlorodifluoromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
1,1-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,2-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Methylene Chloride	<5.0		5.0	ug/L		10-APR-18	R4007413
1,2-Dichloropropane	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		10-APR-18	
Ethylbenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
n-Hexane	<0.50		0.50	ug/L		10-APR-18	R4007413
Methyl Ethyl Ketone	<20		20	ug/L		10-APR-18	R4007413
Methyl Isobutyl Ketone	<20		20	ug/L		10-APR-18	R4007413
MTBE	<2.0		2.0	ug/L		10-APR-18	R4007413
Styrene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Tetrachloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Toluene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichlorofluoromethane	<5.0		5.0	ug/L		10-APR-18	R4007413
Vinyl chloride	<0.50		0.50	ug/L		10-APR-18	R4007413
o-Xylene	<0.30		0.30	ug/L		10-APR-18	R4007413

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-1 GW-11149990-040518-001 Sampled By: T. WITTMAIER on 05-APR-18 @ 15:35 Matrix: WATER							
Volatile Organic Compounds							
m+p-Xylenes	<0.40		0.40	ug/L		10-APR-18	R4007413
Xylenes (Total)	<0.50		0.50	ug/L		10-APR-18	
Surrogate: 4-Bromofluorobenzene	99.6		70-130	%		10-APR-18	R4007413
Surrogate: 1,4-Difluorobenzene	102.4		70-130	%		10-APR-18	R4007413
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		10-APR-18	R4007413
F1-BTEX	<25		25	ug/L		12-APR-18	
F2 (C10-C16)	<100		100	ug/L	09-APR-18	10-APR-18	R4007710
F2-Naphth	<100		100	ug/L		12-APR-18	
F3 (C16-C34)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
F3-PAH	<250		250	ug/L		12-APR-18	
F4 (C34-C50)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
Total Hydrocarbons (C6-C50)	<370		370	ug/L		12-APR-18	
Chrom. to baseline at nC50	YES				09-APR-18	10-APR-18	R4007710
Surrogate: 2-Bromobenzotrifluoride	100.7		60-140	%	09-APR-18	10-APR-18	R4007710
Surrogate: 3,4-Dichlorotoluene	85.4		60-140	%		10-APR-18	R4007413
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Acenaphthylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)pyrene	<0.010		0.010	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(b)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(k)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Chrysene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluorene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		12-APR-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
2-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Naphthalene	<0.050		0.050	ug/L	09-APR-18	12-APR-18	R4009214
Phenanthrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Acenaphthene	107.9		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d12-Chrysene	108.4		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d8-Naphthalene	110.8		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Phenanthrene	111.6		60-140	%	09-APR-18	12-APR-18	R4009214
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-1 GW-11149990-040518-001 Sampled By: T. WITTMAIER on 05-APR-18 @ 15:35 Matrix: WATER							
Semi-Volatile Organics							
4-Chloroaniline	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
2-Chlorophenol	<0.30		0.30	ug/L	09-APR-18	11-APR-18	R4008098
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-APR-18	11-APR-18	R4008098
Diethylphthalate	<0.20		0.20	ug/L	09-APR-18	11-APR-18	R4008098
Dimethylphthalate	<0.20		0.20	ug/L	09-APR-18	11-APR-18	R4008098
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-APR-18	11-APR-18	R4008098
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-APR-18	11-APR-18	R4008098
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		11-APR-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-APR-18	11-APR-18	R4008098
Pentachlorophenol	<0.50		0.50	ug/L	09-APR-18	11-APR-18	R4008098
Phenol	<0.50		0.50	ug/L	09-APR-18	11-APR-18	R4008098
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	11-APR-18	R4008098
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	11-APR-18	R4008098
Surrogate: 2-Fluorobiphenyl	89.0		50-140	%	09-APR-18	11-APR-18	R4008098
Surrogate: Nitrobenzene d5	96.1		50-140	%	09-APR-18	11-APR-18	R4008098
Surrogate: Phenol d5	45.9		30-130	%	09-APR-18	11-APR-18	R4008098
Surrogate: p-Terphenyl d14	109.2		60-140	%	09-APR-18	11-APR-18	R4008098
Surrogate: 2,4,6-Tribromophenol	94.0		50-140	%	09-APR-18	11-APR-18	R4008098
L2077097-2 GW-11149990-040518-002 Sampled By: T. WITTMAIER on 05-APR-18 @ 15:35 Matrix: WATER							
Physical Tests							
Conductivity	1.55		0.0030	mS/cm		07-APR-18	R4007280
pH	7.70		0.10	pH units		07-APR-18	R4007280
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	328		10	mg/L		11-APR-18	R4008410
Ammonia, Total (as N)	0.182		0.020	mg/L		09-APR-18	R4007184
Chloride (Cl)	297	DLDS	2.5	mg/L		11-APR-18	R4009126
Nitrate (as N)	5.33	DLDS	0.10	mg/L		11-APR-18	R4009126
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		11-APR-18	R4009126
Total Kjeldahl Nitrogen	0.36		0.15	mg/L	11-APR-18	11-APR-18	R4008601
Phosphorus, Total	0.0056		0.0030	mg/L	11-APR-18	12-APR-18	R4008707
Sulfate (SO4)	34.1	DLDS	1.5	mg/L		11-APR-18	R4009126
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		11-APR-18	R4008951
Organic / Inorganic Carbon							

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-2 GW-11149990-040518-002 Sampled By: T. WITTMAIER on 05-APR-18 @ 15:35 Matrix: WATER							
Organic / Inorganic Carbon							
Dissolved Organic Carbon	1.9		1.0	mg/L		09-APR-18	R4007873
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					09-APR-18	R4006771
Dissolved Metals Filtration Location	FIELD					09-APR-18	R4006710
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Arsenic (As)-Dissolved	0.13		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Barium (Ba)-Dissolved	58.0		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Boron (B)-Dissolved	42		10	ug/L	09-APR-18	09-APR-18	R4007206
Cadmium (Cd)-Dissolved	0.073		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Chromium (Cr)-Dissolved	0.65		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Copper (Cu)-Dissolved	0.79		0.20	ug/L	09-APR-18	09-APR-18	R4007206
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4006952
Molybdenum (Mo)-Dissolved	0.431		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Nickel (Ni)-Dissolved	0.98		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Selenium (Se)-Dissolved	0.379		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Sodium (Na)-Dissolved	176000	DLHC	5000	ug/L	09-APR-18	09-APR-18	R4007206
Thallium (Tl)-Dissolved	0.048		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Uranium (U)-Dissolved	0.619		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Zinc (Zn)-Dissolved	52.9		1.0	ug/L	09-APR-18	09-APR-18	R4007206
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		09-APR-18	R4007515
Aggregate Organics							
Phenols (4AAP)	<0.0010		0.0010	mg/L		09-APR-18	R4007047
Volatile Organic Compounds							
Acetone	<30		30	ug/L		10-APR-18	R4007413
Benzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Bromodichloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Bromoform	<5.0		5.0	ug/L		10-APR-18	R4007413
Bromomethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Carbon tetrachloride	<0.20		0.20	ug/L		10-APR-18	R4007413
Chlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dibromochloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Chloroform	<1.0		1.0	ug/L		10-APR-18	R4007413
1,2-Dibromoethane	<0.20		0.20	ug/L		10-APR-18	R4007413
1,2-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,3-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,4-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-2 GW-11149990-040518-002 Sampled By: T. WITTMAIER on 05-APR-18 @ 15:35 Matrix: WATER							
Volatile Organic Compounds							
Dichlorodifluoromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
1,1-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,2-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Methylene Chloride	<5.0		5.0	ug/L		10-APR-18	R4007413
1,2-Dichloropropane	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		10-APR-18	
Ethylbenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
n-Hexane	<0.50		0.50	ug/L		10-APR-18	R4007413
Methyl Ethyl Ketone	<20		20	ug/L		10-APR-18	R4007413
Methyl Isobutyl Ketone	<20		20	ug/L		10-APR-18	R4007413
MTBE	<2.0		2.0	ug/L		10-APR-18	R4007413
Styrene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Tetrachloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Toluene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichlorofluoromethane	<5.0		5.0	ug/L		10-APR-18	R4007413
Vinyl chloride	<0.50		0.50	ug/L		10-APR-18	R4007413
o-Xylene	<0.30		0.30	ug/L		10-APR-18	R4007413
m+p-Xylenes	<0.40		0.40	ug/L		10-APR-18	R4007413
Xylenes (Total)	<0.50		0.50	ug/L		10-APR-18	
Surrogate: 4-Bromofluorobenzene	99.0		70-130	%		10-APR-18	R4007413
Surrogate: 1,4-Difluorobenzene	103.1		70-130	%		10-APR-18	R4007413
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		10-APR-18	R4007413
F1-BTEX	<25		25	ug/L		12-APR-18	
F2 (C10-C16)	<100		100	ug/L	09-APR-18	10-APR-18	R4007710
F2-Naphth	<100		100	ug/L		12-APR-18	
F3 (C16-C34)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
F3-PAH	<250		250	ug/L		12-APR-18	
F4 (C34-C50)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
Total Hydrocarbons (C6-C50)	<370		370	ug/L		12-APR-18	
Chrom. to baseline at nC50	YES				09-APR-18	10-APR-18	R4007710

* 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
L2077097-2 GW-11149990-040518-002 Sampled By: T. WITTMAIER on 05-APR-18 @ 15:35 Matrix: WATER							
Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	94.5		60-140	%	09-APR-18	10-APR-18	R4007710
Surrogate: 3,4-Dichlorotoluene	82.9		60-140	%		10-APR-18	R4007413
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Acenaphthylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)pyrene	<0.010		0.010	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(b)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(k)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Chrysene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluorene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		12-APR-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
2-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Naphthalene	<0.050		0.050	ug/L	09-APR-18	12-APR-18	R4009214
Phenanthrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Acenaphthene	104.0		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d12-Chrysene	102.2		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d8-Naphthalene	107.5		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Phenanthrene	105.6		60-140	%	09-APR-18	12-APR-18	R4009214
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
4-Chloroaniline	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
2-Chlorophenol	<0.30		0.30	ug/L	09-APR-18	11-APR-18	R4008098
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-APR-18	11-APR-18	R4008098
Diethylphthalate	<0.20		0.20	ug/L	09-APR-18	11-APR-18	R4008098
Dimethylphthalate	<0.20		0.20	ug/L	09-APR-18	11-APR-18	R4008098
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-APR-18	11-APR-18	R4008098
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-APR-18	11-APR-18	R4008098
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		11-APR-18	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-2 GW-11149990-040518-002 Sampled By: T. WITTMAIER on 05-APR-18 @ 15:35 Matrix: WATER							
Semi-Volatile Organics							
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-APR-18	11-APR-18	R4008098
Pentachlorophenol	<0.50		0.50	ug/L	09-APR-18	11-APR-18	R4008098
Phenol	<0.50		0.50	ug/L	09-APR-18	11-APR-18	R4008098
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-APR-18	11-APR-18	R4008098
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	11-APR-18	R4008098
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	11-APR-18	R4008098
Surrogate: 2-Fluorobiphenyl	89.0		50-140	%	09-APR-18	11-APR-18	R4008098
Surrogate: Nitrobenzene d5	97.3		50-140	%	09-APR-18	11-APR-18	R4008098
Surrogate: Phenol d5	48.5		30-130	%	09-APR-18	11-APR-18	R4008098
Surrogate: p-Terphenyl d14	109.5		60-140	%	09-APR-18	11-APR-18	R4008098
Surrogate: 2,4,6-Tribromophenol	93.6		50-140	%	09-APR-18	11-APR-18	R4008098
L2077097-3 GW-11149990-040518-003 Sampled By: T. WITTMAIER on 05-APR-18 @ 17:25 Matrix: WATER							
Physical Tests							
Conductivity	1.50		0.0030	mS/cm		07-APR-18	R4007280
pH	7.09		0.10	pH units		07-APR-18	R4007280
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	695	DLHC	20	mg/L		11-APR-18	R4008410
Ammonia, Total (as N)	3.63	DLHC	0.10	mg/L		09-APR-18	R4007184
Chloride (Cl)	69.5	DLDS	2.5	mg/L		11-APR-18	R4009126
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		11-APR-18	R4009126
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		11-APR-18	R4009126
Total Kjeldahl Nitrogen	4.82		0.15	mg/L	11-APR-18	11-APR-18	R4008601
Phosphorus, Total	0.0735		0.0030	mg/L	11-APR-18	12-APR-18	R4008707
Sulfate (SO4)	27.9	DLDS	1.5	mg/L		11-APR-18	R4009126
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		11-APR-18	R4008951
Organic / Inorganic Carbon							
Dissolved Organic Carbon	16.7		1.0	mg/L		09-APR-18	R4007873
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					09-APR-18	R4006771
Dissolved Metals Filtration Location	FIELD					09-APR-18	R4006710
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	09-APR-18	10-APR-18	R4007206
Arsenic (As)-Dissolved	0.40		0.10	ug/L	09-APR-18	10-APR-18	R4007206
Barium (Ba)-Dissolved	216		0.10	ug/L	09-APR-18	10-APR-18	R4007206
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	09-APR-18	10-APR-18	R4007206
Boron (B)-Dissolved	559		10	ug/L	09-APR-18	10-APR-18	R4007206
Cadmium (Cd)-Dissolved	<0.010		0.010	ug/L	09-APR-18	10-APR-18	R4007206
Chromium (Cr)-Dissolved	1.03		0.50	ug/L	09-APR-18	10-APR-18	R4007206
Cobalt (Co)-Dissolved	0.36		0.10	ug/L	09-APR-18	10-APR-18	R4007206
Copper (Cu)-Dissolved	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4007206

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-3 GW-11149990-040518-003 Sampled By: T. WITTMAIER on 05-APR-18 @ 17:25 Matrix: WATER							
Dissolved Metals							
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	09-APR-18	10-APR-18	R4007206
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4006952
Molybdenum (Mo)-Dissolved	0.658		0.050	ug/L	09-APR-18	10-APR-18	R4007206
Nickel (Ni)-Dissolved	0.64		0.50	ug/L	09-APR-18	10-APR-18	R4007206
Selenium (Se)-Dissolved	2.37		0.050	ug/L	09-APR-18	10-APR-18	R4007206
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	09-APR-18	10-APR-18	R4007206
Sodium (Na)-Dissolved	105000	DLHC	5000	ug/L	09-APR-18	09-APR-18	R4007206
Thallium (Tl)-Dissolved	<0.010		0.010	ug/L	09-APR-18	10-APR-18	R4007206
Uranium (U)-Dissolved	0.749		0.010	ug/L	09-APR-18	10-APR-18	R4007206
Vanadium (V)-Dissolved	0.53		0.50	ug/L	09-APR-18	10-APR-18	R4007206
Zinc (Zn)-Dissolved	<1.0		1.0	ug/L	09-APR-18	10-APR-18	R4007206
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		09-APR-18	R4007515
Aggregate Organics							
Phenols (4AAP)	0.0011		0.0010	mg/L		09-APR-18	R4007047
Volatile Organic Compounds							
Acetone	<30		30	ug/L		10-APR-18	R4007413
Benzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Bromodichloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Bromoform	<5.0		5.0	ug/L		10-APR-18	R4007413
Bromomethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Carbon tetrachloride	<0.20		0.20	ug/L		10-APR-18	R4007413
Chlorobenzene	1.26		0.50	ug/L		10-APR-18	R4007413
Dibromochloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Chloroform	<1.0		1.0	ug/L		10-APR-18	R4007413
1,2-Dibromoethane	<0.20		0.20	ug/L		10-APR-18	R4007413
1,2-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,3-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,4-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dichlorodifluoromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
1,1-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,2-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Methylene Chloride	<5.0		5.0	ug/L		10-APR-18	R4007413
1,2-Dichloropropane	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		10-APR-18	
Ethylbenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
n-Hexane	<0.50		0.50	ug/L		10-APR-18	R4007413

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-3 GW-11149990-040518-003 Sampled By: T. WITTMAIER on 05-APR-18 @ 17:25 Matrix: WATER							
Volatile Organic Compounds							
Methyl Ethyl Ketone	<20		20	ug/L		10-APR-18	R4007413
Methyl Isobutyl Ketone	<20		20	ug/L		10-APR-18	R4007413
MTBE	<2.0		2.0	ug/L		10-APR-18	R4007413
Styrene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Tetrachloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Toluene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichlorofluoromethane	<5.0		5.0	ug/L		10-APR-18	R4007413
Vinyl chloride	<0.50		0.50	ug/L		10-APR-18	R4007413
o-Xylene	<0.30		0.30	ug/L		10-APR-18	R4007413
m+p-Xylenes	<0.40		0.40	ug/L		10-APR-18	R4007413
Xylenes (Total)	<0.50		0.50	ug/L		10-APR-18	
Surrogate: 4-Bromofluorobenzene	98.8		70-130	%		10-APR-18	R4007413
Surrogate: 1,4-Difluorobenzene	102.7		70-130	%		10-APR-18	R4007413
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		10-APR-18	R4007413
F1-BTEX	<25		25	ug/L		12-APR-18	
F2 (C10-C16)	<100		100	ug/L	09-APR-18	10-APR-18	R4007710
F2-Naphth	<100		100	ug/L		12-APR-18	
F3 (C16-C34)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
F3-PAH	<250		250	ug/L		12-APR-18	
F4 (C34-C50)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
Total Hydrocarbons (C6-C50)	<370		370	ug/L		12-APR-18	
Chrom. to baseline at nC50	YES				09-APR-18	10-APR-18	R4007710
Surrogate: 2-Bromobenzotrifluoride	100.5		60-140	%	09-APR-18	10-APR-18	R4007710
Surrogate: 3,4-Dichlorotoluene	66.1		60-140	%		10-APR-18	R4007413
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	1.07		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Acenaphthylene	0.161		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Anthracene	0.118		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)pyrene	<0.010		0.010	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(b)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(k)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Chrysene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-3 GW-11149990-040518-003 Sampled By: T. WITTMAIER on 05-APR-18 @ 17:25 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Fluoranthene	0.108		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluorene	0.825		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		12-APR-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
2-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Naphthalene	<0.050		0.050	ug/L	09-APR-18	12-APR-18	R4009214
Phenanthrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Pyrene	0.061		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Acenaphthene	107.5		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d12-Chrysene	104.2		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d8-Naphthalene	110.8		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Phenanthrene	111.5		60-140	%	09-APR-18	12-APR-18	R4009214
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
4-Chloroaniline	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2-Chlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
Diethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Dimethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		11-APR-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-APR-18	10-APR-18	R4008098
Pentachlorophenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
Phenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Surrogate: 2-Fluorobiphenyl	94.8		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Nitrobenzene d5	101.1		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Phenol d5	50.4		30-130	%	09-APR-18	10-APR-18	R4008098
Surrogate: p-Terphenyl d14	90.6		60-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: 2,4,6-Tribromophenol	111.2		50-140	%	09-APR-18	10-APR-18	R4008098
L2077097-4 GW-11149990-040518-004 Sampled By: T. WITTMAIER on 05-APR-18 @ 18:25 Matrix: WATER							

* 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
L2077097-4 GW-11149990-040518-004 Sampled By: T. WITTMAIER on 05-APR-18 @ 18:25 Matrix: WATER							
Physical Tests							
Conductivity	2.19		0.0030	mS/cm		07-APR-18	R4007280
pH	7.25		0.10	pH units		07-APR-18	R4007280
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	636	DLHC	20	mg/L		11-APR-18	R4008410
Ammonia, Total (as N)	3.22	DLHC	0.10	mg/L		09-APR-18	R4007184
Chloride (Cl)	278	DLDS	2.5	mg/L		11-APR-18	R4009126
Nitrate (as N)	0.49	DLDS	0.10	mg/L		11-APR-18	R4009126
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		11-APR-18	R4009126
Total Kjeldahl Nitrogen	4.72		0.15	mg/L	11-APR-18	11-APR-18	R4008601
Phosphorus, Total	0.146		0.0030	mg/L	11-APR-18	12-APR-18	R4008707
Sulfate (SO4)	94.8	DLDS	1.5	mg/L		11-APR-18	R4009126
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		11-APR-18	R4008951
Organic / Inorganic Carbon							
Dissolved Organic Carbon	11.7		1.0	mg/L		09-APR-18	R4007873
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					09-APR-18	R4006771
Dissolved Metals Filtration Location	FIELD					09-APR-18	R4006710
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	09-APR-18	09-APR-18	R4007206
Arsenic (As)-Dissolved	4.3	DLHC	1.0	ug/L	09-APR-18	09-APR-18	R4007206
Barium (Ba)-Dissolved	253	DLHC	1.0	ug/L	09-APR-18	09-APR-18	R4007206
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	09-APR-18	09-APR-18	R4007206
Boron (B)-Dissolved	1250	DLHC	100	ug/L	09-APR-18	09-APR-18	R4007206
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	09-APR-18	09-APR-18	R4007206
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	09-APR-18	09-APR-18	R4007206
Cobalt (Co)-Dissolved	5.5	DLHC	1.0	ug/L	09-APR-18	09-APR-18	R4007206
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	09-APR-18	09-APR-18	R4007206
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	09-APR-18	09-APR-18	R4007206
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4006952
Molybdenum (Mo)-Dissolved	2.12	DLHC	0.50	ug/L	09-APR-18	09-APR-18	R4007206
Nickel (Ni)-Dissolved	6.9	DLHC	5.0	ug/L	09-APR-18	09-APR-18	R4007206
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	09-APR-18	09-APR-18	R4007206
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	09-APR-18	09-APR-18	R4007206
Sodium (Na)-Dissolved	180000	DLHC	5000	ug/L	09-APR-18	09-APR-18	R4007206
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	09-APR-18	09-APR-18	R4007206
Uranium (U)-Dissolved	2.03	DLHC	0.10	ug/L	09-APR-18	09-APR-18	R4007206
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	09-APR-18	09-APR-18	R4007206
Zinc (Zn)-Dissolved	13	DLHC	10	ug/L	09-APR-18	09-APR-18	R4007206
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		09-APR-18	R4007515
Aggregate Organics							
Phenols (4AAP)	<0.0010		0.0010	mg/L		09-APR-18	R4007047

* 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
L2077097-4 GW-11149990-040518-004 Sampled By: T. WITTMAIER on 05-APR-18 @ 18:25 Matrix: WATER							
Aggregate Organics **Volatile Organic Compounds**							
Acetone	<30		30	ug/L		10-APR-18	R4007413
Benzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Bromodichloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Bromoform	<5.0		5.0	ug/L		10-APR-18	R4007413
Bromomethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Carbon tetrachloride	<0.20		0.20	ug/L		10-APR-18	R4007413
Chlorobenzene	0.87		0.50	ug/L		10-APR-18	R4007413
Dibromochloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Chloroform	<1.0		1.0	ug/L		10-APR-18	R4007413
1,2-Dibromoethane	<0.20		0.20	ug/L		10-APR-18	R4007413
1,2-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,3-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,4-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dichlorodifluoromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
1,1-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,2-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Methylene Chloride	<5.0		5.0	ug/L		10-APR-18	R4007413
1,2-Dichloropropane	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		10-APR-18	
Ethylbenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
n-Hexane	<0.50		0.50	ug/L		10-APR-18	R4007413
Methyl Ethyl Ketone	<20		20	ug/L		10-APR-18	R4007413
Methyl Isobutyl Ketone	<20		20	ug/L		10-APR-18	R4007413
MTBE	<2.0		2.0	ug/L		10-APR-18	R4007413
Styrene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Tetrachloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Toluene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichlorofluoromethane	<5.0		5.0	ug/L		10-APR-18	R4007413
Vinyl chloride	<0.50		0.50	ug/L		10-APR-18	R4007413
o-Xylene	<0.30		0.30	ug/L		10-APR-18	R4007413

* 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
L2077097-4 GW-11149990-040518-004 Sampled By: T. WITTMAIER on 05-APR-18 @ 18:25 Matrix: WATER							
Volatile Organic Compounds							
m+p-Xylenes	<0.40		0.40	ug/L		10-APR-18	R4007413
Xylenes (Total)	<0.50		0.50	ug/L		10-APR-18	
Surrogate: 4-Bromofluorobenzene	98.8		70-130	%		10-APR-18	R4007413
Surrogate: 1,4-Difluorobenzene	102.9		70-130	%		10-APR-18	R4007413
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		10-APR-18	R4007413
F1-BTEX	<25		25	ug/L		12-APR-18	
F2 (C10-C16)	<100		100	ug/L	09-APR-18	10-APR-18	R4007710
F2-Naphth	<100		100	ug/L		12-APR-18	
F3 (C16-C34)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
F3-PAH	<250		250	ug/L		12-APR-18	
F4 (C34-C50)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
Total Hydrocarbons (C6-C50)	<370		370	ug/L		12-APR-18	
Chrom. to baseline at nC50	YES				09-APR-18	10-APR-18	R4007710
Surrogate: 2-Bromobenzotrifluoride	96.9		60-140	%	09-APR-18	10-APR-18	R4007710
Surrogate: 3,4-Dichlorotoluene	68.4		60-140	%		10-APR-18	R4007413
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Acenaphthylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)pyrene	<0.010		0.010	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(b)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(k)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Chrysene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluorene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		12-APR-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
2-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Naphthalene	<0.050		0.050	ug/L	09-APR-18	12-APR-18	R4009214
Phenanthrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Acenaphthene	110.0		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d12-Chrysene	102.1		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d8-Naphthalene	111.8		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Phenanthrene	113.5		60-140	%	09-APR-18	12-APR-18	R4009214
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098

* 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
L2077097-4 GW-11149990-040518-004 Sampled By: T. WITTMAIER on 05-APR-18 @ 18:25 Matrix: WATER							
Semi-Volatile Organics							
4-Chloroaniline	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2-Chlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
Diethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Dimethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		11-APR-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-APR-18	10-APR-18	R4008098
Pentachlorophenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
Phenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Surrogate: 2-Fluorobiphenyl	93.9		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Nitrobenzene d5	100.1		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Phenol d5	36.7		30-130	%	09-APR-18	10-APR-18	R4008098
Surrogate: p-Terphenyl d14	90.2		60-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: 2,4,6-Tribromophenol	96.3		50-140	%	09-APR-18	10-APR-18	R4008098
L2077097-5 GW-11149990-040518-005 Sampled By: T. WITTMAIER on 05-APR-18 @ 18:50 Matrix: WATER							
Physical Tests							
Conductivity	1.36		0.0030	mS/cm		07-APR-18	R4007280
pH	7.15		0.10	pH units		07-APR-18	R4007280
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	601	DLHC	20	mg/L		11-APR-18	R4008410
Ammonia, Total (as N)	6.36	DLHC	0.20	mg/L		09-APR-18	R4007184
Chloride (Cl)	61.9	DLDS	2.5	mg/L		11-APR-18	R4009126
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		11-APR-18	R4009126
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		11-APR-18	R4009126
Total Kjeldahl Nitrogen	8.40		0.15	mg/L	11-APR-18	11-APR-18	R4008601
Phosphorus, Total	0.293		0.0030	mg/L	11-APR-18	12-APR-18	R4008707
Sulfate (SO4)	32.8	DLDS	1.5	mg/L		11-APR-18	R4009126
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		11-APR-18	R4008951
Organic / Inorganic Carbon							

* 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
L2077097-5 GW-11149990-040518-005 Sampled By: T. WITTMAIER on 05-APR-18 @ 18:50 Matrix: WATER							
Organic / Inorganic Carbon							
Dissolved Organic Carbon	10.7		1.0	mg/L		09-APR-18	R4007873
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					09-APR-18	R4006771
Dissolved Metals Filtration Location	FIELD					09-APR-18	R4006710
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	09-APR-18	10-APR-18	R4007206
Arsenic (As)-Dissolved	2.39		0.10	ug/L	09-APR-18	10-APR-18	R4007206
Barium (Ba)-Dissolved	241		0.10	ug/L	09-APR-18	10-APR-18	R4007206
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	09-APR-18	10-APR-18	R4007206
Boron (B)-Dissolved	403		10	ug/L	09-APR-18	10-APR-18	R4007206
Cadmium (Cd)-Dissolved	<0.010		0.010	ug/L	09-APR-18	10-APR-18	R4007206
Chromium (Cr)-Dissolved	3.46		0.50	ug/L	09-APR-18	10-APR-18	R4007206
Cobalt (Co)-Dissolved	1.99		0.10	ug/L	09-APR-18	10-APR-18	R4007206
Copper (Cu)-Dissolved	0.25		0.20	ug/L	09-APR-18	10-APR-18	R4007206
Lead (Pb)-Dissolved	0.053		0.050	ug/L	09-APR-18	10-APR-18	R4007206
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4006952
Molybdenum (Mo)-Dissolved	1.18		0.050	ug/L	09-APR-18	10-APR-18	R4007206
Nickel (Ni)-Dissolved	3.83		0.50	ug/L	09-APR-18	10-APR-18	R4007206
Selenium (Se)-Dissolved	0.260		0.050	ug/L	09-APR-18	10-APR-18	R4007206
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	09-APR-18	10-APR-18	R4007206
Sodium (Na)-Dissolved	80200		500	ug/L	09-APR-18	10-APR-18	R4007206
Thallium (Tl)-Dissolved	<0.010		0.010	ug/L	09-APR-18	10-APR-18	R4007206
Uranium (U)-Dissolved	2.52		0.010	ug/L	09-APR-18	10-APR-18	R4007206
Vanadium (V)-Dissolved	1.20		0.50	ug/L	09-APR-18	10-APR-18	R4007206
Zinc (Zn)-Dissolved	4.8		1.0	ug/L	09-APR-18	10-APR-18	R4007206
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		09-APR-18	R4007515
Aggregate Organics							
Phenols (4AAP)	0.0088		0.0010	mg/L		09-APR-18	R4007047
Volatile Organic Compounds							
Acetone	<30		30	ug/L		10-APR-18	R4007413
Benzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Bromodichloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Bromoform	<5.0		5.0	ug/L		10-APR-18	R4007413
Bromomethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Carbon tetrachloride	<0.20		0.20	ug/L		10-APR-18	R4007413
Chlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dibromochloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Chloroform	<1.0		1.0	ug/L		10-APR-18	R4007413
1,2-Dibromoethane	<0.20		0.20	ug/L		10-APR-18	R4007413
1,2-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,3-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,4-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413

* 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
L2077097-5 GW-11149990-040518-005 Sampled By: T. WITTMAIER on 05-APR-18 @ 18:50 Matrix: WATER							
Volatile Organic Compounds							
Dichlorodifluoromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
1,1-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,2-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Methylene Chloride	<5.0		5.0	ug/L		10-APR-18	R4007413
1,2-Dichloropropane	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		10-APR-18	
Ethylbenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
n-Hexane	<0.50		0.50	ug/L		10-APR-18	R4007413
Methyl Ethyl Ketone	<20		20	ug/L		10-APR-18	R4007413
Methyl Isobutyl Ketone	<20		20	ug/L		10-APR-18	R4007413
MTBE	<2.0		2.0	ug/L		10-APR-18	R4007413
Styrene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Tetrachloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Toluene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichlorofluoromethane	<5.0		5.0	ug/L		10-APR-18	R4007413
Vinyl chloride	<0.50		0.50	ug/L		10-APR-18	R4007413
o-Xylene	<0.30		0.30	ug/L		10-APR-18	R4007413
m+p-Xylenes	<0.40		0.40	ug/L		10-APR-18	R4007413
Xylenes (Total)	<0.50		0.50	ug/L		10-APR-18	
Surrogate: 4-Bromofluorobenzene	98.5		70-130	%		10-APR-18	R4007413
Surrogate: 1,4-Difluorobenzene	102.6		70-130	%		10-APR-18	R4007413
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		10-APR-18	R4007413
F1-BTEX	<25		25	ug/L		12-APR-18	
F2 (C10-C16)	<100		100	ug/L	09-APR-18	10-APR-18	R4007710
F2-Naphth	<100		100	ug/L		12-APR-18	
F3 (C16-C34)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
F3-PAH	<250		250	ug/L		12-APR-18	
F4 (C34-C50)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
Total Hydrocarbons (C6-C50)	<370		370	ug/L		12-APR-18	
Chrom. to baseline at nC50	YES				09-APR-18	10-APR-18	R4007710

* 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
L2077097-5 GW-11149990-040518-005 Sampled By: T. WITTMAIER on 05-APR-18 @ 18:50 Matrix: WATER							
Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	95.4		60-140	%	09-APR-18	10-APR-18	R4007710
Surrogate: 3,4-Dichlorotoluene	68.4		60-140	%		10-APR-18	R4007413
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	0.838		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Acenaphthylene	0.036		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Anthracene	0.023		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)pyrene	<0.010		0.010	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(b)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(k)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Chrysene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluoranthene	0.102		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluorene	0.389		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
1+2-Methylnaphthalenes	0.029		0.028	ug/L		12-APR-18	
1-Methylnaphthalene	0.029		0.020	ug/L	09-APR-18	12-APR-18	R4009214
2-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Naphthalene	<0.050		0.050	ug/L	09-APR-18	12-APR-18	R4009214
Phenanthrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Pyrene	0.097		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Acenaphthene	105.2		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d12-Chrysene	105.3		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d8-Naphthalene	N/A	SMI	60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Phenanthrene	112.6		60-140	%	09-APR-18	12-APR-18	R4009214
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
4-Chloroaniline	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2-Chlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
Diethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Dimethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		11-APR-18	

* 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
L2077097-5 GW-11149990-040518-005 Sampled By: T. WITTMAIER on 05-APR-18 @ 18:50 Matrix: WATER							
Semi-Volatile Organics							
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-APR-18	10-APR-18	R4008098
Pentachlorophenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
Phenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Surrogate: 2-Fluorobiphenyl	88.7		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Nitrobenzene d5	102.7		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Phenol d5	50.8		30-130	%	09-APR-18	10-APR-18	R4008098
Surrogate: p-Terphenyl d14	93.5		60-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: 2,4,6-Tribromophenol	111.1		50-140	%	09-APR-18	10-APR-18	R4008098
L2077097-6 GW-11149990-040618-006 Sampled By: T. WITTMAIER on 06-APR-18 @ 09:45 Matrix: WATER							
Physical Tests							
Conductivity	1.49		0.0030	mS/cm		07-APR-18	R4007280
pH	7.87		0.10	pH units		07-APR-18	R4007280
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	248		10	mg/L		11-APR-18	R4008410
Ammonia, Total (as N)	0.832		0.020	mg/L		09-APR-18	R4007184
Chloride (Cl)	309		0.50	mg/L		11-APR-18	R4009126
Nitrate (as N)	<0.020		0.020	mg/L		11-APR-18	R4009126
Nitrite (as N)	<0.010		0.010	mg/L		11-APR-18	R4009126
Total Kjeldahl Nitrogen	0.98		0.15	mg/L	11-APR-18	11-APR-18	R4008601
Phosphorus, Total	0.106		0.0030	mg/L	11-APR-18	12-APR-18	R4008707
Sulfate (SO4)	30.4		0.30	mg/L		11-APR-18	R4009126
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		11-APR-18	R4008951
Organic / Inorganic Carbon							
Dissolved Organic Carbon	7.7		1.0	mg/L		09-APR-18	R4007873
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					09-APR-18	R4006771
Dissolved Metals Filtration Location	FIELD					09-APR-18	R4006710
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Arsenic (As)-Dissolved	0.92		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Barium (Ba)-Dissolved	58.5		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Boron (B)-Dissolved	14		10	ug/L	09-APR-18	09-APR-18	R4007206
Cadmium (Cd)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Copper (Cu)-Dissolved	0.27		0.20	ug/L	09-APR-18	09-APR-18	R4007206

* 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
L2077097-6 GW-11149990-040618-006 Sampled By: T. WITTMAIER on 06-APR-18 @ 09:45 Matrix: WATER							
Dissolved Metals							
Lead (Pb)-Dissolved	0.066		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4006952
Molybdenum (Mo)-Dissolved	1.24		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Nickel (Ni)-Dissolved	0.51		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Selenium (Se)-Dissolved	0.094		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Sodium (Na)-Dissolved	186000	DLHC	5000	ug/L	09-APR-18	09-APR-18	R4007206
Thallium (Tl)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Uranium (U)-Dissolved	0.371		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Zinc (Zn)-Dissolved	5.2		1.0	ug/L	09-APR-18	09-APR-18	R4007206
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		09-APR-18	R4007515
Aggregate Organics							
Phenols (4AAP)	<0.0010		0.0010	mg/L		09-APR-18	R4007047
Volatile Organic Compounds							
Acetone	<30		30	ug/L		10-APR-18	R4007413
Benzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Bromodichloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Bromoform	<5.0		5.0	ug/L		10-APR-18	R4007413
Bromomethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Carbon tetrachloride	<0.20		0.20	ug/L		10-APR-18	R4007413
Chlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dibromochloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Chloroform	<1.0		1.0	ug/L		10-APR-18	R4007413
1,2-Dibromoethane	<0.20		0.20	ug/L		10-APR-18	R4007413
1,2-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,3-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,4-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dichlorodifluoromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
1,1-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,2-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Methylene Chloride	<5.0		5.0	ug/L		10-APR-18	R4007413
1,2-Dichloropropane	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		10-APR-18	
Ethylbenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
n-Hexane	<0.50		0.50	ug/L		10-APR-18	R4007413

* 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
L2077097-6 GW-11149990-040618-006 Sampled By: T. WITTMAIER on 06-APR-18 @ 09:45 Matrix: WATER							
Volatile Organic Compounds							
Methyl Ethyl Ketone	<20		20	ug/L		10-APR-18	R4007413
Methyl Isobutyl Ketone	<20		20	ug/L		10-APR-18	R4007413
MTBE	<2.0		2.0	ug/L		10-APR-18	R4007413
Styrene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Tetrachloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Toluene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichlorofluoromethane	<5.0		5.0	ug/L		10-APR-18	R4007413
Vinyl chloride	<0.50		0.50	ug/L		10-APR-18	R4007413
o-Xylene	<0.30		0.30	ug/L		10-APR-18	R4007413
m+p-Xylenes	<0.40		0.40	ug/L		10-APR-18	R4007413
Xylenes (Total)	<0.50		0.50	ug/L		10-APR-18	
Surrogate: 4-Bromofluorobenzene	99.1		70-130	%		10-APR-18	R4007413
Surrogate: 1,4-Difluorobenzene	102.7		70-130	%		10-APR-18	R4007413
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		10-APR-18	R4007413
F1-BTEX	<25		25	ug/L		12-APR-18	
F2 (C10-C16)	<100		100	ug/L	09-APR-18	10-APR-18	R4007710
F2-Naphth	<100		100	ug/L		12-APR-18	
F3 (C16-C34)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
F3-PAH	<250		250	ug/L		12-APR-18	
F4 (C34-C50)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
Total Hydrocarbons (C6-C50)	<370		370	ug/L		12-APR-18	
Chrom. to baseline at nC50	YES				09-APR-18	10-APR-18	R4007710
Surrogate: 2-Bromobenzotrifluoride	97.7		60-140	%	09-APR-18	10-APR-18	R4007710
Surrogate: 3,4-Dichlorotoluene	78.3		60-140	%		10-APR-18	R4007413
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Acenaphthylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)pyrene	<0.010		0.010	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(b)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(k)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Chrysene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214

* 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
L2077097-6 GW-11149990-040618-006 Sampled By: T. WITTMAIER on 06-APR-18 @ 09:45 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Fluoranthene	0.047		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluorene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		12-APR-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
2-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Naphthalene	<0.050		0.050	ug/L	09-APR-18	12-APR-18	R4009214
Phenanthrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Pyrene	0.063		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Acenaphthene	98.3		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d12-Chrysene	75.8		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d8-Naphthalene	99.7		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Phenanthrene	100.6		60-140	%	09-APR-18	12-APR-18	R4009214
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
4-Chloroaniline	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2-Chlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
Diethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Dimethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		11-APR-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-APR-18	10-APR-18	R4008098
Pentachlorophenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
Phenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Surrogate: 2-Fluorobiphenyl	94.4		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Nitrobenzene d5	99.0		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Phenol d5	47.8		30-130	%	09-APR-18	10-APR-18	R4008098
Surrogate: p-Terphenyl d14	103.6		60-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: 2,4,6-Tribromophenol	105.0		50-140	%	09-APR-18	10-APR-18	R4008098
L2077097-7 GW-11149990-040618-007 Sampled By: T. WITTMAIER on 06-APR-18 @ 11:00 Matrix: WATER							

* 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
L2077097-7 GW-11149990-040618-007 Sampled By: T. WITTMAIER on 06-APR-18 @ 11:00 Matrix: WATER							
Physical Tests							
Conductivity	0.607		0.0030	mS/cm		07-APR-18	R4007280
pH	7.96		0.10	pH units		07-APR-18	R4007280
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	202		10	mg/L		11-APR-18	R4008410
Ammonia, Total (as N)	0.414	DLHC	0.040	mg/L		09-APR-18	R4007184
Chloride (Cl)	54.0	DLDS	2.5	mg/L		11-APR-18	R4009126
Nitrate (as N)	0.60	DLDS	0.10	mg/L		11-APR-18	R4009126
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		11-APR-18	R4009126
Total Kjeldahl Nitrogen	1.36		0.15	mg/L	11-APR-18	11-APR-18	R4008601
Phosphorus, Total	0.0227		0.0030	mg/L	11-APR-18	12-APR-18	R4008707
Sulfate (SO4)	22.9	DLDS	1.5	mg/L		11-APR-18	R4009126
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		11-APR-18	R4008951
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.3		1.0	mg/L		09-APR-18	R4007873
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					09-APR-18	R4006771
Dissolved Metals Filtration Location	FIELD					09-APR-18	R4006710
Antimony (Sb)-Dissolved	0.16		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Arsenic (As)-Dissolved	0.24		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Barium (Ba)-Dissolved	24.5		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Boron (B)-Dissolved	11		10	ug/L	09-APR-18	09-APR-18	R4007206
Cadmium (Cd)-Dissolved	0.046		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Copper (Cu)-Dissolved	3.25		0.20	ug/L	09-APR-18	09-APR-18	R4007206
Lead (Pb)-Dissolved	0.123		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4006952
Molybdenum (Mo)-Dissolved	0.419		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Nickel (Ni)-Dissolved	0.65		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Selenium (Se)-Dissolved	0.230		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Sodium (Na)-Dissolved	30200		500	ug/L	09-APR-18	09-APR-18	R4007206
Thallium (Tl)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Uranium (U)-Dissolved	0.598		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Zinc (Zn)-Dissolved	22.6		1.0	ug/L	09-APR-18	09-APR-18	R4007206
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		09-APR-18	R4007515
Aggregate Organics							
Phenols (4AAP)	<0.0010		0.0010	mg/L		09-APR-18	R4007047

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-7 GW-11149990-040618-007 Sampled By: T. WITTMAIER on 06-APR-18 @ 11:00 Matrix: WATER							
Aggregate Organics **Volatile Organic Compounds**							
Acetone	<30		30	ug/L		10-APR-18	R4007413
Benzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Bromodichloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Bromoform	<5.0		5.0	ug/L		10-APR-18	R4007413
Bromomethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Carbon tetrachloride	<0.20		0.20	ug/L		10-APR-18	R4007413
Chlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dibromochloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Chloroform	<1.0		1.0	ug/L		10-APR-18	R4007413
1,2-Dibromoethane	<0.20		0.20	ug/L		10-APR-18	R4007413
1,2-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,3-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,4-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dichlorodifluoromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
1,1-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,2-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Methylene Chloride	<5.0		5.0	ug/L		10-APR-18	R4007413
1,2-Dichloropropane	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		10-APR-18	
Ethylbenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
n-Hexane	<0.50		0.50	ug/L		10-APR-18	R4007413
Methyl Ethyl Ketone	<20		20	ug/L		10-APR-18	R4007413
Methyl Isobutyl Ketone	<20		20	ug/L		10-APR-18	R4007413
MTBE	<2.0		2.0	ug/L		10-APR-18	R4007413
Styrene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Tetrachloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Toluene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichlorofluoromethane	<5.0		5.0	ug/L		10-APR-18	R4007413
Vinyl chloride	<0.50		0.50	ug/L		10-APR-18	R4007413
o-Xylene	<0.30		0.30	ug/L		10-APR-18	R4007413

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-7 GW-11149990-040618-007 Sampled By: T. WITTMAIER on 06-APR-18 @ 11:00 Matrix: WATER							
Volatile Organic Compounds							
m+p-Xylenes	<0.40		0.40	ug/L		10-APR-18	R4007413
Xylenes (Total)	<0.50		0.50	ug/L		10-APR-18	
Surrogate: 4-Bromofluorobenzene	98.6		70-130	%		10-APR-18	R4007413
Surrogate: 1,4-Difluorobenzene	102.2		70-130	%		10-APR-18	R4007413
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		10-APR-18	R4007413
F1-BTEX	<25		25	ug/L		12-APR-18	
F2 (C10-C16)	<100		100	ug/L	09-APR-18	10-APR-18	R4007710
F2-Naphth	<100		100	ug/L		12-APR-18	
F3 (C16-C34)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
F3-PAH	<250		250	ug/L		12-APR-18	
F4 (C34-C50)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
Total Hydrocarbons (C6-C50)	<370		370	ug/L		12-APR-18	
Chrom. to baseline at nC50	YES				09-APR-18	10-APR-18	R4007710
Surrogate: 2-Bromobenzotrifluoride	104.3		60-140	%	09-APR-18	10-APR-18	R4007710
Surrogate: 3,4-Dichlorotoluene	79.0		60-140	%		10-APR-18	R4007413
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Acenaphthylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)pyrene	<0.010		0.010	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(b)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(k)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Chrysene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluorene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		12-APR-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
2-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Naphthalene	<0.050		0.050	ug/L	09-APR-18	12-APR-18	R4009214
Phenanthrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Acenaphthene	105.5		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d12-Chrysene	73.5		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d8-Naphthalene	108.3		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Phenanthrene	107.6		60-140	%	09-APR-18	12-APR-18	R4009214
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-7 GW-11149990-040618-007 Sampled By: T. WITTMAIER on 06-APR-18 @ 11:00 Matrix: WATER							
Semi-Volatile Organics							
4-Chloroaniline	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2-Chlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
Diethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Dimethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		11-APR-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-APR-18	10-APR-18	R4008098
Pentachlorophenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
Phenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Surrogate: 2-Fluorobiphenyl	93.3		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Nitrobenzene d5	99.5		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Phenol d5	50.3		30-130	%	09-APR-18	10-APR-18	R4008098
Surrogate: p-Terphenyl d14	103.9		60-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: 2,4,6-Tribromophenol	100.3		50-140	%	09-APR-18	10-APR-18	R4008098
L2077097-8 GW-11149990-040618-008 Sampled By: T. WITTMAIER on 06-APR-18 @ 12:40 Matrix: WATER							
Physical Tests							
Conductivity	1.13		0.0030	mS/cm		07-APR-18	R4007280
pH	8.13		0.10	pH units		07-APR-18	R4007280
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	298		10	mg/L		11-APR-18	R4008410
Ammonia, Total (as N)	0.149	DLHC	0.040	mg/L		09-APR-18	R4007184
Chloride (Cl)	273	DLDS	2.5	mg/L		11-APR-18	R4009126
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		11-APR-18	R4009126
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		11-APR-18	R4009126
Total Kjeldahl Nitrogen	0.21		0.15	mg/L	11-APR-18	11-APR-18	R4008601
Phosphorus, Total	0.0037		0.0030	mg/L	11-APR-18	12-APR-18	R4008707
Sulfate (SO4)	29.3	DLDS	1.5	mg/L		11-APR-18	R4009126
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		11-APR-18	R4008951
Organic / Inorganic Carbon							

* 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
L2077097-8 GW-11149990-040618-008 Sampled By: T. WITTMAIER on 06-APR-18 @ 12:40 Matrix: WATER							
Organic / Inorganic Carbon							
Dissolved Organic Carbon	3.6		1.0	mg/L		09-APR-18	R4007873
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					09-APR-18	R4006771
Dissolved Metals Filtration Location	FIELD					09-APR-18	R4006710
Antimony (Sb)-Dissolved	0.11		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Arsenic (As)-Dissolved	0.44		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Barium (Ba)-Dissolved	50.1		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Boron (B)-Dissolved	40		10	ug/L	09-APR-18	09-APR-18	R4007206
Cadmium (Cd)-Dissolved	0.056		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Cobalt (Co)-Dissolved	0.28		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Copper (Cu)-Dissolved	0.93		0.20	ug/L	09-APR-18	09-APR-18	R4007206
Lead (Pb)-Dissolved	2.00		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4006952
Molybdenum (Mo)-Dissolved	2.20		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Nickel (Ni)-Dissolved	5.96		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Selenium (Se)-Dissolved	0.550		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Sodium (Na)-Dissolved	144000	DLHC	5000	ug/L	09-APR-18	09-APR-18	R4007206
Thallium (Tl)-Dissolved	0.168		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Uranium (U)-Dissolved	2.19		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Zinc (Zn)-Dissolved	227		1.0	ug/L	09-APR-18	09-APR-18	R4007206
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		09-APR-18	R4007515
Aggregate Organics							
Phenols (4AAP)	<0.0010		0.0010	mg/L		09-APR-18	R4007047
Volatile Organic Compounds							
Acetone	<30		30	ug/L		10-APR-18	R4007413
Benzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Bromodichloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Bromoform	<5.0		5.0	ug/L		10-APR-18	R4007413
Bromomethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Carbon tetrachloride	<0.20		0.20	ug/L		10-APR-18	R4007413
Chlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dibromochloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Chloroform	<1.0		1.0	ug/L		10-APR-18	R4007413
1,2-Dibromoethane	<0.20		0.20	ug/L		10-APR-18	R4007413
1,2-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,3-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,4-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-8 GW-11149990-040618-008 Sampled By: T. WITTMAIER on 06-APR-18 @ 12:40 Matrix: WATER							
Volatile Organic Compounds							
Dichlorodifluoromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
1,1-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,2-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,2-Dichloroethylene	0.54		0.50	ug/L		10-APR-18	R4007413
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Methylene Chloride	<5.0		5.0	ug/L		10-APR-18	R4007413
1,2-Dichloropropane	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		10-APR-18	
Ethylbenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
n-Hexane	<0.50		0.50	ug/L		10-APR-18	R4007413
Methyl Ethyl Ketone	<20		20	ug/L		10-APR-18	R4007413
Methyl Isobutyl Ketone	<20		20	ug/L		10-APR-18	R4007413
MTBE	<2.0		2.0	ug/L		10-APR-18	R4007413
Styrene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Tetrachloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Toluene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichloroethylene	1.88		0.50	ug/L		10-APR-18	R4007413
Trichlorofluoromethane	<5.0		5.0	ug/L		10-APR-18	R4007413
Vinyl chloride	<0.50		0.50	ug/L		10-APR-18	R4007413
o-Xylene	<0.30		0.30	ug/L		10-APR-18	R4007413
m+p-Xylenes	<0.40		0.40	ug/L		10-APR-18	R4007413
Xylenes (Total)	<0.50		0.50	ug/L		10-APR-18	
Surrogate: 4-Bromofluorobenzene	98.8		70-130	%		10-APR-18	R4007413
Surrogate: 1,4-Difluorobenzene	102.2		70-130	%		10-APR-18	R4007413
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		10-APR-18	R4007413
F1-BTEX	<25		25	ug/L		12-APR-18	
F2 (C10-C16)	<100		100	ug/L	09-APR-18	10-APR-18	R4007710
F2-Naphth	<100		100	ug/L		12-APR-18	
F3 (C16-C34)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
F3-PAH	<250		250	ug/L		12-APR-18	
F4 (C34-C50)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
Total Hydrocarbons (C6-C50)	<370		370	ug/L		12-APR-18	
Chrom. to baseline at nC50	YES				09-APR-18	10-APR-18	R4007710

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-8 GW-11149990-040618-008 Sampled By: T. WITTMAIER on 06-APR-18 @ 12:40 Matrix: WATER							
Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	96.9		60-140	%	09-APR-18	10-APR-18	R4007710
Surrogate: 3,4-Dichlorotoluene	74.0		60-140	%		10-APR-18	R4007413
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Acenaphthylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)pyrene	<0.010		0.010	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(b)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(k)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Chrysene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluorene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		12-APR-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
2-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Naphthalene	<0.050		0.050	ug/L	09-APR-18	12-APR-18	R4009214
Phenanthrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Acenaphthene	97.7		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d12-Chrysene	81.9		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d8-Naphthalene	99.6		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Phenanthrene	99.1		60-140	%	09-APR-18	12-APR-18	R4009214
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
4-Chloroaniline	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2-Chlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
Diethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Dimethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		11-APR-18	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-8 GW-11149990-040618-008 Sampled By: T. WITTMAIER on 06-APR-18 @ 12:40 Matrix: WATER							
Semi-Volatile Organics							
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-APR-18	10-APR-18	R4008098
Pentachlorophenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
Phenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Surrogate: 2-Fluorobiphenyl	95.6		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Nitrobenzene d5	100.1		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Phenol d5	48.4		30-130	%	09-APR-18	10-APR-18	R4008098
Surrogate: p-Terphenyl d14	100.5		60-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: 2,4,6-Tribromophenol	102.1		50-140	%	09-APR-18	10-APR-18	R4008098
L2077097-9 GW-11149990-040618-009 Sampled By: T. WITTMAIER on 06-APR-18 @ 13:50 Matrix: WATER							
Physical Tests							
Conductivity	1.13		0.0030	mS/cm		07-APR-18	R4007280
pH	8.12		0.10	pH units		07-APR-18	R4007280
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	475		10	mg/L		11-APR-18	R4008410
Ammonia, Total (as N)	10.0	DLHC	0.40	mg/L		09-APR-18	R4007184
Chloride (Cl)	208	DLDS	2.5	mg/L		11-APR-18	R4009126
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		11-APR-18	R4009126
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		11-APR-18	R4009126
Total Kjeldahl Nitrogen	12.3	DLHC	0.30	mg/L	11-APR-18	11-APR-18	R4008601
Phosphorus, Total	0.0524		0.0030	mg/L	11-APR-18	12-APR-18	R4008707
Sulfate (SO4)	5.0	DLDS	1.5	mg/L		11-APR-18	R4009126
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		11-APR-18	R4008951
Organic / Inorganic Carbon							
Dissolved Organic Carbon	10.5		1.0	mg/L		09-APR-18	R4007873
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					09-APR-18	R4006771
Dissolved Metals Filtration Location	FIELD					09-APR-18	R4006710
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Arsenic (As)-Dissolved	12.5		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Barium (Ba)-Dissolved	177		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Boron (B)-Dissolved	689		10	ug/L	09-APR-18	09-APR-18	R4007206
Cadmium (Cd)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Cobalt (Co)-Dissolved	1.26		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Copper (Cu)-Dissolved	<0.20		0.20	ug/L	09-APR-18	09-APR-18	R4007206

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-9 GW-11149990-040618-009 Sampled By: T. WITTMAIER on 06-APR-18 @ 13:50 Matrix: WATER							
Dissolved Metals							
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4006952
Molybdenum (Mo)-Dissolved	0.821		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Nickel (Ni)-Dissolved	1.79		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Selenium (Se)-Dissolved	0.219		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Sodium (Na)-Dissolved	99700		500	ug/L	09-APR-18	09-APR-18	R4007206
Thallium (Tl)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Uranium (U)-Dissolved	0.091		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Zinc (Zn)-Dissolved	1.5		1.0	ug/L	09-APR-18	09-APR-18	R4007206
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		09-APR-18	R4007515
Aggregate Organics							
Phenols (4AAP)	0.0029		0.0010	mg/L		09-APR-18	R4007047
Volatile Organic Compounds							
Acetone	<30		30	ug/L		10-APR-18	R4007413
Benzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Bromodichloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Bromoform	<5.0		5.0	ug/L		10-APR-18	R4007413
Bromomethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Carbon tetrachloride	<0.20		0.20	ug/L		10-APR-18	R4007413
Chlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dibromochloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Chloroform	<1.0		1.0	ug/L		10-APR-18	R4007413
1,2-Dibromoethane	<0.20		0.20	ug/L		10-APR-18	R4007413
1,2-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,3-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,4-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dichlorodifluoromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
1,1-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,2-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Methylene Chloride	<5.0		5.0	ug/L		10-APR-18	R4007413
1,2-Dichloropropane	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		10-APR-18	
Ethylbenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
n-Hexane	<0.50		0.50	ug/L		10-APR-18	R4007413

* 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
L2077097-9 GW-11149990-040618-009 Sampled By: T. WITTMAIER on 06-APR-18 @ 13:50 Matrix: WATER							
Volatile Organic Compounds							
Methyl Ethyl Ketone	<20		20	ug/L		10-APR-18	R4007413
Methyl Isobutyl Ketone	<20		20	ug/L		10-APR-18	R4007413
MTBE	<2.0		2.0	ug/L		10-APR-18	R4007413
Styrene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Tetrachloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Toluene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichlorofluoromethane	<5.0		5.0	ug/L		10-APR-18	R4007413
Vinyl chloride	<0.50		0.50	ug/L		10-APR-18	R4007413
o-Xylene	<0.30		0.30	ug/L		10-APR-18	R4007413
m+p-Xylenes	<0.40		0.40	ug/L		10-APR-18	R4007413
Xylenes (Total)	<0.50		0.50	ug/L		10-APR-18	
Surrogate: 4-Bromofluorobenzene	99.4		70-130	%		10-APR-18	R4007413
Surrogate: 1,4-Difluorobenzene	102.2		70-130	%		10-APR-18	R4007413
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		10-APR-18	R4007413
F1-BTEX	<25		25	ug/L		12-APR-18	
F2 (C10-C16)	<100		100	ug/L	09-APR-18	10-APR-18	R4007710
F2-Naphth	<100		100	ug/L		12-APR-18	
F3 (C16-C34)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
F3-PAH	<250		250	ug/L		12-APR-18	
F4 (C34-C50)	<250		250	ug/L	09-APR-18	10-APR-18	R4007710
Total Hydrocarbons (C6-C50)	<370		370	ug/L		12-APR-18	
Chrom. to baseline at nC50	YES				09-APR-18	10-APR-18	R4007710
Surrogate: 2-Bromobenzotrifluoride	99.6		60-140	%	09-APR-18	10-APR-18	R4007710
Surrogate: 3,4-Dichlorotoluene	75.9		60-140	%		10-APR-18	R4007413
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Acenaphthylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(a)pyrene	<0.010		0.010	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(b)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Benzo(k)fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Chrysene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214

* 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
L2077097-9 GW-11149990-040618-009 Sampled By: T. WITTMAIER on 06-APR-18 @ 13:50 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Fluoranthene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Fluorene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		12-APR-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
2-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Naphthalene	<0.050		0.050	ug/L	09-APR-18	12-APR-18	R4009214
Phenanthrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Pyrene	<0.020		0.020	ug/L	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Acenaphthene	98.9		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d12-Chrysene	91.5		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d8-Naphthalene	101.8		60-140	%	09-APR-18	12-APR-18	R4009214
Surrogate: d10-Phenanthrene	101.7		60-140	%	09-APR-18	12-APR-18	R4009214
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
4-Chloroaniline	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2-Chlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
Diethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Dimethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		11-APR-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-APR-18	10-APR-18	R4008098
Pentachlorophenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
Phenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Surrogate: 2-Fluorobiphenyl	96.8		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Nitrobenzene d5	99.4		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Phenol d5	45.1		30-130	%	09-APR-18	10-APR-18	R4008098
Surrogate: p-Terphenyl d14	95.9		60-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: 2,4,6-Tribromophenol	106.9		50-140	%	09-APR-18	10-APR-18	R4008098
L2077097-10 GW-11149990-040618-010 Sampled By: T. WITTMAIER on 06-APR-18 @ 15:10 Matrix: WATER							

* 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
L2077097-10 GW-11149990-040618-010 Sampled By: T. WITTMAIER on 06-APR-18 @ 15:10 Matrix: WATER							
Physical Tests							
Conductivity	1.71		0.0030	mS/cm		07-APR-18	R4007280
pH	7.39		0.10	pH units		07-APR-18	R4007280
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	455	DLHC	20	mg/L		11-APR-18	R4008410
Ammonia, Total (as N)	3.43	DLHC	0.10	mg/L		09-APR-18	R4007184
Chloride (Cl)	279	DLDS	2.5	mg/L		11-APR-18	R4009126
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		11-APR-18	R4009126
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		11-APR-18	R4009126
Total Kjeldahl Nitrogen	4.52		0.15	mg/L	11-APR-18	11-APR-18	R4008601
Phosphorus, Total	0.0939		0.0030	mg/L	11-APR-18	12-APR-18	R4008707
Sulfate (SO4)	2.9	DLDS	1.5	mg/L		11-APR-18	R4009126
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		11-APR-18	R4008951
Organic / Inorganic Carbon							
Dissolved Organic Carbon	9.7		1.0	mg/L		09-APR-18	R4007873
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					09-APR-18	R4006771
Dissolved Metals Filtration Location	FIELD					09-APR-18	R4006710
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Arsenic (As)-Dissolved	30.4		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Barium (Ba)-Dissolved	138		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Boron (B)-Dissolved	749		10	ug/L	09-APR-18	09-APR-18	R4007206
Cadmium (Cd)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Cobalt (Co)-Dissolved	0.35		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Copper (Cu)-Dissolved	<0.20		0.20	ug/L	09-APR-18	09-APR-18	R4007206
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4006952
Molybdenum (Mo)-Dissolved	3.37		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Nickel (Ni)-Dissolved	0.83		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Selenium (Se)-Dissolved	0.067		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Sodium (Na)-Dissolved	159000	DLHC	5000	ug/L	09-APR-18	09-APR-18	R4007206
Thallium (Tl)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Uranium (U)-Dissolved	0.132		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Zinc (Zn)-Dissolved	<1.0		1.0	ug/L	09-APR-18	09-APR-18	R4007206
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		09-APR-18	R4007515
Aggregate Organics							
Phenols (4AAP)	0.0026		0.0010	mg/L		09-APR-18	R4007047

* 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
L2077097-10 GW-11149990-040618-010 Sampled By: T. WITTMAIER on 06-APR-18 @ 15:10 Matrix: WATER							
Aggregate Organics **Volatile Organic Compounds**							
Acetone	<30		30	ug/L		10-APR-18	R4007413
Benzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Bromodichloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Bromoform	<5.0		5.0	ug/L		10-APR-18	R4007413
Bromomethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Carbon tetrachloride	<0.20		0.20	ug/L		10-APR-18	R4007413
Chlorobenzene	1.41		0.50	ug/L		10-APR-18	R4007413
Dibromochloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Chloroform	<1.0		1.0	ug/L		10-APR-18	R4007413
1,2-Dibromoethane	<0.20		0.20	ug/L		10-APR-18	R4007413
1,2-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,3-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,4-Dichlorobenzene	1.04		0.50	ug/L		10-APR-18	R4007413
Dichlorodifluoromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
1,1-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,2-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Methylene Chloride	<5.0		5.0	ug/L		10-APR-18	R4007413
1,2-Dichloropropane	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		10-APR-18	
Ethylbenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
n-Hexane	<0.50		0.50	ug/L		10-APR-18	R4007413
Methyl Ethyl Ketone	<20		20	ug/L		10-APR-18	R4007413
Methyl Isobutyl Ketone	<20		20	ug/L		10-APR-18	R4007413
MTBE	<2.0		2.0	ug/L		10-APR-18	R4007413
Styrene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Tetrachloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Toluene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichlorofluoromethane	<5.0		5.0	ug/L		10-APR-18	R4007413
Vinyl chloride	<0.50		0.50	ug/L		10-APR-18	R4007413
o-Xylene	<0.30		0.30	ug/L		10-APR-18	R4007413

* 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
L2077097-10 GW-11149990-040618-010 Sampled By: T. WITTMAIER on 06-APR-18 @ 15:10 Matrix: WATER							
Volatile Organic Compounds							
m+p-Xylenes	<0.40		0.40	ug/L		10-APR-18	R4007413
Xylenes (Total)	<0.50		0.50	ug/L		10-APR-18	
Surrogate: 4-Bromofluorobenzene	98.4		70-130	%		10-APR-18	R4007413
Surrogate: 1,4-Difluorobenzene	102.5		70-130	%		10-APR-18	R4007413
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		10-APR-18	R4007413
F1-BTEX	<25		25	ug/L		11-APR-18	
F2 (C10-C16)	<100		100	ug/L	09-APR-18	10-APR-18	R4008004
F2-Naphth	<100		100	ug/L		11-APR-18	
F3 (C16-C34)	<250		250	ug/L	09-APR-18	10-APR-18	R4008004
F3-PAH	<250		250	ug/L		11-APR-18	
F4 (C34-C50)	<250		250	ug/L	09-APR-18	10-APR-18	R4008004
Total Hydrocarbons (C6-C50)	<370		370	ug/L		11-APR-18	
Chrom. to baseline at nC50	YES				09-APR-18	10-APR-18	R4008004
Surrogate: 2-Bromobenzotrifluoride	96.4		60-140	%	09-APR-18	10-APR-18	R4008004
Surrogate: 3,4-Dichlorotoluene	76.7		60-140	%		10-APR-18	R4007413
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Acenaphthylene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Anthracene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Benzo(a)anthracene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Benzo(a)pyrene	<0.010		0.010	ug/L	09-APR-18	11-APR-18	R4007985
Benzo(b)fluoranthene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Benzo(k)fluoranthene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Chrysene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Fluoranthene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Fluorene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		11-APR-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
2-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Naphthalene	<0.050		0.050	ug/L	09-APR-18	11-APR-18	R4007985
Phenanthrene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Pyrene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Surrogate: d10-Acenaphthene	107.7		60-140	%	09-APR-18	11-APR-18	R4007985
Surrogate: d12-Chrysene	101.9		60-140	%	09-APR-18	11-APR-18	R4007985
Surrogate: d8-Naphthalene	107.5		60-140	%	09-APR-18	11-APR-18	R4007985
Surrogate: d10-Phenanthrene	106.9		60-140	%	09-APR-18	11-APR-18	R4007985
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098

* 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
L2077097-10 GW-11149990-040618-010 Sampled By: T. WITTMAIER on 06-APR-18 @ 15:10 Matrix: WATER							
Semi-Volatile Organics							
4-Chloroaniline	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2-Chlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
Diethylphthalate	0.25		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Dimethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		11-APR-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-APR-18	10-APR-18	R4008098
Pentachlorophenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
Phenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Surrogate: 2-Fluorobiphenyl	83.1		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Nitrobenzene d5	87.3		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Phenol d5	45.1		30-130	%	09-APR-18	10-APR-18	R4008098
Surrogate: p-Terphenyl d14	93.3		60-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: 2,4,6-Tribromophenol	92.5		50-140	%	09-APR-18	10-APR-18	R4008098
L2077097-11 GW-11149990-040618-011 Sampled By: T. WITTMAIER on 06-APR-18 @ 15:55 Matrix: WATER							
Physical Tests							
Conductivity	0.517		0.0030	mS/cm		07-APR-18	R4007280
pH	8.13		0.10	pH units		07-APR-18	R4007280
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	222		10	mg/L		11-APR-18	R4008410
Ammonia, Total (as N)	<0.020		0.020	mg/L		09-APR-18	R4007184
Chloride (Cl)	13.7		0.50	mg/L		11-APR-18	R4009126
Nitrate (as N)	5.73		0.020	mg/L		11-APR-18	R4009126
Nitrite (as N)	<0.010		0.010	mg/L		11-APR-18	R4009126
Total Kjeldahl Nitrogen	0.74		0.15	mg/L	11-APR-18	11-APR-18	R4008601
Phosphorus, Total	0.0281		0.0030	mg/L	11-APR-18	12-APR-18	R4008707
Sulfate (SO4)	5.32		0.30	mg/L		11-APR-18	R4009126
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		11-APR-18	R4008951
Organic / Inorganic Carbon							

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-11 GW-11149990-040618-011 Sampled By: T. WITTMAIER on 06-APR-18 @ 15:55 Matrix: WATER							
Organic / Inorganic Carbon							
Dissolved Organic Carbon	7.2		1.0	mg/L		09-APR-18	R4007873
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					09-APR-18	R4006771
Dissolved Metals Filtration Location	FIELD					09-APR-18	R4006710
Antimony (Sb)-Dissolved	0.37		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Arsenic (As)-Dissolved	0.61		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Barium (Ba)-Dissolved	22.1		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Boron (B)-Dissolved	16		10	ug/L	09-APR-18	10-APR-18	R4007206
Cadmium (Cd)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Chromium (Cr)-Dissolved	3.02		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-APR-18	09-APR-18	R4007206
Copper (Cu)-Dissolved	5.55		0.20	ug/L	09-APR-18	09-APR-18	R4007206
Lead (Pb)-Dissolved	0.062		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4006952
Molybdenum (Mo)-Dissolved	1.40		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Nickel (Ni)-Dissolved	<0.50		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Selenium (Se)-Dissolved	0.190		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	09-APR-18	09-APR-18	R4007206
Sodium (Na)-Dissolved	5290		500	ug/L	09-APR-18	09-APR-18	R4007206
Thallium (Tl)-Dissolved	<0.010		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Uranium (U)-Dissolved	1.21		0.010	ug/L	09-APR-18	09-APR-18	R4007206
Vanadium (V)-Dissolved	0.60		0.50	ug/L	09-APR-18	09-APR-18	R4007206
Zinc (Zn)-Dissolved	1.0		1.0	ug/L	09-APR-18	09-APR-18	R4007206
Speciated Metals							
Chromium, Hexavalent	2.8		1.0	ug/L		09-APR-18	R4007515
Aggregate Organics							
Phenols (4AAP)	<0.0010		0.0010	mg/L		09-APR-18	R4007047
Volatile Organic Compounds							
Acetone	<30		30	ug/L		10-APR-18	R4007413
Benzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Bromodichloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Bromoform	<5.0		5.0	ug/L		10-APR-18	R4007413
Bromomethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Carbon tetrachloride	<0.20		0.20	ug/L		10-APR-18	R4007413
Chlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dibromochloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Chloroform	<1.0		1.0	ug/L		10-APR-18	R4007413
1,2-Dibromoethane	<0.20		0.20	ug/L		10-APR-18	R4007413
1,2-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,3-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,4-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413

* 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
L2077097-11 GW-11149990-040618-011 Sampled By: T. WITTMAIER on 06-APR-18 @ 15:55 Matrix: WATER							
Volatile Organic Compounds							
Dichlorodifluoromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
1,1-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,2-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Methylene Chloride	<5.0		5.0	ug/L		10-APR-18	R4007413
1,2-Dichloropropane	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		10-APR-18	
Ethylbenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
n-Hexane	<0.50		0.50	ug/L		10-APR-18	R4007413
Methyl Ethyl Ketone	<20		20	ug/L		10-APR-18	R4007413
Methyl Isobutyl Ketone	<20		20	ug/L		10-APR-18	R4007413
MTBE	<2.0		2.0	ug/L		10-APR-18	R4007413
Styrene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Tetrachloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Toluene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichlorofluoromethane	<5.0		5.0	ug/L		10-APR-18	R4007413
Vinyl chloride	<0.50		0.50	ug/L		10-APR-18	R4007413
o-Xylene	<0.30		0.30	ug/L		10-APR-18	R4007413
m+p-Xylenes	<0.40		0.40	ug/L		10-APR-18	R4007413
Xylenes (Total)	<0.50		0.50	ug/L		10-APR-18	
Surrogate: 4-Bromofluorobenzene	99.8		70-130	%		10-APR-18	R4007413
Surrogate: 1,4-Difluorobenzene	102.2		70-130	%		10-APR-18	R4007413
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		10-APR-18	R4007413
F1-BTEX	<25		25	ug/L		11-APR-18	
F2 (C10-C16)	<100		100	ug/L	09-APR-18	10-APR-18	R4008004
F2-Naphth	<100		100	ug/L		11-APR-18	
F3 (C16-C34)	<250		250	ug/L	09-APR-18	10-APR-18	R4008004
F3-PAH	<250		250	ug/L		11-APR-18	
F4 (C34-C50)	<250		250	ug/L	09-APR-18	10-APR-18	R4008004
Total Hydrocarbons (C6-C50)	<370		370	ug/L		11-APR-18	
Chrom. to baseline at nC50	YES				09-APR-18	10-APR-18	R4008004

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2077097-11 GW-11149990-040618-011 Sampled By: T. WITTMAIER on 06-APR-18 @ 15:55 Matrix: WATER							
Hydrocarbons							
Surrogate: 2-Bromobenzotrifluoride	107.6		60-140	%	09-APR-18	10-APR-18	R4008004
Surrogate: 3,4-Dichlorotoluene	77.3		60-140	%		10-APR-18	R4007413
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Acenaphthylene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Anthracene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Benzo(a)anthracene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Benzo(a)pyrene	<0.010		0.010	ug/L	09-APR-18	11-APR-18	R4007985
Benzo(b)fluoranthene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Benzo(k)fluoranthene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Chrysene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Fluoranthene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Fluorene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		11-APR-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
2-Methylnaphthalene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Naphthalene	<0.050		0.050	ug/L	09-APR-18	11-APR-18	R4007985
Phenanthrene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Pyrene	<0.020		0.020	ug/L	09-APR-18	11-APR-18	R4007985
Surrogate: d10-Acenaphthene	107.4		60-140	%	09-APR-18	11-APR-18	R4007985
Surrogate: d12-Chrysene	102.0		60-140	%	09-APR-18	11-APR-18	R4007985
Surrogate: d8-Naphthalene	108.2		60-140	%	09-APR-18	11-APR-18	R4007985
Surrogate: d10-Phenanthrene	106.1		60-140	%	09-APR-18	11-APR-18	R4007985
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
4-Chloroaniline	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2-Chlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dichlorophenol	<0.30		0.30	ug/L	09-APR-18	10-APR-18	R4008098
Diethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Dimethylphthalate	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dimethylphenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrophenol	<1.0		1.0	ug/L	09-APR-18	10-APR-18	R4008098
2,4-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,6-Dinitrotoluene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		11-APR-18	

* 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
L2077097-11 GW-11149990-040618-011 Sampled By: T. WITTMAIER on 06-APR-18 @ 15:55 Matrix: WATER							
Semi-Volatile Organics							
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	09-APR-18	10-APR-18	R4008098
Pentachlorophenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
Phenol	<0.50		0.50	ug/L	09-APR-18	10-APR-18	R4008098
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	09-APR-18	10-APR-18	R4008098
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	09-APR-18	10-APR-18	R4008098
Surrogate: 2-Fluorobiphenyl	98.3		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Nitrobenzene d5	104.0		50-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: Phenol d5	47.6		30-130	%	09-APR-18	10-APR-18	R4008098
Surrogate: p-Terphenyl d14	105.6		60-140	%	09-APR-18	10-APR-18	R4008098
Surrogate: 2,4,6-Tribromophenol	105.9		50-140	%	09-APR-18	10-APR-18	R4008098
L2077097-12 TB-11149990-040518-001 Sampled By: T. WITTMAIER on 05-APR-18 Matrix: WATER							
Volatile Organic Compounds							
Acetone	<30		30	ug/L		10-APR-18	R4007413
Benzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Bromodichloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Bromoform	<5.0		5.0	ug/L		10-APR-18	R4007413
Bromomethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Carbon tetrachloride	<0.20		0.20	ug/L		10-APR-18	R4007413
Chlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dibromochloromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
Chloroform	<1.0		1.0	ug/L		10-APR-18	R4007413
1,2-Dibromoethane	<0.20		0.20	ug/L		10-APR-18	R4007413
1,2-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,3-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,4-Dichlorobenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
Dichlorodifluoromethane	<2.0		2.0	ug/L		10-APR-18	R4007413
1,1-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,2-Dichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Methylene Chloride	<5.0		5.0	ug/L		10-APR-18	R4007413
1,2-Dichloropropane	<0.50		0.50	ug/L		10-APR-18	R4007413
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		10-APR-18	R4007413
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		10-APR-18	
Ethylbenzene	<0.50		0.50	ug/L		10-APR-18	R4007413
n-Hexane	<0.50		0.50	ug/L		10-APR-18	R4007413
Methyl Ethyl Ketone	<20		20	ug/L		10-APR-18	R4007413

* 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
L2077097-12 TB-11149990-040518-001 Sampled By: T. WITTMAIER on 05-APR-18 Matrix: WATER							
Volatile Organic Compounds							
Methyl Isobutyl Ketone	<20		20	ug/L		10-APR-18	R4007413
MTBE	<2.0		2.0	ug/L		10-APR-18	R4007413
Styrene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Tetrachloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Toluene	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,1-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
1,1,2-Trichloroethane	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichloroethylene	<0.50		0.50	ug/L		10-APR-18	R4007413
Trichlorofluoromethane	<5.0		5.0	ug/L		10-APR-18	R4007413
Vinyl chloride	<0.50		0.50	ug/L		10-APR-18	R4007413
o-Xylene	<0.30		0.30	ug/L		10-APR-18	R4007413
m+p-Xylenes	<0.40		0.40	ug/L		10-APR-18	R4007413
Xylenes (Total)	<0.50		0.50	ug/L		10-APR-18	
Surrogate: 4-Bromofluorobenzene	99.2		70-130	%		10-APR-18	R4007413
Surrogate: 1,4-Difluorobenzene	102.7		70-130	%		10-APR-18	R4007413
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		10-APR-18	R4007413
F1-BTEX	<25		25	ug/L		10-APR-18	
Surrogate: 3,4-Dichlorotoluene	80.7		60-140	%		10-APR-18	R4007413

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Dichlorodifluoromethane	MES	L2077097-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2077097-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2077097-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2077097-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L2077097-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Nitrate (as N)	MS-B	L2077097-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Phosphorus, Total	MS-B	L2077097-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L2077097-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
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).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
SMI	Surrogate recovery could not be measured due to sample matrix interference.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
625-511-WT	Water	ABN,CP,PAH-O.Reg 153/04	SW846 8270 (511)

Ground water sample extraction is carried out at a pH <2 (acid extractables) and pH>11 (base neutral extractables). Extracts are dried, concentrated and exchanged into a solvent compatible with the cleanup. Analysis is by GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

C-DIS-ORG-WT	Water	Dissolved Organic Carbon	APHA 5310B

Sample is filtered through a 0.45um filter, then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.

CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CN-WAD-R511-WT	Water	Cyanide (WAD)-O.Reg 153/04	APHA 4500CN I-Weak acid Dist Colorimet

Weak acid dissociable cyanide (WAD) is determined by undergoing a distillation procedure. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-R511-WT	Water	Hex Chrom-O.Reg 153/04 (July 2011)	EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

DINITROTOL-CALC-WT	Water	ABN-Calculated Parameters	SW846 8270
EC-R511-WT	Water	Conductivity-O.Reg 153/04 (July 2011)	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F1-F4-511-CALC-WT	Water	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-L

Reference Information

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.

F1-HS-511-WT Water F1-O.Reg 153/04 (July 2011) E3398/CCME TIER 1-HS
Fraction F1 is determined by analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT Water F2-F4-O.Reg 153/04 (July 2011) EPA 3511/CCME Tier 1
Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

HG-D-UG/L-CVAA-WT Water Diss. Mercury in Water by CVAAS (ug/L) EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-D-UG/L-MS-WT Water Diss. Metals in Water by ICPMS (ug/L) EPA 200.8
The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT Water PAH-Calculated Parameters SW846 8270

NH3-WT Water Ammonia, Total as N EPA 350.1
Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.

NO2-IC-WT Water Nitrite in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT Water Nitrate in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WT Water Total P in Water by Colour APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is deteremined colourimetrically after persulphate digestion of the sample.

PAH-511-WT Water PAH-O. Reg 153/04 (July 2011) SW846 3510/8270
Aqueous samples, fortified with surrogates, are extracted using liquid/liquid extraction technique. The sample extracts are concentrated and then analyzed using GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG

Reference Information

must be reported).

PH-WT	Water	pH	APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TKN-WT	Water	Total Kjeldahl Nitrogen	APHA 4500-Norg D

This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 Celsius with analysis using an automated colorimetric method.

VOC-1,3-DCP-CALC-WT	Water	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260

Liquid samples are analyzed by headspace GC/MSD.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION

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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, 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 weight of sample
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: L2077097 Report Date: 25-JUL-18

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Water**							
Batch R4008098								
WG2747235-2 LCS								
1,2,4-Trichlorobenzene			93.6		%		50-140	11-APR-18
2-Chlorophenol			83.5		%		50-140	11-APR-18
2,4-Dichlorophenol			97.5		%		50-140	11-APR-18
2,4-Dimethylphenol			63.1		%		30-130	11-APR-18
2,4-Dinitrophenol			109.1		%		50-140	11-APR-18
2,4-Dinitrotoluene			108.8		%		50-140	11-APR-18
2,4,5-Trichlorophenol			106.4		%		50-140	11-APR-18
2,4,6-Trichlorophenol			100.3		%		50-140	11-APR-18
2,6-Dinitrotoluene			99.2		%		50-140	11-APR-18
3,3'-Dichlorobenzidine			76.8		%		30-130	11-APR-18
4-Chloroaniline			42.5		%		30-130	11-APR-18
Biphenyl			98.7		%		50-140	11-APR-18
Bis(2-chloroethyl)ether			91.6		%		50-140	11-APR-18
Bis(2-chloroisopropyl)ether			92.5		%		50-140	11-APR-18
Bis(2-ethylhexyl)phthalate			120.9		%		50-140	11-APR-18
Diethylphthalate			103.0		%		50-140	11-APR-18
Dimethylphthalate			100.4		%		50-140	11-APR-18
Pentachlorophenol			107.0		%		50-140	11-APR-18
Phenol			48.5		%		30-130	11-APR-18
WG2747235-3 LCSD		**WG2747235-2**						
1,2,4-Trichlorobenzene		93.6	91.0		%	2.8	50	11-APR-18
2-Chlorophenol		83.5	85.0		%	1.7	50	11-APR-18
2,4-Dichlorophenol		97.5	97.8		%	0.3	50	11-APR-18
2,4-Dimethylphenol		63.1	84.5		%	29	50	11-APR-18
2,4-Dinitrophenol		109.1	126.5		%	15	50	11-APR-18
2,4-Dinitrotoluene		108.8	108.7		%	0.0	50	11-APR-18
2,4,5-Trichlorophenol		106.4	106.3		%	0.1	50	11-APR-18
2,4,6-Trichlorophenol		100.3	101.9		%	1.6	50	11-APR-18
2,6-Dinitrotoluene		99.2	102.6		%	3.4	50	11-APR-18
3,3'-Dichlorobenzidine		76.8	83.6		%	8.5	50	11-APR-18
4-Chloroaniline		42.5	40.1		%	5.9	50	11-APR-18
Biphenyl		98.7	97.6		%	1.1	50	11-APR-18
Bis(2-chloroethyl)ether		91.6	90.0		%	1.7	50	11-APR-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Water**							
Batch R4008098								
WG2747235-3 LCSD		**WG2747235-2**						
Bis(2-chloroisopropyl)ether		92.5	92.5		%	0.0	50	11-APR-18
Bis(2-ethylhexyl)phthalate		120.9	116.7		%	3.6	50	11-APR-18
Diethylphthalate		103.0	101.8		%	1.1	50	11-APR-18
Dimethylphthalate		100.4	100.9		%	0.6	50	11-APR-18
Pentachlorophenol		107.0	111.6		%	4.2	50	11-APR-18
Phenol		48.5	48.6		%	0.1	50	11-APR-18
WG2747235-1 MB								
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	11-APR-18
2-Chlorophenol			<0.30		ug/L		0.3	11-APR-18
2,4-Dichlorophenol			<0.30		ug/L		0.3	11-APR-18
2,4-Dimethylphenol			<0.50		ug/L		0.5	11-APR-18
2,4-Dinitrophenol			<1.0		ug/L		1	11-APR-18
2,4-Dinitrotoluene			<0.40		ug/L		0.4	11-APR-18
2,4,5-Trichlorophenol			<0.20		ug/L		0.2	11-APR-18
2,4,6-Trichlorophenol			<0.20		ug/L		0.2	11-APR-18
2,6-Dinitrotoluene			<0.40		ug/L		0.4	11-APR-18
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	11-APR-18
4-Chloroaniline			<0.40		ug/L		0.4	11-APR-18
Biphenyl			<0.40		ug/L		0.4	11-APR-18
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	11-APR-18
Bis(2-chloroisopropyl)ether			<0.40		ug/L		0.4	11-APR-18
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	11-APR-18
Diethylphthalate			<0.20		ug/L		0.2	11-APR-18
Dimethylphthalate			<0.20		ug/L		0.2	11-APR-18
Pentachlorophenol			<0.50		ug/L		0.5	11-APR-18
Phenol			<0.50		ug/L		0.5	11-APR-18
Surrogate: 2-Fluorobiphenyl			93.0		%		50-140	11-APR-18
Surrogate: 2,4,6-Tribromophenol			78.9		%		50-140	11-APR-18
Surrogate: Nitrobenzene d5			90.3		%		50-140	11-APR-18
Surrogate: p-Terphenyl d14			110.6		%		60-140	11-APR-18
Surrogate: Phenol d5			39.7		%		30-130	11-APR-18
ALK-WT	**Water**							

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-WT	**Water**							
Batch R4008410								
WG2749188-3 CRM		**WT-ALK-CRM**						
Alkalinity, Total (as CaCO3)			100.1		%		80-120	11-APR-18
WG2749188-4 DUP		**L2077055-1**						
Alkalinity, Total (as CaCO3)		310	321		mg/L	3.4	20	11-APR-18
WG2749188-2 LCS								
Alkalinity, Total (as CaCO3)			98.4		%		85-115	11-APR-18
WG2749188-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	11-APR-18
C-DIS-ORG-WT	**Water**							
Batch R4007873								
WG2747838-3 DUP		**L2077097-11**						
Dissolved Organic Carbon		7.2	7.7		mg/L	5.9	20	09-APR-18
WG2747838-2 LCS								
Dissolved Organic Carbon			99.4		%		80-120	09-APR-18
WG2747838-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	09-APR-18
WG2747838-4 MS		**L2077097-11**						
Dissolved Organic Carbon			94.2		%		70-130	09-APR-18
CL-IC-N-WT	**Water**							
Batch R4009126								
WG2748899-4 DUP		**WG2748899-3**						
Chloride (Cl)		13.8	13.7		mg/L	0.4	20	11-APR-18
WG2748899-2 LCS								
Chloride (Cl)			100.5		%		90-110	11-APR-18
WG2748899-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	11-APR-18
WG2748899-5 MS		**WG2748899-3**						
Chloride (Cl)			98.3		%		75-125	11-APR-18
CN-WAD-R511-WT	**Water**							
Batch R4008951								
WG2749813-3 DUP		**L2077156-1**						
Cyanide, Weak Acid Diss		<2.0	<2.0	RPD-NA	ug/L	N/A	20	11-APR-18
WG2749813-2 LCS								
Cyanide, Weak Acid Diss			100.8		%		80-120	11-APR-18
WG2749813-1 MB								
Cyanide, Weak Acid Diss			<2.0		ug/L		2	11-APR-18
WG2749813-4 MS		**L2077156-1**						

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-WAD-R511-WT	**Water**							
Batch R4008951								
WG2749813-4 MS		**L2077156-1**						
Cyanide, Weak Acid Diss			102.6		%		70-130	11-APR-18
Batch R4014554								
WG2750836-3 DUP		**L2077097-1**						
Cyanide, Weak Acid Diss		<2.0	<2.0	RPD-NA	ug/L	N/A	20	13-APR-18
WG2750836-2 LCS								
Cyanide, Weak Acid Diss			99.0		%		80-120	13-APR-18
WG2750836-1 MB								
Cyanide, Weak Acid Diss			<2.0		ug/L		2	13-APR-18
WG2750836-4 MS		**L2077097-1**						
Cyanide, Weak Acid Diss			115.0		%		70-130	13-APR-18
CR-CR6-IC-R511-WT	**Water**							
Batch R4007515								
WG2747458-10 DUP		**WG2747458-8**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	09-APR-18
WG2747458-7 LCS								
Chromium, Hexavalent			97.9		%		80-120	09-APR-18
WG2747458-6 MB								
Chromium, Hexavalent			<1.0		ug/L		1	09-APR-18
WG2747458-9 MS		**WG2747458-8**						
Chromium, Hexavalent			99.5		%		70-130	09-APR-18
EC-R511-WT	**Water**							
Batch R4007280								
WG2746819-4 DUP		**WG2746819-3**						
Conductivity		3.96	3.96		mS/cm	0.0	10	07-APR-18
WG2746819-8 DUP		**WG2746819-7**						
Conductivity		1.78	1.77		mS/cm	0.5	10	07-APR-18
WG2746819-2 LCS								
Conductivity			100.7		%		90-110	07-APR-18
WG2746819-6 LCS								
Conductivity			100.5		%		90-110	07-APR-18
WG2746819-1 MB								
Conductivity			<0.0030		mS/cm		0.003	07-APR-18
WG2746819-5 MB								
Conductivity			<0.0030		mS/cm		0.003	07-APR-18
F1-HS-511-WT	**Water**							

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Water**							
Batch R4007413								
WG2746300-4 DUP		**WG2746300-3**						
F1 (C6-C10)		127	125		ug/L	1.6	30	10-APR-18
WG2746300-1 LCS								
F1 (C6-C10)			93.6		%		80-120	09-APR-18
WG2746300-2 MB								
F1 (C6-C10)			<25		ug/L		25	10-APR-18
Surrogate: 3,4-Dichlorotoluene			95.9		%		60-140	10-APR-18
WG2746300-5 MS		**WG2746300-3**						
F1 (C6-C10)			91.1		%		60-140	10-APR-18
F2-F4-511-WT	**Water**							
Batch R4007710								
WG2747290-2 LCS								
F2 (C10-C16)			108.1		%		70-130	10-APR-18
F3 (C16-C34)			119.3		%		70-130	10-APR-18
F4 (C34-C50)			120.4		%		70-130	10-APR-18
WG2747290-3 LCSD		**WG2747290-2**						
F2 (C10-C16)		108.1	117.4		%	8.2	50	10-APR-18
F3 (C16-C34)		119.3	122.9		%	3.0	50	10-APR-18
F4 (C34-C50)		120.4	124.8		%	3.6	50	10-APR-18
WG2747290-1 MB								
F2 (C10-C16)			<100		ug/L		100	10-APR-18
F3 (C16-C34)			<250		ug/L		250	10-APR-18
F4 (C34-C50)			<250		ug/L		250	10-APR-18
Surrogate: 2-Bromobenzotrifluoride			97.4		%		60-140	10-APR-18
Batch R4008004								
WG2747804-2 LCS								
F2 (C10-C16)			102.0		%		70-130	10-APR-18
F3 (C16-C34)			109.8		%		70-130	10-APR-18
F4 (C34-C50)			112.8		%		70-130	10-APR-18
WG2747804-3 LCSD		**WG2747804-2**						
F2 (C10-C16)		102.0	113.8		%	11	50	10-APR-18
F3 (C16-C34)		109.8	116.5		%	5.9	50	10-APR-18
F4 (C34-C50)		112.8	116.7		%	3.4	50	10-APR-18
WG2747804-1 MB								
F2 (C10-C16)			<100		ug/L		100	10-APR-18
F3 (C16-C34)			<250		ug/L		250	10-APR-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	**Water**							
Batch R4008004								
WG2747804-1 MB								
F4 (C34-C50)			<250		ug/L		250	10-APR-18
Surrogate: 2-Bromobenzotrifluoride			103.7		%		60-140	10-APR-18
HG-D-UG/L-CVAA-WT	**Water**							
Batch R4006952								
WG2747351-3 DUP		**L2077097-1**						
Mercury (Hg)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	09-APR-18
WG2747351-2 LCS								
Mercury (Hg)-Dissolved			88.9		%		80-120	09-APR-18
WG2747351-1 MB								
Mercury (Hg)-Dissolved			<0.010		ug/L		0.01	09-APR-18
WG2747351-4 MS		**L2077097-2**						
Mercury (Hg)-Dissolved			87.8		%		70-130	09-APR-18
MET-D-UG/L-MS-WT	**Water**							
Batch R4007206								
WG2747222-4 DUP		**WG2747222-3**						
Antimony (Sb)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	09-APR-18
Arsenic (As)-Dissolved		0.13	0.15		ug/L	18	20	09-APR-18
Barium (Ba)-Dissolved		58.3	57.1		ug/L	2.1	20	09-APR-18
Beryllium (Be)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	09-APR-18
Boron (B)-Dissolved		43	43		ug/L	0.2	20	09-APR-18
Cadmium (Cd)-Dissolved		0.0700	0.0735		ug/L	4.9	20	09-APR-18
Chromium (Cr)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	09-APR-18
Cobalt (Co)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	09-APR-18
Copper (Cu)-Dissolved		1.26	1.26		ug/L	0.4	20	09-APR-18
Lead (Pb)-Dissolved		0.051	0.052		ug/L	2.6	20	09-APR-18
Molybdenum (Mo)-Dissolved		0.428	0.423		ug/L	1.3	20	09-APR-18
Nickel (Ni)-Dissolved		1.64	1.63		ug/L	0.2	20	09-APR-18
Selenium (Se)-Dissolved		0.420	0.424		ug/L	0.9	20	09-APR-18
Silver (Ag)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	09-APR-18
Sodium (Na)-Dissolved		173000	174000		ug/L	0.5	20	09-APR-18
Thallium (Tl)-Dissolved		0.053	0.051		ug/L	4.4	20	09-APR-18
Uranium (U)-Dissolved		0.628	0.637		ug/L	1.5	20	09-APR-18
Vanadium (V)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	09-APR-18
Zinc (Zn)-Dissolved		53.9	53.7		ug/L	0.3	20	09-APR-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4007206								
WG2747222-2 LCS								
Antimony (Sb)-Dissolved			99.0		%		80-120	09-APR-18
Arsenic (As)-Dissolved			100.6		%		80-120	09-APR-18
Barium (Ba)-Dissolved			96.9		%		80-120	09-APR-18
Beryllium (Be)-Dissolved			101.5		%		80-120	09-APR-18
Boron (B)-Dissolved			96.5		%		80-120	09-APR-18
Cadmium (Cd)-Dissolved			104.3		%		80-120	09-APR-18
Chromium (Cr)-Dissolved			102.6		%		80-120	09-APR-18
Cobalt (Co)-Dissolved			102.6		%		80-120	09-APR-18
Copper (Cu)-Dissolved			103.4		%		80-120	09-APR-18
Lead (Pb)-Dissolved			103.7		%		80-120	09-APR-18
Molybdenum (Mo)-Dissolved			101.6		%		80-120	09-APR-18
Nickel (Ni)-Dissolved			104.1		%		80-120	09-APR-18
Selenium (Se)-Dissolved			104.9		%		80-120	09-APR-18
Silver (Ag)-Dissolved			101.6		%		80-120	09-APR-18
Sodium (Na)-Dissolved			105.6		%		80-120	09-APR-18
Thallium (Tl)-Dissolved			101.0		%		80-120	09-APR-18
Uranium (U)-Dissolved			113.3		%		80-120	09-APR-18
Vanadium (V)-Dissolved			104.1		%		80-120	09-APR-18
Zinc (Zn)-Dissolved			96.8		%		80-120	09-APR-18
WG2747222-1 MB								
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	09-APR-18
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	09-APR-18
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	09-APR-18
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	09-APR-18
Boron (B)-Dissolved			<10		ug/L		10	09-APR-18
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	09-APR-18
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	09-APR-18
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	09-APR-18
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	09-APR-18
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	09-APR-18
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	09-APR-18
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	09-APR-18
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	09-APR-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	09-APR-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4007206								
WG2747222-1 MB								
Sodium (Na)-Dissolved			<500		ug/L		500	09-APR-18
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	09-APR-18
Uranium (U)-Dissolved			<0.010		ug/L		0.01	09-APR-18
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	09-APR-18
Zinc (Zn)-Dissolved			<1.0		ug/L		1	09-APR-18
WG2747222-5 MS		**WG2747222-6**						
Antimony (Sb)-Dissolved			98.3		%		70-130	09-APR-18
Arsenic (As)-Dissolved			103.1		%		70-130	09-APR-18
Barium (Ba)-Dissolved			N/A	MS-B	%		-	09-APR-18
Beryllium (Be)-Dissolved			97.8		%		70-130	09-APR-18
Boron (B)-Dissolved			89.1		%		70-130	09-APR-18
Cadmium (Cd)-Dissolved			99.6		%		70-130	09-APR-18
Chromium (Cr)-Dissolved			99.5		%		70-130	09-APR-18
Cobalt (Co)-Dissolved			97.7		%		70-130	09-APR-18
Copper (Cu)-Dissolved			95.5		%		70-130	09-APR-18
Lead (Pb)-Dissolved			95.5		%		70-130	09-APR-18
Molybdenum (Mo)-Dissolved			99.9		%		70-130	09-APR-18
Nickel (Ni)-Dissolved			93.9		%		70-130	09-APR-18
Selenium (Se)-Dissolved			103.2		%		70-130	09-APR-18
Silver (Ag)-Dissolved			98.1		%		70-130	09-APR-18
Sodium (Na)-Dissolved			N/A	MS-B	%		-	09-APR-18
Thallium (Tl)-Dissolved			97.4		%		70-130	09-APR-18
Uranium (U)-Dissolved			N/A	MS-B	%		-	09-APR-18
Vanadium (V)-Dissolved			104.7		%		70-130	09-APR-18
Zinc (Zn)-Dissolved			N/A	MS-B	%		-	09-APR-18
NH3-WT	**Water**							
Batch R4007184								
WG2747742-7 DUP		**L2077097-1**						
Ammonia, Total (as N)		<0.020	0.043	RPD-NA	mg/L	N/A	20	09-APR-18
WG2747742-6 LCS								
Ammonia, Total (as N)			101.6		%		85-115	09-APR-18
WG2747742-5 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	09-APR-18
WG2747742-8 MS		**L2077097-1**						

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-WT	**Water**							
Batch R4007184								
WG2747742-8 MS		**L2077097-1**						
Ammonia, Total (as N)			82.8		%		75-125	09-APR-18
NO2-IC-WT	**Water**							
Batch R4009126								
WG2748899-4 DUP		**WG2748899-3**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	25	11-APR-18
WG2748899-2 LCS								
Nitrite (as N)			102.1		%		70-130	11-APR-18
WG2748899-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	11-APR-18
WG2748899-5 MS		**WG2748899-3**						
Nitrite (as N)			94.6		%		70-130	11-APR-18
NO3-IC-WT	**Water**							
Batch R4009126								
WG2748899-4 DUP		**WG2748899-3**						
Nitrate (as N)		5.74	5.74		mg/L	0.1	25	11-APR-18
WG2748899-2 LCS								
Nitrate (as N)			100.3		%		70-130	11-APR-18
WG2748899-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	11-APR-18
WG2748899-5 MS		**WG2748899-3**						
Nitrate (as N)			N/A	MS-B	%		-	11-APR-18
P-T-COL-WT	**Water**							
Batch R4008707								
WG2749384-3 DUP		**L2077097-5**						
Phosphorus, Total		0.293	0.284		mg/L	3.3	20	12-APR-18
WG2749384-2 LCS								
Phosphorus, Total			92.5		%		80-120	12-APR-18
WG2749384-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	12-APR-18
WG2749384-4 MS		**L2077097-5**						
Phosphorus, Total			N/A	MS-B	%		-	12-APR-18
PAH-511-WT	**Water**							

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Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4007985								
WG2747804-2 LCS								
1-Methylnaphthalene			103.4		%		50-140	10-APR-18
2-Methylnaphthalene			99.0		%		50-140	10-APR-18
Acenaphthene			104.3		%		50-140	10-APR-18
Acenaphthylene			102.6		%		50-140	10-APR-18
Anthracene			98.2		%		50-140	10-APR-18
Benzo(a)anthracene			114.3		%		50-140	10-APR-18
Benzo(a)pyrene			100.6		%		50-140	10-APR-18
Benzo(b)fluoranthene			100.6		%		50-140	10-APR-18
Benzo(g,h,i)perylene			104.7		%		50-140	10-APR-18
Benzo(k)fluoranthene			110.2		%		50-140	10-APR-18
Chrysene			115.5		%		50-140	10-APR-18
Dibenzo(ah)anthracene			105.1		%		50-140	10-APR-18
Fluoranthene			107.8		%		50-140	10-APR-18
Fluorene			105.4		%		50-140	10-APR-18
Indeno(1,2,3-cd)pyrene			109.8		%		50-140	10-APR-18
Naphthalene			102.5		%		50-140	10-APR-18
Phenanthrene			106.2		%		50-140	10-APR-18
Pyrene			108.2		%		50-140	10-APR-18
WG2747804-3 LCSD		**WG2747804-2**						
1-Methylnaphthalene		103.4	103.4		%	0.1	50	10-APR-18
2-Methylnaphthalene		99.0	100.2		%	1.1	50	10-APR-18
Acenaphthene		104.3	103.5		%	0.8	50	10-APR-18
Acenaphthylene		102.6	100.9		%	1.7	50	10-APR-18
Anthracene		98.2	98.8		%	0.6	50	10-APR-18
Benzo(a)anthracene		114.3	109.7		%	4.1	50	10-APR-18
Benzo(a)pyrene		100.6	99.1		%	1.4	50	10-APR-18
Benzo(b)fluoranthene		100.6	95.5		%	5.1	50	10-APR-18
Benzo(g,h,i)perylene		104.7	104.8		%	0.1	50	10-APR-18
Benzo(k)fluoranthene		110.2	109.1		%	1.0	50	10-APR-18
Chrysene		115.5	111.8		%	3.3	50	10-APR-18
Dibenzo(ah)anthracene		105.1	101.2		%	3.8	50	10-APR-18
Fluoranthene		107.8	106.0		%	1.7	50	10-APR-18
Fluorene		105.4	103.0		%	2.3	50	10-APR-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4007985								
WG2747804-3 LCSD		**WG2747804-2**						
Indeno(1,2,3-cd)pyrene		109.8	109.2		%	0.6	50	10-APR-18
Naphthalene		102.5	103.1		%	0.6	50	10-APR-18
Phenanthrene		106.2	103.9		%	2.2	50	10-APR-18
Pyrene		108.2	106.3		%	1.7	50	10-APR-18
WG2747804-1 MB								
1-Methylnaphthalene			<0.020		ug/L		0.02	10-APR-18
2-Methylnaphthalene			<0.020		ug/L		0.02	10-APR-18
Acenaphthene			<0.020		ug/L		0.02	10-APR-18
Acenaphthylene			<0.020		ug/L		0.02	10-APR-18
Anthracene			<0.020		ug/L		0.02	10-APR-18
Benzo(a)anthracene			<0.020		ug/L		0.02	10-APR-18
Benzo(a)pyrene			<0.010		ug/L		0.01	10-APR-18
Benzo(b)fluoranthene			<0.020		ug/L		0.02	10-APR-18
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	10-APR-18
Benzo(k)fluoranthene			<0.020		ug/L		0.02	10-APR-18
Chrysene			<0.020		ug/L		0.02	10-APR-18
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	10-APR-18
Fluoranthene			<0.020		ug/L		0.02	10-APR-18
Fluorene			<0.020		ug/L		0.02	10-APR-18
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	10-APR-18
Naphthalene			<0.050		ug/L		0.05	10-APR-18
Phenanthrene			<0.020		ug/L		0.02	10-APR-18
Pyrene			<0.020		ug/L		0.02	10-APR-18
Surrogate: d8-Naphthalene			102.7		%		60-140	10-APR-18
Surrogate: d10-Phenanthrene			103.3		%		60-140	10-APR-18
Surrogate: d12-Chrysene			106.1		%		60-140	10-APR-18
Surrogate: d10-Acenaphthene			104.7		%		60-140	10-APR-18
Batch R4009214								
WG2747290-2 LCS								
1-Methylnaphthalene			85.3		%		50-140	12-APR-18
2-Methylnaphthalene			82.1		%		50-140	12-APR-18
Acenaphthene			89.0		%		50-140	12-APR-18
Acenaphthylene			91.0		%		50-140	12-APR-18
Anthracene			101.2		%		50-140	12-APR-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4009214								
WG2747290-2 LCS								
Benzo(a)anthracene			106.8		%		50-140	12-APR-18
Benzo(a)pyrene			94.2		%		50-140	12-APR-18
Benzo(b)fluoranthene			90.3		%		50-140	12-APR-18
Benzo(g,h,i)perylene			93.0		%		50-140	12-APR-18
Benzo(k)fluoranthene			92.1		%		50-140	12-APR-18
Chrysene			95.3		%		50-140	12-APR-18
Dibenzo(ah)anthracene			92.7		%		50-140	12-APR-18
Fluoranthene			97.4		%		50-140	12-APR-18
Fluorene			93.8		%		50-140	12-APR-18
Indeno(1,2,3-cd)pyrene			106.2		%		50-140	12-APR-18
Naphthalene			83.5		%		50-140	12-APR-18
Phenanthrene			98.5		%		50-140	12-APR-18
Pyrene			96.8		%		50-140	12-APR-18
WG2747290-3 LCSD		**WG2747290-2**						
1-Methylnaphthalene		85.3	89.6		%	4.9	50	12-APR-18
2-Methylnaphthalene		82.1	86.0		%	4.7	50	12-APR-18
Acenaphthene		89.0	93.0		%	4.4	50	12-APR-18
Acenaphthylene		91.0	94.8		%	4.0	50	12-APR-18
Anthracene		101.2	102.8		%	1.6	50	12-APR-18
Benzo(a)anthracene		106.8	112.7		%	5.4	50	12-APR-18
Benzo(a)pyrene		94.2	98.1		%	4.0	50	12-APR-18
Benzo(b)fluoranthene		90.3	93.5		%	3.5	50	12-APR-18
Benzo(g,h,i)perylene		93.0	100.6		%	7.8	50	12-APR-18
Benzo(k)fluoranthene		92.1	96.9		%	5.1	50	12-APR-18
Chrysene		95.3	104.1		%	8.8	50	12-APR-18
Dibenzo(ah)anthracene		92.7	101.7		%	9.2	50	12-APR-18
Fluoranthene		97.4	101.4		%	4.1	50	12-APR-18
Fluorene		93.8	97.6		%	4.0	50	12-APR-18
Indeno(1,2,3-cd)pyrene		106.2	113.3		%	6.5	50	12-APR-18
Naphthalene		83.5	87.8		%	5.0	50	12-APR-18
Phenanthrene		98.5	100.6		%	2.2	50	12-APR-18
Pyrene		96.8	100.1		%	3.3	50	12-APR-18
WG2747290-1 MB								

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4009214								
WG2747290-1 MB								
1-Methylnaphthalene			<0.020		ug/L		0.02	12-APR-18
2-Methylnaphthalene			<0.020		ug/L		0.02	12-APR-18
Acenaphthene			<0.020		ug/L		0.02	12-APR-18
Acenaphthylene			<0.020		ug/L		0.02	12-APR-18
Anthracene			<0.020		ug/L		0.02	12-APR-18
Benzo(a)anthracene			<0.020		ug/L		0.02	12-APR-18
Benzo(a)pyrene			<0.010		ug/L		0.01	12-APR-18
Benzo(b)fluoranthene			<0.020		ug/L		0.02	12-APR-18
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	12-APR-18
Benzo(k)fluoranthene			<0.020		ug/L		0.02	12-APR-18
Chrysene			<0.020		ug/L		0.02	12-APR-18
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	12-APR-18
Fluoranthene			<0.020		ug/L		0.02	12-APR-18
Fluorene			<0.020		ug/L		0.02	12-APR-18
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	12-APR-18
Naphthalene			<0.050		ug/L		0.05	12-APR-18
Phenanthrene			<0.020		ug/L		0.02	12-APR-18
Pyrene			<0.020		ug/L		0.02	12-APR-18
Surrogate: d8-Naphthalene			102.7		%		60-140	12-APR-18
Surrogate: d10-Phenanthrene			103.1		%		60-140	12-APR-18
Surrogate: d12-Chrysene			100.1		%		60-140	12-APR-18
Surrogate: d10-Acenaphthene			100.0		%		60-140	12-APR-18
PH-WT	**Water**							
Batch R4007280								
WG2746819-4 DUP		**WG2746819-3**						
pH		8.12	8.13	J	pH units	0.01	0.2	07-APR-18
WG2746819-8 DUP		**WG2746819-7**						
pH		7.86	7.93	J	pH units	0.07	0.2	07-APR-18
WG2746819-2 LCS								
pH			7.00		pH units		6.9-7.1	07-APR-18
WG2746819-6 LCS								
pH			7.10		pH units		6.9-7.1	07-APR-18
PHENOLS-4AAP-WT	**Water**							

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	**Water**							
Batch R4007047								
WG2747536-7 DUP		**L2077068-1**						
Phenols (4AAP)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	09-APR-18
WG2747536-6 LCS								
Phenols (4AAP)			93.6		%		85-115	09-APR-18
WG2747536-5 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	09-APR-18
WG2747536-8 MS		**L2077068-1**						
Phenols (4AAP)			103.8		%		75-125	09-APR-18
SO4-IC-N-WT	**Water**							
Batch R4009126								
WG2748899-4 DUP		**WG2748899-3**						
Sulfate (SO4)		5.34	5.32		mg/L	0.4	20	11-APR-18
WG2748899-2 LCS								
Sulfate (SO4)			101.1		%		90-110	11-APR-18
WG2748899-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	11-APR-18
WG2748899-5 MS		**WG2748899-3**						
Sulfate (SO4)			100.5		%		75-125	11-APR-18
TKN-WT	**Water**							
Batch R4008601								
WG2748835-3 DUP		**L2077073-9**						
Total Kjeldahl Nitrogen		7.72	7.57		mg/L	2.0	20	11-APR-18
WG2748835-2 LCS								
Total Kjeldahl Nitrogen			101.2		%		75-125	11-APR-18
WG2748835-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	11-APR-18
WG2748835-4 MS		**L2077073-9**						
Total Kjeldahl Nitrogen			N/A	MS-B	%		-	11-APR-18
VOC-511-HS-WT	**Water**							
Batch R4007413								
WG2746300-4 DUP		**WG2746300-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4007413								
WG2746300-4 DUP		**WG2746300-3**						
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	10-APR-18
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	10-APR-18
Benzene		2.82	2.74		ug/L	2.9	30	10-APR-18
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	10-APR-18
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	10-APR-18
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	10-APR-18
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	10-APR-18
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	10-APR-18
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	10-APR-18
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	10-APR-18
Ethylbenzene		6.31	6.20		ug/L	1.8	30	10-APR-18
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
m+p-Xylenes		8.37	8.13		ug/L	2.9	30	10-APR-18
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	10-APR-18
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	10-APR-18
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	10-APR-18
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	10-APR-18
o-Xylene		29.1	28.4		ug/L	2.5	30	10-APR-18
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
Toluene		2.74	2.67		ug/L	2.6	30	10-APR-18
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	10-APR-18
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
Trichlorofluoromethane		<5.0	<5.0		ug/L			10-APR-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4007413								
WG2746300-4 DUP		**WG2746300-3**						
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	10-APR-18
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	10-APR-18
WG2746300-1 LCS								
1,1,1,2-Tetrachloroethane			99.6		%		70-130	09-APR-18
1,1,2,2-Tetrachloroethane			96.3		%		70-130	09-APR-18
1,1,1-Trichloroethane			97.8		%		70-130	09-APR-18
1,1,2-Trichloroethane			100.2		%		70-130	09-APR-18
1,1-Dichloroethane			95.5		%		70-130	09-APR-18
1,1-Dichloroethylene			88.7		%		70-130	09-APR-18
1,2-Dibromoethane			99.2		%		70-130	09-APR-18
1,2-Dichlorobenzene			103.0		%		70-130	09-APR-18
1,2-Dichloroethane			96.1		%		70-130	09-APR-18
1,2-Dichloropropane			102.7		%		70-130	09-APR-18
1,3-Dichlorobenzene			104.0		%		70-130	09-APR-18
1,4-Dichlorobenzene			105.8		%		70-130	09-APR-18
Acetone			109.3		%		60-140	09-APR-18
Benzene			102.0		%		70-130	09-APR-18
Bromodichloromethane			95.7		%		70-130	09-APR-18
Bromoform			95.6		%		70-130	09-APR-18
Bromomethane			94.9		%		60-140	09-APR-18
Carbon tetrachloride			97.1		%		70-130	09-APR-18
Chlorobenzene			102.7		%		70-130	09-APR-18
Chloroform			99.3		%		70-130	09-APR-18
cis-1,2-Dichloroethylene			100.9		%		70-130	09-APR-18
cis-1,3-Dichloropropene			103.3		%		70-130	09-APR-18
Dibromochloromethane			102.0		%		70-130	09-APR-18
Dichlorodifluoromethane			52.0		%		50-140	09-APR-18
Ethylbenzene			101.8		%		70-130	09-APR-18
n-Hexane			111.1		%		70-130	09-APR-18
m+p-Xylenes			102.9		%		70-130	09-APR-18
Methyl Ethyl Ketone			104.9		%		60-140	09-APR-18
Methyl Isobutyl Ketone			99.3		%		60-140	09-APR-18
Methylene Chloride			100.7		%		70-130	09-APR-18
MTBE			107.4		%		70-130	09-APR-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4007413								
WG2746300-1 LCS								
o-Xylene			100.5		%		70-130	09-APR-18
Styrene			101.0		%		70-130	09-APR-18
Tetrachloroethylene			104.5		%		70-130	09-APR-18
Toluene			102.5		%		70-130	09-APR-18
trans-1,2-Dichloroethylene			100.1		%		70-130	09-APR-18
trans-1,3-Dichloropropene			100.5		%		70-130	09-APR-18
Trichloroethylene			105.4		%		70-130	09-APR-18
Trichlorofluoromethane			96.8		%		60-140	09-APR-18
Vinyl chloride			89.1		%		60-140	09-APR-18
WG2746300-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	10-APR-18
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	10-APR-18
1,1,1-Trichloroethane			<0.50		ug/L		0.5	10-APR-18
1,1,2-Trichloroethane			<0.50		ug/L		0.5	10-APR-18
1,1-Dichloroethane			<0.50		ug/L		0.5	10-APR-18
1,1-Dichloroethylene			<0.50		ug/L		0.5	10-APR-18
1,2-Dibromoethane			<0.20		ug/L		0.2	10-APR-18
1,2-Dichlorobenzene			<0.50		ug/L		0.5	10-APR-18
1,2-Dichloroethane			<0.50		ug/L		0.5	10-APR-18
1,2-Dichloropropane			<0.50		ug/L		0.5	10-APR-18
1,3-Dichlorobenzene			<0.50		ug/L		0.5	10-APR-18
1,4-Dichlorobenzene			<0.50		ug/L		0.5	10-APR-18
Acetone			<30		ug/L		30	10-APR-18
Benzene			<0.50		ug/L		0.5	10-APR-18
Bromodichloromethane			<2.0		ug/L		2	10-APR-18
Bromoform			<5.0		ug/L		5	10-APR-18
Bromomethane			<0.50		ug/L		0.5	10-APR-18
Carbon tetrachloride			<0.20		ug/L		0.2	10-APR-18
Chlorobenzene			<0.50		ug/L		0.5	10-APR-18
Chloroform			<1.0		ug/L		1	10-APR-18
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	10-APR-18
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	10-APR-18
Dibromochloromethane			<2.0		ug/L		2	10-APR-18
Dichlorodifluoromethane			<2.0		ug/L		2	10-APR-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4007413								
WG2746300-2 MB								
Ethylbenzene			<0.50		ug/L		0.5	10-APR-18
n-Hexane			<0.50		ug/L		0.5	10-APR-18
m+p-Xylenes			<0.40		ug/L		0.4	10-APR-18
Methyl Ethyl Ketone			<20		ug/L		20	10-APR-18
Methyl Isobutyl Ketone			<20		ug/L		20	10-APR-18
Methylene Chloride			<5.0		ug/L		5	10-APR-18
MTBE			<2.0		ug/L		2	10-APR-18
o-Xylene			<0.30		ug/L		0.3	10-APR-18
Styrene			<0.50		ug/L		0.5	10-APR-18
Tetrachloroethylene			<0.50		ug/L		0.5	10-APR-18
Toluene			<0.50		ug/L		0.5	10-APR-18
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	10-APR-18
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	10-APR-18
Trichloroethylene			<0.50		ug/L		0.5	10-APR-18
Trichlorofluoromethane			<5.0		ug/L		5	10-APR-18
Vinyl chloride			<0.50		ug/L		0.5	10-APR-18
Surrogate: 1,4-Difluorobenzene			102.5		%		70-130	10-APR-18
Surrogate: 4-Bromofluorobenzene			100.8		%		70-130	10-APR-18
WG2746300-5 MS		**WG2746300-3**						
1,1,1,2-Tetrachloroethane			100.2		%		50-140	10-APR-18
1,1,2,2-Tetrachloroethane			98.5		%		50-140	10-APR-18
1,1,1-Trichloroethane			96.4		%		50-140	10-APR-18
1,1,2-Trichloroethane			103.1		%		50-140	10-APR-18
1,1-Dichloroethane			95.6		%		50-140	10-APR-18
1,1-Dichloroethylene			85.8		%		50-140	10-APR-18
1,2-Dibromoethane			103.1		%		50-140	10-APR-18
1,2-Dichlorobenzene			102.7		%		50-140	10-APR-18
1,2-Dichloroethane			99.6		%		50-140	10-APR-18
1,2-Dichloropropane			104.7		%		50-140	10-APR-18
1,3-Dichlorobenzene			102.2		%		50-140	10-APR-18
1,4-Dichlorobenzene			103.8		%		50-140	10-APR-18
Acetone			113.0		%		50-140	10-APR-18
Benzene			102.0		%		50-140	10-APR-18
Bromodichloromethane			97.2		%		50-140	10-APR-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4007413								
WG2746300-5 MS		**WG2746300-3**						
Bromoform			98.2		%		50-140	10-APR-18
Bromomethane			90.7		%		50-140	10-APR-18
Carbon tetrachloride			95.0		%		50-140	10-APR-18
Chlorobenzene			101.9		%		50-140	10-APR-18
Chloroform			100.3		%		50-140	10-APR-18
cis-1,2-Dichloroethylene			101.7		%		50-140	10-APR-18
cis-1,3-Dichloropropene			104.0		%		50-140	10-APR-18
Dibromochloromethane			103.9		%		50-140	10-APR-18
Dichlorodifluoromethane			45.1	MES	%		50-140	10-APR-18
Ethylbenzene			98.9		%		50-140	10-APR-18
n-Hexane			104.7		%		50-140	10-APR-18
m+p-Xylenes			100.5		%		50-140	10-APR-18
Methyl Ethyl Ketone			111.1		%		50-140	10-APR-18
Methyl Isobutyl Ketone			104.9		%		50-140	10-APR-18
Methylene Chloride			102.1		%		50-140	10-APR-18
MTBE			107.0		%		50-140	10-APR-18
o-Xylene			99.2		%		50-140	10-APR-18
Styrene			99.9		%		50-140	10-APR-18
Tetrachloroethylene			99.7		%		50-140	10-APR-18
Toluene			100.4		%		50-140	10-APR-18
trans-1,2-Dichloroethylene			97.4		%		50-140	10-APR-18
trans-1,3-Dichloropropene			102.7		%		50-140	10-APR-18
Trichloroethylene			103.6		%		50-140	10-APR-18
Trichlorofluoromethane			91.7		%		50-140	10-APR-18
Vinyl chloride			83.0		%		50-140	10-APR-18

Quality Control Report

Workorder: L2077097 Report Date: 25-JUL-18

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

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
J	Duplicate results and limits are expressed in terms of absolute difference.
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).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
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.

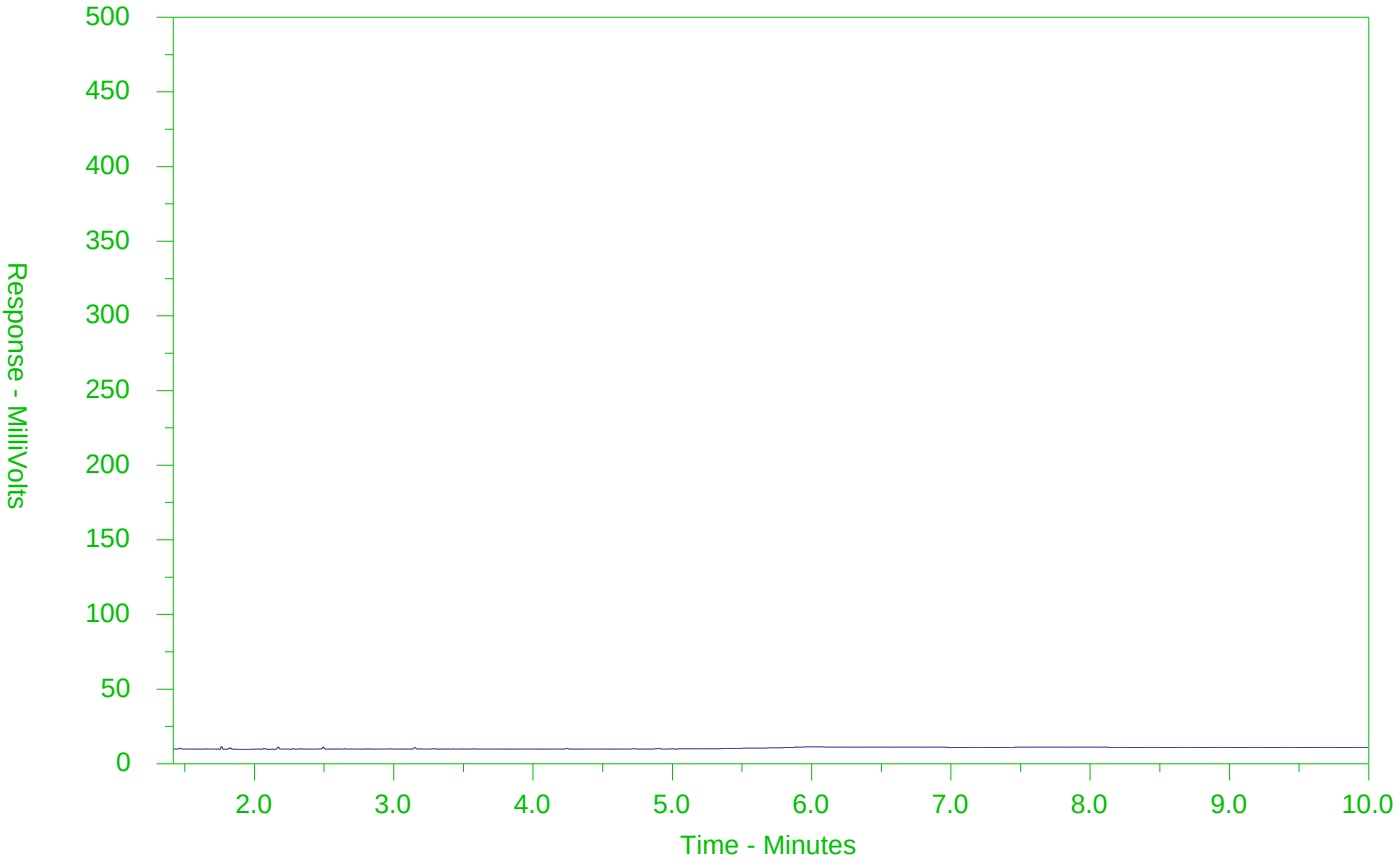
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2077097-1
Client Sample ID: GW-11149990-040518-001



←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.

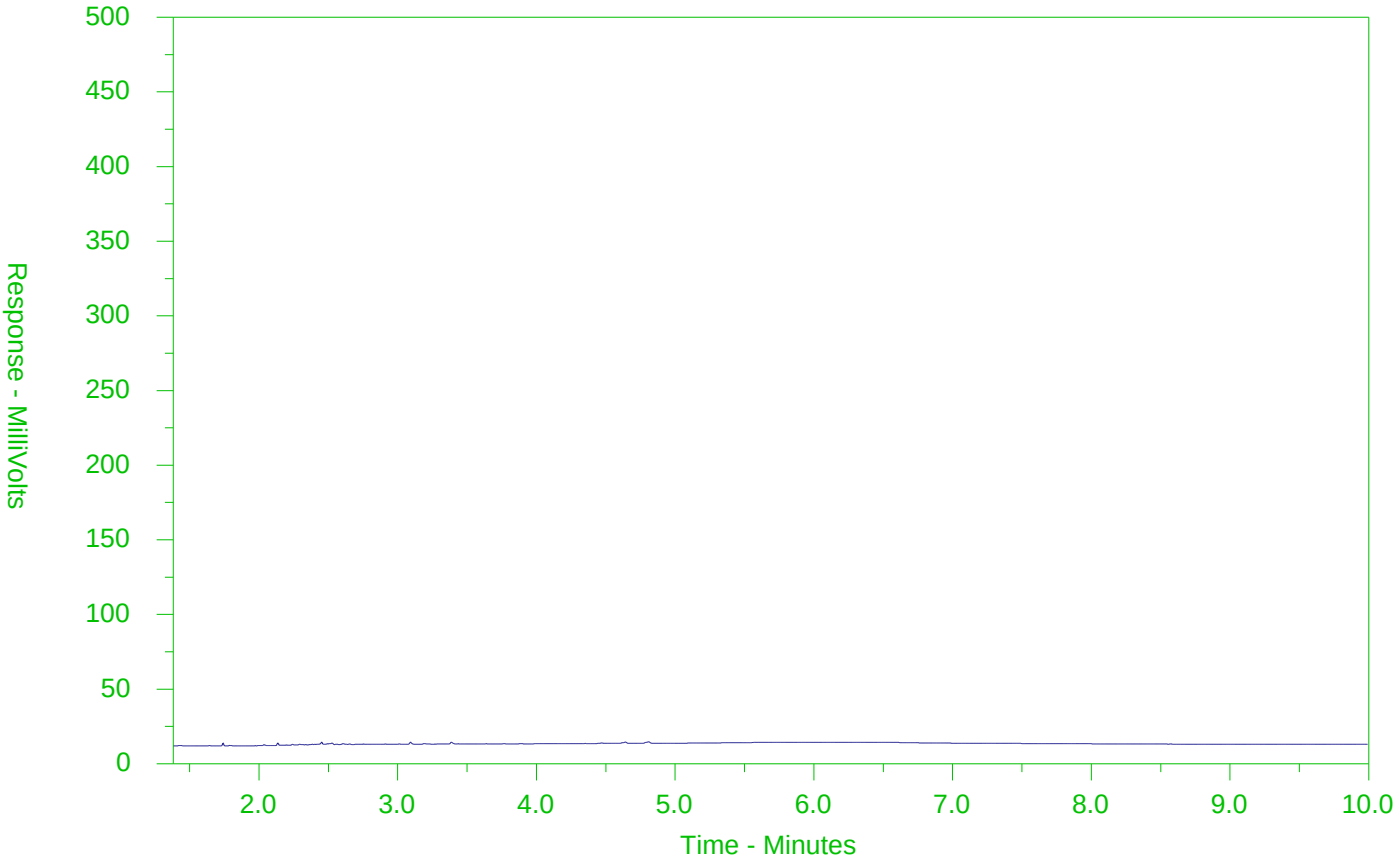
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2077097-2
Client Sample ID: GW-11149990-040518-002



←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.

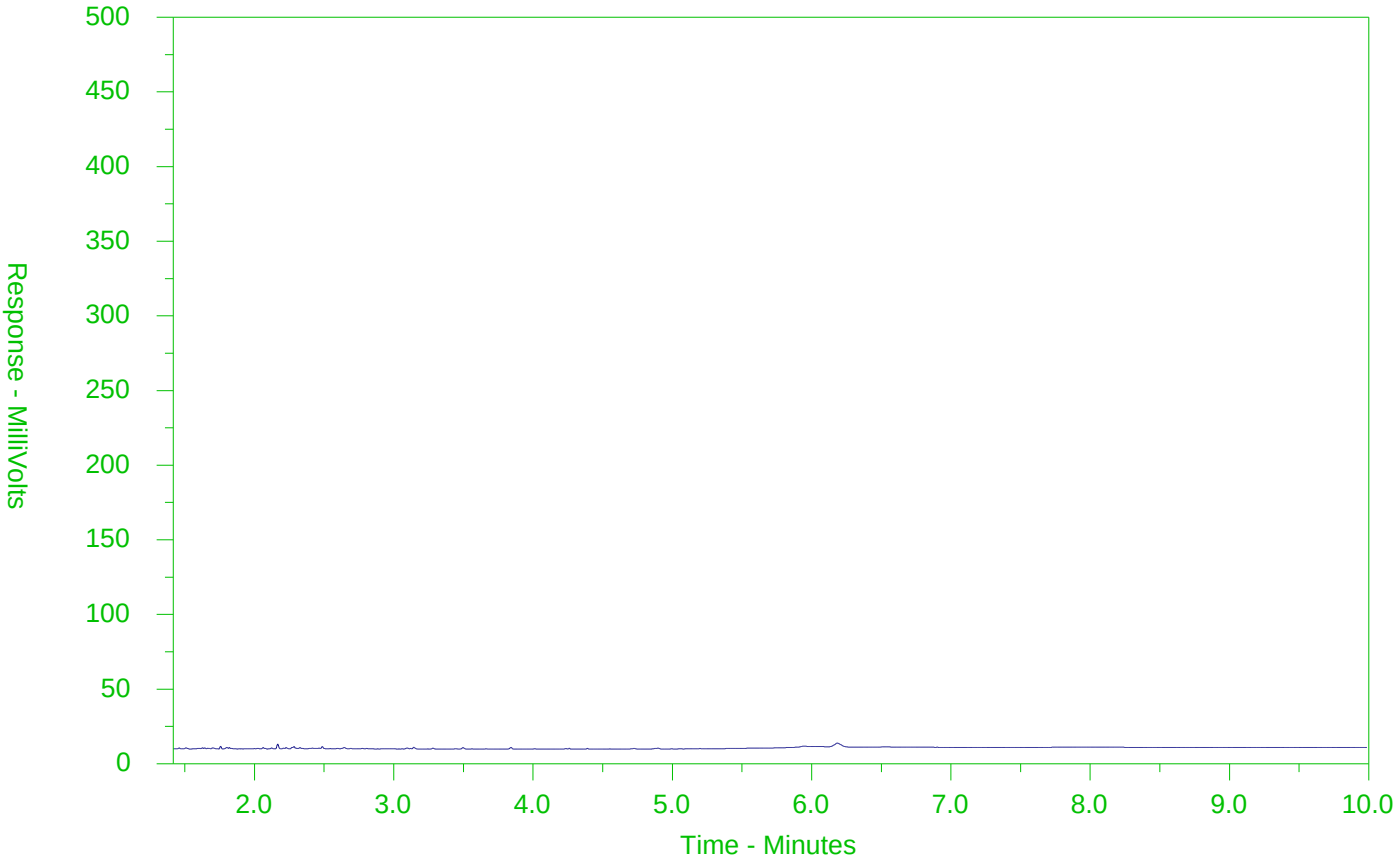
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2077097-3
Client Sample ID: GW-11149990-040518-003



←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.

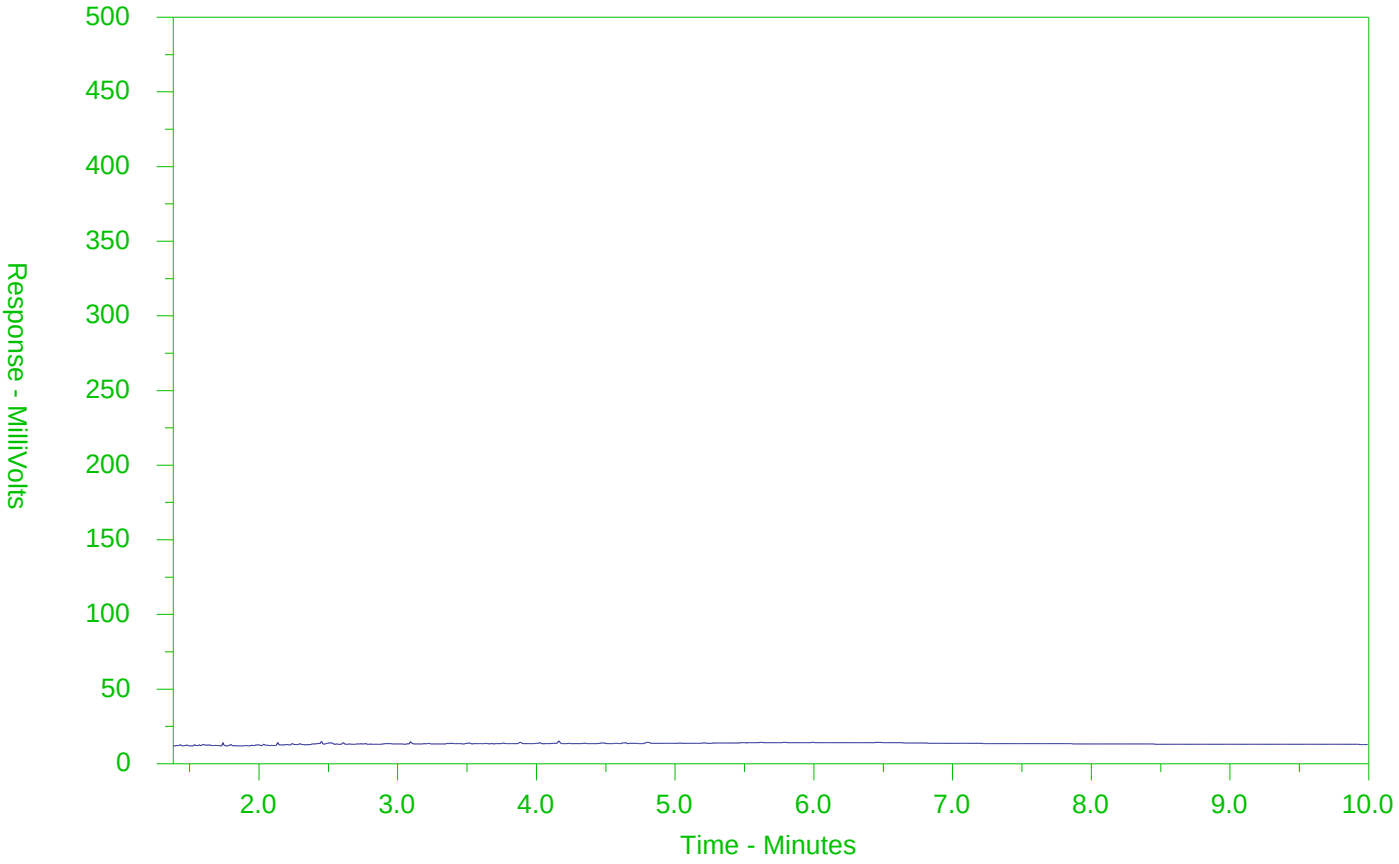
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2077097-4
Client Sample ID: GW-11149990-040518-004



←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.

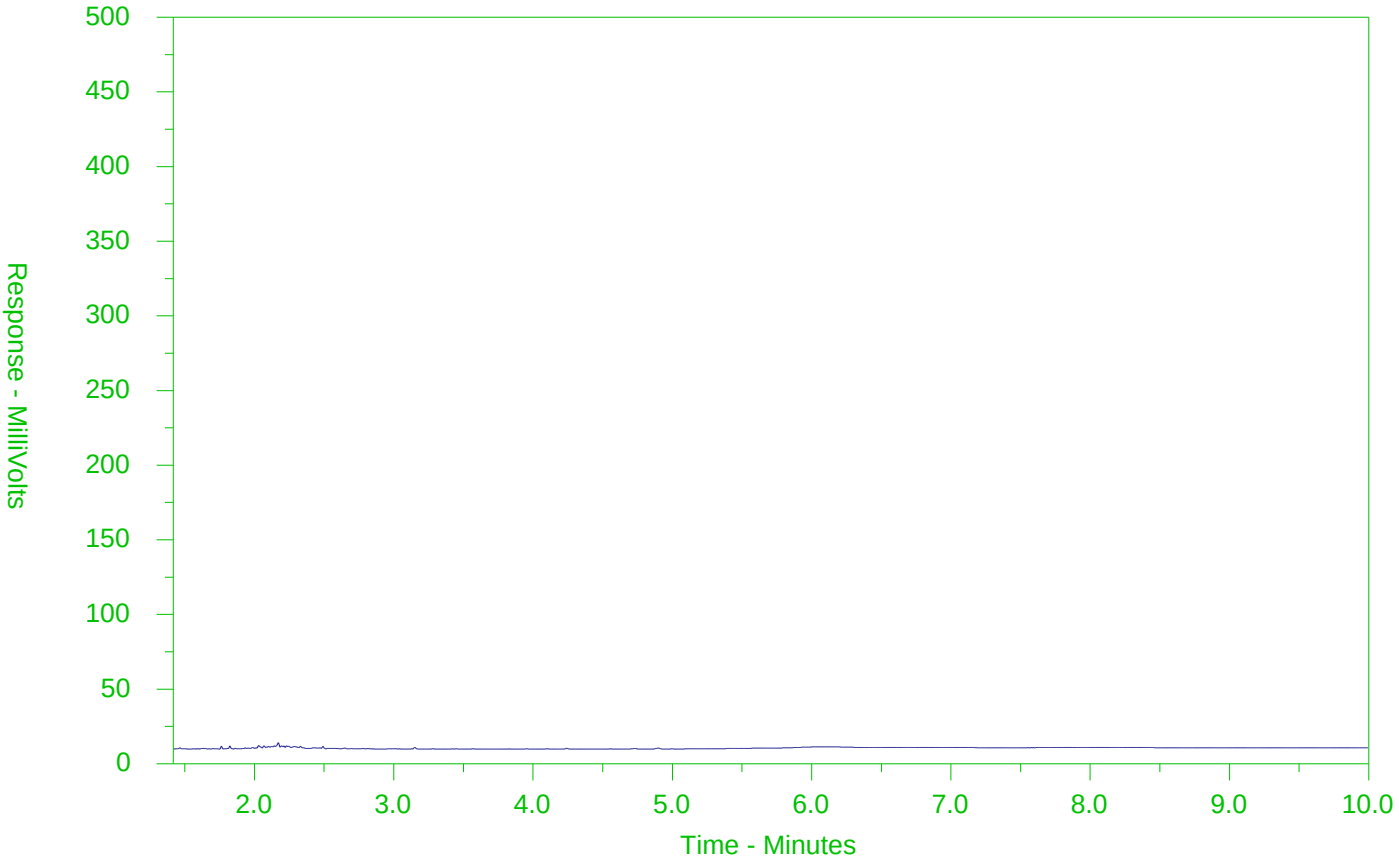
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2077097-5
Client Sample ID: GW-11149990-040518-005



←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.

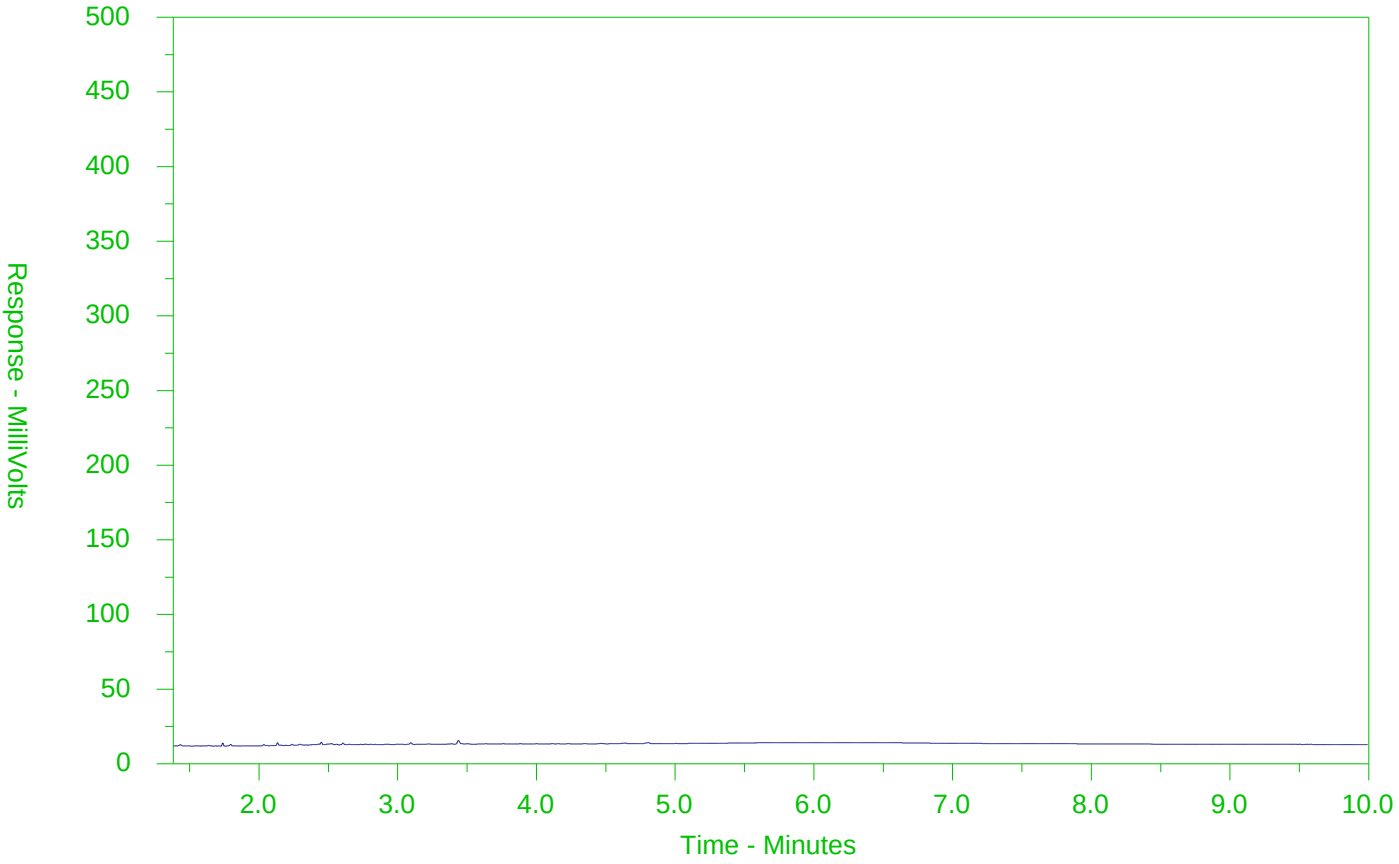
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2077097-6
Client Sample ID: GW-11149990-040618-006



←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.

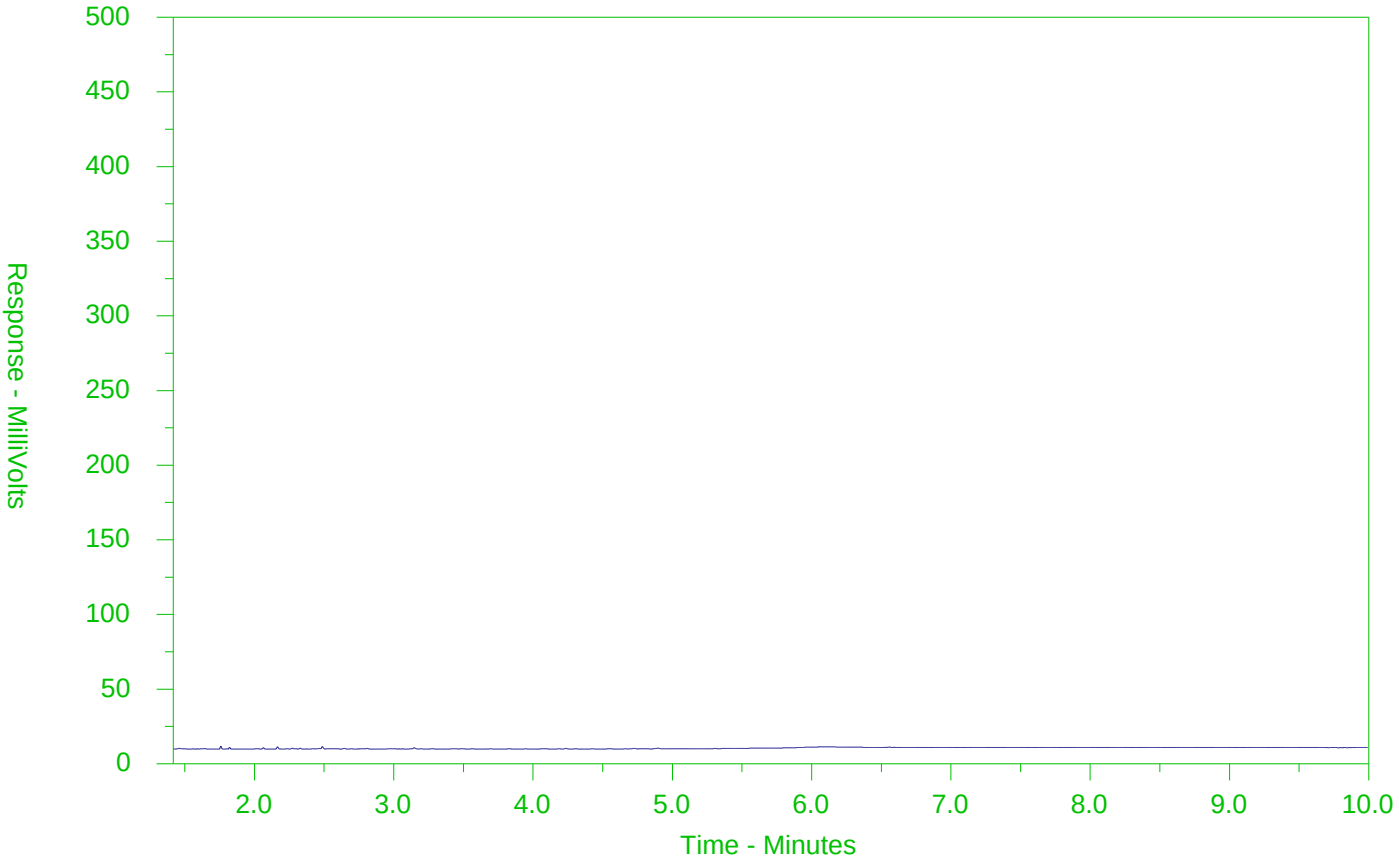
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2077097-7
Client Sample ID: GW-11149990-040618-007



←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.

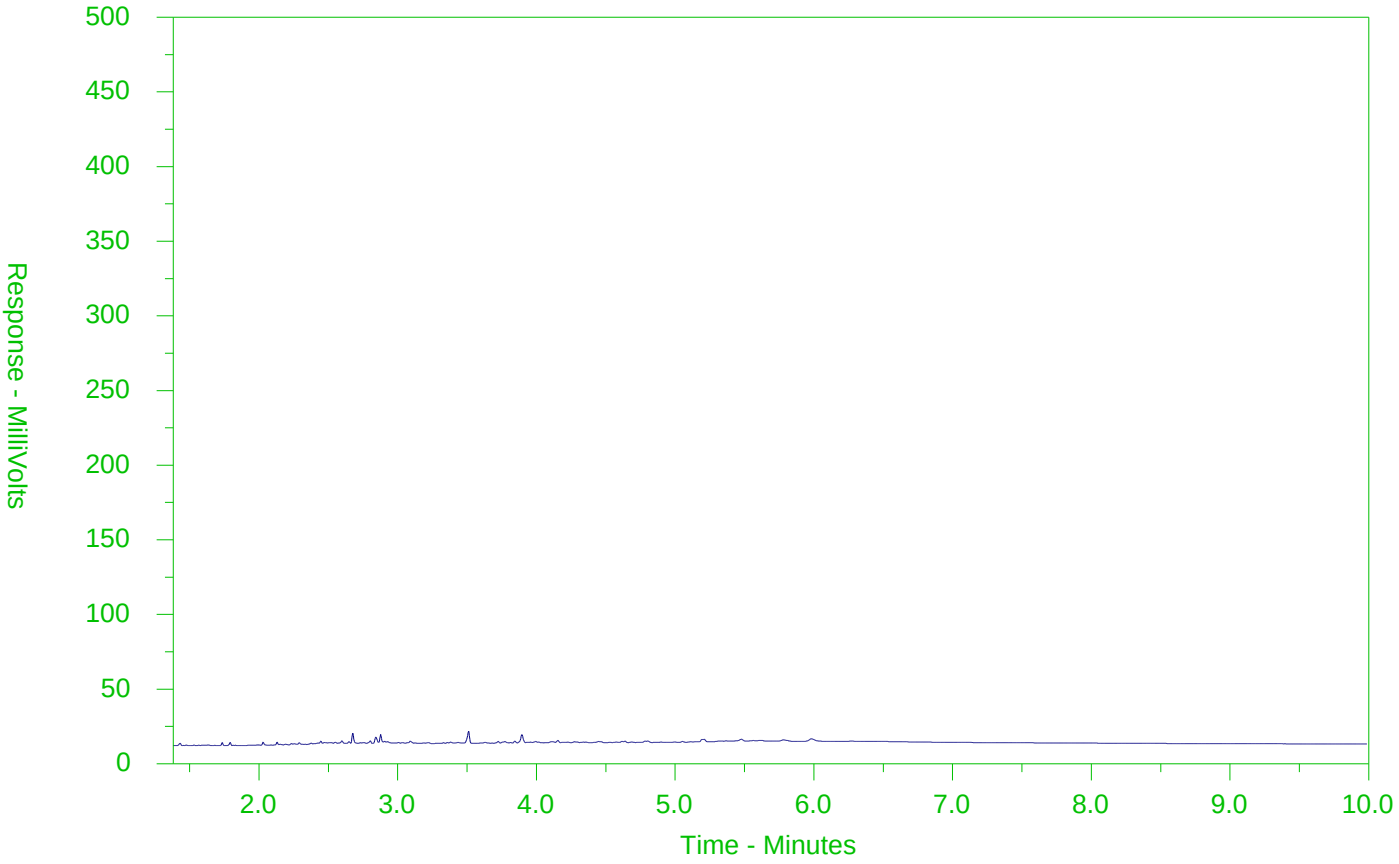
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2077097-8
Client Sample ID: GW-11149990-040618-008



←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.

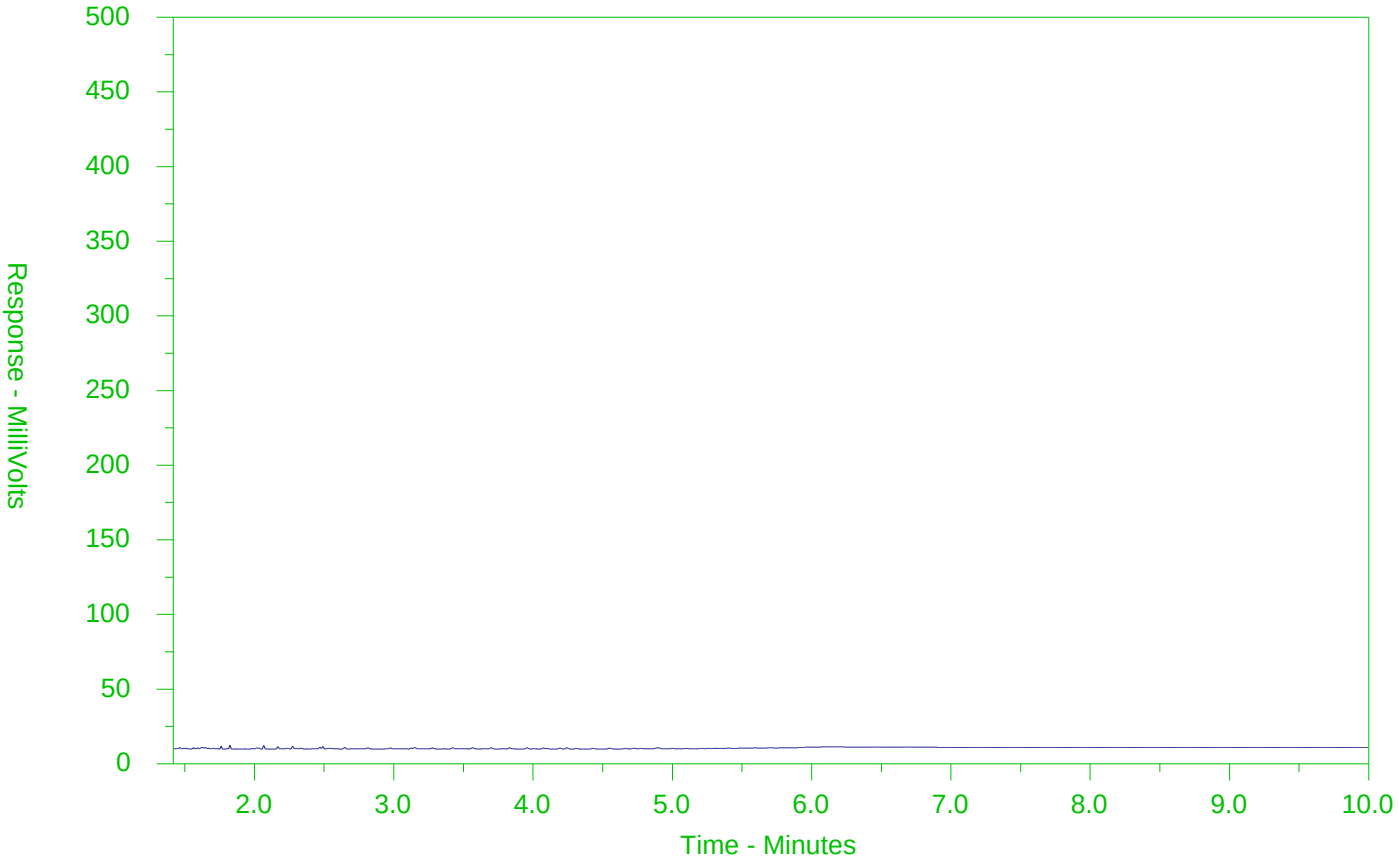
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2077097-9
Client Sample ID: GW-11149990-040618-009



←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.

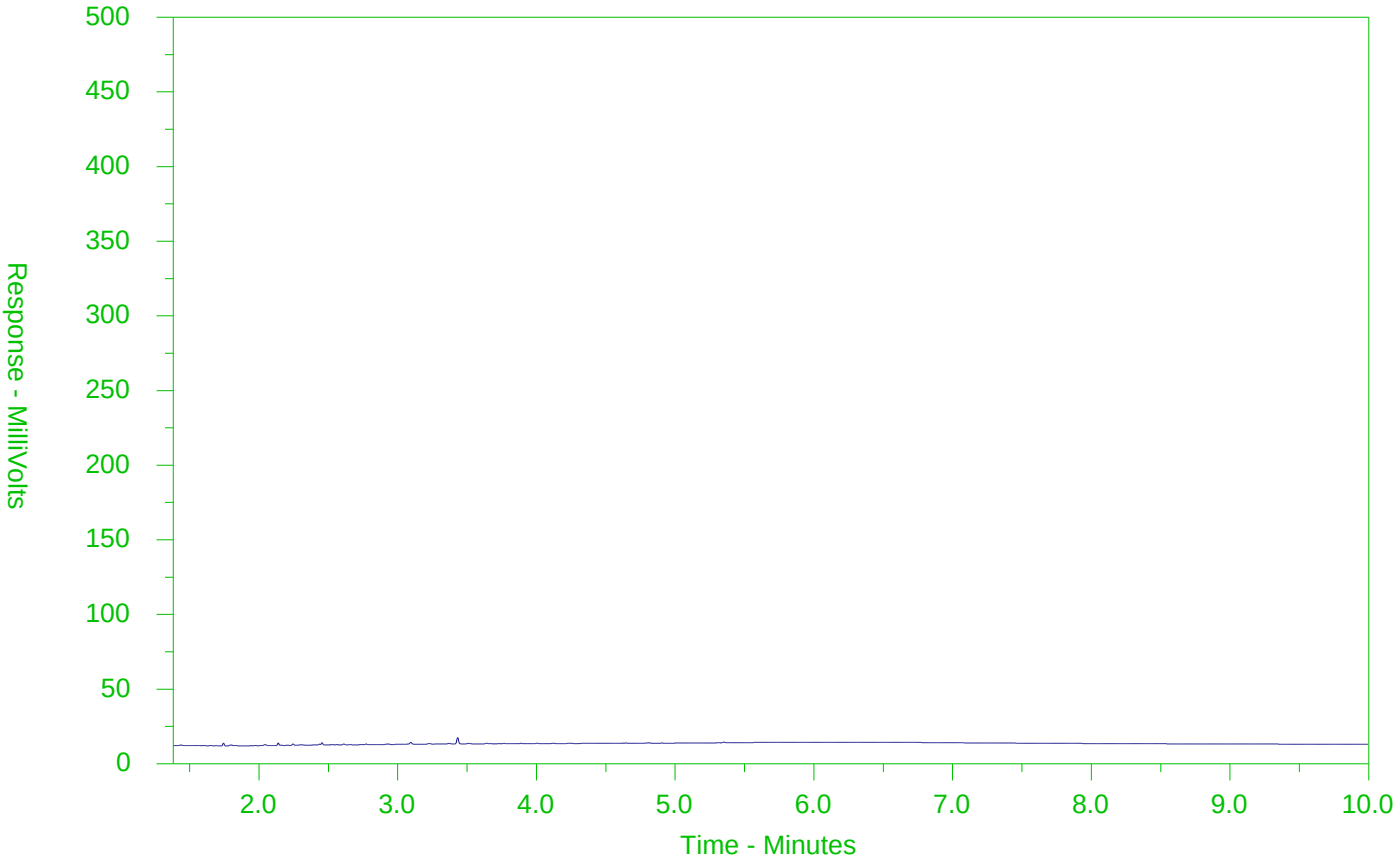
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2077097-10
Client Sample ID: GW-11149990-040618-010



←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.

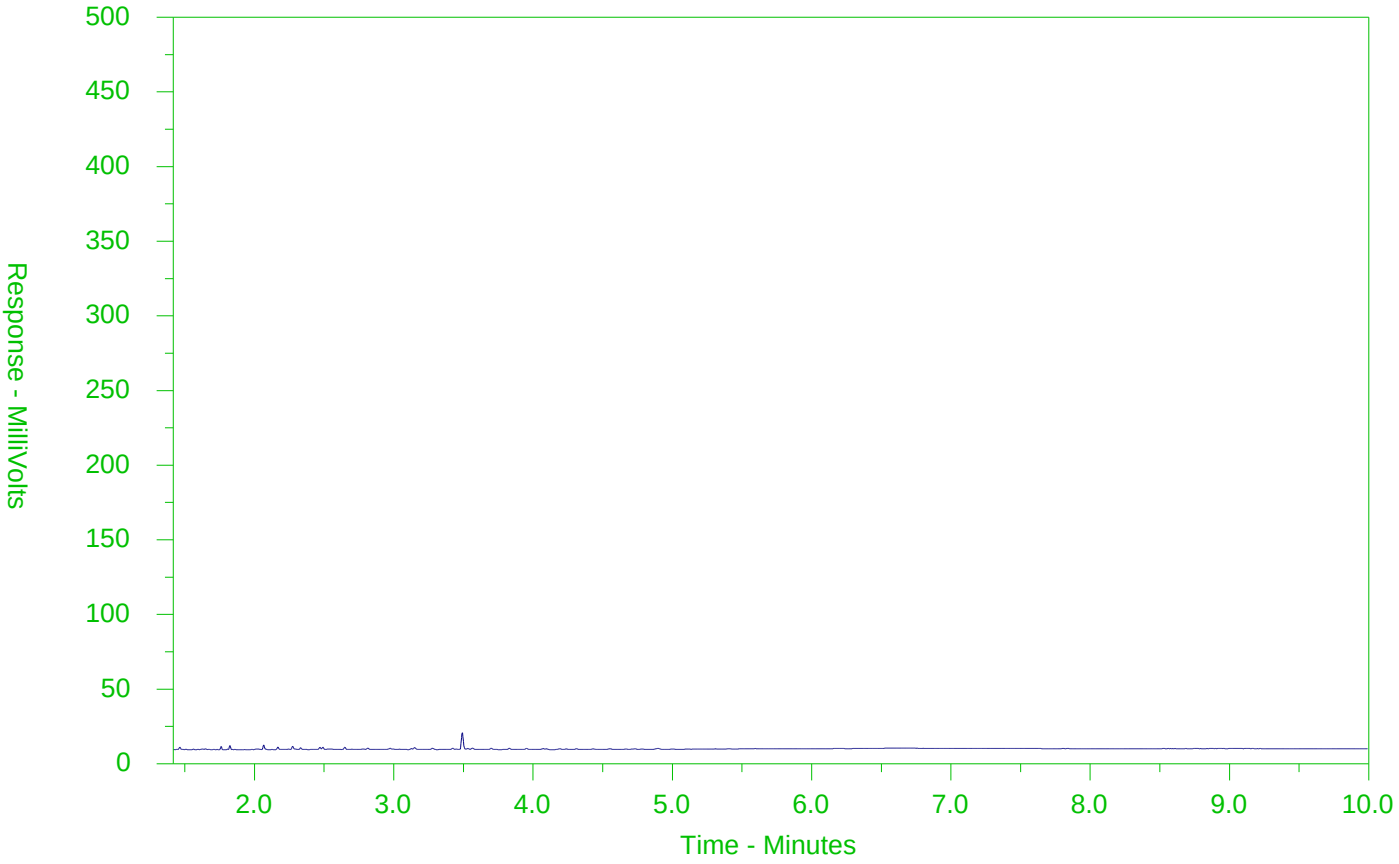
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2077097-11
Client Sample ID: GW-11149990-040618-011



←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 the 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.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2077097-COFC

COC Number: 15 -

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	GHD LIMITED Acct# 13791
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	651 Colby Drive
City/Province:	Waterloo / Ontario
Postal Code:	N2V 1C2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD LIMITED
Contact:	Jennifer Balkwill

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	See PO
Email 3	
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote#:		AFE/Cost Center:	PO#
Job #:	11149990-04	Major/Minor Code:	Routing Code:
PO / AFE:	73511036	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L2077097-COFC | ALS Contact: Rick H | Sampler: T Wittmaier

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	VOC,F1-F4	SVOCs	153 M&I pkg	Phenols-4AAP	ALK	TKN,TP	DOC	NH3	Anions3 (N2N3,SO4)	VOC,F1 (Trip Blank)				Number of Containers
1	GW-11149990-04 05 18[illegible]W-001	05-APR-18	15:35	Water	X	X	X	X	X	X	X	X	X					15
2	GW-11149990-04 05 18[illegible]W-002	↓	15:35	Water	↓	↓	↓	↓	↓	↓	↓	↓	↓					↓
3	GW-11149990-04 05 18[illegible]W-003	↓	17:25	Water	↓	↓	↓	↓	↓	↓	↓	↓	↓					↓
4	GW-11149990-04 05 18[illegible]W-004	↓	18:25	Water	↓	↓	↓	↓	↓	↓	↓	↓	↓					↓
5	GW-11149990-04 05 18[illegible]W-005	↓	18:50	Water	↓	↓	↓	↓	↓	↓	↓	↓	↓					↓
6	GW-11149990-04 06 18[illegible]W-006	06-APR-18	9:45	Water	↓	↓	↓	↓	↓	↓	↓	↓	↓					↓
7	GW-11149990-04 06 18[illegible]W-007	↓	11:00	Water	↓	↓	↓	↓	↓	↓	↓	↓	↓					↓
8	GW-11149990-04 06 18[illegible]W-008	↓	12:40	Water	↓	↓	↓	↓	↓	↓	↓	↓	↓					↓
9	GW-11149990-04 06 18[illegible]W-009	↓	13:50	Water	↓	↓	↓	↓	↓	↓	↓	↓	↓					↓
10	GW-11149990-04 06 18[illegible]W-010	↓	15:10	Water	↓	↓	↓	↓	↓	↓	↓	↓	↓					↓
11	GW-11149990-04 06 18[illegible]W-011	↓	15:55	Water	↓	↓	↓	↓	↓	↓	↓	↓	↓					↓
12.	TB ~~GW~~-11149990-04 05 18[illegible] 001	05-APR-18	~	Water										X				2

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☒ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

metals, CrVI, mercury, DOC all field filtered

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐		SIF Observations	Yes ☐	No ☐
Ice Packs ☐	Ice Cubes ☒	Custody seal intact	Yes ☐	No ☐
Cooling Initiated ☐				

INITIAL COOLER TEMPERATURES °C:

FINAL COOLER TEMPERATURES °C: 2.6 | 2.3 | 1.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Tyler Wittmaier	Date: 6-APR-2018	Time: 18:00	Received by:	Date:	Time:	Received by: [signature]	Date: April 06/18	Time: 18:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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 back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

UOC-383

GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 08-MAY-18
Report Date: 25-JUL-18 18:42 (MT)
Version: FINAL REV. 4

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L2091162

Project P.O. #: 73511036-2
Job Reference: 11149990-04
C of C Numbers: 17-618892, 17-622445
Legal Site Desc:

Comments: ADDITIONAL 11-JUN-18 10:05
ADDITIONAL 11-JUN-18 09:48
ADDITIONAL 04-JUN-18 14:40
ADDITIONAL 16-MAY-18 15:59

Report #2 Split

Rick Hawthorne
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-1 TB-11149990-050118-TW-01 Sampled By: TYLER W. on 01-MAY-18 Matrix: SOIL							
Physical Tests							
% Moisture	<0.10		0.10	%	10-MAY-18	11-MAY-18	R4040337
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Benzene	<0.0068		0.0068	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromodichloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromoform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromomethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dibromochloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chloroform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methylene Chloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-MAY-18	
Ethylbenzene	<0.018		0.018	ug/g	09-MAY-18	11-MAY-18	R4039955
n-Hexane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
MTBE	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Styrene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Toluene	<0.080		0.080	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichloroethylene	<0.010		0.010	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Vinyl chloride	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955

* 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
L2091162-1 TB-11149990-050118-TW-01 Sampled By: TYLER W. on 01-MAY-18 Matrix: SOIL							
Volatile Organic Compounds							
o-Xylene	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
m+p-Xylenes	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
Xylenes (Total)	<0.050		0.050	ug/g		11-MAY-18	
Surrogate: 4-Bromofluorobenzene	96.7		50-140	%	09-MAY-18	11-MAY-18	R4039955
Surrogate: 1,4-Difluorobenzene	110.0		50-140	%	09-MAY-18	11-MAY-18	R4039955
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAY-18	11-MAY-18	R4039955
Surrogate: 3,4-Dichlorotoluene	94.7		60-140	%	09-MAY-18	11-MAY-18	R4039955
L2091162-2 S-11149990-050118-TW-01 Sampled By: TYLER W. on 01-MAY-18 @ 11:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.244		0.0040	mS/cm		14-MAY-18	R4043686
% Moisture	22.4		0.10	%	10-MAY-18	11-MAY-18	R4040337
pH	7.04		0.10	pH units		11-MAY-18	R4040674
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	10-MAY-18	11-MAY-18	R4041545
Saturated Paste Extractables							
SAR	0.11		0.10	SAR		14-MAY-18	R4044158
Calcium (Ca)	34.1		1.0	mg/L		14-MAY-18	R4044158
Magnesium (Mg)	1.6		1.0	mg/L		14-MAY-18	R4044158
Sodium (Na)	2.3		1.0	mg/L		14-MAY-18	R4044158
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Arsenic (As)	3.8		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Barium (Ba)	53.4		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Beryllium (Be)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B)	9.1		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B), Hot Water Ext.	1.11		0.10	ug/g	11-MAY-18	14-MAY-18	R4044369
Cadmium (Cd)	1.02		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Chromium (Cr)	11.1		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Cobalt (Co)	3.2		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Copper (Cu)	16.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Lead (Pb)	85.7		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Mercury (Hg)	0.294		0.0050	ug/g	11-MAY-18	11-MAY-18	R4040544
Molybdenum (Mo)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Nickel (Ni)	7.8		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Selenium (Se)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Silver (Ag)	<0.20		0.20	ug/g	11-MAY-18	11-MAY-18	R4042972
Thallium (Tl)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Uranium (U)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Vanadium (V)	18.6		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972

* 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
L2091162-2 S-11149990-050118-TW-01 Sampled By: TYLER W. on 01-MAY-18 @ 11:00 Matrix: SOIL							
Metals							
Zinc (Zn)	354		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	10-MAY-18	14-MAY-18	R4042953
Volatile Organic Compounds							
Acetone	0.55		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Benzene	<0.0068		0.0068	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromodichloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromoform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromomethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chlorobenzene	0.064		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dibromochloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chloroform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,4-Dichlorobenzene	0.225		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methylene Chloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-MAY-18	
Ethylbenzene	<0.018		0.018	ug/g	09-MAY-18	11-MAY-18	R4039955
n-Hexane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
MTBE	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Styrene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Toluene	<0.080		0.080	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichloroethylene	<0.010		0.010	ug/g	09-MAY-18	11-MAY-18	R4039955

* 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
L2091162-2 S-11149990-050118-TW-01 Sampled By: TYLER W. on 01-MAY-18 @ 11:00 Matrix: SOIL							
Volatile Organic Compounds							
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Vinyl chloride	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
o-Xylene	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
m+p-Xylenes	0.049		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
Xylenes (Total)	<0.050		0.050	ug/g		11-MAY-18	
Surrogate: 4-Bromofluorobenzene	79.1		50-140	%	09-MAY-18	11-MAY-18	R4039955
Surrogate: 1,4-Difluorobenzene	84.5		50-140	%	09-MAY-18	11-MAY-18	R4039955
Hydrocarbons							
F1 (C6-C10)	7.9		5.0	ug/g	09-MAY-18	11-MAY-18	R4039955
F1-BTEX	7.8		5.0	ug/g		11-MAY-18	
F2 (C10-C16)	105		10	ug/g	09-MAY-18	10-MAY-18	R4040554
F2-Naphth	105		10	ug/g		11-MAY-18	
F3 (C16-C34)	530		50	ug/g	09-MAY-18	10-MAY-18	R4040554
F3-PAH	527		50	ug/g		11-MAY-18	
F4 (C34-C50)	245		50	ug/g	09-MAY-18	10-MAY-18	R4040554
F4G-SG (GHH-Silica)	660		250	ug/g	10-MAY-18	10-MAY-18	R4042547
Total Hydrocarbons (C6-C50)	887		72	ug/g		11-MAY-18	
Chrom. to baseline at nC50	NO				09-MAY-18	10-MAY-18	R4040554
Surrogate: 2-Bromobenzotrifluoride	89.8		60-140	%	09-MAY-18	10-MAY-18	R4040554
Surrogate: 3,4-Dichlorotoluene	73.6		60-140	%	09-MAY-18	11-MAY-18	R4039955
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		11-MAY-18	
Semi-Volatile Organics							
Acenaphthene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Acenaphthylene	0.059		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Anthracene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)anthracene	0.313	R	0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)pyrene	0.390		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(b)fluoranthene	0.366		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(ghi)perylene	0.216		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(k)fluoranthene	0.312		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Biphenyl	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
4-Chloroaniline	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroethyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroisopropyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Chlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Chrysene	0.364		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Dibenzo(a,h)anthracene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
3,3'-Dichlorobenzidine	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Diethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Dimethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412

* 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
L2091162-2 S-11149990-050118-TW-01 Sampled By: TYLER W. on 01-MAY-18 @ 11:00 Matrix: SOIL							
Semi-Volatile Organics							
2,4-Dimethylphenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrophenol	<1.0		1.0	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,6-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4+2,6-Dinitrotoluene	<0.14		0.14	ug/g		11-MAY-18	
Bis(2-ethylhexyl)phthalate	<0.20	DLQ	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluoranthene	0.436		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluorene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Indeno(1,2,3-cd)pyrene	0.238		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1-Methylnaphthalene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Methylnaphthalene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
Naphthalene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Pentachlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenanthrene	0.175		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Pyrene	0.472		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1,2,4-Trichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,5-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,6-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2-Fluorobiphenyl	90.1		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Nitrobenzene d5	97.6		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Phenol d5	92.8		30-130	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: p-Terphenyl d14	87.3		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2,4,6-Tribromophenol	90.6		50-140	%	09-MAY-18	11-MAY-18	R4040412
Polychlorinated Biphenyls							
Aroclor 1242	0.160	PRAR	0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1248	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1254	<0.060	DLM	0.060	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1260	<0.070	DLM	0.070	ug/g	16-MAY-18	16-MAY-18	R4045150
Total PCBs	0.160	DLM	0.094	ug/g	16-MAY-18	16-MAY-18	R4045150
Surrogate: d14-Terphenyl	106.3		60-140	%	16-MAY-18	16-MAY-18	R4045150
L2091162-3 S-11149990-050118-TW-02 Sampled By: TYLER W. on 01-MAY-18 @ 13:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.177		0.0040	mS/cm		14-MAY-18	R4043686
% Moisture	14.9		0.10	%	10-MAY-18	11-MAY-18	R4040337
pH	7.59		0.10	pH units		11-MAY-18	R4040674
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	10-MAY-18	11-MAY-18	R4041545
Saturated Paste Extractables							
SAR	1.14		0.10	SAR		14-MAY-18	R4044158

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-3 S-11149990-050118-TW-02 Sampled By: TYLER W. on 01-MAY-18 @ 13:00 Matrix: SOIL							
Saturated Paste Extractables							
Calcium (Ca)	15.6		1.0	mg/L		14-MAY-18	R4044158
Magnesium (Mg)	4.9		1.0	mg/L		14-MAY-18	R4044158
Sodium (Na)	20.1		1.0	mg/L		14-MAY-18	R4044158
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Arsenic (As)	3.7		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Barium (Ba)	49.5		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Beryllium (Be)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B)	6.9		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B), Hot Water Ext.	0.39		0.10	ug/g	11-MAY-18	14-MAY-18	R4044369
Cadmium (Cd)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Chromium (Cr)	13.6		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Cobalt (Co)	4.6		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Copper (Cu)	14.8		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Lead (Pb)	74.4		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Mercury (Hg)	0.109		0.0050	ug/g	11-MAY-18	11-MAY-18	R4040544
Molybdenum (Mo)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Nickel (Ni)	10.2		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Selenium (Se)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Silver (Ag)	<0.20		0.20	ug/g	11-MAY-18	11-MAY-18	R4042972
Thallium (Tl)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Uranium (U)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Vanadium (V)	24.5		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Zinc (Zn)	122		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Speciated Metals							
Chromium, Hexavalent	0.30		0.20	ug/g	10-MAY-18	14-MAY-18	R4042953
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Benzene	<0.0068		0.0068	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromodichloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromoform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromomethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dibromochloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chloroform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-3 S-11149990-050118-TW-02 Sampled By: TYLER W. on 01-MAY-18 @ 13:00 Matrix: SOIL							
Volatile Organic Compounds							
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methylene Chloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-MAY-18	
Ethylbenzene	<0.018		0.018	ug/g	09-MAY-18	11-MAY-18	R4039955
n-Hexane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
MTBE	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Styrene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Toluene	<0.080		0.080	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichloroethylene	<0.010		0.010	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Vinyl chloride	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
o-Xylene	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
m+p-Xylenes	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
Xylenes (Total)	<0.050		0.050	ug/g		11-MAY-18	
Surrogate: 4-Bromofluorobenzene	87.6		50-140	%	09-MAY-18	11-MAY-18	R4039955
Surrogate: 1,4-Difluorobenzene	99.4		50-140	%	09-MAY-18	11-MAY-18	R4039955
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAY-18	11-MAY-18	R4039955
F1-BTEX	<5.0		5.0	ug/g		14-MAY-18	
F2 (C10-C16)	<10		10	ug/g	09-MAY-18	14-MAY-18	R4040554
F2-Naphth	<10		10	ug/g		14-MAY-18	
F3 (C16-C34)	82		50	ug/g	09-MAY-18	14-MAY-18	R4040554
F3-PAH	81		50	ug/g		14-MAY-18	
F4 (C34-C50)	118		50	ug/g	09-MAY-18	14-MAY-18	R4040554
F4G-SG (GHH-Silica)	570		250	ug/g	10-MAY-18	10-MAY-18	R4042547
Total Hydrocarbons (C6-C50)	200		72	ug/g		14-MAY-18	
Chrom. to baseline at nC50	NO				09-MAY-18	14-MAY-18	R4040554
Surrogate: 2-Bromobenzotrifluoride	78.1		60-140	%	09-MAY-18	14-MAY-18	R4040554

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-3 S-11149990-050118-TW-02 Sampled By: TYLER W. on 01-MAY-18 @ 13:00 Matrix: SOIL							
Hydrocarbons							
Surrogate: 3,4-Dichlorotoluene	90.8		60-140	%	09-MAY-18	11-MAY-18	R4039955
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		11-MAY-18	
Semi-Volatile Organics							
Acenaphthene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Acenaphthylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Anthracene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)anthracene	0.116	R	0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)pyrene	0.152		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(b)fluoranthene	0.112		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(ghi)perylene	0.088		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(k)fluoranthene	0.141		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Biphenyl	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
4-Chloroaniline	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroethyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroisopropyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Chlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Chrysene	0.119		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Dibenzo(a,h)anthracene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
3,3'-Dichlorobenzidine	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Diethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Dimethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dimethylphenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrophenol	<1.0		1.0	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,6-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4+2,6-Dinitrotoluene	<0.14		0.14	ug/g		11-MAY-18	
Bis(2-ethylhexyl)phthalate	<0.25	DLQ	0.25	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluoranthene	0.124		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluorene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Indeno(1,2,3-cd)pyrene	0.103		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1-Methylnaphthalene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Methylnaphthalene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
Naphthalene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Pentachlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenanthrene	0.120		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Pyrene	0.153		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1,2,4-Trichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,5-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-3 S-11149990-050118-TW-02 Sampled By: TYLER W. on 01-MAY-18 @ 13:00 Matrix: SOIL							
Semi-Volatile Organics							
2,4,6-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2-Fluorobiphenyl	89.5		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Nitrobenzene d5	99.1		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Phenol d5	93.8		30-130	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: p-Terphenyl d14	86.6		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2,4,6-Tribromophenol	85.2		50-140	%	09-MAY-18	11-MAY-18	R4040412
Polychlorinated Biphenyls							
Aroclor 1242	<0.050	DLM	0.050	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1248	<0.050	DLM	0.050	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1254	<0.050	DLM	0.050	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1260	<0.050	DLM	0.050	ug/g	16-MAY-18	16-MAY-18	R4045150
Total PCBs	<0.10	DLM	0.10	ug/g	16-MAY-18	16-MAY-18	R4045150
Surrogate: d14-Terphenyl	105.7		60-140	%	16-MAY-18	16-MAY-18	R4045150
L2091162-4 S-11149990-050118-TW-03 Sampled By: TYLER W. on 01-MAY-18 @ 15:30 Matrix: SOIL							
Physical Tests							
Conductivity	0.963		0.0040	mS/cm		14-MAY-18	R4042892
% Moisture	22.1		0.10	%	10-MAY-18	11-MAY-18	R4040337
pH	7.08		0.10	pH units		11-MAY-18	R4040674
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	10-MAY-18	11-MAY-18	R4041545
Saturated Paste Extractables							
SAR	4.63		0.10	SAR		14-MAY-18	R4044110
Calcium (Ca)	40.8		1.0	mg/L		14-MAY-18	R4044110
Magnesium (Mg)	4.6		1.0	mg/L		14-MAY-18	R4044110
Sodium (Na)	117		1.0	mg/L		14-MAY-18	R4044110
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Arsenic (As)	4.5		1.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Barium (Ba)	53.4		1.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Beryllium (Be)	<0.50		0.50	ug/g	11-MAY-18	14-MAY-18	R4044200
Boron (B)	119		5.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Boron (B), Hot Water Ext.	2.91		0.10	ug/g	11-MAY-18	14-MAY-18	R4044366
Cadmium (Cd)	3.06		0.50	ug/g	11-MAY-18	14-MAY-18	R4044200
Chromium (Cr)	34.7		1.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Cobalt (Co)	3.9		1.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Copper (Cu)	26.7		1.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Lead (Pb)	70.7		1.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Mercury (Hg)	0.115		0.0050	ug/g	11-MAY-18	14-MAY-18	R4042909
Molybdenum (Mo)	1.0		1.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Nickel (Ni)	17.4		1.0	ug/g	11-MAY-18	14-MAY-18	R4044200

* 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
L2091162-4 S-11149990-050118-TW-03 Sampled By: TYLER W. on 01-MAY-18 @ 15:30 Matrix: SOIL							
Metals							
Selenium (Se)	<1.0		1.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Silver (Ag)	<0.20		0.20	ug/g	11-MAY-18	14-MAY-18	R4044200
Thallium (Tl)	<0.50		0.50	ug/g	11-MAY-18	14-MAY-18	R4044200
Uranium (U)	<1.0		1.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Vanadium (V)	19.6		1.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Zinc (Zn)	635		5.0	ug/g	11-MAY-18	14-MAY-18	R4044200
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	10-MAY-18	14-MAY-18	R4042953
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Benzene	<0.0068		0.0068	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromodichloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromoform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromomethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dibromochloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chloroform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,4-Dichlorobenzene	0.216		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methylene Chloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-MAY-18	
Ethylbenzene	0.058		0.018	ug/g	09-MAY-18	11-MAY-18	R4039955
n-Hexane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
MTBE	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Styrene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-4 S-11149990-050118-TW-03 Sampled By: TYLER W. on 01-MAY-18 @ 15:30 Matrix: SOIL							
Volatile Organic Compounds							
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Toluene	<0.080		0.080	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichloroethylene	<0.010		0.010	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Vinyl chloride	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
o-Xylene	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
m+p-Xylenes	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
Xylenes (Total)	<0.050		0.050	ug/g		11-MAY-18	
Surrogate: 4-Bromofluorobenzene	90.6		50-140	%	09-MAY-18	11-MAY-18	R4039955
Surrogate: 1,4-Difluorobenzene	95.3		50-140	%	09-MAY-18	11-MAY-18	R4039955
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAY-18	11-MAY-18	R4039955
F1-BTEX	<5.0		5.0	ug/g		11-MAY-18	
F2 (C10-C16)	46		10	ug/g	09-MAY-18	10-MAY-18	R4040554
F2-Naphth	46		10	ug/g		11-MAY-18	
F3 (C16-C34)	1300		50	ug/g	09-MAY-18	10-MAY-18	R4040554
F3-PAH	1290		50	ug/g		11-MAY-18	
F4 (C34-C50)	431		50	ug/g	09-MAY-18	10-MAY-18	R4040554
F4G-SG (GHH-Silica)	1630		250	ug/g	10-MAY-18	10-MAY-18	R4042547
Total Hydrocarbons (C6-C50)	1780		72	ug/g		11-MAY-18	
Chrom. to baseline at nC50	NO				09-MAY-18	10-MAY-18	R4040554
Surrogate: 2-Bromobenzotrifluoride	82.8		60-140	%	09-MAY-18	10-MAY-18	R4040554
Surrogate: 3,4-Dichlorotoluene	87.7		60-140	%	09-MAY-18	11-MAY-18	R4039955
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	0.077		0.042	ug/g		11-MAY-18	
Semi-Volatile Organics							
Acenaphthene	0.076		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Acenaphthylene	0.090		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Anthracene	0.146		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)anthracene	0.541		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)pyrene	0.566		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(b)fluoranthene	0.590		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(ghi)perylene	0.317		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(k)fluoranthene	0.559		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Biphenyl	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
4-Chloroaniline	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroethyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroisopropyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Chlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Chrysene	0.687		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-4 S-11149990-050118-TW-03 Sampled By: TYLER W. on 01-MAY-18 @ 15:30 Matrix: SOIL							
Semi-Volatile Organics							
Dibenzo(a,h)anthracene	0.066		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
3,3'-Dichlorobenzidine	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Diethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Dimethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dimethylphenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrophenol	<1.0		1.0	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,6-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4+2,6-Dinitrotoluene	<0.14		0.14	ug/g		11-MAY-18	
Bis(2-ethylhexyl)phthalate	<1.50	DLQ	1.5	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluoranthene	1.07		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluorene	0.115		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Indeno(1,2,3-cd)pyrene	0.400		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1-Methylnaphthalene	0.040		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Methylnaphthalene	0.037		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
Naphthalene	0.072		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Pentachlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenanthrene	0.695		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Pyrene	0.926		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1,2,4-Trichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,5-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,6-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2-Fluorobiphenyl	94.6		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Nitrobenzene d5	103.4		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Phenol d5	96.1		30-130	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: p-Terphenyl d14	88.3		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2,4,6-Tribromophenol	96.5		50-140	%	09-MAY-18	11-MAY-18	R4040412
Polychlorinated Biphenyls							
Aroclor 1242	<0.040	DLM	0.040	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1248	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1254	<0.090	DLM	0.090	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1260	0.742	PRAR	0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Total PCBs	0.742	DLM	0.10	ug/g	16-MAY-18	16-MAY-18	R4045150
Surrogate: d14-Terphenyl	112.7		60-140	%	16-MAY-18	16-MAY-18	R4045150
L2091162-5 S-11149990-050218-TW-04 Sampled By: TYLER W. on 02-MAY-18 @ 10:20 Matrix: SOIL							
Physical Tests							
Conductivity	0.204		0.0040	mS/cm		14-MAY-18	R4043686
% Moisture	12.7		0.10	%	10-MAY-18	11-MAY-18	R4040337

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-5 S-11149990-050218-TW-04 Sampled By: TYLER W. on 02-MAY-18 @ 10:20 Matrix: SOIL							
Physical Tests							
pH	7.41		0.10	pH units		11-MAY-18	R4040674
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	10-MAY-18	11-MAY-18	R4041545
Saturated Paste Extractables							
SAR	0.16		0.10	SAR		14-MAY-18	R4044158
Calcium (Ca)	19.8		1.0	mg/L		14-MAY-18	R4044158
Magnesium (Mg)	2.4		1.0	mg/L		14-MAY-18	R4044158
Sodium (Na)	2.9		1.0	mg/L		14-MAY-18	R4044158
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Arsenic (As)	4.4		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Barium (Ba)	48.2		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Beryllium (Be)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B)	6.0		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B), Hot Water Ext.	0.38		0.10	ug/g	11-MAY-18	14-MAY-18	R4044369
Cadmium (Cd)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Chromium (Cr)	13.9		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Cobalt (Co)	4.3		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Copper (Cu)	17.6		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Lead (Pb)	56.9		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Mercury (Hg)	0.0405		0.0050	ug/g	11-MAY-18	11-MAY-18	R4040544
Molybdenum (Mo)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Nickel (Ni)	8.9		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Selenium (Se)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Silver (Ag)	<0.20		0.20	ug/g	11-MAY-18	11-MAY-18	R4042972
Thallium (Tl)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Uranium (U)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Vanadium (V)	30.1		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Zinc (Zn)	124		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	10-MAY-18	14-MAY-18	R4042953
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Benzene	<0.0068		0.0068	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromodichloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromoform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromomethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dibromochloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chloroform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-5 S-11149990-050218-TW-04 Sampled By: TYLER W. on 02-MAY-18 @ 10:20 Matrix: SOIL							
Volatile Organic Compounds							
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methylene Chloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-MAY-18	
Ethylbenzene	<0.018		0.018	ug/g	09-MAY-18	11-MAY-18	R4039955
n-Hexane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
MTBE	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Styrene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Toluene	<0.080		0.080	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichloroethylene	<0.010		0.010	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Vinyl chloride	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
o-Xylene	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
m+p-Xylenes	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
Xylenes (Total)	<0.050		0.050	ug/g		11-MAY-18	
Surrogate: 4-Bromofluorobenzene	86.2		50-140	%	09-MAY-18	11-MAY-18	R4039955
Surrogate: 1,4-Difluorobenzene	97.6		50-140	%	09-MAY-18	11-MAY-18	R4039955
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAY-18	11-MAY-18	R4039955
F1-BTEX	<5.0		5.0	ug/g		11-MAY-18	
F2 (C10-C16)	11		10	ug/g	09-MAY-18	10-MAY-18	R4040554
F2-Naphth	11		10	ug/g		11-MAY-18	
F3 (C16-C34)	301		50	ug/g	09-MAY-18	10-MAY-18	R4040554
F3-PAH	280		50	ug/g		11-MAY-18	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-5 S-11149990-050218-TW-04 Sampled By: TYLER W. on 02-MAY-18 @ 10:20 Matrix: SOIL							
Hydrocarbons							
F4 (C34-C50)	154		50	ug/g	09-MAY-18	10-MAY-18	R4040554
F4G-SG (GHH-Silica)	780		250	ug/g	10-MAY-18	10-MAY-18	R4042547
Total Hydrocarbons (C6-C50)	465		72	ug/g		11-MAY-18	
Chrom. to baseline at nC50	NO				09-MAY-18	10-MAY-18	R4040554
Surrogate: 2-Bromobenzotrifluoride	83.3		60-140	%	09-MAY-18	10-MAY-18	R4040554
Surrogate: 3,4-Dichlorotoluene	85.2		60-140	%	09-MAY-18	11-MAY-18	R4039955
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	<0.085		0.085	ug/g		11-MAY-18	
Semi-Volatile Organics							
Acenaphthene	<0.10	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Acenaphthylene	0.81	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Anthracene	0.72	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)anthracene	2.42	R	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)pyrene	2.64	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(b)fluoranthene	2.38	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(ghi)perylene	1.39	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(k)fluoranthene	2.13	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Biphenyl	<0.10	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
4-Chloroaniline	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroethyl)ether	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroisopropyl)ether	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Chlorophenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Chrysene	2.08	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Dibenzo(a,h)anthracene	0.33	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
3,3'-Dichlorobenzidine	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dichlorophenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Diethylphthalate	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Dimethylphthalate	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dimethylphenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrophenol	<2.0	DLM	2.0	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrotoluene	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2,6-Dinitrotoluene	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4+2,6-Dinitrotoluene	<0.28		0.28	ug/g		11-MAY-18	
Bis(2-ethylhexyl)phthalate	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluoranthene	3.51	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluorene	0.23	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Indeno(1,2,3-cd)pyrene	1.79	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
1-Methylnaphthalene	<0.060	DLM	0.060	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Methylnaphthalene	<0.060	DLM	0.060	ug/g	09-MAY-18	11-MAY-18	R4040412
Naphthalene	<0.10	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Pentachlorophenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-5 S-11149990-050218-TW-04 Sampled By: TYLER W. on 02-MAY-18 @ 10:20 Matrix: SOIL							
Semi-Volatile Organics							
Phenanthrene	1.92	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Pyrene	3.12	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
1,2,4-Trichlorobenzene	<0.10	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,5-Trichlorophenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,6-Trichlorophenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2-Fluorobiphenyl	95.6		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Nitrobenzene d5	107.0		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Phenol d5	99.0		30-130	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: p-Terphenyl d14	86.5		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2,4,6-Tribromophenol	97.3		50-140	%	09-MAY-18	11-MAY-18	R4040412
Polychlorinated Biphenyls							
Aroclor 1242	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1248	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1254	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1260	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Total PCBs	<0.020		0.020	ug/g	16-MAY-18	16-MAY-18	R4045150
Surrogate: d14-Terphenyl	109.7		60-140	%	16-MAY-18	16-MAY-18	R4045150
L2091162-6 S-11149990-050218-TW-05 Sampled By: TYLER W. on 02-MAY-18 @ 16:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.269		0.0040	mS/cm		14-MAY-18	R4043686
% Moisture	16.2		0.10	%	10-MAY-18	11-MAY-18	R4040337
pH	6.89		0.10	pH units		11-MAY-18	R4040674
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	10-MAY-18	11-MAY-18	R4041545
Saturated Paste Extractables							
SAR	0.16		0.10	SAR		14-MAY-18	R4044158
Calcium (Ca)	23.6		1.0	mg/L		14-MAY-18	R4044158
Magnesium (Mg)	3.5		1.0	mg/L		14-MAY-18	R4044158
Sodium (Na)	3.1		1.0	mg/L		14-MAY-18	R4044158
Metals							
Antimony (Sb)	3.6		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Arsenic (As)	15.4		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Barium (Ba)	347		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Beryllium (Be)	0.82		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B)	10.3		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B), Hot Water Ext.	0.54		0.10	ug/g	11-MAY-18	14-MAY-18	R4044369
Cadmium (Cd)	2.29		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Chromium (Cr)	29.4		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Cobalt (Co)	10.1		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-6 S-11149990-050218-TW-05 Sampled By: TYLER W. on 02-MAY-18 @ 16:00 Matrix: SOIL							
Metals							
Copper (Cu)	148		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Lead (Pb)	711		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Mercury (Hg)	1.51	DLHC	0.050	ug/g	11-MAY-18	11-MAY-18	R4040544
Molybdenum (Mo)	2.2		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Nickel (Ni)	65.9		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Selenium (Se)	1.6		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Silver (Ag)	0.43		0.20	ug/g	11-MAY-18	11-MAY-18	R4042972
Thallium (Tl)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Uranium (U)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Vanadium (V)	28.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Zinc (Zn)	1560		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	10-MAY-18	14-MAY-18	R4042953
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Benzene	<0.0068		0.0068	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromodichloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromoform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromomethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dibromochloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chloroform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methylene Chloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-MAY-18	
Ethylbenzene	<0.018		0.018	ug/g	09-MAY-18	11-MAY-18	R4039955
n-Hexane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-6 S-11149990-050218-TW-05 Sampled By: TYLER W. on 02-MAY-18 @ 16:00 Matrix: SOIL							
Volatile Organic Compounds							
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
MTBE	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Styrene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Toluene	<0.080		0.080	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichloroethylene	<0.010		0.010	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Vinyl chloride	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
o-Xylene	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
m+p-Xylenes	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
Xylenes (Total)	<0.050		0.050	ug/g		11-MAY-18	
Surrogate: 4-Bromofluorobenzene	84.1		50-140	%	09-MAY-18	11-MAY-18	R4039955
Surrogate: 1,4-Difluorobenzene	97.5		50-140	%	09-MAY-18	11-MAY-18	R4039955
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAY-18	11-MAY-18	R4039955
F1-BTEX	<5.0		5.0	ug/g		11-MAY-18	
F2 (C10-C16)	39		10	ug/g	09-MAY-18	10-MAY-18	R4040554
F2-Naphth	39		10	ug/g		11-MAY-18	
F3 (C16-C34)	499		50	ug/g	09-MAY-18	10-MAY-18	R4040554
F3-PAH	468		50	ug/g		11-MAY-18	
F4 (C34-C50)	166		50	ug/g	09-MAY-18	10-MAY-18	R4040554
F4G-SG (GHH-Silica)	750		250	ug/g	10-MAY-18	10-MAY-18	R4042547
Total Hydrocarbons (C6-C50)	704		72	ug/g		11-MAY-18	
Chrom. to baseline at nC50	NO				09-MAY-18	10-MAY-18	R4040554
Surrogate: 2-Bromobenzotrifluoride	82.8		60-140	%	09-MAY-18	10-MAY-18	R4040554
Surrogate: 3,4-Dichlorotoluene	79.7		60-140	%	09-MAY-18	11-MAY-18	R4039955
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	0.612		0.085	ug/g		11-MAY-18	
Semi-Volatile Organics							
Acenaphthene	0.32	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Acenaphthylene	1.06	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Anthracene	1.70	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)anthracene	3.18	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)pyrene	2.97	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(b)fluoranthene	2.82	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(ghi)perylene	1.41	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(k)fluoranthene	2.23	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Biphenyl	<0.10	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-6 S-11149990-050218-TW-05 Sampled By: TYLER W. on 02-MAY-18 @ 16:00 Matrix: SOIL							
Semi-Volatile Organics							
4-Chloroaniline	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroethyl)ether	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroisopropyl)ether	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Chlorophenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Chrysene	2.85	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Dibenzo(a,h)anthracene	0.35	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
3,3'-Dichlorobenzidine	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dichlorophenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Diethylphthalate	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Dimethylphthalate	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dimethylphenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrophenol	<2.0	DLM	2.0	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrotoluene	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2,6-Dinitrotoluene	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4+2,6-Dinitrotoluene	<0.28		0.28	ug/g		11-MAY-18	
Bis(2-ethylhexyl)phthalate	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluoranthene	6.60	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluorene	0.87	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Indeno(1,2,3-cd)pyrene	1.81	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
1-Methylnaphthalene	0.305	DLM	0.060	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Methylnaphthalene	0.307	DLM	0.060	ug/g	09-MAY-18	11-MAY-18	R4040412
Naphthalene	0.35	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Pentachlorophenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenanthrene	6.11	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Pyrene	4.81	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
1,2,4-Trichlorobenzene	<0.10	DLM	0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,5-Trichlorophenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,6-Trichlorophenol	<0.20	DLM	0.20	ug/g	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2-Fluorobiphenyl	94.2		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Nitrobenzene d5	105.5		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Phenol d5	96.8		30-130	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: p-Terphenyl d14	85.7		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2,4,6-Tribromophenol	102.9		50-140	%	09-MAY-18	11-MAY-18	R4040412
Polychlorinated Biphenyls							
Aroclor 1242	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1248	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1254	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1260	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Total PCBs	<0.020		0.020	ug/g	16-MAY-18	16-MAY-18	R4045150
Surrogate: d14-Terphenyl	108.9		60-140	%	16-MAY-18	16-MAY-18	R4045150

* 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
L2091162-7 S-11149990-050218-TW-06 Sampled By: TYLER W. on 02-MAY-18 @ 12:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.264		0.0040	mS/cm		14-MAY-18	R4043686
% Moisture	19.9		0.10	%	10-MAY-18	10-MAY-18	R4040332
pH	7.39		0.10	pH units		11-MAY-18	R4040674
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	10-MAY-18	11-MAY-18	R4041545
Saturated Paste Extractables							
SAR	0.64		0.10	SAR		14-MAY-18	R4044158
Calcium (Ca)	26.9		1.0	mg/L		14-MAY-18	R4044158
Magnesium (Mg)	1.9		1.0	mg/L		14-MAY-18	R4044158
Sodium (Na)	12.7		1.0	mg/L		14-MAY-18	R4044158
Metals							
Antimony (Sb)	1.4		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Arsenic (As)	6.4		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Barium (Ba)	96.8		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Beryllium (Be)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B)	9.1		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B), Hot Water Ext.	0.59		0.10	ug/g	11-MAY-18	14-MAY-18	R4044369
Cadmium (Cd)	0.74		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Chromium (Cr)	12.9		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Cobalt (Co)	3.8		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Copper (Cu)	43.9		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Lead (Pb)	95.5		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Mercury (Hg)	0.146		0.0050	ug/g	11-MAY-18	11-MAY-18	R4040544
Molybdenum (Mo)	1.3		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Nickel (Ni)	10.3		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Selenium (Se)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Silver (Ag)	<0.20		0.20	ug/g	11-MAY-18	11-MAY-18	R4042972
Thallium (Tl)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Uranium (U)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Vanadium (V)	17.2		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Zinc (Zn)	413		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	10-MAY-18	14-MAY-18	R4042953
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Benzene	<0.0068		0.0068	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromodichloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromoform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromomethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dibromochloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-7 S-11149990-050218-TW-06 Sampled By: TYLER W. on 02-MAY-18 @ 12:00 Matrix: SOIL							
Volatile Organic Compounds							
Chloroform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methylene Chloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-MAY-18	
Ethylbenzene	<0.018		0.018	ug/g	09-MAY-18	11-MAY-18	R4039955
n-Hexane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
MTBE	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Styrene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Toluene	<0.080		0.080	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichloroethylene	<0.010		0.010	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Vinyl chloride	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
o-Xylene	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
m+p-Xylenes	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
Xylenes (Total)	<0.050		0.050	ug/g		11-MAY-18	
Surrogate: 4-Bromofluorobenzene	82.8		50-140	%	09-MAY-18	11-MAY-18	R4039955
Surrogate: 1,4-Difluorobenzene	94.2		50-140	%	09-MAY-18	11-MAY-18	R4039955
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAY-18	11-MAY-18	R4039955
F1-BTEX	<5.0		5.0	ug/g		11-MAY-18	
F2 (C10-C16)	<10		10	ug/g	10-MAY-18	11-MAY-18	R4040894
F2-Naphth	<10		10	ug/g		11-MAY-18	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-7 S-11149990-050218-TW-06 Sampled By: TYLER W. on 02-MAY-18 @ 12:00 Matrix: SOIL							
Hydrocarbons							
F3 (C16-C34)	72		50	ug/g	10-MAY-18	11-MAY-18	R4040894
F3-PAH	70		50	ug/g		11-MAY-18	
F4 (C34-C50)	60		50	ug/g	10-MAY-18	11-MAY-18	R4040894
Total Hydrocarbons (C6-C50)	132		72	ug/g		11-MAY-18	
Chrom. to baseline at nC50	YES				10-MAY-18	11-MAY-18	R4040894
Surrogate: 2-Bromobenzotrifluoride	93.8		60-140	%	10-MAY-18	11-MAY-18	R4040894
Surrogate: 3,4-Dichlorotoluene	81.9		60-140	%	09-MAY-18	11-MAY-18	R4039955
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		11-MAY-18	
Semi-Volatile Organics							
Acenaphthene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Acenaphthylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Anthracene	0.063		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)anthracene	0.217	R	0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)pyrene	0.242		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(b)fluoranthene	0.216		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(ghi)perylene	0.143		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(k)fluoranthene	0.256		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Biphenyl	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
4-Chloroaniline	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroethyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroisopropyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Chlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Chrysene	0.213		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Dibenzo(a,h)anthracene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
3,3'-Dichlorobenzidine	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Diethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Dimethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dimethylphenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrophenol	<1.0		1.0	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,6-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4+2,6-Dinitrotoluene	<0.14		0.14	ug/g		11-MAY-18	
Bis(2-ethylhexyl)phthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluoranthene	0.319		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluorene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Indeno(1,2,3-cd)pyrene	0.184		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1-Methylnaphthalene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Methylnaphthalene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
Naphthalene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-7 S-11149990-050218-TW-06 Sampled By: TYLER W. on 02-MAY-18 @ 12:00 Matrix: SOIL							
Semi-Volatile Organics							
Pentachlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenanthrene	0.191		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Pyrene	0.248		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1,2,4-Trichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,5-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,6-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2-Fluorobiphenyl	90.2		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Nitrobenzene d5	99.6		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Phenol d5	92.8		30-130	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: p-Terphenyl d14	80.7		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2,4,6-Tribromophenol	92.8		50-140	%	09-MAY-18	11-MAY-18	R4040412
Polychlorinated Biphenyls							
Aroclor 1242	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1248	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1254	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1260	0.034	PRAR	0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Total PCBs	0.034		0.020	ug/g	16-MAY-18	16-MAY-18	R4045150
Surrogate: d14-Terphenyl	108.1		60-140	%	16-MAY-18	16-MAY-18	R4045150
L2091162-8 S-11149990-050218-TW-07 Sampled By: TYLER W. on 02-MAY-18 @ 16:10 Matrix: SOIL							
Physical Tests							
% Moisture	15.7		0.10	%	05-JUN-18	05-JUN-18	R4071533
Metals							
Cadmium (Cd)	<0.50		0.50	ug/g	06-JUN-18	07-JUN-18	R4075827
Copper (Cu)	2.9		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Lead (Pb)	2.8		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Mercury (Hg)	<0.0050		0.0050	ug/g	06-JUN-18	07-JUN-18	R4075062
Zinc (Zn)	157		5.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Hydrocarbons							
F3 (C16-C34)	<50		50	ug/g	05-JUN-18	06-JUN-18	R4071755
F3-PAH	<50		50	ug/g		08-JUN-18	
Chrom. to baseline at nC50	YES				05-JUN-18	06-JUN-18	R4071755
Surrogate: 2-Bromobenzotrifluoride	84.6		60-140	%	05-JUN-18	06-JUN-18	R4071755
Polycyclic Aromatic Hydrocarbons							
Acenaphthylene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Anthracene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Benzo(a)anthracene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Benzo(a)pyrene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Benzo(b)fluoranthene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Benzo(k)fluoranthene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-8 S-11149990-050218-TW-07 Sampled By: TYLER W. on 02-MAY-18 @ 16:10 Matrix: SOIL							
Polycyclic Aromatic Hydrocarbons							
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Fluoranthene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		08-JUN-18	
Surrogate: 2-Fluorobiphenyl	88.8		50-140	%	05-JUN-18	08-JUN-18	R4075182
Surrogate: p-Terphenyl d14	87.9		50-140	%	05-JUN-18	08-JUN-18	R4075182
L2091162-9 S-11149990-050318-TW-08 Sampled By: TYLER W. on 03-MAY-18 @ 08:30 Matrix: SOIL							
Physical Tests							
Conductivity	0.304		0.0040	mS/cm		14-MAY-18	R4043686
% Moisture	14.9		0.10	%	10-MAY-18	10-MAY-18	R4040332
pH	7.31		0.10	pH units		11-MAY-18	R4040674
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	10-MAY-18	11-MAY-18	R4041545
Saturated Paste Extractables							
SAR	0.51		0.10	SAR		14-MAY-18	R4044158
Calcium (Ca)	29.4		1.0	mg/L		14-MAY-18	R4044158
Magnesium (Mg)	2.2		1.0	mg/L		14-MAY-18	R4044158
Sodium (Na)	10.7		1.0	mg/L		14-MAY-18	R4044158
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Arsenic (As)	5.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Barium (Ba)	61.7		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Beryllium (Be)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B)	10.1		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B), Hot Water Ext.	1.10		0.10	ug/g	11-MAY-18	14-MAY-18	R4044369
Cadmium (Cd)	1.45		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Chromium (Cr)	12.9		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Cobalt (Co)	3.8		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Copper (Cu)	35.1		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Lead (Pb)	52.4		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Mercury (Hg)	0.366		0.0050	ug/g	11-MAY-18	11-MAY-18	R4040544
Molybdenum (Mo)	1.3		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Nickel (Ni)	39.4		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Selenium (Se)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Silver (Ag)	<0.20		0.20	ug/g	11-MAY-18	11-MAY-18	R4042972
Thallium (Tl)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Uranium (U)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Vanadium (V)	14.3		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Zinc (Zn)	558		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Speciated Metals							

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-9 S-11149990-050318-TW-08 Sampled By: TYLER W. on 03-MAY-18 @ 08:30 Matrix: SOIL							
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	10-MAY-18	14-MAY-18	R4042953
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	09-MAY-18	10-MAY-18	R4039969
Benzene	<0.0068		0.0068	ug/g	09-MAY-18	10-MAY-18	R4039969
Bromodichloromethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Bromoform	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Bromomethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Chlorobenzene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Dibromochloromethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Chloroform	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Methylene Chloride	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	10-MAY-18	R4039969
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	10-MAY-18	R4039969
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-MAY-18	
Ethylbenzene	<0.018		0.018	ug/g	09-MAY-18	10-MAY-18	R4039969
n-Hexane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAY-18	10-MAY-18	R4039969
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAY-18	10-MAY-18	R4039969
MTBE	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Styrene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Toluene	<0.080		0.080	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Trichloroethylene	<0.010		0.010	ug/g	09-MAY-18	10-MAY-18	R4039969
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Vinyl chloride	<0.020		0.020	ug/g	09-MAY-18	10-MAY-18	R4039969

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-9 S-11149990-050318-TW-08 Sampled By: TYLER W. on 03-MAY-18 @ 08:30 Matrix: SOIL							
Volatile Organic Compounds							
o-Xylene	<0.020		0.020	ug/g	09-MAY-18	10-MAY-18	R4039969
m+p-Xylenes	<0.030		0.030	ug/g	09-MAY-18	10-MAY-18	R4039969
Xylenes (Total)	<0.050		0.050	ug/g		11-MAY-18	
Surrogate: 4-Bromofluorobenzene	96.9		50-140	%	09-MAY-18	10-MAY-18	R4039969
Surrogate: 1,4-Difluorobenzene	99.4		50-140	%	09-MAY-18	10-MAY-18	R4039969
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAY-18	10-MAY-18	R4039969
F1-BTEX	<5.0		5.0	ug/g		11-MAY-18	
F2 (C10-C16)	<10		10	ug/g	10-MAY-18	11-MAY-18	R4040894
F2-Naphth	<10		10	ug/g		11-MAY-18	
F3 (C16-C34)	125		50	ug/g	10-MAY-18	11-MAY-18	R4040894
F3-PAH	122		50	ug/g		11-MAY-18	
F4 (C34-C50)	117		50	ug/g	10-MAY-18	11-MAY-18	R4040894
F4G-SG (GHH-Silica)	500		250	ug/g	11-MAY-18	11-MAY-18	R4042528
Total Hydrocarbons (C6-C50)	242		72	ug/g		11-MAY-18	
Chrom. to baseline at nC50	NO				10-MAY-18	11-MAY-18	R4040894
Surrogate: 2-Bromobenzotrifluoride	91.5		60-140	%	10-MAY-18	11-MAY-18	R4040894
Surrogate: 3,4-Dichlorotoluene	103.2		60-140	%	09-MAY-18	10-MAY-18	R4039969
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	0.085		0.042	ug/g		11-MAY-18	
Semi-Volatile Organics							
Acenaphthene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Acenaphthylene	0.135		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Anthracene	0.098		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)anthracene	0.276	R	0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)pyrene	0.413		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(b)fluoranthene	0.316		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(ghi)perylene	0.274		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(k)fluoranthene	0.356		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Biphenyl	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
4-Chloroaniline	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroethyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroisopropyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Chlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Chrysene	0.259		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Dibenzo(a,h)anthracene	0.053		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
3,3'-Dichlorobenzidine	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Diethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Dimethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dimethylphenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrophenol	<1.0		1.0	ug/g	09-MAY-18	11-MAY-18	R4040412

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-9 S-11149990-050318-TW-08 Sampled By: TYLER W. on 03-MAY-18 @ 08:30 Matrix: SOIL							
Semi-Volatile Organics							
2,4-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,6-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4+2,6-Dinitrotoluene	<0.14		0.14	ug/g		11-MAY-18	
Bis(2-ethylhexyl)phthalate	<0.30	DLQ	0.30	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluoranthene	0.348		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluorene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Indeno(1,2,3-cd)pyrene	0.317		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1-Methylnaphthalene	0.036		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Methylnaphthalene	0.049		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
Naphthalene	0.063		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Pentachlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenanthrene	0.281		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenol	0.29		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Pyrene	0.319		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1,2,4-Trichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,5-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,6-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2-Fluorobiphenyl	91.7		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Nitrobenzene d5	99.9		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Phenol d5	91.4		30-130	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: p-Terphenyl d14	79.9		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2,4,6-Tribromophenol	96.5		50-140	%	09-MAY-18	11-MAY-18	R4040412
Polychlorinated Biphenyls							
Aroclor 1242	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1248	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1254	0.016	PRAR	0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1260	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Total PCBs	<0.020		0.020	ug/g	16-MAY-18	16-MAY-18	R4045150
Surrogate: d14-Terphenyl	108.8		60-140	%	16-MAY-18	16-MAY-18	R4045150
L2091162-10 S-11149990-050318-TW-09 Sampled By: TYLER W. on 03-MAY-18 @ 08:40 Matrix: SOIL							
Physical Tests							
% Moisture	13.0		0.10	%	05-JUN-18	05-JUN-18	R4071533
Metals							
Cadmium (Cd)	0.77		0.50	ug/g	06-JUN-18	06-JUN-18	R4074941
Mercury (Hg)	0.181		0.0050	ug/g	06-JUN-18	06-JUN-18	R4072393
Zinc (Zn)	336		5.0	ug/g	06-JUN-18	06-JUN-18	R4074941
Polycyclic Aromatic Hydrocarbons							
Benzo(a)pyrene	0.142		0.020	mg/kg	05-JUN-18	08-JUN-18	R4075182
Surrogate: 2-Fluorobiphenyl	89.2		50-140	%	05-JUN-18	08-JUN-18	R4075182
Surrogate: p-Terphenyl d14	91.5		50-140	%	05-JUN-18	08-JUN-18	R4075182

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-10 S-11149990-050318-TW-09 Sampled By: TYLER W. on 03-MAY-18 @ 08:40 Matrix: SOIL							
Polycyclic Aromatic Hydrocarbons							
L2091162-12 S-11149990-050418-TW-11 Sampled By: TYLER W. on 04-MAY-18 @ 08:15 Matrix: SOIL							
Physical Tests							
Conductivity	0.727		0.0040	mS/cm		14-MAY-18	R4043686
% Moisture	9.53		0.10	%	10-MAY-18	10-MAY-18	R4040332
pH	7.69		0.10	pH units		11-MAY-18	R4040674
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	10-MAY-18	11-MAY-18	R4041545
Saturated Paste Extractables							
SAR	8.98		0.10	SAR		14-MAY-18	R4044158
Calcium (Ca)	13.0		1.0	mg/L		14-MAY-18	R4044158
Magnesium (Mg)	1.7		1.0	mg/L		14-MAY-18	R4044158
Sodium (Na)	130		1.0	mg/L		14-MAY-18	R4044158
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Arsenic (As)	4.1		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Barium (Ba)	61.5		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Beryllium (Be)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B)	13.2		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B), Hot Water Ext.	3.37		0.10	ug/g	11-MAY-18	14-MAY-18	R4044369
Cadmium (Cd)	0.52		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Chromium (Cr)	13.6		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Cobalt (Co)	6.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Copper (Cu)	25.5		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Lead (Pb)	40.7		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Mercury (Hg)	0.0659		0.0050	ug/g	11-MAY-18	11-MAY-18	R4040544
Molybdenum (Mo)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Nickel (Ni)	11.6		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Selenium (Se)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Silver (Ag)	<0.20		0.20	ug/g	11-MAY-18	11-MAY-18	R4042972
Thallium (Tl)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Uranium (U)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Vanadium (V)	20.1		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Zinc (Zn)	174		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Speciated Metals							
Chromium, Hexavalent	0.27		0.20	ug/g	10-MAY-18	14-MAY-18	R4042953
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Benzene	<0.0068		0.0068	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromodichloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromoform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-12 S-11149990-050418-TW-11 Sampled By: TYLER W. on 04-MAY-18 @ 08:15 Matrix: SOIL							
Volatile Organic Compounds							
Bromomethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dibromochloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chloroform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methylene Chloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-MAY-18	
Ethylbenzene	<0.018		0.018	ug/g	09-MAY-18	11-MAY-18	R4039955
n-Hexane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
MTBE	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Styrene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Toluene	<0.080		0.080	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichloroethylene	<0.010		0.010	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Vinyl chloride	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
o-Xylene	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
m+p-Xylenes	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
Xylenes (Total)	<0.050		0.050	ug/g		11-MAY-18	
Surrogate: 4-Bromofluorobenzene	89.0		50-140	%	09-MAY-18	11-MAY-18	R4039955
Surrogate: 1,4-Difluorobenzene	101.9		50-140	%	09-MAY-18	11-MAY-18	R4039955
Hydrocarbons							

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-12 S-11149990-050418-TW-11 Sampled By: TYLER W. on 04-MAY-18 @ 08:15 Matrix: SOIL							
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAY-18	11-MAY-18	R4039955
F1-BTEX	<5.0		5.0	ug/g		11-MAY-18	
F2 (C10-C16)	<10		10	ug/g	10-MAY-18	11-MAY-18	R4040894
F2-Naphth	<10		10	ug/g		11-MAY-18	
F3 (C16-C34)	167		50	ug/g	10-MAY-18	11-MAY-18	R4040894
F3-PAH	147		50	ug/g		11-MAY-18	
F4 (C34-C50)	88		50	ug/g	10-MAY-18	11-MAY-18	R4040894
F4G-SG (GHH-Silica)	270		250	ug/g	11-MAY-18	11-MAY-18	R4042528
Total Hydrocarbons (C6-C50)	256		72	ug/g		11-MAY-18	
Chrom. to baseline at nC50	NO				10-MAY-18	11-MAY-18	R4040894
Surrogate: 2-Bromobenzotrifluoride	84.7		60-140	%	10-MAY-18	11-MAY-18	R4040894
Surrogate: 3,4-Dichlorotoluene	80.1		60-140	%	09-MAY-18	11-MAY-18	R4039955
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	0.360		0.042	ug/g		11-MAY-18	
Semi-Volatile Organics							
Acenaphthene	0.129		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Acenaphthylene	0.959		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Anthracene	1.09		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)anthracene	1.90	R	0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)pyrene	2.19		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(b)fluoranthene	1.43		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(ghi)perylene	1.13		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(k)fluoranthene	1.93		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Biphenyl	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
4-Chloroaniline	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroethyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroisopropyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Chlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Chrysene	1.73		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Dibenzo(a,h)anthracene	0.217		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
3,3'-Dichlorobenzidine	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Diethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Dimethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dimethylphenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrophenol	<1.0		1.0	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,6-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4+2,6-Dinitrotoluene	<0.14		0.14	ug/g		11-MAY-18	
Bis(2-ethylhexyl)phthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluoranthene	3.99		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-12 S-11149990-050418-TW-11 Sampled By: TYLER W. on 04-MAY-18 @ 08:15 Matrix: SOIL							
Semi-Volatile Organics							
Fluorene	0.598		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Indeno(1,2,3-cd)pyrene	1.33		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1-Methylnaphthalene	0.171		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Methylnaphthalene	0.189		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
Naphthalene	0.275		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Pentachlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenanthrene	3.58		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Pyrene	3.63		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1,2,4-Trichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,5-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,6-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2-Fluorobiphenyl	91.4		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Nitrobenzene d5	98.7		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Phenol d5	93.5		30-130	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: p-Terphenyl d14	86.3		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2,4,6-Tribromophenol	91.4		50-140	%	09-MAY-18	11-MAY-18	R4040412
Polychlorinated Biphenyls							
Aroclor 1242	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1248	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1254	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1260	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Total PCBs	<0.020		0.020	ug/g	16-MAY-18	16-MAY-18	R4045150
Surrogate: d14-Terphenyl	102.6		60-140	%	16-MAY-18	16-MAY-18	R4045150
L2091162-13 S-11149990-050418-TW-12 Sampled By: TYLER W. on 04-MAY-18 @ 08:30 Matrix: SOIL							
Physical Tests							
% Moisture	10.5		0.10	%	05-JUN-18	05-JUN-18	R4071533
Saturated Paste Extractables							
SAR	2.79		0.10	SAR		08-JUN-18	R4076234
Calcium (Ca)	8.7		1.0	mg/L		08-JUN-18	R4076234
Magnesium (Mg)	2.7		1.0	mg/L		08-JUN-18	R4076234
Sodium (Na)	36.8		1.0	mg/L		08-JUN-18	R4076234
Polycyclic Aromatic Hydrocarbons							
Acenaphthylene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Anthracene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Benzo(a)anthracene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Benzo(a)pyrene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Benzo(b)fluoranthene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Benzo(k)fluoranthene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-13 S-11149990-050418-TW-12 Sampled By: TYLER W. on 04-MAY-18 @ 08:30 Matrix: SOIL							
Polycyclic Aromatic Hydrocarbons							
Fluoranthene	0.067		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	05-JUN-18	08-JUN-18	R4075182
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		08-JUN-18	
Surrogate: 2-Fluorobiphenyl	87.5		50-140	%	05-JUN-18	08-JUN-18	R4075182
Surrogate: p-Terphenyl d14	88.0		50-140	%	05-JUN-18	08-JUN-18	R4075182
L2091162-14 S-11149990-050418-TW-13 Sampled By: TYLER W. on 04-MAY-18 @ 10:25 Matrix: SOIL							
Physical Tests							
Conductivity	0.244		0.0040	mS/cm		14-MAY-18	R4043686
% Moisture	12.6		0.10	%	10-MAY-18	10-MAY-18	R4040332
pH	7.60		0.10	pH units		11-MAY-18	R4040674
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	11-MAY-18	14-MAY-18	R4044173
Saturated Paste Extractables							
SAR	0.52		0.10	SAR		14-MAY-18	R4044158
Calcium (Ca)	24.4		1.0	mg/L		14-MAY-18	R4044158
Magnesium (Mg)	4.8		1.0	mg/L		14-MAY-18	R4044158
Sodium (Na)	10.7		1.0	mg/L		14-MAY-18	R4044158
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Arsenic (As)	3.1		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Barium (Ba)	55.1		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Beryllium (Be)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B)	7.8		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B), Hot Water Ext.	0.93		0.10	ug/g	11-MAY-18	14-MAY-18	R4044369
Cadmium (Cd)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Chromium (Cr)	15.9		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Cobalt (Co)	4.6		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Copper (Cu)	19.8		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Lead (Pb)	27.5		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Mercury (Hg)	0.0586		0.0050	ug/g	11-MAY-18	11-MAY-18	R4040544
Molybdenum (Mo)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Nickel (Ni)	11.3		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Selenium (Se)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Silver (Ag)	<0.20		0.20	ug/g	11-MAY-18	11-MAY-18	R4042972
Thallium (Tl)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Uranium (U)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Vanadium (V)	23.1		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Zinc (Zn)	121		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Speciated Metals							
Chromium, Hexavalent	0.20		0.20	ug/g	10-MAY-18	14-MAY-18	R4042953

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-14 S-11149990-050418-TW-13 Sampled By: TYLER W. on 04-MAY-18 @ 10:25 Matrix: SOIL							
Speciated Metals							
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Benzene	<0.0068		0.0068	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromodichloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromoform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Bromomethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dibromochloromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Chloroform	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methylene Chloride	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-MAY-18	
Ethylbenzene	<0.018		0.018	ug/g	09-MAY-18	11-MAY-18	R4039955
n-Hexane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAY-18	11-MAY-18	R4039955
MTBE	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Styrene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Toluene	<0.080		0.080	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichloroethylene	<0.010		0.010	ug/g	09-MAY-18	11-MAY-18	R4039955
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4039955
Vinyl chloride	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955
o-Xylene	<0.020		0.020	ug/g	09-MAY-18	11-MAY-18	R4039955

* 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
L2091162-14 S-11149990-050418-TW-13 Sampled By: TYLER W. on 04-MAY-18 @ 10:25 Matrix: SOIL							
Volatile Organic Compounds							
m+p-Xylenes	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4039955
Xylenes (Total)	<0.050		0.050	ug/g		11-MAY-18	
Surrogate: 4-Bromofluorobenzene	87.8		50-140	%	09-MAY-18	11-MAY-18	R4039955
Surrogate: 1,4-Difluorobenzene	99.1		50-140	%	09-MAY-18	11-MAY-18	R4039955
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAY-18	11-MAY-18	R4039955
F1-BTEX	<5.0		5.0	ug/g		11-MAY-18	
F2 (C10-C16)	<10		10	ug/g	10-MAY-18	11-MAY-18	R4040894
F2-Naphth	<10		10	ug/g		11-MAY-18	
F3 (C16-C34)	57		50	ug/g	10-MAY-18	11-MAY-18	R4040894
F3-PAH	54		50	ug/g		11-MAY-18	
F4 (C34-C50)	<50		50	ug/g	10-MAY-18	11-MAY-18	R4040894
Total Hydrocarbons (C6-C50)	<72		72	ug/g		11-MAY-18	
Chrom. to baseline at nC50	YES				10-MAY-18	11-MAY-18	R4040894
Surrogate: 2-Bromobenzotrifluoride	90.2		60-140	%	10-MAY-18	11-MAY-18	R4040894
Surrogate: 3,4-Dichlorotoluene	87.3		60-140	%	09-MAY-18	11-MAY-18	R4039955
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		11-MAY-18	
Semi-Volatile Organics							
Acenaphthene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Acenaphthylene	0.111		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Anthracene	0.127		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)anthracene	0.334		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)pyrene	0.460		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(b)fluoranthene	0.377		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(ghi)perylene	0.261		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(k)fluoranthene	0.424		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Biphenyl	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
4-Chloroaniline	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroethyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroisopropyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Chlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Chrysene	0.330		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Dibenzo(a,h)anthracene	0.061		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
3,3'-Dichlorobenzidine	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Diethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Dimethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dimethylphenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrophenol	<1.0		1.0	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,6-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-14 S-11149990-050418-TW-13 Sampled By: TYLER W. on 04-MAY-18 @ 10:25 Matrix: SOIL							
Semi-Volatile Organics							
2,4+2,6-Dinitrotoluene	<0.14		0.14	ug/g		11-MAY-18	
Bis(2-ethylhexyl)phthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluoranthene	0.466		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluorene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Indeno(1,2,3-cd)pyrene	0.324		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1-Methylnaphthalene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Methylnaphthalene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
Naphthalene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Pentachlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenanthrene	0.318		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Pyrene	0.406		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1,2,4-Trichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,5-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,6-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2-Fluorobiphenyl	90.9		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Nitrobenzene d5	96.9		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Phenol d5	91.5		30-130	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: p-Terphenyl d14	82.9		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2,4,6-Tribromophenol	97.0		50-140	%	09-MAY-18	11-MAY-18	R4040412
Polychlorinated Biphenyls							
Aroclor 1242	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1248	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1254	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1260	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Total PCBs	<0.020		0.020	ug/g	16-MAY-18	16-MAY-18	R4045150
Surrogate: d14-Terphenyl	103.4		60-140	%	16-MAY-18	16-MAY-18	R4045150
L2091162-15 S-11149990-050418-TW-14 Sampled By: TYLER W. on 04-MAY-18 @ 10:40 Matrix: SOIL							
Physical Tests							
% Moisture	25.2		0.10	%	05-JUN-18	05-JUN-18	R4071533
Polycyclic Aromatic Hydrocarbons							
Benzo(a)pyrene	<0.020		0.020	mg/kg	05-JUN-18	08-JUN-18	R4075182
Surrogate: 2-Fluorobiphenyl	87.0		50-140	%	05-JUN-18	08-JUN-18	R4075182
Surrogate: p-Terphenyl d14	87.7		50-140	%	05-JUN-18	08-JUN-18	R4075182
L2091162-16 S-11149990-050718-TW-15 Sampled By: TYLER W. on 07-MAY-18 @ 09:05 Matrix: SOIL							
Physical Tests							
Conductivity	0.541		0.0040	mS/cm		14-MAY-18	R4043686
% Moisture	15.2		0.10	%	10-MAY-18	10-MAY-18	R4040332

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-16 S-11149990-050718-TW-15 Sampled By: TYLER W. on 07-MAY-18 @ 09:05 Matrix: SOIL							
Physical Tests							
pH	7.26		0.10	pH units		11-MAY-18	R4040674
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	11-MAY-18	14-MAY-18	R4044173
Saturated Paste Extractables							
SAR	0.30		0.10	SAR		14-MAY-18	R4044158
Calcium (Ca)	64.5		1.0	mg/L		14-MAY-18	R4044158
Magnesium (Mg)	10.1		1.0	mg/L		14-MAY-18	R4044158
Sodium (Na)	9.8		1.0	mg/L		14-MAY-18	R4044158
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Arsenic (As)	4.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Barium (Ba)	50.4		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Beryllium (Be)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B)	7.2		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B), Hot Water Ext.	1.50		0.10	ug/g	11-MAY-18	14-MAY-18	R4044369
Cadmium (Cd)	0.59		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Chromium (Cr)	12.5		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Cobalt (Co)	3.4		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Copper (Cu)	20.1		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Lead (Pb)	46.6		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Mercury (Hg)	0.0979		0.0050	ug/g	11-MAY-18	11-MAY-18	R4040544
Molybdenum (Mo)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Nickel (Ni)	8.4		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Selenium (Se)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Silver (Ag)	<0.20		0.20	ug/g	11-MAY-18	11-MAY-18	R4042972
Thallium (Tl)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Uranium (U)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Vanadium (V)	20.5		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Zinc (Zn)	206		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	10-MAY-18	14-MAY-18	R4042953
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	09-MAY-18	10-MAY-18	R4039969
Benzene	<0.0068		0.0068	ug/g	09-MAY-18	10-MAY-18	R4039969
Bromodichloromethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Bromoform	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Bromomethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Chlorobenzene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Dibromochloromethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Chloroform	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-16 S-11149990-050718-TW-15 Sampled By: TYLER W. on 07-MAY-18 @ 09:05 Matrix: SOIL							
Volatile Organic Compounds							
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Methylene Chloride	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	10-MAY-18	R4039969
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	10-MAY-18	R4039969
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-MAY-18	
Ethylbenzene	<0.018		0.018	ug/g	09-MAY-18	10-MAY-18	R4039969
n-Hexane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAY-18	10-MAY-18	R4039969
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAY-18	10-MAY-18	R4039969
MTBE	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Styrene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Toluene	<0.080		0.080	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Trichloroethylene	0.013		0.010	ug/g	09-MAY-18	10-MAY-18	R4039969
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Vinyl chloride	<0.020		0.020	ug/g	09-MAY-18	10-MAY-18	R4039969
o-Xylene	<0.020		0.020	ug/g	09-MAY-18	10-MAY-18	R4039969
m+p-Xylenes	<0.030		0.030	ug/g	09-MAY-18	10-MAY-18	R4039969
Xylenes (Total)	<0.050		0.050	ug/g		11-MAY-18	
Surrogate: 4-Bromofluorobenzene	96.1		50-140	%	09-MAY-18	10-MAY-18	R4039969
Surrogate: 1,4-Difluorobenzene	100.5		50-140	%	09-MAY-18	10-MAY-18	R4039969
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAY-18	10-MAY-18	R4039969
F1-BTEX	<5.0		5.0	ug/g		11-MAY-18	
F2 (C10-C16)	<10		10	ug/g	10-MAY-18	11-MAY-18	R4040894
F2-Naphth	<10		10	ug/g		11-MAY-18	
F3 (C16-C34)	71		50	ug/g	10-MAY-18	11-MAY-18	R4040894
F3-PAH	69		50	ug/g		11-MAY-18	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-16 S-11149990-050718-TW-15 Sampled By: TYLER W. on 07-MAY-18 @ 09:05 Matrix: SOIL							
Hydrocarbons							
F4 (C34-C50)	<50		50	ug/g	10-MAY-18	11-MAY-18	R4040894
Total Hydrocarbons (C6-C50)	<72		72	ug/g		11-MAY-18	
Chrom. to baseline at nC50	YES				10-MAY-18	11-MAY-18	R4040894
Surrogate: 2-Bromobenzotrifluoride	89.2		60-140	%	10-MAY-18	11-MAY-18	R4040894
Surrogate: 3,4-Dichlorotoluene	92.2		60-140	%	09-MAY-18	10-MAY-18	R4039969
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		11-MAY-18	
Semi-Volatile Organics							
Acenaphthene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Acenaphthylene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Anthracene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)anthracene	0.153		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(a)pyrene	0.166		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(b)fluoranthene	0.158		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(ghi)perylene	0.093		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Benzo(k)fluoranthene	0.167		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Biphenyl	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
4-Chloroaniline	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroethyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Bis(2-chloroisopropyl)ether	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Chlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Chrysene	0.161		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Dibenzo(a,h)anthracene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
3,3'-Dichlorobenzidine	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Diethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Dimethylphthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dimethylphenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrophenol	<1.0		1.0	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,6-Dinitrotoluene	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4+2,6-Dinitrotoluene	<0.14		0.14	ug/g		11-MAY-18	
Bis(2-ethylhexyl)phthalate	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluoranthene	0.199		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Fluorene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Indeno(1,2,3-cd)pyrene	0.109		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1-Methylnaphthalene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
2-Methylnaphthalene	<0.030		0.030	ug/g	09-MAY-18	11-MAY-18	R4040412
Naphthalene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
Pentachlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Phenanthrene	0.124		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-16 S-11149990-050718-TW-15 Sampled By: TYLER W. on 07-MAY-18 @ 09:05 Matrix: SOIL							
Semi-Volatile Organics							
Phenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Pyrene	0.182		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
1,2,4-Trichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,5-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
2,4,6-Trichlorophenol	<0.10		0.10	ug/g	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2-Fluorobiphenyl	90.6		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Nitrobenzene d5	97.3		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: Phenol d5	91.6		30-130	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: p-Terphenyl d14	83.4		50-140	%	09-MAY-18	11-MAY-18	R4040412
Surrogate: 2,4,6-Tribromophenol	91.9		50-140	%	09-MAY-18	11-MAY-18	R4040412
Polychlorinated Biphenyls							
Aroclor 1242	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1248	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1254	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1260	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Total PCBs	<0.020		0.020	ug/g	16-MAY-18	16-MAY-18	R4045150
Surrogate: d14-Terphenyl	105.5		60-140	%	16-MAY-18	16-MAY-18	R4045150
L2091162-18 S-11149990-050718-TW-17 Sampled By: TYLER W. on 07-MAY-18 @ 11:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.359		0.0040	mS/cm		14-MAY-18	R4043686
% Moisture	20.6		0.10	%	10-MAY-18	10-MAY-18	R4040332
pH	7.81		0.10	pH units		11-MAY-18	R4040674
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	11-MAY-18	14-MAY-18	R4044173
Saturated Paste Extractables							
SAR	0.44		0.10	SAR		14-MAY-18	R4044158
Calcium (Ca)	29.8		1.0	mg/L		14-MAY-18	R4044158
Magnesium (Mg)	2.4		1.0	mg/L		14-MAY-18	R4044158
Sodium (Na)	9.2		1.0	mg/L		14-MAY-18	R4044158
Metals							
Antimony (Sb)	2.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Arsenic (As)	5.1		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Barium (Ba)	425		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Beryllium (Be)	0.59		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B)	242		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Boron (B), Hot Water Ext.	11.5		0.10	ug/g	11-MAY-18	14-MAY-18	R4044369
Cadmium (Cd)	2.97		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Chromium (Cr)	27.7		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Cobalt (Co)	26.7		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Copper (Cu)	134		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-18 S-11149990-050718-TW-17 Sampled By: TYLER W. on 07-MAY-18 @ 11:00 Matrix: SOIL							
Metals							
Lead (Pb)	102		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Mercury (Hg)	1.18	DLHC	0.050	ug/g	11-MAY-18	11-MAY-18	R4040544
Molybdenum (Mo)	1.5		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Nickel (Ni)	45.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Selenium (Se)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Silver (Ag)	0.46		0.20	ug/g	11-MAY-18	11-MAY-18	R4042972
Thallium (Tl)	<0.50		0.50	ug/g	11-MAY-18	11-MAY-18	R4042972
Uranium (U)	<1.0		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Vanadium (V)	23.6		1.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Zinc (Zn)	402		5.0	ug/g	11-MAY-18	11-MAY-18	R4042972
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	10-MAY-18	14-MAY-18	R4042953
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	09-MAY-18	10-MAY-18	R4039969
Benzene	0.0311		0.0068	ug/g	09-MAY-18	10-MAY-18	R4039969
Bromodichloromethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Bromoform	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Bromomethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Chlorobenzene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Dibromochloromethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Chloroform	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,2-Dibromoethane	<0.35	DLVH	0.35	ug/g	09-MAY-18	10-MAY-18	R4039969
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,4-Dichlorobenzene	0.087		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Methylene Chloride	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	10-MAY-18	R4039969
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAY-18	10-MAY-18	R4039969
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-MAY-18	
Ethylbenzene	0.630		0.018	ug/g	09-MAY-18	10-MAY-18	R4039969
n-Hexane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAY-18	10-MAY-18	R4039969
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAY-18	10-MAY-18	R4039969

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-18 S-11149990-050718-TW-17 Sampled By: TYLER W. on 07-MAY-18 @ 11:00 Matrix: SOIL							
Volatile Organic Compounds							
MTBE	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Styrene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1,2,2-Tetrachloroethane	<6.3	DLVH	6.3	ug/g	09-MAY-18	10-MAY-18	R4039969
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Toluene	0.099		0.080	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
1,1,2-Trichloroethane	<4.7	DLVH	4.7	ug/g	09-MAY-18	10-MAY-18	R4039969
Trichloroethylene	<0.010		0.010	ug/g	09-MAY-18	10-MAY-18	R4039969
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAY-18	10-MAY-18	R4039969
Vinyl chloride	<0.020		0.020	ug/g	09-MAY-18	10-MAY-18	R4039969
o-Xylene	0.482		0.020	ug/g	09-MAY-18	10-MAY-18	R4039969
m+p-Xylenes	1.68		0.030	ug/g	09-MAY-18	10-MAY-18	R4039969
Xylenes (Total)	2.16		0.050	ug/g		11-MAY-18	
Surrogate: 4-Bromofluorobenzene	80.6		50-140	%	09-MAY-18	10-MAY-18	R4039969
Surrogate: 1,4-Difluorobenzene	94.9		50-140	%	09-MAY-18	10-MAY-18	R4039969
Hydrocarbons							
F1 (C6-C10)	1830	DLHC	100	ug/g	09-MAY-18	11-MAY-18	R4039969
F1-BTEX	1830		100	ug/g		16-MAY-18	
F2 (C10-C16)	3030		10	ug/g	10-MAY-18	11-MAY-18	R4040894
F2-Naphth	3030		10	ug/g		16-MAY-18	
F3 (C16-C34)	2850		50	ug/g	10-MAY-18	11-MAY-18	R4040894
F3-PAH	2850		50	ug/g		16-MAY-18	
F4 (C34-C50)	632		50	ug/g	10-MAY-18	11-MAY-18	R4040894
F4G-SG (GHH-Silica)	2170		250	ug/g	11-MAY-18	11-MAY-18	R4042528
Total Hydrocarbons (C6-C50)	8340		120	ug/g		16-MAY-18	
Chrom. to baseline at nC50	NO				10-MAY-18	11-MAY-18	R4040894
Surrogate: 2-Bromobenzotrifluoride	N/A	SMI	-	%	10-MAY-18	11-MAY-18	R4040894
Surrogate: 3,4-Dichlorotoluene	N/A	SDO:RNA	60-140	%	09-MAY-18	11-MAY-18	R4039969
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	0.322		0.042	ug/g		16-MAY-18	
Semi-Volatile Organics							
Acenaphthene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Acenaphthylene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Anthracene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Benzo(a)anthracene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Benzo(a)pyrene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Benzo(b)fluoranthene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Benzo(ghi)perylene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Benzo(k)fluoranthene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Biphenyl	0.078		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
4-Chloroaniline	<0.10		0.10	ug/g	11-MAY-18	15-MAY-18	R4044107

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-18 S-11149990-050718-TW-17 Sampled By: TYLER W. on 07-MAY-18 @ 11:00 Matrix: SOIL							
Semi-Volatile Organics							
Bis(2-chloroethyl)ether	<0.20	DLQ	0.20	ug/g	11-MAY-18	15-MAY-18	R4044107
Bis(2-chloroisopropyl)ether	<0.10		0.10	ug/g	11-MAY-18	15-MAY-18	R4044107
2-Chlorophenol	<0.10		0.10	ug/g	11-MAY-18	15-MAY-18	R4044107
Chrysene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Dibenzo(a,h)anthracene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
3,3'-Dichlorobenzidine	<0.10		0.10	ug/g	11-MAY-18	15-MAY-18	R4044107
2,4-Dichlorophenol	<0.10		0.10	ug/g	11-MAY-18	15-MAY-18	R4044107
Diethylphthalate	2.77		0.10	ug/g	11-MAY-18	15-MAY-18	R4044107
Dimethylphthalate	<0.10		0.10	ug/g	11-MAY-18	15-MAY-18	R4044107
2,4-Dimethylphenol	<0.20	DLQ	0.20	ug/g	11-MAY-18	15-MAY-18	R4044107
2,4-Dinitrophenol	<1.0		1.0	ug/g	11-MAY-18	15-MAY-18	R4044107
2,4-Dinitrotoluene	<0.10		0.10	ug/g	11-MAY-18	15-MAY-18	R4044107
2,6-Dinitrotoluene	<0.10		0.10	ug/g	11-MAY-18	15-MAY-18	R4044107
2,4+2,6-Dinitrotoluene	<0.14		0.14	ug/g		16-MAY-18	
Bis(2-ethylhexyl)phthalate	16.7	DLHC	0.50	ug/g	11-MAY-18	16-MAY-18	R4044107
Fluoranthene	0.107		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Fluorene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
1-Methylnaphthalene	0.133		0.030	ug/g	11-MAY-18	15-MAY-18	R4044107
2-Methylnaphthalene	0.188		0.030	ug/g	11-MAY-18	15-MAY-18	R4044107
Naphthalene	0.563		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Pentachlorophenol	<0.10		0.10	ug/g	11-MAY-18	15-MAY-18	R4044107
Phenanthrene	0.120		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
Phenol	<0.30	DLQ	0.30	ug/g	11-MAY-18	15-MAY-18	R4044107
Pyrene	0.092		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
1,2,4-Trichlorobenzene	<0.050		0.050	ug/g	11-MAY-18	15-MAY-18	R4044107
2,4,5-Trichlorophenol	<0.10		0.10	ug/g	11-MAY-18	15-MAY-18	R4044107
2,4,6-Trichlorophenol	<0.10		0.10	ug/g	11-MAY-18	15-MAY-18	R4044107
Surrogate: 2-Fluorobiphenyl	87.9		50-140	%	11-MAY-18	15-MAY-18	R4044107
Surrogate: Nitrobenzene d5	105.1		50-140	%	11-MAY-18	15-MAY-18	R4044107
Surrogate: Phenol d5	126.1		30-130	%	11-MAY-18	15-MAY-18	R4044107
Surrogate: p-Terphenyl d14	119.5		50-140	%	11-MAY-18	15-MAY-18	R4044107
Surrogate: 2,4,6-Tribromophenol	99.8		50-140	%	11-MAY-18	15-MAY-18	R4044107
Polychlorinated Biphenyls							
Aroclor 1242	<0.150	DLM	0.15	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1248	<0.010		0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1254	<0.0850	DLM	0.085	ug/g	16-MAY-18	16-MAY-18	R4045150
Aroclor 1260	0.277	PRAR	0.010	ug/g	16-MAY-18	16-MAY-18	R4045150
Total PCBs	0.277	DLM	0.090	ug/g	16-MAY-18	16-MAY-18	R4045150
Surrogate: d14-Terphenyl	109.2		60-140	%	16-MAY-18	16-MAY-18	R4045150
L2091162-19 S-11149990-050718-TW-18							

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2091162-19 S-11149990-050718-TW-18 Sampled By: TYLER W. on 07-MAY-18 @ 11:30 Matrix: SOIL							
Physical Tests							
% Moisture	16.3		0.10	%	05-JUN-18	05-JUN-18	R4071533
Metals							
Barium (Ba)	2.1		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Boron (B)	<5.0		5.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Cadmium (Cd)	<0.50		0.50	ug/g	06-JUN-18	07-JUN-18	R4075827
Cobalt (Co)	<1.0		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Mercury (Hg)	0.0085		0.0050	ug/g	06-JUN-18	07-JUN-18	R4075062
Zinc (Zn)	19.9		5.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	04-JUN-18	06-JUN-18	R4072649
F2 (C10-C16)	<10		10	ug/g	05-JUN-18	06-JUN-18	R4071755
F3 (C16-C34)	<50		50	ug/g	05-JUN-18	06-JUN-18	R4071755
Total Hydrocarbons (C6-C50)	<72		72	ug/g		06-JUN-18	
Chrom. to baseline at nC50	YES				05-JUN-18	06-JUN-18	R4071755
Surrogate: 2-Bromobenzotrifluoride	86.2		60-140	%	05-JUN-18	06-JUN-18	R4071755
Surrogate: 3,4-Dichlorotoluene	96.7		60-140	%	04-JUN-18	06-JUN-18	R4072649
Semi-Volatile Organics							
1,4-Dichlorobenzene	<0.10		0.10	ug/g	05-JUN-18	06-JUN-18	R4071915
Diethylphthalate	<0.10		0.10	ug/g	05-JUN-18	06-JUN-18	R4071915
Bis(2-ethylhexyl)phthalate	<0.10		0.10	ug/g	05-JUN-18	06-JUN-18	R4071915
Surrogate: 2-Fluorobiphenyl	89.0		50-140	%	05-JUN-18	06-JUN-18	R4071915
Surrogate: 2-Fluorobiphenyl	89.0		50-140	%	05-JUN-18	06-JUN-18	R4071915
Surrogate: Nitrobenzene d5	86.7		50-150	%	05-JUN-18	06-JUN-18	R4071915
Surrogate: Nitrobenzene d5	86.7		50-150	%	05-JUN-18	06-JUN-18	R4071915
Surrogate: Phenol d5	83.8		30-120	%	05-JUN-18	06-JUN-18	R4071915
Surrogate: Phenol d5	83.8		30-120	%	05-JUN-18	06-JUN-18	R4071915
Surrogate: p-Terphenyl d14	97.1		50-140	%	05-JUN-18	06-JUN-18	R4071915
Surrogate: p-Terphenyl d14	97.1		50-140	%	05-JUN-18	06-JUN-18	R4071915
Surrogate: 2,4,6-Tribromophenol	64.8		40-160	%	05-JUN-18	06-JUN-18	R4071915
Surrogate: 2,4,6-Tribromophenol	64.8		40-160	%	05-JUN-18	06-JUN-18	R4071915
L2091162-20 S-11149990-050718-TW-19 Sampled By: TYLER W. on 07-MAY-18 @ 09:00 Matrix: SOIL							
Physical Tests							
pH	7.44		0.10	pH units		11-MAY-18	R4040674
Particle Size							
% >75um	47.9		1.0	%	11-MAY-18	11-MAY-18	R4040502
L2091162-21 S-11149990-050418-TW-20 Sampled By: TYLER W. on 04-MAY-18 @ 08:10 Matrix: SOIL							
Physical Tests							
pH	7.27		0.10	pH units		11-MAY-18	R4040674
Particle Size							

* 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
L2091162-21 S-11149990-050418-TW-20 Sampled By: TYLER W. on 04-MAY-18 @ 08:10 Matrix: SOIL							
Particle Size							
% >75um	77.1		1.0	%	11-MAY-18	11-MAY-18	R4040502
L2091162-22 S-11149990-050418-TW-21 Sampled By: TYLER W. on 04-MAY-18 @ 14:20 Matrix: SOIL							
Physical Tests							
pH	7.54		0.10	pH units		11-MAY-18	R4040674
Particle Size							
% >75um	57.9		1.0	%	11-MAY-18	11-MAY-18	R4040502

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Benzo(a)pyrene	DUP-H	L2091162-18
Duplicate	Benzo(ghi)perylene	DUP-H	L2091162-18
Duplicate	Benzo(k)fluoranthene	DUP-H	L2091162-18
Duplicate	Indeno(1,2,3-cd)pyrene	DUP-H	L2091162-18
Duplicate	Acenaphthene	DUP-H,J	L2091162-18
Matrix Spike	Benzo(a)anthracene	MS-B	L2091162-18
Matrix Spike	Benzo(a)pyrene	MS-B	L2091162-18
Matrix Spike	Benzo(b)fluoranthene	MS-B	L2091162-18
Matrix Spike	Benzo(ghi)perylene	MS-B	L2091162-18
Matrix Spike	Benzo(k)fluoranthene	MS-B	L2091162-18
Matrix Spike	Chrysene	MS-B	L2091162-18
Matrix Spike	Fluoranthene	MS-B	L2091162-18
Matrix Spike	Indeno(1,2,3-cd)pyrene	MS-B	L2091162-18
Matrix Spike	Naphthalene	MS-B	L2091162-18
Matrix Spike	Phenanthrene	MS-B	L2091162-18
Matrix Spike	Pyrene	MS-B	L2091162-18
Matrix Spike	2,4-Dinitrophenol	RRQC	L2091162-12, -14, -16, -2, -3, -4, -5, -6, -7, -9

Comments: Recovery is outside ALS control limits. Associated sample results have not been affected.

Sample Parameter Qualifier key listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLQ	Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.
DLVH	Detection Limit raised due to interference from Volatile Hydrocarbons on VOC method. Chromatographic elution of interfering peaks in the same region as test analytes prevents a determination of whether VOC analyte is present or absent (above/below regular detection limits).
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PRAR	PCB Pattern Most Closely Resembles Aroclor Reported
R	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
RRQC	Refer to report remarks for information regarding this QC result.
SDO:RNA	Surrogate diluted out:% recovery not available
SMI	Surrogate recovery could not be measured due to sample matrix interference.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
625-511-WT	Soil	ABN-O.Reg 153/04 (July 2011)	SW846 8270 (511)

Soil and sediment samples are dried by mixing with a desiccant prior to extraction. The extracts are dried, concentrated and exchanged into a solvent and analyzed by GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

625-NO-PAH-WT	Soil	EPA 8270 Extractables	SW846 8270

Soil samples are extracted and the extracts are analyzed by GC/MSD.

625-WT	Soil	EPA 8270 Extractables	SW846 8270

Soil samples are extracted and the extracts are analyzed by GC/MSD. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

N-nitrosodiphenylamine is reported as diphenylamine. N-nitrosodiphenylamine decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine. (EPA 8270D)

B-HWS-R511-WT	Soil	Boron-HWE-O.Reg 153/04 (July 2011)	HW EXTR, EPA 6010B

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Reference Information

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

BAP-WT	Soil	Benzo(a)pyrene	SW486 8270

The procedure uses a mechanical shaking technique to extract a representative sub-sample with a mixture of methanol and toluene. The extract is analyzed by GC/MSD.

CN-WAD-R511-WT	Soil	Cyanide (WAD)-O.Reg 153/04 (July 2011)	MOE 3015/APHA 4500CN I-WAD

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-WT	Soil	Hexavalent Chromium in Soil	SW846 3060A/7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

DINITROTOL-CALC-WT	Soil	ABN-Calculated Parameters	SW846 8270
EC-WT	Soil	Conductivity (EC)	MOEE E3138

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	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.

Hydrocarbon results are expressed on a dry weight basis.

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.

F1-HS-511-WT	Soil	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT	Soil	F2-F4-O.Reg 153/04 (July 2011)	CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.

Reference Information

3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F4G-ADD-511-WT Soil F4G SG-O.Reg 153/04 (July 2011) MOE DECPH-E3398/CCME TIER 1

F4G, gravimetric analysis, is determined if the chromatogram does not return to baseline at or before C50. A soil sample is extracted with a solvent mix, the solvent is evaporated and the weight of the residue is determined.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

HG-200.2-CVAA-WT Soil Mercury in Soil by CVAAS EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-200.2-CCMS-WT Soil Metals in Soil by CRC ICPMS EPA 200.2/6020A (mod)

This method uses a heated strong acid digestion with HNO3 and HCl and is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT Soil ABN-Calculated Parameters SW846 8270

MOISTURE-WT Soil % Moisture Gravimetric: Oven Dried

PAH-511-WT Soil PAH-O.Reg 153/04 (July 2011) SW846 3510/8270

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

PCB-511-WT Soil PCB-O.Reg 153/04 (July 2011) SW846 3510/8082

An aliquot of a solid sample is extracted with a solvent, extract is cleaned up and analyzed on the GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

PH-WT Soil pH MOEE E3137A

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

PSA-75UM-SIEVE-WT Soil % Particles>75um (Coarse/Fine) CARTER CSSS 55.4 (modified)

An air-dried sample is reduced to < 2 mm size and mixed with a dispersing agent (sodium metaphosphate). The sample is washed through a 200 mesh (75 µm) sieve. The retained mass of sample is used to determine % sand fraction. If the percentage of sand is >50%, the soil is considered to be coarse textured soil. If the percentage of sand is <50%, the soil is considered to be fine textured.

SAR-R511-WT Soil SAR-O.Reg 153/04 (July 2011) SW846 6010C

Reference Information

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

VOC-1,3-DCP-CALC-WT	Soil	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Soil	VOC-O.Reg 153/04 (July 2011)	SW846 8260 (511)

Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION

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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

17-618892 17-622445

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 weight of sample
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: L2091162 Report Date: 25-JUL-18

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4040412								
WG2768390-4 DUP		**WG2768390-3**						
1-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	11-MAY-18
1,2,4-Trichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
2-Chlorophenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	11-MAY-18
2,4-Dichlorophenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
2,4-Dimethylphenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
2,4-Dinitrophenol		<1.0	<1.0	RPD-NA	ug/g	N/A	40	11-MAY-18
2,4-Dinitrotoluene		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
2,4,5-Trichlorophenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
2,4,6-Trichlorophenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
2,6-Dinitrotoluene		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
3,3'-Dichlorobenzidine		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
4-Chloroaniline		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Benzo(ghi)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Biphenyl		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Bis(2-chloroethyl)ether		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
Bis(2-chloroisopropyl)ether		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
Bis(2-ethylhexyl)phthalate		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Dibenzo(a,h)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Diethylphthalate		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
Dimethylphthalate		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Naphthalene		<0.050	<0.050		ug/g			11-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4040412								
WG2768390-4 DUP		**WG2768390-3**						
Naphthalene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Pentachlorophenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
Phenanthrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
Phenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAY-18
WG2768390-2 LCS								
1-Methylnaphthalene			87.8		%		50-140	11-MAY-18
1,2,4-Trichlorobenzene			94.4		%		50-140	11-MAY-18
2-Chlorophenol			99.5		%		50-140	11-MAY-18
2-Methylnaphthalene			94.3		%		50-140	11-MAY-18
2,4-Dichlorophenol			101.3		%		50-140	11-MAY-18
2,4-Dimethylphenol			117.2		%		30-130	11-MAY-18
2,4-Dinitrophenol			108.1		%		30-130	11-MAY-18
2,4-Dinitrotoluene			99.3		%		50-140	11-MAY-18
2,4,5-Trichlorophenol			99.8		%		50-140	11-MAY-18
2,4,6-Trichlorophenol			95.0		%		50-140	11-MAY-18
2,6-Dinitrotoluene			97.3		%		50-140	11-MAY-18
3,3'-Dichlorobenzidine			113.0		%		30-130	11-MAY-18
4-Chloroaniline			88.2		%		30-130	11-MAY-18
Acenaphthene			87.7		%		50-140	11-MAY-18
Acenaphthylene			92.2		%		50-140	11-MAY-18
Anthracene			99.8		%		50-140	11-MAY-18
Benzo(a)anthracene			103.2		%		50-140	11-MAY-18
Benzo(a)pyrene			103.4		%		50-140	11-MAY-18
Benzo(b)fluoranthene			96.0		%		50-140	11-MAY-18
Benzo(ghi)perylene			82.1		%		50-140	11-MAY-18
Benzo(k)fluoranthene			100.8		%		50-140	11-MAY-18
Biphenyl			93.3		%		50-140	11-MAY-18
Bis(2-chloroethyl)ether			96.3		%		50-140	11-MAY-18
Bis(2-chloroisopropyl)ether			97.9		%		50-140	11-MAY-18
Bis(2-ethylhexyl)phthalate			99.6		%		50-140	11-MAY-18
Chrysene			102.4		%		50-140	11-MAY-18
Dibenzo(a,h)anthracene			85.4		%		50-140	11-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4040412								
WG2768390-2 LCS								
Diethylphthalate			100.3		%		50-140	11-MAY-18
Dimethylphthalate			95.8		%		50-140	11-MAY-18
Fluoranthene			80.9		%		50-140	11-MAY-18
Fluorene			92.9		%		50-140	11-MAY-18
Indeno(1,2,3-cd)pyrene			89.3		%		50-140	11-MAY-18
Naphthalene			93.3		%		50-140	11-MAY-18
Pentachlorophenol			113.5		%		50-140	11-MAY-18
Phenanthrene			93.6		%		50-140	11-MAY-18
Phenol			100.1		%		30-130	11-MAY-18
Pyrene			81.2		%		50-140	11-MAY-18
WG2768390-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	11-MAY-18
1,2,4-Trichlorobenzene			<0.050		ug/g		0.05	11-MAY-18
2-Chlorophenol			<0.10		ug/g		0.1	11-MAY-18
2-Methylnaphthalene			<0.030		ug/g		0.03	11-MAY-18
2,4-Dichlorophenol			<0.10		ug/g		0.1	11-MAY-18
2,4-Dimethylphenol			<0.10		ug/g		0.1	11-MAY-18
2,4-Dinitrophenol			<1.0		ug/g		1	11-MAY-18
2,4-Dinitrotoluene			<0.10		ug/g		0.1	11-MAY-18
2,4,5-Trichlorophenol			<0.10		ug/g		0.1	11-MAY-18
2,4,6-Trichlorophenol			<0.10		ug/g		0.1	11-MAY-18
2,6-Dinitrotoluene			<0.10		ug/g		0.1	11-MAY-18
3,3'-Dichlorobenzidine			<0.10		ug/g		0.1	11-MAY-18
4-Chloroaniline			<0.10		ug/g		0.1	11-MAY-18
Acenaphthene			<0.050		ug/g		0.05	11-MAY-18
Acenaphthylene			<0.050		ug/g		0.05	11-MAY-18
Anthracene			<0.050		ug/g		0.05	11-MAY-18
Benzo(a)anthracene			<0.050		ug/g		0.05	11-MAY-18
Benzo(a)pyrene			<0.050		ug/g		0.05	11-MAY-18
Benzo(b)fluoranthene			<0.050		ug/g		0.05	11-MAY-18
Benzo(ghi)perylene			<0.050		ug/g		0.05	11-MAY-18
Benzo(k)fluoranthene			<0.050		ug/g		0.05	11-MAY-18
Biphenyl			<0.050		ug/g		0.05	11-MAY-18
Bis(2-chloroethyl)ether			<0.10		ug/g		0.1	11-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4040412								
WG2768390-1 MB								
Bis(2-chloroisopropyl)ether			<0.10		ug/g		0.1	11-MAY-18
Bis(2-ethylhexyl)phthalate			<0.10		ug/g		0.1	11-MAY-18
Chrysene			<0.050		ug/g		0.05	11-MAY-18
Dibenzo(a,h)anthracene			<0.050		ug/g		0.05	11-MAY-18
Diethylphthalate			<0.10		ug/g		0.1	11-MAY-18
Dimethylphthalate			<0.10		ug/g		0.1	11-MAY-18
Fluoranthene			<0.050		ug/g		0.05	11-MAY-18
Fluorene			<0.050		ug/g		0.05	11-MAY-18
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	11-MAY-18
Naphthalene			<0.050		ug/g		0.05	11-MAY-18
Pentachlorophenol			<0.10		ug/g		0.1	11-MAY-18
Phenanthrene			<0.050		ug/g		0.05	11-MAY-18
Phenol			<0.10		ug/g		0.1	11-MAY-18
Pyrene			<0.050		ug/g		0.05	11-MAY-18
Surrogate: 2-Fluorobiphenyl			96.5		%		50-140	11-MAY-18
Surrogate: 2,4,6-Tribromophenol			86.8		%		50-140	11-MAY-18
Surrogate: Nitrobenzene d5			108.1		%		50-140	11-MAY-18
Surrogate: p-Terphenyl d14			91.9		%		50-140	11-MAY-18
Surrogate: Phenol d5			102.4		%		30-130	11-MAY-18
WG2768390-5 MS		**WG2768390-3**						
1-Methylnaphthalene			87.8		%		50-140	11-MAY-18
1,2,4-Trichlorobenzene			90.5		%		50-140	11-MAY-18
2-Chlorophenol			96.8		%		50-140	11-MAY-18
2-Methylnaphthalene			91.3		%		50-140	11-MAY-18
2,4-Dichlorophenol			96.7		%		50-140	11-MAY-18
2,4-Dimethylphenol			105.3		%		30-150	11-MAY-18
2,4-Dinitrophenol			26.7	RRQC	%		30-150	11-MAY-18
2,4-Dinitrotoluene			93.6		%		50-140	11-MAY-18
2,4,5-Trichlorophenol			92.1		%		50-140	11-MAY-18
2,4,6-Trichlorophenol			86.9		%		50-140	11-MAY-18
2,6-Dinitrotoluene			90.2		%		50-140	11-MAY-18
3,3'-Dichlorobenzidine			96.9		%		30-130	11-MAY-18
4-Chloroaniline			82.6		%		30-130	11-MAY-18
Acenaphthene			86.0		%		50-140	11-MAY-18

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4040412								
WG2768390-5 MS		**WG2768390-3**						
Acenaphthylene			87.7		%		50-140	11-MAY-18
Anthracene			94.1		%		50-140	11-MAY-18
Benzo(a)anthracene			96.1		%		50-140	11-MAY-18
Benzo(a)pyrene			96.0		%		50-140	11-MAY-18
Benzo(b)fluoranthene			90.0		%		50-140	11-MAY-18
Benzo(ghi)perylene			73.6		%		50-140	11-MAY-18
Benzo(k)fluoranthene			94.6		%		50-140	11-MAY-18
Biphenyl			88.8		%		50-140	11-MAY-18
Bis(2-chloroethyl)ether			92.3		%		50-140	11-MAY-18
Bis(2-chloroisopropyl)ether			94.2		%		50-140	11-MAY-18
Bis(2-ethylhexyl)phthalate			93.6		%		50-140	11-MAY-18
Chrysene			96.1		%		50-140	11-MAY-18
Dibenzo(a,h)anthracene			79.3		%		50-140	11-MAY-18
Diethylphthalate			96.2		%		50-140	11-MAY-18
Dimethylphthalate			90.4		%		50-140	11-MAY-18
Fluoranthene			78.3		%		50-140	11-MAY-18
Fluorene			89.0		%		50-140	11-MAY-18
Indeno(1,2,3-cd)pyrene			83.1		%		50-140	11-MAY-18
Naphthalene			89.3		%		50-140	11-MAY-18
Pentachlorophenol			73.9		%		50-140	11-MAY-18
Phenanthrene			89.3		%		50-140	11-MAY-18
Phenol			95.6		%		30-130	11-MAY-18
Pyrene			78.8		%		50-140	11-MAY-18
COMMENTS: Recovery is outside ALS control limits. Associated sample results have not been affected.								
Batch R4044107								
WG2769943-4 DUP		**WG2769943-3**						
1-Methylnaphthalene		0.321	0.250		ug/g	25	40	15-MAY-18
1,2,4-Trichlorobenzene		<0.10	<0.10	RPD-NA	ug/g	N/A	40	15-MAY-18
2-Chlorophenol		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
2-Methylnaphthalene		0.495	0.383		ug/g	26	40	15-MAY-18
2,4-Dichlorophenol		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
2,4-Dimethylphenol		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
2,4-Dinitrophenol		<2.0	<2.0	RPD-NA	ug/g	N/A	40	15-MAY-18
2,4-Dinitrotoluene		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4044107								
WG2769943-4 DUP		**WG2769943-3**						
2,4,5-Trichlorophenol		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
2,4,6-Trichlorophenol		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
2,6-Dinitrotoluene		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
3,3'-Dichlorobenzidine		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
4-Chloroaniline		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
Acenaphthene		0.16	0.43	DUP-H,J	ug/g	0.27	0.2	15-MAY-18
Acenaphthylene		0.26	0.20		ug/g	28	40	15-MAY-18
Anthracene		0.63	0.49		ug/g	25	40	15-MAY-18
Benzo(a)anthracene		1.46	1.79		ug/g	20	40	15-MAY-18
Benzo(a)pyrene		1.77	2.96	DUP-H	ug/g	51	40	15-MAY-18
Benzo(b)fluoranthene		1.79	2.32		ug/g	26	40	15-MAY-18
Benzo(ghi)perylene		1.66	2.92	DUP-H	ug/g	55	40	15-MAY-18
Benzo(k)fluoranthene		1.17	2.30	DUP-H	ug/g	65	40	15-MAY-18
Biphenyl		0.12	<0.10	RPD-NA	ug/g	N/A	40	15-MAY-18
Bis(2-chloroethyl)ether		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
Bis(2-chloroisopropyl)ether		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
Bis(2-ethylhexyl)phthalate		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
Chrysene		1.43	1.82		ug/g	24	40	15-MAY-18
Dibenzo(a,h)anthracene		0.34	0.48		ug/g	34	40	15-MAY-18
Diethylphthalate		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
Dimethylphthalate		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
Fluoranthene		2.71	2.63		ug/g	3.1	40	15-MAY-18
Fluorene		0.40	0.28		ug/g	33	40	15-MAY-18
Indeno(1,2,3-cd)pyrene		1.72	3.01	DUP-H	ug/g	55	40	15-MAY-18
Naphthalene		1.80	1.53		ug/g	16	40	15-MAY-18
Pentachlorophenol		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
Phenanthrene		2.46	2.03		ug/g	19	40	15-MAY-18
Phenol		<0.20	<0.20	RPD-NA	ug/g	N/A	40	15-MAY-18
Pyrene		2.12	2.28		ug/g	7.0	40	15-MAY-18
WG2769943-2 LCS								
1-Methylnaphthalene			100.2		%		50-140	15-MAY-18
1,2,4-Trichlorobenzene			93.1		%		50-140	15-MAY-18
2-Chlorophenol			93.4		%		50-140	15-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4044107								
WG2769943-2 LCS								
2-Methylnaphthalene			104.7		%		50-140	15-MAY-18
2,4-Dichlorophenol			99.3		%		50-140	15-MAY-18
2,4-Dimethylphenol			98.0		%		30-130	15-MAY-18
2,4-Dinitrophenol			96.7		%		30-130	15-MAY-18
2,4-Dinitrotoluene			96.8		%		50-140	15-MAY-18
2,4,5-Trichlorophenol			106.3		%		50-140	15-MAY-18
2,4,6-Trichlorophenol			103.1		%		50-140	15-MAY-18
2,6-Dinitrotoluene			101.6		%		50-140	15-MAY-18
3,3'-Dichlorobenzidine			95.9		%		30-130	15-MAY-18
4-Chloroaniline			83.4		%		30-130	15-MAY-18
Acenaphthene			99.3		%		50-140	15-MAY-18
Acenaphthylene			101.1		%		50-140	15-MAY-18
Anthracene			93.9		%		50-140	15-MAY-18
Benzo(a)anthracene			98.3		%		50-140	15-MAY-18
Benzo(a)pyrene			102.1		%		50-140	15-MAY-18
Benzo(b)fluoranthene			103.2		%		50-140	15-MAY-18
Benzo(ghi)perylene			102.9		%		50-140	15-MAY-18
Benzo(k)fluoranthene			97.5		%		50-140	15-MAY-18
Biphenyl			107.9		%		50-140	15-MAY-18
Bis(2-chloroethyl)ether			94.2		%		50-140	15-MAY-18
Bis(2-chloroisopropyl)ether			82.4		%		50-140	15-MAY-18
Bis(2-ethylhexyl)phthalate			107.3		%		50-140	15-MAY-18
Chrysene			101.2		%		50-140	15-MAY-18
Dibenzo(a,h)anthracene			105.8		%		50-140	15-MAY-18
Diethylphthalate			100.6		%		50-140	15-MAY-18
Dimethylphthalate			105.2		%		50-140	15-MAY-18
Fluoranthene			95.8		%		50-140	15-MAY-18
Fluorene			96.2		%		50-140	15-MAY-18
Indeno(1,2,3-cd)pyrene			108.8		%		50-140	15-MAY-18
Naphthalene			91.9		%		50-140	15-MAY-18
Pentachlorophenol			97.2		%		50-140	15-MAY-18
Phenanthrene			93.5		%		50-140	15-MAY-18
Phenol			93.7		%		30-130	15-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4044107								
WG2769943-2 LCS								
Pyrene			93.1		%		50-140	15-MAY-18
WG2769943-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	15-MAY-18
1,2,4-Trichlorobenzene			<0.050		ug/g		0.05	15-MAY-18
2-Chlorophenol			<0.10		ug/g		0.1	15-MAY-18
2-Methylnaphthalene			<0.030		ug/g		0.03	15-MAY-18
2,4-Dichlorophenol			<0.10		ug/g		0.1	15-MAY-18
2,4-Dimethylphenol			<0.10		ug/g		0.1	15-MAY-18
2,4-Dinitrophenol			<1.0		ug/g		1	15-MAY-18
2,4-Dinitrotoluene			<0.10		ug/g		0.1	15-MAY-18
2,4,5-Trichlorophenol			<0.10		ug/g		0.1	15-MAY-18
2,4,6-Trichlorophenol			<0.10		ug/g		0.1	15-MAY-18
2,6-Dinitrotoluene			<0.10		ug/g		0.1	15-MAY-18
3,3'-Dichlorobenzidine			<0.10		ug/g		0.1	15-MAY-18
4-Chloroaniline			<0.10		ug/g		0.1	15-MAY-18
Acenaphthene			<0.050		ug/g		0.05	15-MAY-18
Acenaphthylene			<0.050		ug/g		0.05	15-MAY-18
Anthracene			<0.050		ug/g		0.05	15-MAY-18
Benzo(a)anthracene			<0.050		ug/g		0.05	15-MAY-18
Benzo(a)pyrene			<0.050		ug/g		0.05	15-MAY-18
Benzo(b)fluoranthene			<0.050		ug/g		0.05	15-MAY-18
Benzo(ghi)perylene			<0.050		ug/g		0.05	15-MAY-18
Benzo(k)fluoranthene			<0.050		ug/g		0.05	15-MAY-18
Biphenyl			<0.050		ug/g		0.05	15-MAY-18
Bis(2-chloroethyl)ether			<0.10		ug/g		0.1	15-MAY-18
Bis(2-chloroisopropyl)ether			<0.10		ug/g		0.1	15-MAY-18
Bis(2-ethylhexyl)phthalate			<0.10		ug/g		0.1	15-MAY-18
Chrysene			<0.050		ug/g		0.05	15-MAY-18
Dibenzo(a,h)anthracene			<0.050		ug/g		0.05	15-MAY-18
Diethylphthalate			<0.10		ug/g		0.1	15-MAY-18
Dimethylphthalate			<0.10		ug/g		0.1	15-MAY-18
Fluoranthene			<0.050		ug/g		0.05	15-MAY-18
Fluorene			<0.050		ug/g		0.05	15-MAY-18
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	15-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4044107								
WG2769943-1 MB								
Naphthalene			<0.050		ug/g		0.05	15-MAY-18
Pentachlorophenol			<0.10		ug/g		0.1	15-MAY-18
Phenanthrene			<0.050		ug/g		0.05	15-MAY-18
Phenol			<0.10		ug/g		0.1	15-MAY-18
Pyrene			<0.050		ug/g		0.05	15-MAY-18
Surrogate: 2-Fluorobiphenyl			84.7		%		50-140	15-MAY-18
Surrogate: 2,4,6-Tribromophenol			65.4		%		50-140	15-MAY-18
Surrogate: Nitrobenzene d5			86.3		%		50-140	15-MAY-18
Surrogate: p-Terphenyl d14			109.6		%		50-140	15-MAY-18
Surrogate: Phenol d5			93.1		%		30-130	15-MAY-18
WG2769943-5 MS		**WG2769943-3**						
1-Methylnaphthalene			75.7		%		50-140	15-MAY-18
1,2,4-Trichlorobenzene			89.0		%		50-140	15-MAY-18
2-Chlorophenol			88.3		%		50-140	15-MAY-18
2-Methylnaphthalene			71.8		%		50-140	15-MAY-18
2,4-Dichlorophenol			93.9		%		50-140	15-MAY-18
2,4-Dimethylphenol			95.3		%		30-150	15-MAY-18
2,4-Dinitrophenol			61.6		%		30-150	15-MAY-18
2,4-Dinitrotoluene			95.8		%		50-140	15-MAY-18
2,4,5-Trichlorophenol			86.9		%		50-140	15-MAY-18
2,4,6-Trichlorophenol			85.6		%		50-140	15-MAY-18
2,6-Dinitrotoluene			88.6		%		50-140	15-MAY-18
3,3'-Dichlorobenzidine			96.8		%		30-130	15-MAY-18
4-Chloroaniline			82.0		%		30-130	15-MAY-18
Acenaphthene			81.1		%		50-140	15-MAY-18
Acenaphthylene			78.1		%		50-140	15-MAY-18
Anthracene			75.5		%		50-140	15-MAY-18
Benzo(a)anthracene			N/A	MS-B	%		-	15-MAY-18
Benzo(a)pyrene			N/A	MS-B	%		-	15-MAY-18
Benzo(b)fluoranthene			N/A	MS-B	%		-	15-MAY-18
Benzo(ghi)perylene			N/A	MS-B	%		-	15-MAY-18
Benzo(k)fluoranthene			N/A	MS-B	%		-	15-MAY-18
Biphenyl			87.5		%		50-140	15-MAY-18
Bis(2-chloroethyl)ether			89.6		%		50-140	15-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4044107								
WG2769943-5 MS		**WG2769943-3**						
Bis(2-chloroisopropyl)ether			87.6		%		50-140	15-MAY-18
Bis(2-ethylhexyl)phthalate			107.2		%		50-140	15-MAY-18
Chrysene			N/A	MS-B	%		-	15-MAY-18
Dibenzo(a,h)anthracene			80.0		%		50-140	15-MAY-18
Diethylphthalate			97.6		%		50-140	15-MAY-18
Dimethylphthalate			91.3		%		50-140	15-MAY-18
Fluoranthene			N/A	MS-B	%		-	15-MAY-18
Fluorene			80.0		%		50-140	15-MAY-18
Indeno(1,2,3-cd)pyrene			N/A	MS-B	%		-	15-MAY-18
Naphthalene			N/A	MS-B	%		-	15-MAY-18
Pentachlorophenol			96.8		%		50-140	15-MAY-18
Phenanthrene			N/A	MS-B	%		-	15-MAY-18
Phenol			91.2		%		30-130	15-MAY-18
Pyrene			N/A	MS-B	%		-	15-MAY-18
625-NO-PAH-WT	**Soil**							
Batch R4071915								
WG2788716-4 DUP		**WG2788716-3**						
Bis(2-ethylhexyl)phthalate		<0.10	<0.10	RPD-NA	ug/g	N/A	50	06-JUN-18
Diethylphthalate		<0.10	<0.10	RPD-NA	ug/g	N/A	50	06-JUN-18
WG2788716-2 LCS								
Bis(2-ethylhexyl)phthalate			98.7		%		50-150	06-JUN-18
Diethylphthalate			95.6		%		50-150	06-JUN-18
WG2788716-1 MB								
Bis(2-ethylhexyl)phthalate			<0.10		ug/g		0.1	06-JUN-18
Diethylphthalate			<0.10		ug/g		0.1	06-JUN-18
Surrogate: 2-Fluorobiphenyl			81.4		%		50-140	06-JUN-18
Surrogate: 2,4,6-Tribromophenol			56.2		%		40-160	06-JUN-18
Surrogate: Nitrobenzene d5			89.6		%		50-150	06-JUN-18
Surrogate: p-Terphenyl d14			112.6		%		50-140	06-JUN-18
Surrogate: Phenol d5			86.6		%		30-120	06-JUN-18
WG2788716-5 MS		**WG2788716-3**						
Bis(2-ethylhexyl)phthalate			99.5		%		50-140	06-JUN-18
Diethylphthalate			95.2		%		50-140	06-JUN-18
625-WT	**Soil**							

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-WT	**Soil**							
Batch R4071915								
WG2788716-4 DUP		**WG2788716-3**						
1,4-Dichlorobenzene		<0.10	<0.10	RPD-NA	ug/g	N/A	50	06-JUN-18
WG2788716-2 LCS								
1,4-Dichlorobenzene			80.4		%		50-140	06-JUN-18
WG2788716-1 MB								
1,4-Dichlorobenzene			<0.10		ug/g		0.1	06-JUN-18
Surrogate: 2-Fluorobiphenyl			81.4		%		50-140	06-JUN-18
Surrogate: 2,4,6-Tribromophenol			56.2		%		40-160	06-JUN-18
Surrogate: Nitrobenzene d5			89.6		%		50-150	06-JUN-18
Surrogate: p-Terphenyl d14			112.6		%		50-140	06-JUN-18
Surrogate: Phenol d5			86.6		%		30-120	06-JUN-18
WG2788716-5 MS		**WG2788716-3**						
1,4-Dichlorobenzene			89.4		%		50-140	06-JUN-18
B-HWS-R511-WT	**Soil**							
Batch R4044366								
WG2770645-4 DUP		**L2092780-15**						
Boron (B), Hot Water Ext.		0.13	0.10		ug/g	23	30	14-MAY-18
WG2770645-2 IRM		**HOTB-SAL_SOIL5**						
Boron (B), Hot Water Ext.			99.7		%		70-130	14-MAY-18
WG2770645-3 LCS								
Boron (B), Hot Water Ext.			96.9		%		70-130	14-MAY-18
WG2770645-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	14-MAY-18
Batch R4044369								
WG2770789-4 DUP		**L2091162-18**						
Boron (B), Hot Water Ext.		11.5	11.8		ug/g	2.7	30	14-MAY-18
WG2770789-2 IRM		**HOTB-SAL_SOIL5**						
Boron (B), Hot Water Ext.			123.9		%		70-130	14-MAY-18
WG2770789-3 LCS								
Boron (B), Hot Water Ext.			108.0		%		70-130	14-MAY-18
WG2770789-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	14-MAY-18
BAP-WT	**Soil**							
Batch R4075182								
WG2788646-4 DUP		**WG2788646-3**						
Benzo(a)pyrene		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	07-JUN-18
WG2788646-2 LCS								

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BAP-WT	**Soil**							
Batch R4075182								
WG2788646-2 LCS								
Benzo(a)pyrene			94.6		%		60-140	07-JUN-18
WG2788646-1 MB								
Benzo(a)pyrene			<0.020		mg/kg		0.02	07-JUN-18
Surrogate: 2-Fluorobiphenyl			88.1		%		50-140	07-JUN-18
Surrogate: p-Terphenyl d14			87.2		%		50-140	07-JUN-18
WG2788646-5 MS		**WG2788646-3**						
Benzo(a)pyrene			95.4		%		50-140	07-JUN-18
CN-WAD-R511-WT	**Soil**							
Batch R4041545								
WG2768974-3 DUP		**L2090876-1**						
Cyanide, Weak Acid Diss		<0.050	0.050	RPD-NA	ug/g	N/A	35	11-MAY-18
WG2768974-2 LCS								
Cyanide, Weak Acid Diss			93.9		%		80-120	11-MAY-18
WG2768974-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	11-MAY-18
WG2768974-4 MS		**L2090876-1**						
Cyanide, Weak Acid Diss			101.4		%		70-130	11-MAY-18
Batch R4044173								
WG2770514-3 DUP		**L2091209-1**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	14-MAY-18
WG2770514-2 LCS								
Cyanide, Weak Acid Diss			83.8		%		80-120	14-MAY-18
WG2770514-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	14-MAY-18
WG2770514-4 MS		**L2091209-1**						
Cyanide, Weak Acid Diss			93.2		%		70-130	14-MAY-18
CR-CR6-IC-WT	**Soil**							
Batch R4042953								
WG2769138-3 CRM		**WT-SQC012**						
Chromium, Hexavalent			89.3		%		70-130	14-MAY-18
WG2769138-4 DUP		**L2086582-1**						
Chromium, Hexavalent		0.25	0.25		ug/g	1.0	35	14-MAY-18
WG2769138-2 LCS								
Chromium, Hexavalent			102.8		%		80-120	14-MAY-18
WG2769138-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	14-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WT	**Soil**							
Batch R4042892								
WG2770697-4 DUP		**WG2770697-3**						
Conductivity		0.586	0.579		mS/cm	1.2	20	14-MAY-18
WG2771445-1 LCS								
Conductivity			94.5		%		90-110	14-MAY-18
WG2770697-1 MB								
Conductivity			<0.0040		mS/cm		0.004	14-MAY-18
Batch R4043686								
WG2770763-4 DUP		**WG2770763-3**						
Conductivity		0.304	0.318		mS/cm	4.5	20	14-MAY-18
WG2771455-1 LCS								
Conductivity			91.0		%		90-110	14-MAY-18
WG2770763-1 MB								
Conductivity			<0.0040		mS/cm		0.004	14-MAY-18
F1-HS-511-WT	**Soil**							
Batch R4039955								
WG2767820-4 DUP		**WG2767820-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	10-MAY-18
WG2767820-2 LCS								
F1 (C6-C10)			101.0		%		80-120	10-MAY-18
WG2767820-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	10-MAY-18
Surrogate: 3,4-Dichlorotoluene			104.8		%		60-140	10-MAY-18
WG2767820-6 MS		**L2091140-3**						
F1 (C6-C10)			103.6		%		60-140	10-MAY-18
Batch R4039969								
WG2768103-4 DUP		**WG2768103-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	10-MAY-18
WG2768103-2 LCS								
F1 (C6-C10)			87.5		%		80-120	10-MAY-18
WG2768103-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	10-MAY-18
Surrogate: 3,4-Dichlorotoluene			105.0		%		60-140	10-MAY-18
WG2768103-6 MS		**L2091209-11**						
F1 (C6-C10)			102.7		%		60-140	11-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Soil**							
Batch R4072649								
WG2787692-4 DUP		**WG2787692-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	06-JUN-18
WG2787692-2 LCS								
F1 (C6-C10)			98.8		%		80-120	06-JUN-18
WG2787692-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	06-JUN-18
Surrogate: 3,4-Dichlorotoluene			108.2		%		60-140	06-JUN-18
WG2787692-6 MS		**L2104485-2**						
F1 (C6-C10)			89.9		%		60-140	06-JUN-18
F2-F4-511-WT	**Soil**							
Batch R4040554								
WG2768679-3 DUP		**WG2768679-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	10-MAY-18
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	10-MAY-18
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	10-MAY-18
WG2768679-2 LCS								
F2 (C10-C16)			103.8		%		80-120	10-MAY-18
F3 (C16-C34)			103.6		%		80-120	10-MAY-18
F4 (C34-C50)			106.0		%		80-120	10-MAY-18
WG2768679-1 MB								
F2 (C10-C16)			<10		ug/g		10	10-MAY-18
F3 (C16-C34)			<50		ug/g		50	10-MAY-18
F4 (C34-C50)			<50		ug/g		50	10-MAY-18
Surrogate: 2-Bromobenzotrifluoride			70.8		%		60-140	10-MAY-18
WG2768679-4 MS		**WG2768679-5**						
F2 (C10-C16)			100.7		%		60-140	10-MAY-18
F3 (C16-C34)			110.2		%		60-140	10-MAY-18
F4 (C34-C50)			108.9		%		60-140	10-MAY-18
Batch R4040894								
WG2768889-4 DUP		**WG2768889-3**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	11-MAY-18
F3 (C16-C34)		72	77		ug/g	6.4	30	11-MAY-18
F4 (C34-C50)		60	54		ug/g	10	30	11-MAY-18
WG2768889-2 LCS								
F2 (C10-C16)			102.1		%		80-120	11-MAY-18
F3 (C16-C34)			100.9		%		80-120	11-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	**Soil**							
Batch R4040894								
WG2768889-2 LCS								
F4 (C34-C50)			99.0		%		80-120	11-MAY-18
WG2768889-1 MB								
F2 (C10-C16)			<10		ug/g		10	11-MAY-18
F3 (C16-C34)			<50		ug/g		50	11-MAY-18
F4 (C34-C50)			<50		ug/g		50	11-MAY-18
Surrogate: 2-Bromobenzotrifluoride			94.4		%		60-140	11-MAY-18
WG2768889-5 MS		**WG2768889-3**						
F2 (C10-C16)			99.4		%		60-140	11-MAY-18
F3 (C16-C34)			98.0		%		60-140	11-MAY-18
F4 (C34-C50)			91.1		%		60-140	11-MAY-18
Batch R4071755								
WG2788571-4 DUP		**WG2788571-3**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	06-JUN-18
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	06-JUN-18
WG2788571-2 LCS								
F2 (C10-C16)			106.0		%		80-120	06-JUN-18
F3 (C16-C34)			104.3		%		80-120	06-JUN-18
WG2788571-1 MB								
F2 (C10-C16)			<10		ug/g		10	06-JUN-18
F3 (C16-C34)			<50		ug/g		50	06-JUN-18
Surrogate: 2-Bromobenzotrifluoride			82.2		%		60-140	06-JUN-18
WG2788571-5 MS		**WG2788571-3**						
F2 (C10-C16)			110.3		%		60-140	06-JUN-18
F3 (C16-C34)			104.1		%		60-140	06-JUN-18
F4G-ADD-511-WT	**Soil**							
Batch R4042528								
WG2771703-2 LCS								
F4G-SG (GHH-Silica)			65.3		%		60-140	11-MAY-18
WG2771703-1 MB								
F4G-SG (GHH-Silica)			<250		ug/g		250	11-MAY-18
Batch R4042547								
WG2771700-2 LCS								
F4G-SG (GHH-Silica)			92.6		%		60-140	10-MAY-18
WG2771700-1 MB								
F4G-SG (GHH-Silica)			<250		ug/g		250	10-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAA-WT	**Soil**							
Batch R4040544								
WG2769863-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			99.8		%		70-130	11-MAY-18
WG2769863-6 DUP		**WG2769863-5**						
Mercury (Hg)		<0.0050	0.0055	RPD-NA	ug/g	N/A	40	11-MAY-18
WG2769863-3 LCS								
Mercury (Hg)			102.0		%		80-120	11-MAY-18
WG2769863-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	11-MAY-18
Batch R4042909								
WG2770566-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			96.0		%		70-130	14-MAY-18
WG2770566-6 DUP		**WG2770566-5**						
Mercury (Hg)		0.0095	0.0096		ug/g	1.8	40	14-MAY-18
WG2770566-3 LCS								
Mercury (Hg)			109.0		%		80-120	14-MAY-18
WG2770566-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	14-MAY-18
Batch R4072393								
WG2789568-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			94.8		%		70-130	06-JUN-18
WG2789568-6 DUP		**WG2789568-5**						
Mercury (Hg)		0.0101	0.0089		ug/g	13	40	06-JUN-18
WG2789568-3 LCS								
Mercury (Hg)			108.5		%		80-120	06-JUN-18
WG2789568-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	06-JUN-18
Batch R4075062								
WG2790526-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			119.7		%		70-130	07-JUN-18
WG2790526-6 DUP		**WG2790526-5**						
Mercury (Hg)		0.0398	0.0595		ug/g	40	40	07-JUN-18
WG2790526-3 LCS								
Mercury (Hg)			109.5		%		80-120	07-JUN-18
WG2790526-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	07-JUN-18
MET-200.2-CCMS-WT	**Soil**							

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4042972								
WG2769863-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			94.8		%		70-130	11-MAY-18
Arsenic (As)			101.7		%		70-130	11-MAY-18
Barium (Ba)			98.5		%		70-130	11-MAY-18
Beryllium (Be)			97.1		%		70-130	11-MAY-18
Boron (B)			3.5		mg/kg		0-8.2	11-MAY-18
Cadmium (Cd)			106.4		%		70-130	11-MAY-18
Chromium (Cr)			100.6		%		70-130	11-MAY-18
Cobalt (Co)			97.4		%		70-130	11-MAY-18
Copper (Cu)			102.9		%		70-130	11-MAY-18
Lead (Pb)			92.2		%		70-130	11-MAY-18
Molybdenum (Mo)			100.3		%		70-130	11-MAY-18
Nickel (Ni)			101.0		%		70-130	11-MAY-18
Selenium (Se)			0.33		mg/kg		0.11-0.51	11-MAY-18
Silver (Ag)			0.21		mg/kg		0.13-0.33	11-MAY-18
Thallium (Tl)			0.116		mg/kg		0.077-0.18	11-MAY-18
Uranium (U)			92.4		%		70-130	11-MAY-18
Vanadium (V)			101.5		%		70-130	11-MAY-18
Zinc (Zn)			105.5		%		70-130	11-MAY-18
WG2769863-6 DUP		**WG2769863-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	11-MAY-18
Arsenic (As)		1.15	1.30		ug/g	13	30	11-MAY-18
Barium (Ba)		15.2	17.4		ug/g	14	40	11-MAY-18
Beryllium (Be)		0.18	0.19		ug/g	3.4	30	11-MAY-18
Boron (B)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	11-MAY-18
Cadmium (Cd)		0.024	0.028		ug/g	16	30	11-MAY-18
Chromium (Cr)		6.43	7.13		ug/g	10	30	11-MAY-18
Cobalt (Co)		2.11	2.35		ug/g	11	30	11-MAY-18
Copper (Cu)		5.20	5.66		ug/g	8.5	30	11-MAY-18
Lead (Pb)		2.26	2.46		ug/g	8.5	40	11-MAY-18
Molybdenum (Mo)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18
Nickel (Ni)		4.36	4.89		ug/g	12	30	11-MAY-18
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	11-MAY-18
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	11-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4042972								
WG2769863-6 DUP		**WG2769863-5**						
Thallium (Tl)		<0.050	<0.050	RPD-NA	ug/g	N/A	30	11-MAY-18
Uranium (U)		0.251	0.281		ug/g	11	30	11-MAY-18
Vanadium (V)		11.4	13.0		ug/g	13	30	11-MAY-18
Zinc (Zn)		11.0	14.8		ug/g	30	30	11-MAY-18
WG2769863-4 LCS								
Antimony (Sb)			113.2		%		80-120	11-MAY-18
Arsenic (As)			112.6		%		80-120	11-MAY-18
Barium (Ba)			101.9		%		80-120	11-MAY-18
Beryllium (Be)			98.4		%		80-120	11-MAY-18
Boron (B)			100.7		%		80-120	11-MAY-18
Cadmium (Cd)			107.9		%		80-120	11-MAY-18
Chromium (Cr)			108.6		%		80-120	11-MAY-18
Cobalt (Co)			107.5		%		80-120	11-MAY-18
Copper (Cu)			111.3		%		80-120	11-MAY-18
Lead (Pb)			103.5		%		80-120	11-MAY-18
Molybdenum (Mo)			104.2		%		80-120	11-MAY-18
Nickel (Ni)			110.0		%		80-120	11-MAY-18
Selenium (Se)			113.1		%		80-120	11-MAY-18
Silver (Ag)			101.2		%		80-120	11-MAY-18
Thallium (Tl)			99.4		%		80-120	11-MAY-18
Uranium (U)			103.0		%		80-120	11-MAY-18
Vanadium (V)			112.5		%		80-120	11-MAY-18
Zinc (Zn)			106.0		%		80-120	11-MAY-18
WG2769863-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	11-MAY-18
Arsenic (As)			<0.10		mg/kg		0.1	11-MAY-18
Barium (Ba)			<0.50		mg/kg		0.5	11-MAY-18
Beryllium (Be)			<0.10		mg/kg		0.1	11-MAY-18
Boron (B)			<5.0		mg/kg		5	11-MAY-18
Cadmium (Cd)			<0.020		mg/kg		0.02	11-MAY-18
Chromium (Cr)			<0.50		mg/kg		0.5	11-MAY-18
Cobalt (Co)			<0.10		mg/kg		0.1	11-MAY-18
Copper (Cu)			<0.50		mg/kg		0.5	11-MAY-18
Lead (Pb)			<0.50		mg/kg		0.5	11-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4042972								
WG2769863-1 MB								
Molybdenum (Mo)			<0.10		mg/kg		0.1	11-MAY-18
Nickel (Ni)			<0.50		mg/kg		0.5	11-MAY-18
Selenium (Se)			<0.20		mg/kg		0.2	11-MAY-18
Silver (Ag)			<0.10		mg/kg		0.1	11-MAY-18
Thallium (Tl)			<0.050		mg/kg		0.05	11-MAY-18
Uranium (U)			<0.050		mg/kg		0.05	11-MAY-18
Vanadium (V)			<0.20		mg/kg		0.2	11-MAY-18
Zinc (Zn)			<2.0		mg/kg		2	11-MAY-18
Batch R4044200								
WG2770566-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			103.3		%		70-130	14-MAY-18
Arsenic (As)			102.0		%		70-130	14-MAY-18
Barium (Ba)			104.0		%		70-130	14-MAY-18
Beryllium (Be)			92.5		%		70-130	14-MAY-18
Boron (B)			2.9		mg/kg		0-8.2	14-MAY-18
Cadmium (Cd)			102.6		%		70-130	14-MAY-18
Chromium (Cr)			101.7		%		70-130	14-MAY-18
Cobalt (Co)			97.9		%		70-130	14-MAY-18
Copper (Cu)			104.8		%		70-130	14-MAY-18
Lead (Pb)			96.2		%		70-130	14-MAY-18
Molybdenum (Mo)			92.7		%		70-130	14-MAY-18
Nickel (Ni)			103.0		%		70-130	14-MAY-18
Selenium (Se)			0.31		mg/kg		0.11-0.51	14-MAY-18
Silver (Ag)			0.22		mg/kg		0.13-0.33	14-MAY-18
Thallium (Tl)			0.121		mg/kg		0.077-0.18	14-MAY-18
Uranium (U)			95.8		%		70-130	14-MAY-18
Vanadium (V)			103.0		%		70-130	14-MAY-18
Zinc (Zn)			100.6		%		70-130	14-MAY-18
WG2770566-6 DUP		**WG2770566-5**						
Antimony (Sb)		0.27	0.20	J	ug/g	0.07	0.2	14-MAY-18
Arsenic (As)		2.60	2.53		ug/g	2.7	30	14-MAY-18
Barium (Ba)		60.6	62.1		ug/g	2.4	40	14-MAY-18
Beryllium (Be)		0.40	0.42		ug/g	4.3	30	14-MAY-18
Boron (B)		7.8	7.1		ug/g	9.3	30	14-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4044200								
WG2770566-6 DUP		**WG2770566-5**						
Cadmium (Cd)		0.050	0.051		ug/g	2.2	30	14-MAY-18
Chromium (Cr)		17.9	18.9		ug/g	5.0	30	14-MAY-18
Cobalt (Co)		5.76	5.81		ug/g	0.7	30	14-MAY-18
Copper (Cu)		11.7	11.6		ug/g	0.6	30	14-MAY-18
Lead (Pb)		5.40	5.51		ug/g	2.0	40	14-MAY-18
Molybdenum (Mo)		0.34	0.29		ug/g	15	40	14-MAY-18
Nickel (Ni)		13.5	13.5		ug/g	0.3	30	14-MAY-18
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	14-MAY-18
Silver (Ag)		0.14	0.18		ug/g	23	40	14-MAY-18
Thallium (Tl)		0.074	0.075		ug/g	1.5	30	14-MAY-18
Uranium (U)		0.548	0.574		ug/g	4.6	30	14-MAY-18
Vanadium (V)		24.2	24.4		ug/g	1.1	30	14-MAY-18
Zinc (Zn)		29.3	28.9		ug/g	1.6	30	14-MAY-18
WG2770566-4 LCS								
Antimony (Sb)			111.7		%		80-120	14-MAY-18
Arsenic (As)			96.0		%		80-120	14-MAY-18
Barium (Ba)			93.3		%		80-120	14-MAY-18
Beryllium (Be)			94.6		%		80-120	14-MAY-18
Boron (B)			87.4		%		80-120	14-MAY-18
Cadmium (Cd)			97.4		%		80-120	14-MAY-18
Chromium (Cr)			96.9		%		80-120	14-MAY-18
Cobalt (Co)			91.0		%		80-120	14-MAY-18
Copper (Cu)			94.0		%		80-120	14-MAY-18
Lead (Pb)			92.9		%		80-120	14-MAY-18
Molybdenum (Mo)			93.6		%		80-120	14-MAY-18
Nickel (Ni)			94.8		%		80-120	14-MAY-18
Selenium (Se)			95.3		%		80-120	14-MAY-18
Silver (Ag)			99.4		%		80-120	14-MAY-18
Thallium (Tl)			92.7		%		80-120	14-MAY-18
Uranium (U)			92.9		%		80-120	14-MAY-18
Vanadium (V)			99.2		%		80-120	14-MAY-18
Zinc (Zn)			90.6		%		80-120	14-MAY-18
WG2770566-1 MB								
							0.1	

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4044200								
WG2770566-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	14-MAY-18
Arsenic (As)			<0.10		mg/kg		0.1	14-MAY-18
Barium (Ba)			<0.50		mg/kg		0.5	14-MAY-18
Beryllium (Be)			<0.10		mg/kg		0.1	14-MAY-18
Boron (B)			<5.0		mg/kg		5	14-MAY-18
Cadmium (Cd)			<0.020		mg/kg		0.02	14-MAY-18
Chromium (Cr)			<0.50		mg/kg		0.5	14-MAY-18
Cobalt (Co)			<0.10		mg/kg		0.1	14-MAY-18
Copper (Cu)			<0.50		mg/kg		0.5	14-MAY-18
Lead (Pb)			<0.50		mg/kg		0.5	14-MAY-18
Molybdenum (Mo)			<0.10		mg/kg		0.1	14-MAY-18
Nickel (Ni)			<0.50		mg/kg		0.5	14-MAY-18
Selenium (Se)			<0.20		mg/kg		0.2	14-MAY-18
Silver (Ag)			<0.10		mg/kg		0.1	14-MAY-18
Thallium (Tl)			<0.050		mg/kg		0.05	14-MAY-18
Uranium (U)			<0.050		mg/kg		0.05	14-MAY-18
Vanadium (V)			<0.20		mg/kg		0.2	14-MAY-18
Zinc (Zn)			<2.0		mg/kg		2	14-MAY-18
Batch R4074941								
WG2789568-2 CRM		**WT-CANMET-TILL1**						
Cadmium (Cd)			104.1		%		70-130	06-JUN-18
Zinc (Zn)			108.6		%		70-130	06-JUN-18
WG2789568-6 DUP		**WG2789568-5**						
Cadmium (Cd)		0.057	0.050		ug/g	13	30	06-JUN-18
Zinc (Zn)		21.8	20.3		ug/g	6.8	30	06-JUN-18
WG2789568-4 LCS								
Cadmium (Cd)			81.7		%		80-120	06-JUN-18
Zinc (Zn)			103.1		%		80-120	06-JUN-18
WG2789568-1 MB								
Cadmium (Cd)			<0.020		mg/kg		0.02	06-JUN-18
Zinc (Zn)			<2.0		mg/kg		2	06-JUN-18
Batch R4075827								
WG2790526-2 CRM		**WT-CANMET-TILL1**						
Barium (Ba)			112.9		%		70-130	07-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4075827								
WG2790526-2 CRM		**WT-CANMET-TILL1**						
Boron (B)			3.1		mg/kg		0-8.2	07-JUN-18
Cadmium (Cd)			96.9		%		70-130	07-JUN-18
Cobalt (Co)			104.9		%		70-130	07-JUN-18
Copper (Cu)			105.6		%		70-130	07-JUN-18
Lead (Pb)			93.1		%		70-130	07-JUN-18
Zinc (Zn)			100.9		%		70-130	07-JUN-18
WG2790526-6 DUP		**WG2790526-5**						
Barium (Ba)		30.8	29.0		ug/g	6.2	40	07-JUN-18
Boron (B)		5.3	<5.0	RPD-NA	ug/g	N/A	30	07-JUN-18
Cadmium (Cd)		0.273	0.260		ug/g	5.0	30	07-JUN-18
Cobalt (Co)		3.35	3.20		ug/g	4.5	30	07-JUN-18
Copper (Cu)		13.0	12.1		ug/g	7.6	30	07-JUN-18
Lead (Pb)		28.8	29.5		ug/g	2.5	40	07-JUN-18
Zinc (Zn)		67.9	60.0		ug/g	12	30	07-JUN-18
WG2790526-4 LCS								
Barium (Ba)			112.4		%		80-120	07-JUN-18
Boron (B)			113.7		%		80-120	07-JUN-18
Cadmium (Cd)			103.6		%		80-120	07-JUN-18
Cobalt (Co)			108.5		%		80-120	07-JUN-18
Copper (Cu)			107.4		%		80-120	07-JUN-18
Lead (Pb)			107.0		%		80-120	07-JUN-18
Zinc (Zn)			102.9		%		80-120	07-JUN-18
WG2790526-1 MB								
Barium (Ba)			<0.50		mg/kg		0.5	07-JUN-18
Boron (B)			<5.0		mg/kg		5	07-JUN-18
Cadmium (Cd)			<0.020		mg/kg		0.02	07-JUN-18
Cobalt (Co)			<0.10		mg/kg		0.1	07-JUN-18
Copper (Cu)			<0.50		mg/kg		0.5	07-JUN-18
Lead (Pb)			<0.50		mg/kg		0.5	07-JUN-18
Zinc (Zn)			<2.0		mg/kg		2	07-JUN-18
MOISTURE-WT	**Soil**							

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	**Soil**							
Batch R4040332								
WG2769342-3 DUP		**L2091209-12**						
% Moisture		7.77	8.05		%	3.5	20	10-MAY-18
WG2769342-2 LCS								
% Moisture			100.6		%		90-110	10-MAY-18
WG2769342-1 MB								
% Moisture			<0.10		%		0.1	10-MAY-18
Batch R4040337								
WG2769176-3 DUP		**L2091198-1**						
% Moisture		11.0	10.8		%	1.8	20	11-MAY-18
WG2769176-2 LCS								
% Moisture			102.4		%		90-110	11-MAY-18
WG2769176-1 MB								
% Moisture			<0.10		%		0.1	11-MAY-18
Batch R4071533								
WG2788854-3 DUP		**L2104587-3**						
% Moisture		15.6	15.7		%	0.4	20	05-JUN-18
WG2788854-2 LCS								
% Moisture			99.8		%		90-110	05-JUN-18
WG2788854-1 MB								
% Moisture			<0.10		%		0.1	05-JUN-18
PAH-511-WT	**Soil**							
Batch R4075182								
WG2788646-4 DUP		**WG2788646-3**						
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	07-JUN-18
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	07-JUN-18
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	07-JUN-18
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	07-JUN-18
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	07-JUN-18
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	07-JUN-18
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	07-JUN-18
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	07-JUN-18
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	07-JUN-18
WG2788646-2 LCS								
Acenaphthylene			96.0		%		50-140	07-JUN-18
Anthracene			97.6		%		50-140	07-JUN-18
Benzo(a)anthracene			98.8		%		50-140	07-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R4075182								
WG2788646-2 LCS								
Benzo(a)pyrene			94.6		%		50-140	07-JUN-18
Benzo(b)fluoranthene			93.8		%		50-140	07-JUN-18
Benzo(k)fluoranthene			101.1		%		50-140	07-JUN-18
Dibenzo(ah)anthracene			89.9		%		50-140	07-JUN-18
Fluoranthene			96.6		%		50-140	07-JUN-18
Indeno(1,2,3-cd)pyrene			93.6		%		50-140	07-JUN-18
WG2788646-1 MB								
Acenaphthylene			<0.050		ug/g		0.05	07-JUN-18
Anthracene			<0.050		ug/g		0.05	07-JUN-18
Benzo(a)anthracene			<0.050		ug/g		0.05	07-JUN-18
Benzo(a)pyrene			<0.050		ug/g		0.05	07-JUN-18
Benzo(b)fluoranthene			<0.050		ug/g		0.05	07-JUN-18
Benzo(k)fluoranthene			<0.050		ug/g		0.05	07-JUN-18
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	07-JUN-18
Fluoranthene			<0.050		ug/g		0.05	07-JUN-18
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	07-JUN-18
Surrogate: 2-Fluorobiphenyl			88.1		%		50-140	07-JUN-18
Surrogate: p-Terphenyl d14			87.2		%		50-140	07-JUN-18
WG2788646-5 MS		**WG2788646-3**						
Acenaphthylene			91.6		%		50-140	07-JUN-18
Anthracene			94.3		%		50-140	07-JUN-18
Benzo(a)anthracene			98.0		%		50-140	07-JUN-18
Benzo(a)pyrene			95.4		%		50-140	07-JUN-18
Benzo(b)fluoranthene			95.1		%		50-140	07-JUN-18
Benzo(k)fluoranthene			104.7		%		50-140	07-JUN-18
Dibenzo(ah)anthracene			91.8		%		50-140	07-JUN-18
Fluoranthene			97.5		%		50-140	07-JUN-18
Indeno(1,2,3-cd)pyrene			85.3		%		50-140	07-JUN-18
PCB-511-WT	**Soil**							
Batch R4045150								
WG2769277-3 DUP		**WG2769277-5**						
Aroclor 1242		<0.010	<0.010	RPD-NA	ug/g	N/A	40	16-MAY-18
Aroclor 1248		<0.010	<0.010	RPD-NA	ug/g	N/A	40	16-MAY-18
Aroclor 1254		<0.010	<0.010	RPD-NA	ug/g	N/A	40	16-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-511-WT	**Soil**							
Batch R4045150								
WG2769277-3 DUP		**WG2769277-5**						
Aroclor 1260		<0.010	<0.010	RPD-NA	ug/g	N/A	40	16-MAY-18
WG2769277-2 LCS								
Aroclor 1242			100.4		%		60-140	16-MAY-18
Aroclor 1248			91.1		%		60-140	16-MAY-18
Aroclor 1254			102.2		%		60-140	16-MAY-18
Aroclor 1260			109.8		%		60-140	16-MAY-18
WG2769277-1 MB								
Aroclor 1242			<0.010		ug/g		0.01	16-MAY-18
Aroclor 1248			<0.010		ug/g		0.01	16-MAY-18
Aroclor 1254			<0.010		ug/g		0.01	16-MAY-18
Aroclor 1260			<0.010		ug/g		0.01	16-MAY-18
Surrogate: d14-Terphenyl			102.2		%		60-140	16-MAY-18
WG2769277-4 MS		**WG2769277-5**						
Aroclor 1242			97.2		%		60-140	16-MAY-18
Aroclor 1254			102.4		%		60-140	16-MAY-18
Aroclor 1260			110.3		%		60-140	16-MAY-18
PH-WT	**Soil**							
Batch R4040674								
WG2768912-1 DUP		**L2090876-1**						
pH		6.91	6.94	J	pH units	0.03	0.3	11-MAY-18
WG2770016-1 LCS								
pH			6.97		pH units		6.9-7.1	11-MAY-18
SAR-R511-WT	**Soil**							
Batch R4044110								
WG2770697-4 DUP		**WG2770697-3**						
Calcium (Ca)		35.3	36.8		mg/L	4.1	30	14-MAY-18
Sodium (Na)		43.5	44.9		mg/L	3.2	30	14-MAY-18
Magnesium (Mg)		11.4	11.9		mg/L	4.5	30	14-MAY-18
WG2770697-2 IRM		**WT SAR2**						
Calcium (Ca)			94.8		%		70-130	14-MAY-18
Sodium (Na)			98.6		%		70-130	14-MAY-18
Magnesium (Mg)			101.4		%		70-130	14-MAY-18
WG2770697-1 MB								
Calcium (Ca)			<1.0		mg/L		1	14-MAY-18
Sodium (Na)			<1.0		mg/L		1	14-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	**Soil**							
Batch R4044110								
WG2770697-1 MB								
Magnesium (Mg)			<1.0		mg/L		1	14-MAY-18
Batch R4044158								
WG2770763-4 DUP		**WG2770763-3**						
Calcium (Ca)		29.4	33.6		mg/L	13	30	14-MAY-18
Sodium (Na)		10.7	12.3		mg/L	14	30	14-MAY-18
Magnesium (Mg)		2.2	2.6		mg/L	16	30	14-MAY-18
WG2770763-2 IRM		**WT SAR2**						
Calcium (Ca)			104.6		%		70-130	14-MAY-18
Sodium (Na)			104.9		%		70-130	14-MAY-18
Magnesium (Mg)			110.4		%		70-130	14-MAY-18
WG2770763-1 MB								
Calcium (Ca)			<1.0		mg/L		1	14-MAY-18
Sodium (Na)			<1.0		mg/L		1	14-MAY-18
Magnesium (Mg)			<1.0		mg/L		1	14-MAY-18
Batch R4076234								
WG2791786-4 DUP		**WG2791786-3**						
Calcium (Ca)		11.0	10.5		mg/L	5.0	30	08-JUN-18
Sodium (Na)		118	119		mg/L	1.2	30	08-JUN-18
Magnesium (Mg)		13.4	13.6		mg/L	1.5	30	08-JUN-18
WG2791786-2 IRM		**WT SAR2**						
Calcium (Ca)			106.7		%		70-130	08-JUN-18
Sodium (Na)			98.4		%		70-130	08-JUN-18
Magnesium (Mg)			105.1		%		70-130	08-JUN-18
WG2791786-1 MB								
Calcium (Ca)			<1.0		mg/L		1	08-JUN-18
Sodium (Na)			<1.0		mg/L		1	08-JUN-18
Magnesium (Mg)			<1.0		mg/L		1	08-JUN-18
VOC-511-HS-WT	**Soil**							
Batch R4039955								
WG2767820-4 DUP		**WG2767820-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4039955								
WG2767820-4 DUP		**WG2767820-3**						
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	10-MAY-18
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	10-MAY-18
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAY-18
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	10-MAY-18
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAY-18
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	10-MAY-18
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	10-MAY-18
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	10-MAY-18
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	10-MAY-18
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
trans-1,3-Dichloropropene		<0.030	<0.030		ug/g			10-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4039955								
WG2767820-4 DUP		**WG2767820-3**						
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAY-18
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	10-MAY-18
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	10-MAY-18
WG2767820-2 LCS								
1,1,1,2-Tetrachloroethane			93.1		%		60-130	10-MAY-18
1,1,2,2-Tetrachloroethane			88.3		%		60-130	10-MAY-18
1,1,1-Trichloroethane			94.9		%		60-130	10-MAY-18
1,1,2-Trichloroethane			97.6		%		60-130	10-MAY-18
1,1-Dichloroethane			96.8		%		60-130	10-MAY-18
1,1-Dichloroethylene			87.5		%		60-130	10-MAY-18
1,2-Dibromoethane			95.5		%		70-130	10-MAY-18
1,2-Dichlorobenzene			98.1		%		70-130	10-MAY-18
1,2-Dichloroethane			94.3		%		60-130	10-MAY-18
1,2-Dichloropropane			97.8		%		70-130	10-MAY-18
1,3-Dichlorobenzene			98.0		%		70-130	10-MAY-18
1,4-Dichlorobenzene			99.2		%		70-130	10-MAY-18
Acetone			100.9		%		60-140	10-MAY-18
Benzene			100.5		%		70-130	10-MAY-18
Bromodichloromethane			93.0		%		50-140	10-MAY-18
Bromoform			87.5		%		70-130	10-MAY-18
Bromomethane			97.4		%		50-140	10-MAY-18
Carbon tetrachloride			92.7		%		70-130	10-MAY-18
Chlorobenzene			97.3		%		70-130	10-MAY-18
Chloroform			97.0		%		70-130	10-MAY-18
cis-1,2-Dichloroethylene			99.2		%		70-130	10-MAY-18
cis-1,3-Dichloropropene			95.2		%		70-130	10-MAY-18
Dibromochloromethane			94.7		%		60-130	10-MAY-18
Dichlorodifluoromethane			71.2		%		50-140	10-MAY-18
Ethylbenzene			94.6		%		70-130	10-MAY-18
n-Hexane			107.9		%		70-130	10-MAY-18
Methylene Chloride			99.7		%		70-130	10-MAY-18
MTBE			101.0		%		70-130	10-MAY-18
m+p-Xylenes			96.5				70-130	

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4039955								
WG2767820-2 LCS								
m+p-Xylenes			96.5		%		70-130	10-MAY-18
Methyl Ethyl Ketone			102.7		%		60-140	10-MAY-18
Methyl Isobutyl Ketone			88.9		%		60-140	10-MAY-18
o-Xylene			93.4		%		70-130	10-MAY-18
Styrene			91.6		%		70-130	10-MAY-18
Tetrachloroethylene			96.5		%		60-130	10-MAY-18
Toluene			97.8		%		70-130	10-MAY-18
trans-1,2-Dichloroethylene			96.8		%		60-130	10-MAY-18
trans-1,3-Dichloropropene			91.6		%		70-130	10-MAY-18
Trichloroethylene			99.1		%		60-130	10-MAY-18
Trichlorofluoromethane			95.6		%		50-140	10-MAY-18
Vinyl chloride			92.0		%		60-140	10-MAY-18
WG2767820-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	10-MAY-18
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	10-MAY-18
1,1,1-Trichloroethane			<0.050		ug/g		0.05	10-MAY-18
1,1,2-Trichloroethane			<0.050		ug/g		0.05	10-MAY-18
1,1-Dichloroethane			<0.050		ug/g		0.05	10-MAY-18
1,1-Dichloroethylene			<0.050		ug/g		0.05	10-MAY-18
1,2-Dibromoethane			<0.050		ug/g		0.05	10-MAY-18
1,2-Dichlorobenzene			<0.050		ug/g		0.05	10-MAY-18
1,2-Dichloroethane			<0.050		ug/g		0.05	10-MAY-18
1,2-Dichloropropane			<0.050		ug/g		0.05	10-MAY-18
1,3-Dichlorobenzene			<0.050		ug/g		0.05	10-MAY-18
1,4-Dichlorobenzene			<0.050		ug/g		0.05	10-MAY-18
Acetone			<0.50		ug/g		0.5	10-MAY-18
Benzene			<0.0068		ug/g		0.0068	10-MAY-18
Bromodichloromethane			<0.050		ug/g		0.05	10-MAY-18
Bromoform			<0.050		ug/g		0.05	10-MAY-18
Bromomethane			<0.050		ug/g		0.05	10-MAY-18
Carbon tetrachloride			<0.050		ug/g		0.05	10-MAY-18
Chlorobenzene			<0.050		ug/g		0.05	10-MAY-18
Chloroform			<0.050		ug/g		0.05	10-MAY-18
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	10-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4039955								
WG2767820-1 MB								
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	10-MAY-18
Dibromochloromethane			<0.050		ug/g		0.05	10-MAY-18
Dichlorodifluoromethane			<0.050		ug/g		0.05	10-MAY-18
Ethylbenzene			<0.018		ug/g		0.018	10-MAY-18
n-Hexane			<0.050		ug/g		0.05	10-MAY-18
Methylene Chloride			<0.050		ug/g		0.05	10-MAY-18
MTBE			<0.050		ug/g		0.05	10-MAY-18
m+p-Xylenes			<0.030		ug/g		0.03	10-MAY-18
Methyl Ethyl Ketone			<0.50		ug/g		0.5	10-MAY-18
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	10-MAY-18
o-Xylene			<0.020		ug/g		0.02	10-MAY-18
Styrene			<0.050		ug/g		0.05	10-MAY-18
Tetrachloroethylene			<0.050		ug/g		0.05	10-MAY-18
Toluene			<0.080		ug/g		0.08	10-MAY-18
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	10-MAY-18
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	10-MAY-18
Trichloroethylene			<0.010		ug/g		0.01	10-MAY-18
Trichlorofluoromethane			<0.050		ug/g		0.05	10-MAY-18
Vinyl chloride			<0.020		ug/g		0.02	10-MAY-18
Surrogate: 1,4-Difluorobenzene			111.7		%		50-140	10-MAY-18
Surrogate: 4-Bromofluorobenzene			100.2		%		50-140	10-MAY-18
WG2767820-5 MS		**L2091140-1**						
1,1,1,2-Tetrachloroethane			97.3		%		50-140	10-MAY-18
1,1,2,2-Tetrachloroethane			98.4		%		50-140	10-MAY-18
1,1,1-Trichloroethane			97.3		%		50-140	10-MAY-18
1,1,2-Trichloroethane			105.7		%		50-140	10-MAY-18
1,1-Dichloroethane			101.5		%		50-140	10-MAY-18
1,1-Dichloroethylene			90.0		%		50-140	10-MAY-18
1,2-Dibromoethane			104.4		%		50-140	10-MAY-18
1,2-Dichlorobenzene			101.7		%		50-140	10-MAY-18
1,2-Dichloroethane			102.4		%		50-140	10-MAY-18
1,2-Dichloropropane			103.7		%		50-140	10-MAY-18
1,3-Dichlorobenzene			99.2		%		50-140	10-MAY-18
1,4-Dichlorobenzene			100.7		%		50-140	10-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4039955								
WG2767820-5 MS		**L2091140-1**						
Acetone			118.4		%		50-140	10-MAY-18
Benzene			105.4		%		50-140	10-MAY-18
Bromodichloromethane			98.6		%		50-140	10-MAY-18
Bromoform			95.7		%		50-140	10-MAY-18
Bromomethane			100.1		%		50-140	10-MAY-18
Carbon tetrachloride			94.7		%		50-140	10-MAY-18
Chlorobenzene			100.8		%		50-140	10-MAY-18
Chloroform			102.1		%		50-140	10-MAY-18
cis-1,2-Dichloroethylene			104.2		%		50-140	10-MAY-18
cis-1,3-Dichloropropene			96.6		%		50-140	10-MAY-18
Dibromochloromethane			101.7		%		50-140	10-MAY-18
Dichlorodifluoromethane			74.2		%		50-140	10-MAY-18
Ethylbenzene			96.3		%		50-140	10-MAY-18
n-Hexane			111.6		%		50-140	10-MAY-18
Methylene Chloride			106.6		%		50-140	10-MAY-18
MTBE			105.1		%		50-140	10-MAY-18
m+p-Xylenes			98.2		%		50-140	10-MAY-18
Methyl Ethyl Ketone			118.5		%		50-140	10-MAY-18
Methyl Isobutyl Ketone			102.0		%		50-140	10-MAY-18
o-Xylene			95.9		%		50-140	10-MAY-18
Styrene			94.9		%		50-140	10-MAY-18
Tetrachloroethylene			96.9		%		50-140	10-MAY-18
Toluene			100.6		%		50-140	10-MAY-18
trans-1,2-Dichloroethylene			99.6		%		50-140	10-MAY-18
trans-1,3-Dichloropropene			92.9		%		50-140	10-MAY-18
Trichloroethylene			101.4		%		50-140	10-MAY-18
Trichlorofluoromethane			98.2		%		50-140	10-MAY-18
Vinyl chloride			95.1		%		50-140	10-MAY-18
Batch R4039969								
WG2768103-4 DUP		**WG2768103-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,1,2-Trichloroethane		<0.050	<0.050					

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4039969								
WG2768103-4 DUP		**WG2768103-3**						
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	10-MAY-18
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	10-MAY-18
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAY-18
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	10-MAY-18
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAY-18
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	10-MAY-18
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	10-MAY-18
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	10-MAY-18
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	10-MAY-18
trans-1,2-Dichloroethylene		<0.050	<0.050		ug/g			10-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4039969								
WG2768103-4 DUP		**WG2768103-3**						
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAY-18
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	10-MAY-18
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAY-18
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	10-MAY-18
WG2768103-2 LCS								
1,1,1,2-Tetrachloroethane			97.7		%		60-130	10-MAY-18
1,1,2,2-Tetrachloroethane			105.5		%		60-130	10-MAY-18
1,1,1-Trichloroethane			97.4		%		60-130	10-MAY-18
1,1,2-Trichloroethane			100.5		%		60-130	10-MAY-18
1,1-Dichloroethane			97.3		%		60-130	10-MAY-18
1,1-Dichloroethylene			86.0		%		60-130	10-MAY-18
1,2-Dibromoethane			103.1		%		70-130	10-MAY-18
1,2-Dichlorobenzene			96.4		%		70-130	10-MAY-18
1,2-Dichloroethane			105.8		%		60-130	10-MAY-18
1,2-Dichloropropane			100.3		%		70-130	10-MAY-18
1,3-Dichlorobenzene			92.3		%		70-130	10-MAY-18
1,4-Dichlorobenzene			95.1		%		70-130	10-MAY-18
Acetone			119.6		%		60-140	10-MAY-18
Benzene			98.9		%		70-130	10-MAY-18
Bromodichloromethane			99.8		%		50-140	10-MAY-18
Bromoform			101.2		%		70-130	10-MAY-18
Bromomethane			97.2		%		50-140	10-MAY-18
Carbon tetrachloride			95.5		%		70-130	10-MAY-18
Chlorobenzene			97.4		%		70-130	10-MAY-18
Chloroform			99.9		%		70-130	10-MAY-18
cis-1,2-Dichloroethylene			99.6		%		70-130	10-MAY-18
cis-1,3-Dichloropropene			109.8		%		70-130	10-MAY-18
Dibromochloromethane			103.9		%		60-130	10-MAY-18
Dichlorodifluoromethane			76.1		%		50-140	10-MAY-18
Ethylbenzene			91.4		%		70-130	10-MAY-18
n-Hexane			102.9		%		70-130	10-MAY-18
Methylene Chloride			101.0		%		70-130	10-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4039969								
WG2768103-2 LCS								
MTBE			103.4		%		70-130	10-MAY-18
m+p-Xylenes			92.7		%		70-130	10-MAY-18
Methyl Ethyl Ketone			119.3		%		60-140	10-MAY-18
Methyl Isobutyl Ketone			117.0		%		60-140	10-MAY-18
o-Xylene			93.3		%		70-130	10-MAY-18
Styrene			95.5		%		70-130	10-MAY-18
Tetrachloroethylene			92.6		%		60-130	10-MAY-18
Toluene			91.8		%		70-130	10-MAY-18
trans-1,2-Dichloroethylene			98.0		%		60-130	10-MAY-18
trans-1,3-Dichloropropene			106.4		%		70-130	10-MAY-18
Trichloroethylene			100.1		%		60-130	10-MAY-18
Trichlorofluoromethane			95.6		%		50-140	10-MAY-18
Vinyl chloride			87.9		%		60-140	10-MAY-18
WG2768103-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	10-MAY-18
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	10-MAY-18
1,1,1-Trichloroethane			<0.050		ug/g		0.05	10-MAY-18
1,1,2-Trichloroethane			<0.050		ug/g		0.05	10-MAY-18
1,1-Dichloroethane			<0.050		ug/g		0.05	10-MAY-18
1,1-Dichloroethylene			<0.050		ug/g		0.05	10-MAY-18
1,2-Dibromoethane			<0.050		ug/g		0.05	10-MAY-18
1,2-Dichlorobenzene			<0.050		ug/g		0.05	10-MAY-18
1,2-Dichloroethane			<0.050		ug/g		0.05	10-MAY-18
1,2-Dichloropropane			<0.050		ug/g		0.05	10-MAY-18
1,3-Dichlorobenzene			<0.050		ug/g		0.05	10-MAY-18
1,4-Dichlorobenzene			<0.050		ug/g		0.05	10-MAY-18
Acetone			<0.50		ug/g		0.5	10-MAY-18
Benzene			<0.0068		ug/g		0.0068	10-MAY-18
Bromodichloromethane			<0.050		ug/g		0.05	10-MAY-18
Bromoform			<0.050		ug/g		0.05	10-MAY-18
Bromomethane			<0.050		ug/g		0.05	10-MAY-18
Carbon tetrachloride			<0.050		ug/g		0.05	10-MAY-18
Chlorobenzene			<0.050		ug/g		0.05	10-MAY-18
Chloroform			<0.050		ug/g		0.05	10-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4039969								
WG2768103-1 MB								
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	10-MAY-18
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	10-MAY-18
Dibromochloromethane			<0.050		ug/g		0.05	10-MAY-18
Dichlorodifluoromethane			<0.050		ug/g		0.05	10-MAY-18
Ethylbenzene			<0.018		ug/g		0.018	10-MAY-18
n-Hexane			<0.050		ug/g		0.05	10-MAY-18
Methylene Chloride			<0.050		ug/g		0.05	10-MAY-18
MTBE			<0.050		ug/g		0.05	10-MAY-18
m+p-Xylenes			<0.030		ug/g		0.03	10-MAY-18
Methyl Ethyl Ketone			<0.50		ug/g		0.5	10-MAY-18
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	10-MAY-18
o-Xylene			<0.020		ug/g		0.02	10-MAY-18
Styrene			<0.050		ug/g		0.05	10-MAY-18
Tetrachloroethylene			<0.050		ug/g		0.05	10-MAY-18
Toluene			<0.080		ug/g		0.08	10-MAY-18
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	10-MAY-18
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	10-MAY-18
Trichloroethylene			<0.010		ug/g		0.01	10-MAY-18
Trichlorofluoromethane			<0.050		ug/g		0.05	10-MAY-18
Vinyl chloride			<0.020		ug/g		0.02	10-MAY-18
Surrogate: 1,4-Difluorobenzene			108.4		%		50-140	10-MAY-18
Surrogate: 4-Bromofluorobenzene			103.3		%		50-140	10-MAY-18
WG2768103-5 MS		**L2091209-6**						
1,1,1,2-Tetrachloroethane			102.2		%		50-140	11-MAY-18
1,1,2,2-Tetrachloroethane			108.5		%		50-140	11-MAY-18
1,1,1-Trichloroethane			102.1		%		50-140	11-MAY-18
1,1,2-Trichloroethane			104.9		%		50-140	11-MAY-18
1,1-Dichloroethane			101.2		%		50-140	11-MAY-18
1,1-Dichloroethylene			90.0		%		50-140	11-MAY-18
1,2-Dibromoethane			108.1		%		50-140	11-MAY-18
1,2-Dichlorobenzene			99.7		%		50-140	11-MAY-18
1,2-Dichloroethane			110.9		%		50-140	11-MAY-18
1,2-Dichloropropane			103.2		%		50-140	11-MAY-18
1,3-Dichlorobenzene			95.8		%		50-140	11-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4039969								
WG2768103-5 MS		**L2091209-6**						
1,4-Dichlorobenzene			98.6		%		50-140	11-MAY-18
Acetone			126.1		%		50-140	11-MAY-18
Benzene			102.1		%		50-140	11-MAY-18
Bromodichloromethane			104.3		%		50-140	11-MAY-18
Bromoform			104.9		%		50-140	11-MAY-18
Bromomethane			101.8		%		50-140	11-MAY-18
Carbon tetrachloride			100.6		%		50-140	11-MAY-18
Chlorobenzene			100.5		%		50-140	11-MAY-18
Chloroform			104.5		%		50-140	11-MAY-18
cis-1,2-Dichloroethylene			103.8		%		50-140	11-MAY-18
cis-1,3-Dichloropropene			110.6		%		50-140	11-MAY-18
Dibromochloromethane			108.8		%		50-140	11-MAY-18
Dichlorodifluoromethane			82.6		%		50-140	11-MAY-18
Ethylbenzene			94.0		%		50-140	11-MAY-18
n-Hexane			107.7		%		50-140	11-MAY-18
Methylene Chloride			106.1		%		50-140	11-MAY-18
MTBE			107.7		%		50-140	11-MAY-18
m+p-Xylenes			95.2		%		50-140	11-MAY-18
Methyl Ethyl Ketone			122.7		%		50-140	11-MAY-18
Methyl Isobutyl Ketone			118.1		%		50-140	11-MAY-18
o-Xylene			95.7		%		50-140	11-MAY-18
Styrene			97.9		%		50-140	11-MAY-18
Tetrachloroethylene			96.7		%		50-140	11-MAY-18
Toluene			94.9		%		50-140	11-MAY-18
trans-1,2-Dichloroethylene			101.3		%		50-140	11-MAY-18
trans-1,3-Dichloropropene			106.8		%		50-140	11-MAY-18
Trichloroethylene			104.8		%		50-140	11-MAY-18
Trichlorofluoromethane			102.0		%		50-140	11-MAY-18
Vinyl chloride			91.6		%		50-140	11-MAY-18

Quality Control Report

Workorder: L2091162 Report Date: 25-JUL-18

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

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
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
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: L2091162 Report Date: 25-JUL-18

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
% Moisture							
	8	02-MAY-18 16:10	05-JUN-18 12:46	14	34	days	EHT
	10	03-MAY-18 08:40	05-JUN-18 12:47	14	33	days	EHT
	13	04-MAY-18 08:30	05-JUN-18 12:48	14	32	days	EHT
	15	04-MAY-18 10:40	05-JUN-18 12:49	14	32	days	EHT
	19	07-MAY-18 11:30	05-JUN-18 12:50	14	29	days	EHT
Hydrocarbons							
F1-O.Reg 153/04 (July 2011)							
	19	07-MAY-18 11:30	04-JUN-18 18:08	14	28	days	EHT
F2-F4-O.Reg 153/04 (July 2011)							
	8	02-MAY-18 16:10	05-JUN-18 07:00	14	34	days	EHT
	19	07-MAY-18 11:30	05-JUN-18 07:00	14	29	days	EHT
Polycyclic Aromatic Hydrocarbons							
Benzo(a)pyrene							
	10	03-MAY-18 08:40	05-JUN-18 09:00	14	33	days	EHT
	15	04-MAY-18 10:40	05-JUN-18 09:00	14	32	days	EHT
Semi-Volatile Organics							
EPA 8270 Extractables							
	19	07-MAY-18 11:30	05-JUN-18 11:00	14	29	days	EHT
EPA 8270 Extractables							
	19	07-MAY-18 11:30	05-JUN-18 00:00	14	29	days	EHT

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 L2091162 were received on 08-MAY-18 18:35.

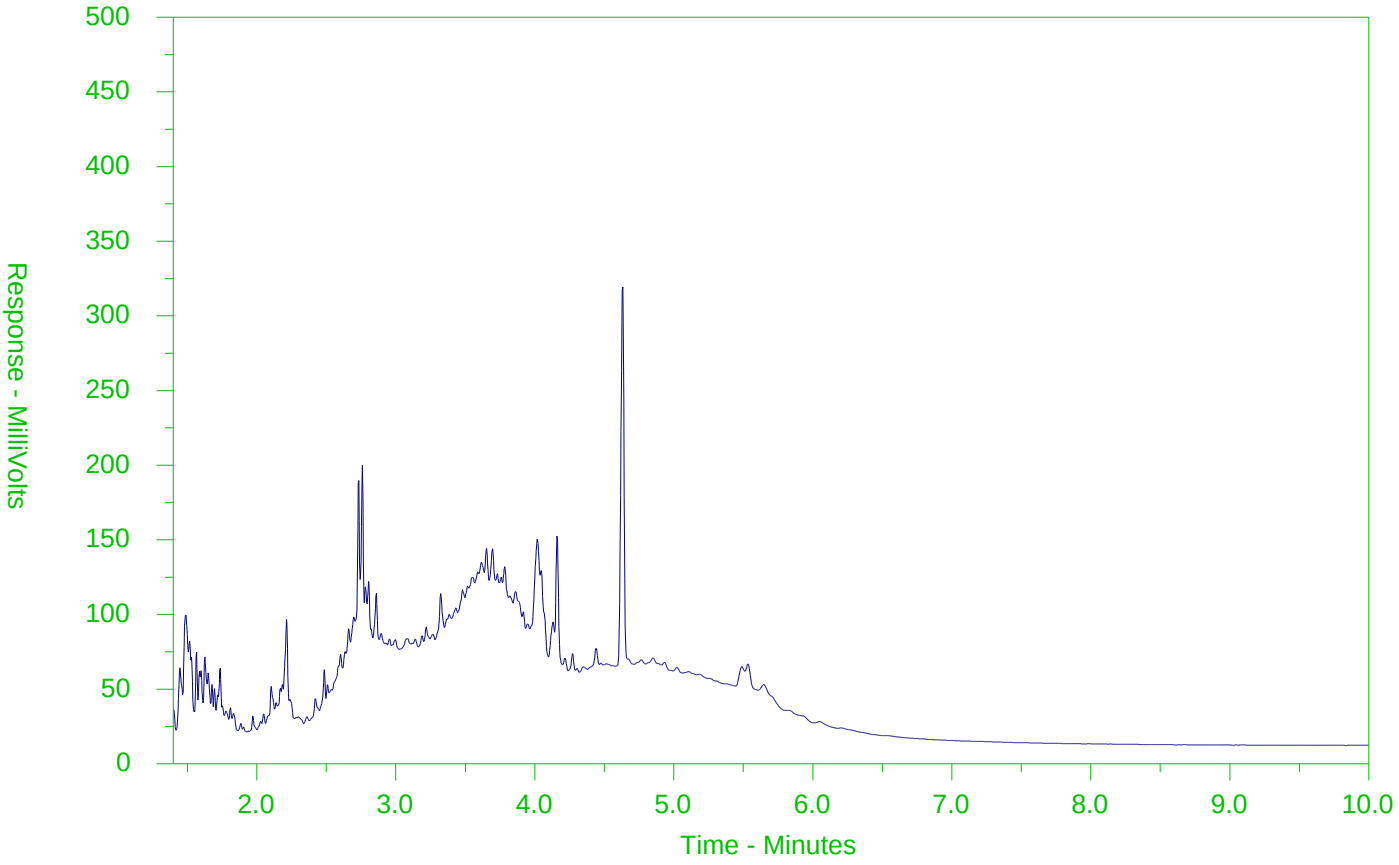
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2091162-2
Client Sample ID: S-11149990-050118-TW-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.

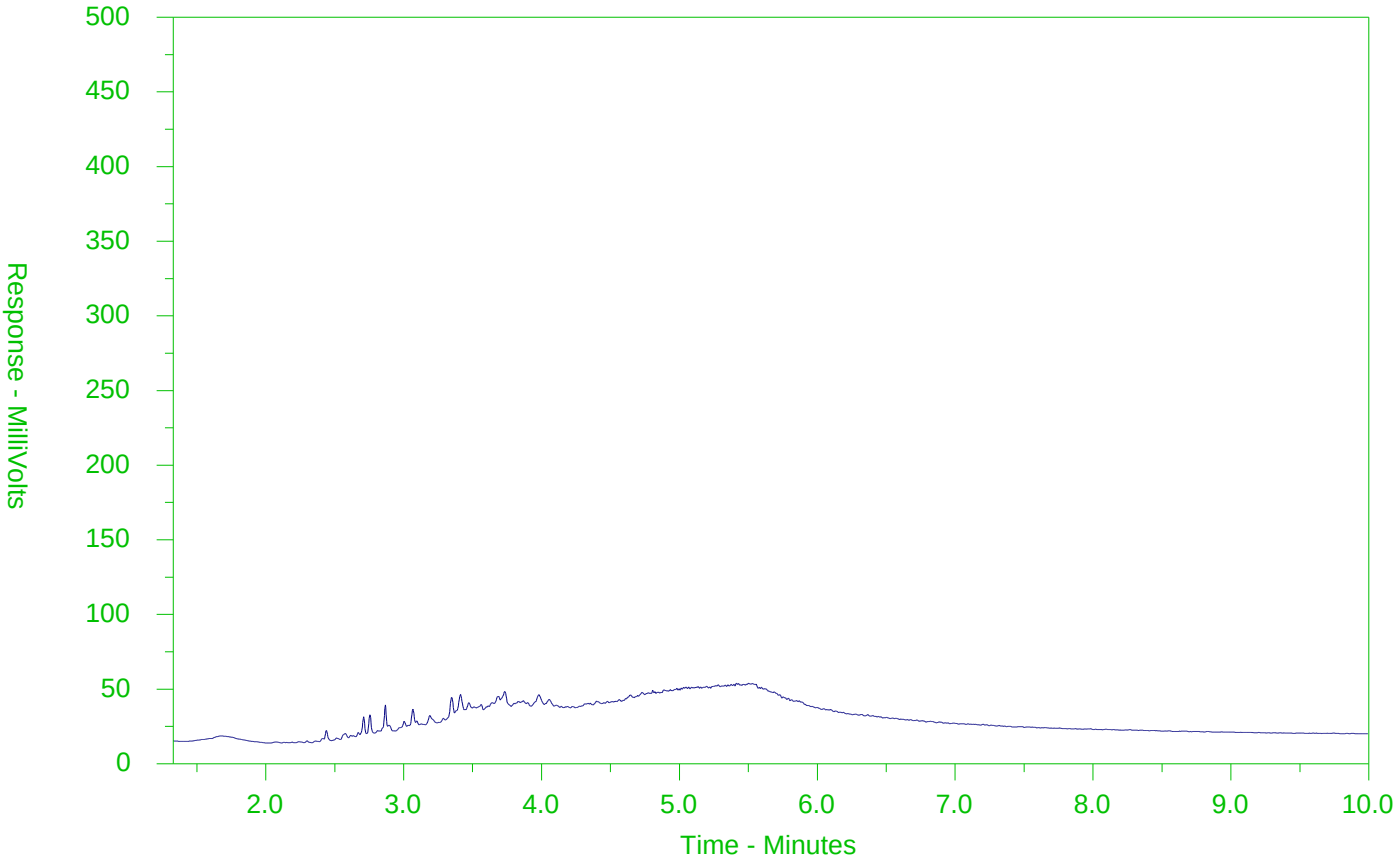
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-3
Client Sample ID: S-11149990-050118-TW-02



←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.

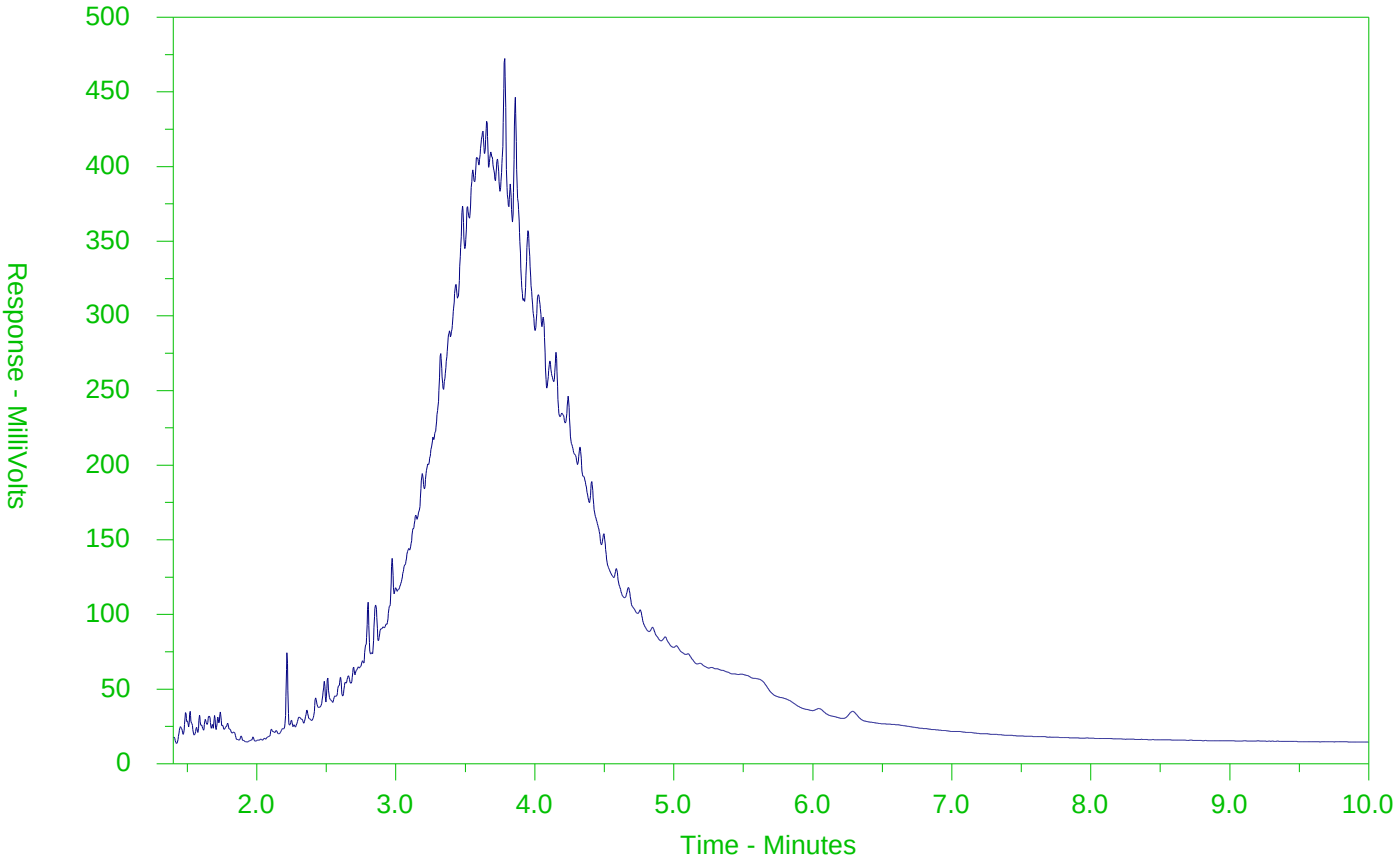
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-4
Client Sample ID: S-11149990-050118-TW-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.

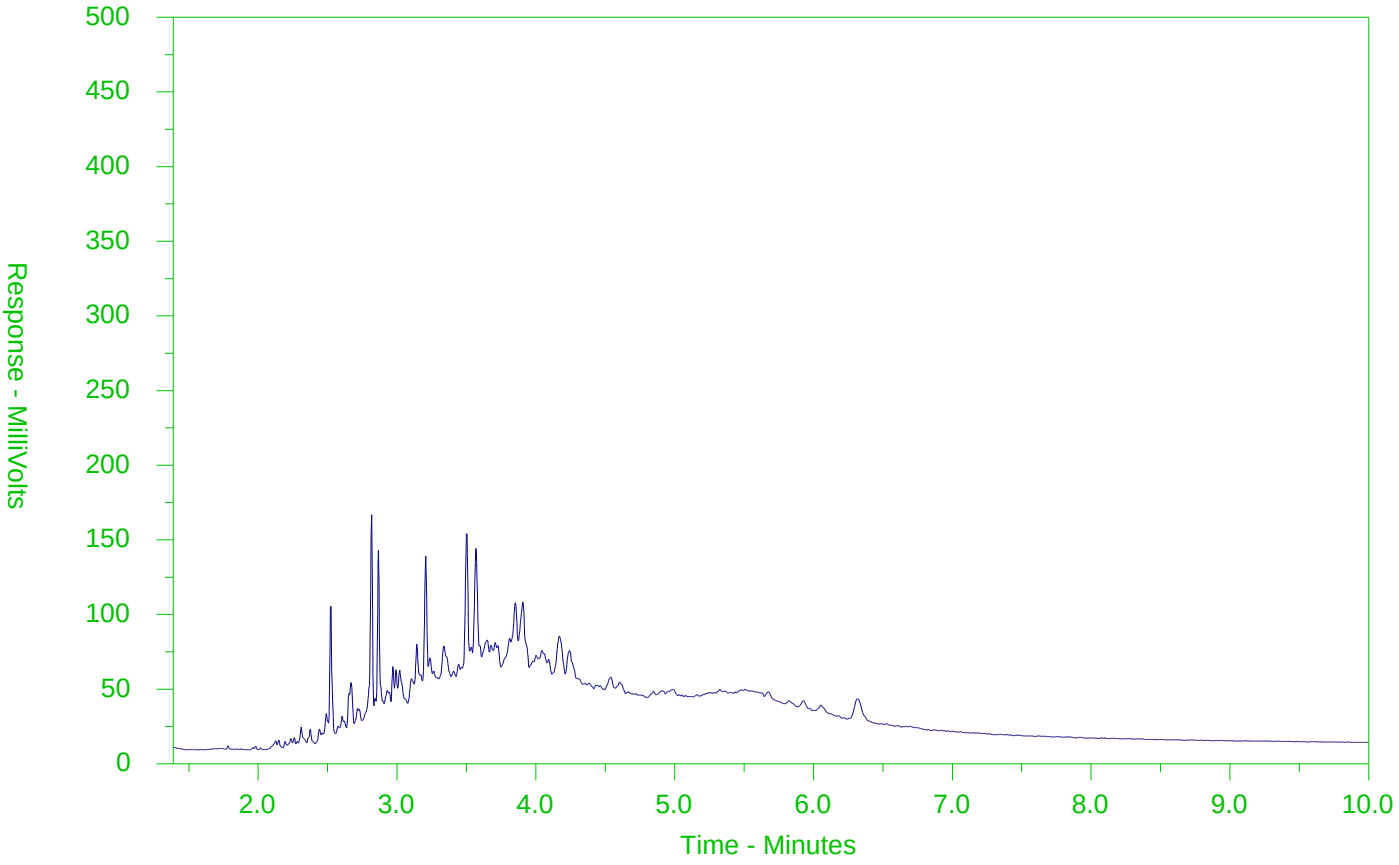
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-5
Client Sample ID: S-11149990-050218-TW-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.

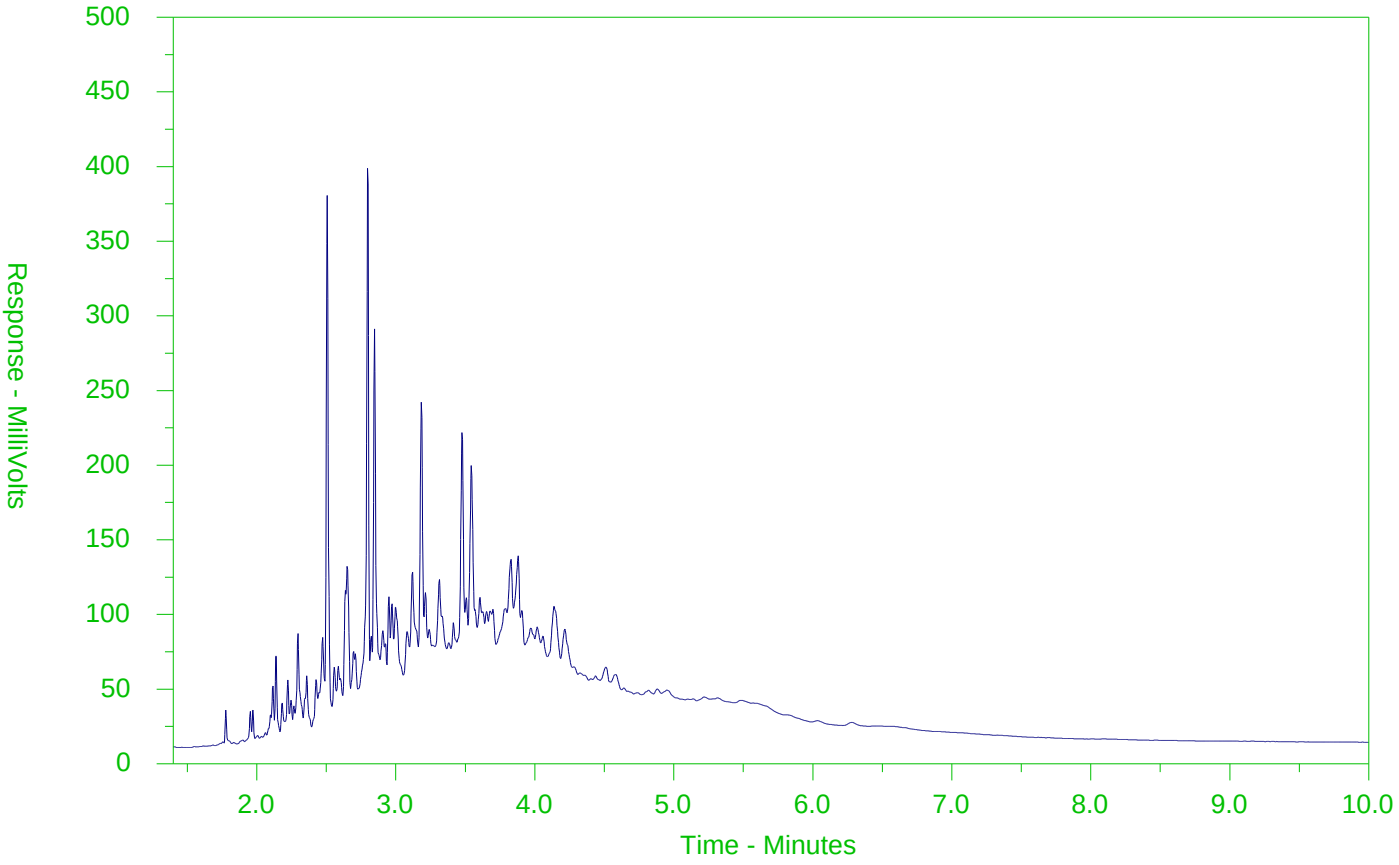
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-6
Client Sample ID: S-11149990-050218-TW-05



←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.

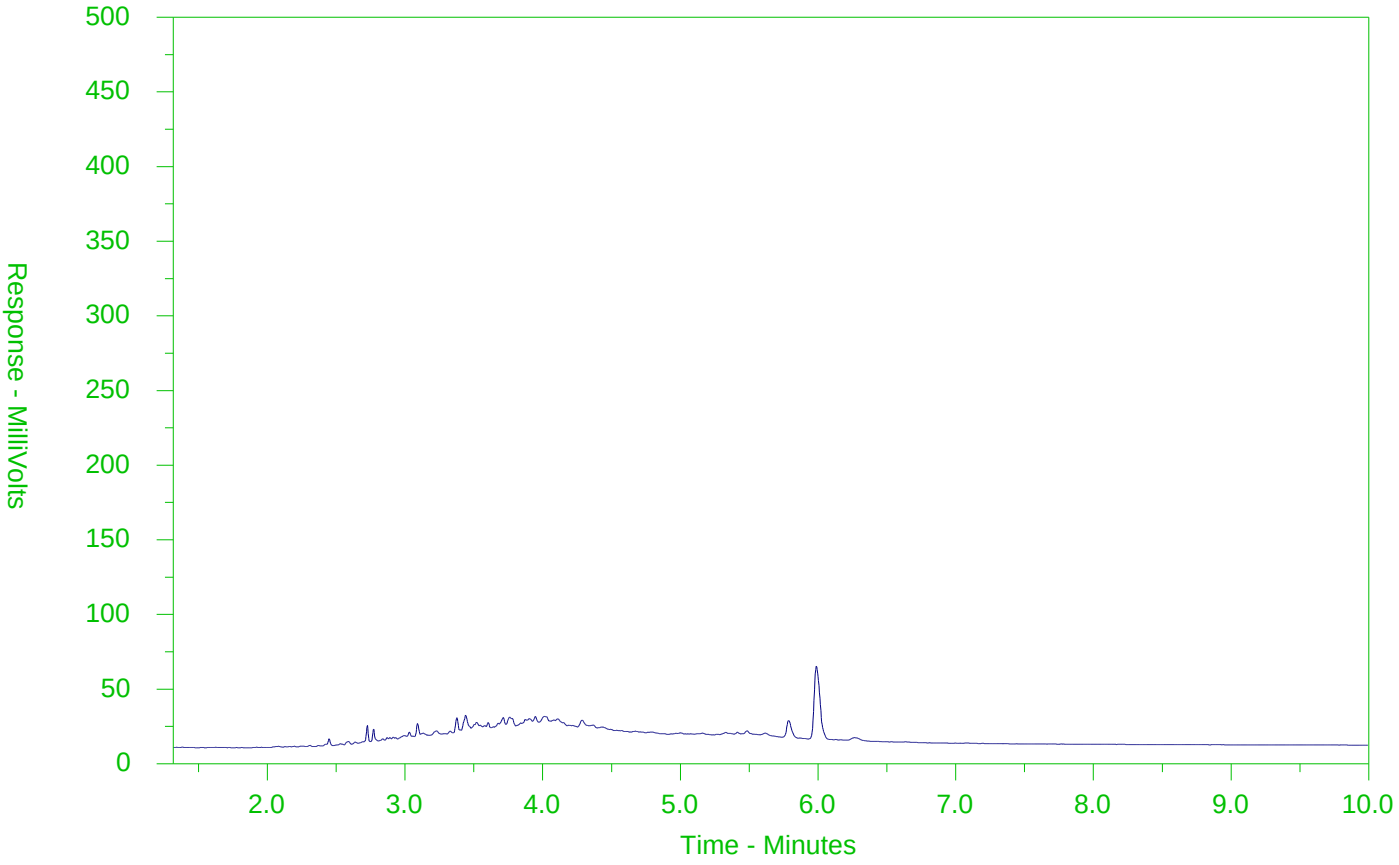
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-7
Client Sample ID: S-11149990-050218-TW-06



←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.

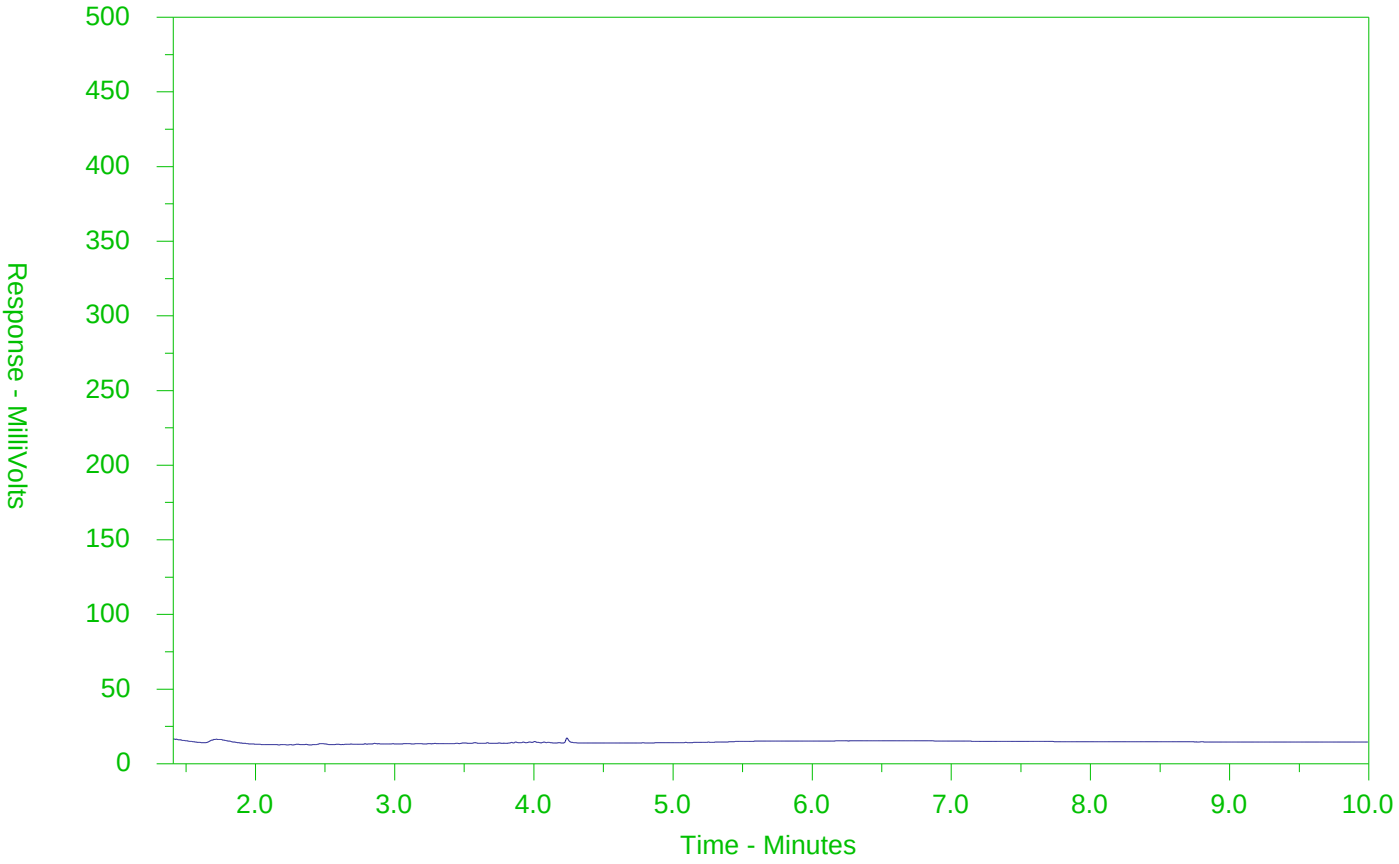
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-8
Client Sample ID: S-11149990-050218-TW-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.

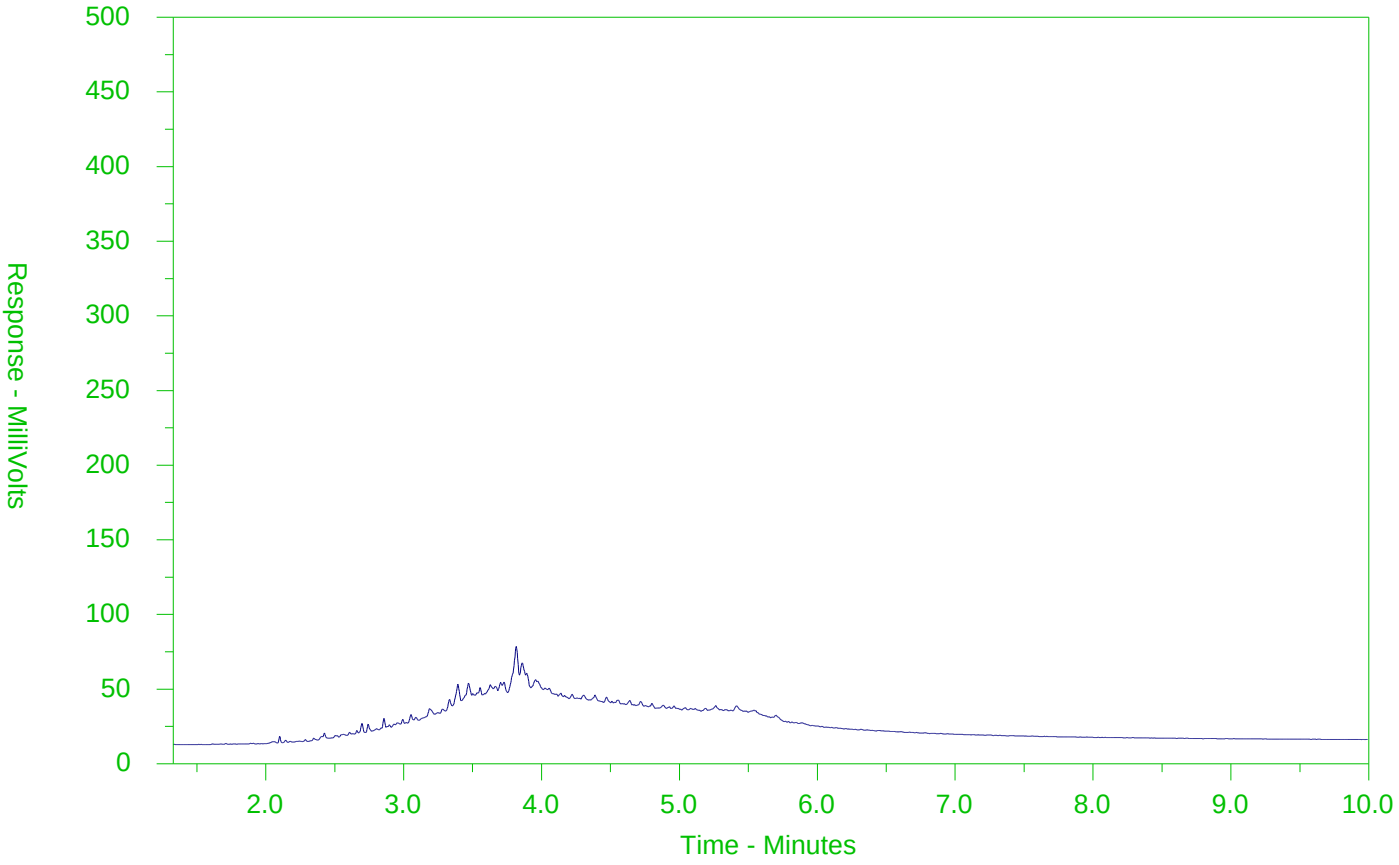
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-9
Client Sample ID: S-11149990-050318-TW-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.

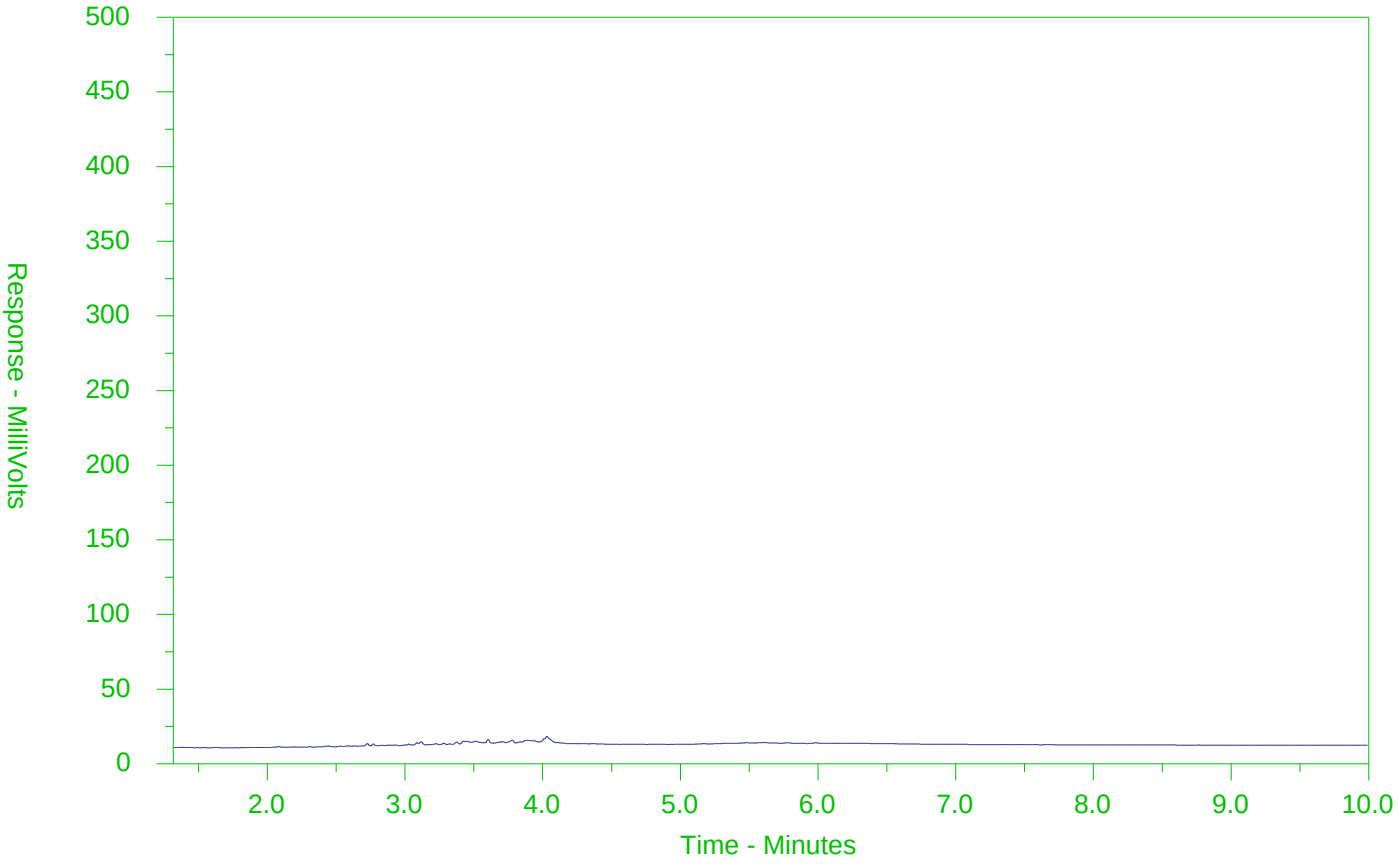
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-11
Client Sample ID: S-11149990-050318-TW-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.

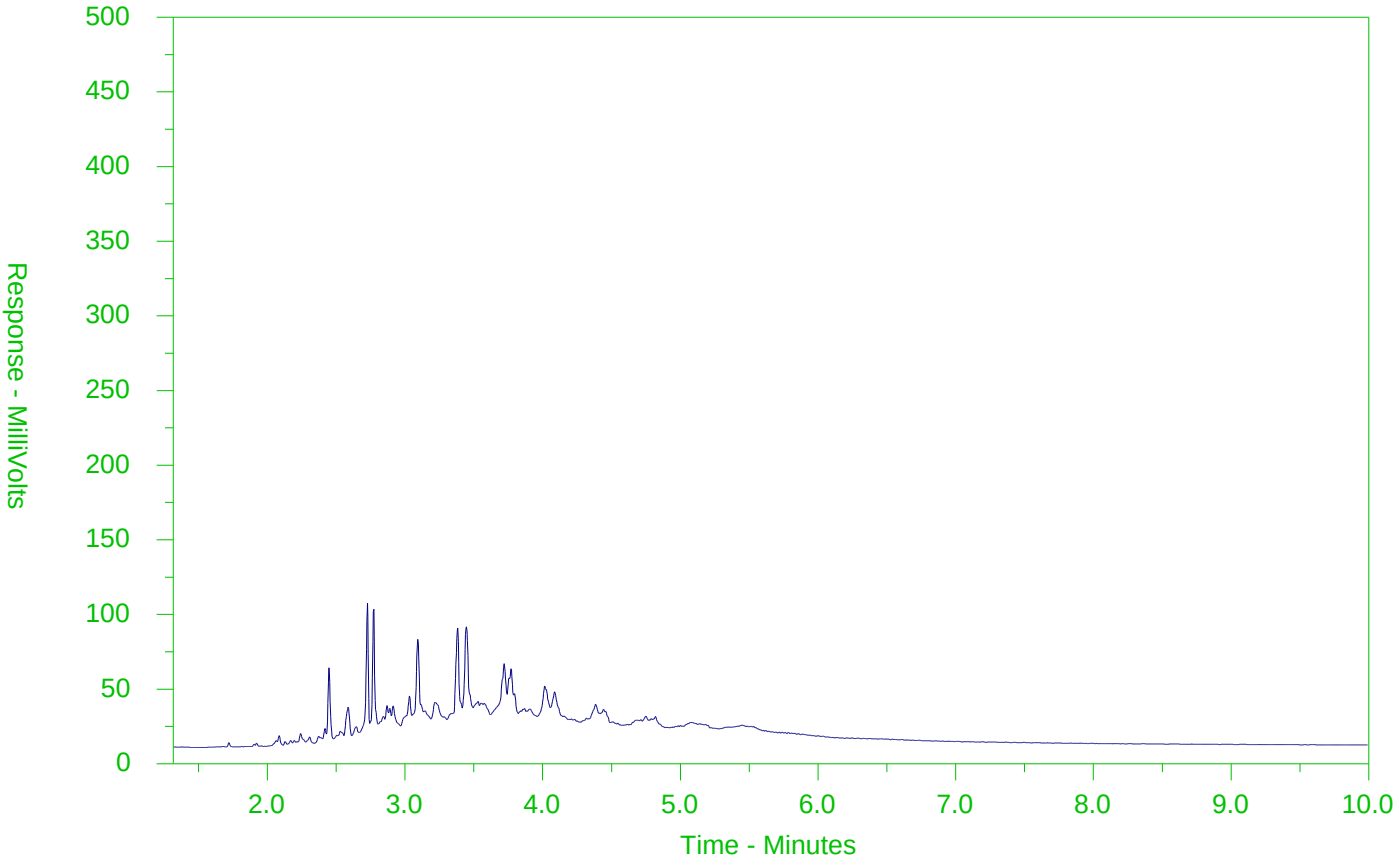
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-12
Client Sample ID: S-11149990-050418-TW-11



←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.

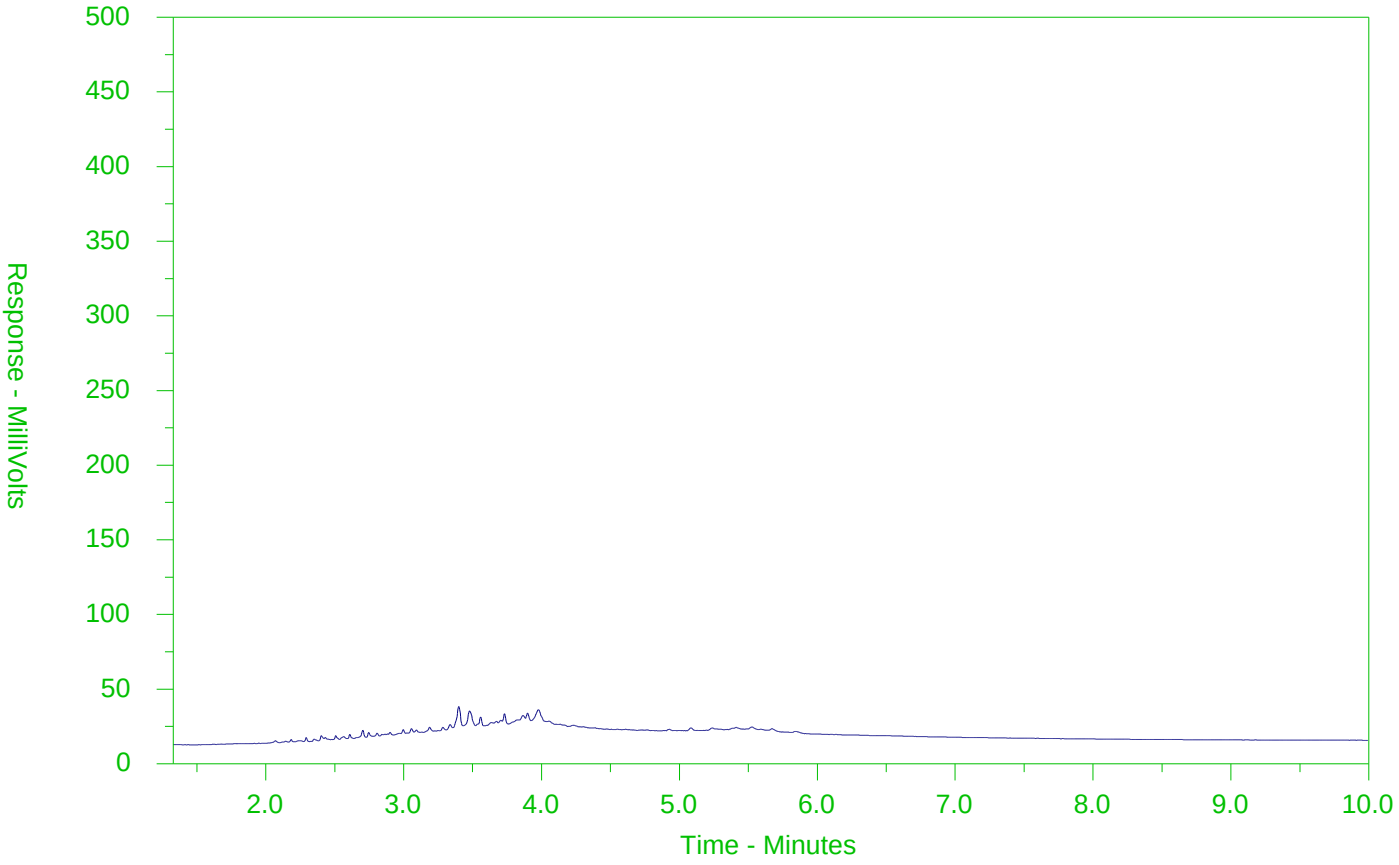
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-14
Client Sample ID: S-11149990-050418-TW-13



←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.

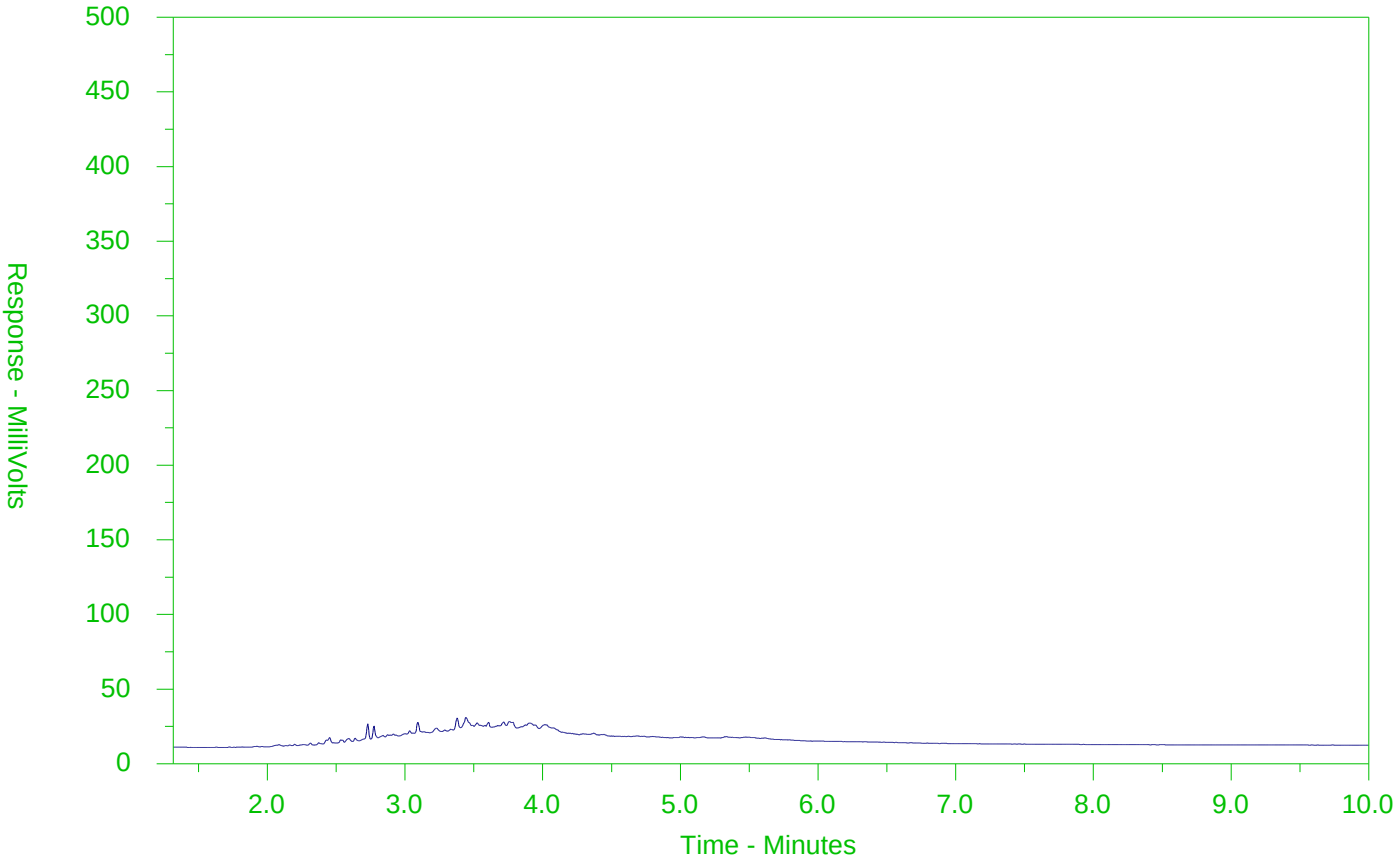
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-16
Client Sample ID: S-11149990-050718-TW-15



←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.

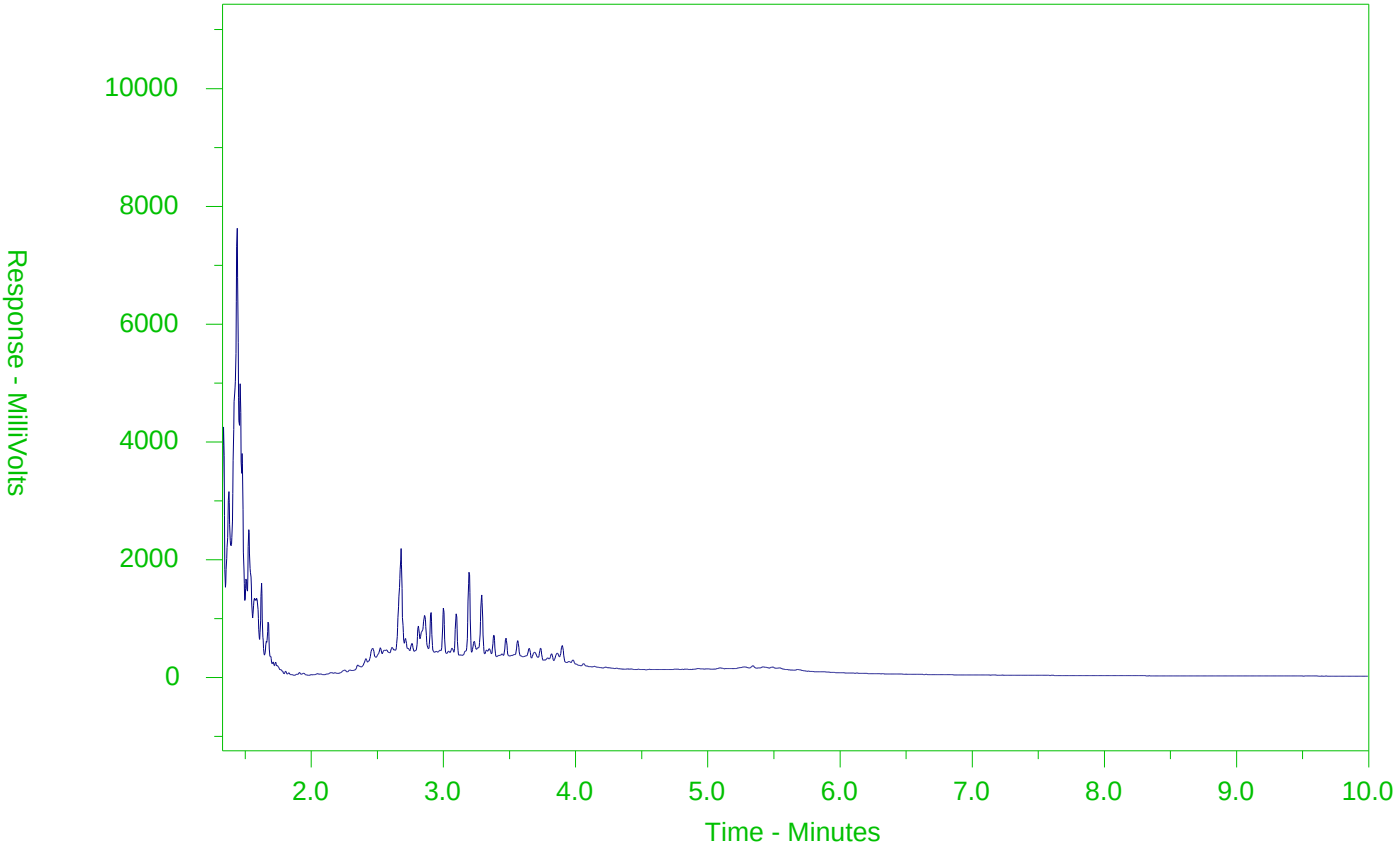
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-18
Client Sample ID: S-11149990-050718-TW-17



←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.

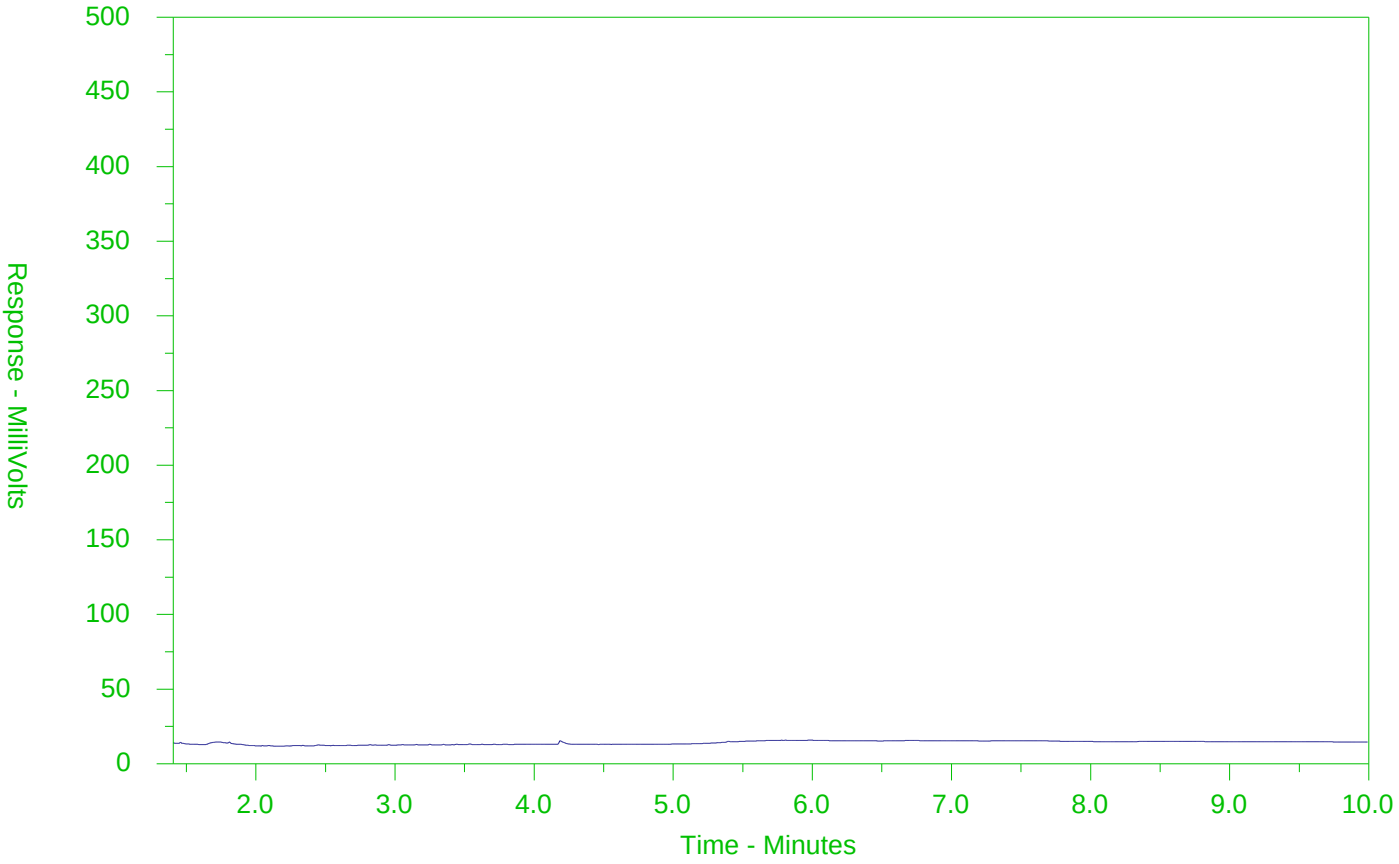
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2091162-19
Client Sample ID: S-11149990-050718-TW-18



←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 the 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.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2091162-COFC

COC Number: 17 - 618892

Page 1 of 2

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	GHD Limited Acct# 13791	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Jennifer Baltzwill	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:	519-884-0510	☐ Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Business day [E-100%] ☐ / Same Day, Weekend or Statutory holiday [E2-200% (Laboratory opening fees may apply)] ☐
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:	651 Colby Drive	Email 1 or Fax Jennifer.Baltzwill@ghd.com	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Waterloo/Ontario	Email 2 see PO	
Postal Code:	N2V 1K7	Email 3	
Invoice To	Same as Report To ☑ YES ☐ NO	**Invoice Distribution**	
	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)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	11149990-04	Major/Minor Code:	Routing Code:
PO / AFE:	73911036-2	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L2091162 08C

ALS Contact: Rick H

Sampler: Tyler W.

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	VOC, F1-F4	SVOCs	153 Mandt Pkg	PCBs	VOC, F1 (Trip Blank)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
1	TB-11149990-050118-TW-01	01-May-18	~	~					X			
2	S-11149990-050118-TW-01		11:00	S	X	X	X	X				4
3	-02		13:00		X	X	X	X				
4	-03		15:30		X	X	X	X				
5	-050218 -04	02-May-18	10:20		X	X	X	X				
6	-05		16:00		X	X	X	X				
7	-06		12:00		X	X	X	X				
8	-07		16:10							X		
9	-050318 -08	03-May-18	8:30									
10	-09		8:40							X		
11	-10		14:15		X	X	X	X				
12	-050418 -11	04-May-18	8:15		X	X	X	X				

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☒ NO	
Are samples for human consumption/ use? ☐ YES ☒ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No	☐
Ice Packs	☐	Ice Cubes ☒	Custody seal intact	Yes ☐	No ☐
Cooling Initiated	☐				

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
	3.6°C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Tyler Williams	Date: 8-May-2018	Time: 18:35	Received by:	Date:	Time:	Received by:	Date: 08-May-18	Time: 18:85

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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JULY 2017 FRONT

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 back page of the white report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2091162-COFC

COC Number: 17 - 622445

Report To	Contact and company name below will appear on the final report
Company:	GHD Limited Acct#3791
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	651 Colby Drive
City/Province:	waterloo/Ontario
Postal Code:	N2V 1C2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	see PO
Email 3	
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

- Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply
- PRIORITY (Business Days): 4 day [P4-20%] ☐; 3 day [P3-25%] ☐; 2 day [P2-50%] ☐
- EMERGENCY: 1 Business day [E-100%] ☐; Same Day, Weekend or Statutory holiday [E2-200% (Laboratory opening fees may apply)] ☐
- Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
- For tests that can not be performed according to the service level selected, you will be contacted.

Project Information	
ALS Account # / Quote #:	
Job #:	11149990-04
PO / AFE:	7351036-2
LSD:	
ALS Lab Work Order # (lab use only):	L2091162 08C

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: Rick H	Sampler: Tyler W

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	VOC F1-F4	SVOCs	153 Mand I Pkg	PCBs	VOC F1 (Trip Blank)	Grainsize	PH	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
13	S-11149990-050418-TW-12	04-May-18	8:30	S								X		4
14	↓ -13	↓	10:25	↓	X	X	X	X						↓
15	↓ -14	↓	10:40	↓								X		↓
16	-030718- -15	03-May-18	9:05	↓	X	X	X	X						↓
17	↓ -16	↓	9:20	↓								X		↓
18	↓ -17	↓	11:00	↓	X	X	X	X						↓
19	↓ -18	↓	11:30	↓								X		↓
20	↓ -19	↓	9:00	↓						X	X			2
21	-050418- -20	04-May-18	8:10	↓						X	X			↓
22	↓ -21	↓	14:20	↓						X	X			↓

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

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)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☒ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C:
FINAL COOLER TEMPERATURES °C: 3.6°C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Tyler Wittmaier	Date: 8-May-2018	Time: 18:35	Received by:	Date:	Time:	Received by: [signature]	Date: 08-May-18	Time: 18:35

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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 back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

JULY 2017 FRONT

GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 11-MAY-18
Report Date: 26-JUL-18 09:05 (MT)
Version: FINAL REV. 2

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L2093541

Project P.O. #: 73511036-2
Job Reference: 11149990-04
C of C Numbers:
Legal Site Desc:

Comments: Report #2

Rick Hawthorne
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-1 GW-11149990-051118-TW-001 Sampled By: T. WITTMAIER on 11-MAY-18 @ 10:00 Matrix: WATER							
Physical Tests							
Conductivity	3.20		0.0030	mS/cm		15-MAY-18	R4044635
pH	7.26		0.10	pH units		15-MAY-18	R4044635
Anions and Nutrients							
Chloride (Cl)	757	DLHC	2.5	mg/L		16-MAY-18	R4046897
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		18-MAY-18	R4050720
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					15-MAY-18	R4043931
Dissolved Metals Filtration Location	FIELD					15-MAY-18	R4043769
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Arsenic (As)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Barium (Ba)-Dissolved	118	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Boron (B)-Dissolved	380	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Cadmium (Cd)-Dissolved	0.153	DLHC	0.050	ug/L	15-MAY-18	15-MAY-18	R4044327
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Copper (Cu)-Dissolved	5.7	DLHC	2.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	15-MAY-18	15-MAY-18	R4044019
Molybdenum (Mo)-Dissolved	0.96	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Selenium (Se)-Dissolved	1.98	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Sodium (Na)-Dissolved	421000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Uranium (U)-Dissolved	3.08	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Zinc (Zn)-Dissolved	95	DLHC	10	ug/L	15-MAY-18	15-MAY-18	R4044327
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		14-MAY-18	R4043214
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328
Benzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328

* 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
L2093541-1 GW-11149990-051118-TW-001 Sampled By: T. WITTMAIER on 11-MAY-18 @ 10:00 Matrix: WATER							
Volatile Organic Compounds							
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	
Ethylbenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	<0.30		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	<0.40		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	<0.50		0.50	ug/L		17-MAY-18	
Surrogate: 4-Bromofluorobenzene	94.3		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	99.9		70-130	%		17-MAY-18	R4046328
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		17-MAY-18	R4046328
F1-BTEX	<25		25	ug/L		22-MAY-18	
F2 (C10-C16)	<100		100	ug/L	17-MAY-18	17-MAY-18	R4047463
F2-Naphth	<100		100	ug/L		22-MAY-18	
F3 (C16-C34)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
F3-PAH	<250		250	ug/L		22-MAY-18	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-1 GW-11149990-051118-TW-001 Sampled By: T. WITTMAIER on 11-MAY-18 @ 10:00 Matrix: WATER							
Hydrocarbons							
F4 (C34-C50)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
Total Hydrocarbons (C6-C50)	<370		370	ug/L		22-MAY-18	
Chrom. to baseline at nC50	YES				17-MAY-18	17-MAY-18	R4047463
Surrogate: 2-Bromobenzotrifluoride	89.3		60-140	%	17-MAY-18	17-MAY-18	R4047463
Surrogate: 3,4-Dichlorotoluene	82.8		60-140	%		17-MAY-18	R4046328
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Acenaphthylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)pyrene	<0.010		0.010	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(b)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(k)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Chrysene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluorene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		22-MAY-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
2-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Naphthalene	<0.050		0.050	ug/L	17-MAY-18	18-MAY-18	R4047455
Phenanthrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Acenaphthene	100.2		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d12-Chrysene	93.3		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d8-Naphthalene	105.4		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Phenanthrene	102.1		60-140	%	17-MAY-18	18-MAY-18	R4047455
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
4-Chloroaniline	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2-Chlorophenol	<0.30		0.30	ug/L	17-MAY-18	22-MAY-18	R4050092
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dichlorophenol	<0.30		0.30	ug/L	17-MAY-18	22-MAY-18	R4050092
Diethylphthalate	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
Dimethylphthalate	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dimethylphenol	<0.50		0.50	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dinitrophenol	<1.0		1.0	ug/L	17-MAY-18	22-MAY-18	R4050092

* 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
L2093541-1 GW-11149990-051118-TW-001 Sampled By: T. WITTMAIER on 11-MAY-18 @ 10:00 Matrix: WATER							
Semi-Volatile Organics							
2,4-Dinitrotoluene	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,6-Dinitrotoluene	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		22-MAY-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	17-MAY-18	22-MAY-18	R4050092
Pentachlorophenol	<0.50		0.50	ug/L	17-MAY-18	22-MAY-18	R4050092
Phenol	<0.50		0.50	ug/L	17-MAY-18	22-MAY-18	R4050092
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
Surrogate: 2-Fluorobiphenyl	91.0		50-140	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: Nitrobenzene d5	94.3		50-140	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: Phenol d5	50.6		30-130	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: p-Terphenyl d14	105.5		60-140	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: 2,4,6-Tribromophenol	92.7		50-140	%	17-MAY-18	22-MAY-18	R4050092
L2093541-3 GW-11149990-051118-TW-004 Sampled By: T. WITTMAIER on 11-MAY-18 @ 16:05 Matrix: WATER							
Physical Tests							
Conductivity	2.15		0.0030	mS/cm		15-MAY-18	R4044635
Hardness (as CaCO3)	724000		1300	ug/L		18-MAY-18	
pH	7.34		0.10	pH units		15-MAY-18	R4044635
Total Dissolved Solids	1210		20	mg/L		18-MAY-18	R4049497
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	764	DLHC	20	mg/L		17-MAY-18	R4046936
Ammonia, Total (as N)	27.1	DLHC	1.0	mg/L		16-MAY-18	R4046688
Chloride (Cl)	273	DLDS	2.5	mg/L		16-MAY-18	R4046897
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		16-MAY-18	R4046897
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		16-MAY-18	R4046897
Total Kjeldahl Nitrogen	33.3	DLHC	3.0	mg/L	16-MAY-18	17-MAY-18	R4046628
Phosphorus, Total	0.150		0.0030	mg/L	15-MAY-18	16-MAY-18	R4045211
Sulfate (SO4)	2.4	DLDS	1.5	mg/L		16-MAY-18	R4046897
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		18-MAY-18	R4050720
Organic / Inorganic Carbon							
Dissolved Organic Carbon	23.6	DLHC	5.0	mg/L		16-MAY-18	R4046482
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					15-MAY-18	R4043931
Dissolved Metals Filtration Location	FIELD					15-MAY-18	R4043769
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Arsenic (As)-Dissolved	3.3	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Barium (Ba)-Dissolved	240	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327

* 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
L2093541-3 GW-11149990-051118-TW-004 Sampled By: T. WITTMAIER on 11-MAY-18 @ 16:05 Matrix: WATER							
Dissolved Metals							
Boron (B)-Dissolved	2240	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	15-MAY-18	15-MAY-18	R4044327
Calcium (Ca)-Dissolved	183000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Cobalt (Co)-Dissolved	1.2	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Iron (Fe)-Dissolved	22800	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Magnesium (Mg)-Dissolved	64900	DLHC	50	ug/L	15-MAY-18	15-MAY-18	R4044327
Manganese (Mn)-Dissolved	321	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	15-MAY-18	15-MAY-18	R4044019
Molybdenum (Mo)-Dissolved	1.24	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Sodium (Na)-Dissolved	154000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Uranium (U)-Dissolved	0.45	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	15-MAY-18	15-MAY-18	R4044327
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		14-MAY-18	R4043214
Aggregate Organics							
Phenols (4AAP)	0.0053		0.0010	mg/L		14-MAY-18	R4043900
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328
Benzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	3.09		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	0.62		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328

* 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
L2093541-3 GW-11149990-051118-TW-004 Sampled By: T. WITTMAIER on 11-MAY-18 @ 16:05 Matrix: WATER							
Volatile Organic Compounds							
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	
Ethylbenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	0.58		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	<0.30		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	<0.40		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	<0.50		0.50	ug/L		17-MAY-18	
Surrogate: 4-Bromofluorobenzene	93.8		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	100.6		70-130	%		17-MAY-18	R4046328
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		17-MAY-18	R4046328
F1-BTEX	<25		25	ug/L		22-MAY-18	
F2 (C10-C16)	<100		100	ug/L	17-MAY-18	17-MAY-18	R4047463
F2-Naphth	<100		100	ug/L		22-MAY-18	
F3 (C16-C34)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
F3-PAH	<250		250	ug/L		22-MAY-18	
F4 (C34-C50)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
Total Hydrocarbons (C6-C50)	<370		370	ug/L		22-MAY-18	
Chrom. to baseline at nC50	YES				17-MAY-18	17-MAY-18	R4047463
Surrogate: 2-Bromobenzotrifluoride	91.9		60-140	%	17-MAY-18	17-MAY-18	R4047463
Surrogate: 3,4-Dichlorotoluene	75.5		60-140	%		17-MAY-18	R4046328
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	0.140		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-3 GW-11149990-051118-TW-004 Sampled By: T. WITTMAIER on 11-MAY-18 @ 16:05 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Acenaphthylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)pyrene	<0.010		0.010	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(b)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(k)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Chrysene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluorene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
1+2-Methylnaphthalenes	0.069		0.028	ug/L		22-MAY-18	
1-Methylnaphthalene	0.040		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
2-Methylnaphthalene	0.029		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Naphthalene	0.082		0.050	ug/L	17-MAY-18	18-MAY-18	R4047455
Phenanthrene	0.027		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Acenaphthene	101.8		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d12-Chrysene	82.8		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d8-Naphthalene	126.7		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Phenanthrene	105.3		60-140	%	17-MAY-18	18-MAY-18	R4047455
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
4-Chloroaniline	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2-Chlorophenol	<0.30		0.30	ug/L	17-MAY-18	22-MAY-18	R4050092
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dichlorophenol	<0.30		0.30	ug/L	17-MAY-18	22-MAY-18	R4050092
Diethylphthalate	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
Dimethylphthalate	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dimethylphenol	<0.50		0.50	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dinitrophenol	<1.0		1.0	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dinitrotoluene	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,6-Dinitrotoluene	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		22-MAY-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	17-MAY-18	22-MAY-18	R4050092
Pentachlorophenol	<0.50		0.50	ug/L	17-MAY-18	22-MAY-18	R4050092
Phenol	<0.50		0.50	ug/L	17-MAY-18	22-MAY-18	R4050092
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-3 GW-11149990-051118-TW-004 Sampled By: T. WITTMAIER on 11-MAY-18 @ 16:05 Matrix: WATER							
Semi-Volatile Organics							
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
Surrogate: 2-Fluorobiphenyl	88.7		50-140	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: Nitrobenzene d5	94.6		50-140	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: Phenol d5	50.7		30-130	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: p-Terphenyl d14	96.0		60-140	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: 2,4,6-Tribromophenol	103.2		50-140	%	17-MAY-18	22-MAY-18	R4050092
L2093541-4 GW-11149990-051118-TW-005 Sampled By: T. WITTMAIER on 11-MAY-18 @ 12:50 Matrix: WATER							
Physical Tests							
Conductivity	4.10		0.0030	mS/cm		15-MAY-18	R4044635
Hardness (as CaCO3)	553000		1300	ug/L		18-MAY-18	
pH	7.69		0.10	pH units		15-MAY-18	R4044635
Total Dissolved Solids	2410	DLDS	20	mg/L		16-MAY-18	R4046600
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	310		10	mg/L		17-MAY-18	R4046936
Ammonia, Total (as N)	3.25	DLHC	0.10	mg/L		16-MAY-18	R4046688
Chloride (Cl)	1180	DLDS	2.5	mg/L		16-MAY-18	R4046897
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		16-MAY-18	R4046897
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		16-MAY-18	R4046897
Total Kjeldahl Nitrogen	3.77		0.15	mg/L	16-MAY-18	17-MAY-18	R4046628
Phosphorus, Total	0.0265		0.0030	mg/L	15-MAY-18	16-MAY-18	R4045211
Sulfate (SO4)	97.1	DLDS	1.5	mg/L		16-MAY-18	R4046897
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		18-MAY-18	R4050720
Organic / Inorganic Carbon							
Dissolved Organic Carbon	7.7	DLM	5.0	mg/L		16-MAY-18	R4046482
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					15-MAY-18	R4043931
Dissolved Metals Filtration Location	FIELD					15-MAY-18	R4043769
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Arsenic (As)-Dissolved	2.6	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Barium (Ba)-Dissolved	411	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Boron (B)-Dissolved	1580	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	15-MAY-18	15-MAY-18	R4044327
Calcium (Ca)-Dissolved	158000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Copper (Cu)-Dissolved	2.0	DLHC	2.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Iron (Fe)-Dissolved	6060	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-4 GW-11149990-051118-TW-005 Sampled By: T. WITTMAIER on 11-MAY-18 @ 12:50 Matrix: WATER							
Dissolved Metals							
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Magnesium (Mg)-Dissolved	38700	DLHC	50	ug/L	15-MAY-18	15-MAY-18	R4044327
Manganese (Mn)-Dissolved	1380	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	15-MAY-18	15-MAY-18	R4044019
Molybdenum (Mo)-Dissolved	2.56	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Sodium (Na)-Dissolved	627000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Uranium (U)-Dissolved	0.53	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	15-MAY-18	15-MAY-18	R4044327
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		14-MAY-18	R4043214
Aggregate Organics							
Phenols (4AAP)	0.0016		0.0010	mg/L		14-MAY-18	R4043900
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328
Benzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-4 GW-11149990-051118-TW-005 Sampled By: T. WITTMAIER on 11-MAY-18 @ 12:50 Matrix: WATER							
Volatile Organic Compounds							
Ethylbenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	<0.30		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	<0.40		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	<0.50		0.50	ug/L		17-MAY-18	
Surrogate: 4-Bromofluorobenzene	93.3		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	100.6		70-130	%		17-MAY-18	R4046328
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		17-MAY-18	R4046328
F1-BTEX	<25		25	ug/L		22-MAY-18	
F2 (C10-C16)	<100		100	ug/L	17-MAY-18	17-MAY-18	R4047463
F2-Naphth	<100		100	ug/L		22-MAY-18	
F3 (C16-C34)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
F3-PAH	<250		250	ug/L		22-MAY-18	
F4 (C34-C50)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
Total Hydrocarbons (C6-C50)	<370		370	ug/L		22-MAY-18	
Chrom. to baseline at nC50	YES				17-MAY-18	17-MAY-18	R4047463
Surrogate: 2-Bromobenzotrifluoride	81.2		60-140	%	17-MAY-18	17-MAY-18	R4047463
Surrogate: 3,4-Dichlorotoluene	92.5		60-140	%		17-MAY-18	R4046328
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	0.139		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Acenaphthylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)pyrene	<0.010		0.010	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(b)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(k)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455

* 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
L2093541-4 GW-11149990-051118-TW-005 Sampled By: T. WITTMAIER on 11-MAY-18 @ 12:50 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Chrysene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluorene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		22-MAY-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
2-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Naphthalene	<0.050		0.050	ug/L	17-MAY-18	18-MAY-18	R4047455
Phenanthrene	0.025		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Acenaphthene	98.6		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d12-Chrysene	91.8		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d8-Naphthalene	103.0		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Phenanthrene	101.9		60-140	%	17-MAY-18	18-MAY-18	R4047455
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
4-Chloroaniline	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2-Chlorophenol	<0.30		0.30	ug/L	17-MAY-18	22-MAY-18	R4050092
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dichlorophenol	<0.30		0.30	ug/L	17-MAY-18	22-MAY-18	R4050092
Diethylphthalate	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
Dimethylphthalate	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dimethylphenol	<0.50		0.50	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dinitrophenol	<1.0		1.0	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dinitrotoluene	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,6-Dinitrotoluene	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		22-MAY-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	17-MAY-18	22-MAY-18	R4050092
Pentachlorophenol	<0.50		0.50	ug/L	17-MAY-18	22-MAY-18	R4050092
Phenol	<0.50		0.50	ug/L	17-MAY-18	22-MAY-18	R4050092
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
Surrogate: 2-Fluorobiphenyl	88.9		50-140	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: Nitrobenzene d5	95.1		50-140	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: Phenol d5	49.3		30-130	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: p-Terphenyl d14	94.3		60-140	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: 2,4,6-Tribromophenol	100.2		50-140	%	17-MAY-18	22-MAY-18	R4050092

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-5 GW-11149990-051118-TW-006 Sampled By: T. WITTMAIER on 11-MAY-18 @ 12:50 Matrix: WATER							
Physical Tests							
Conductivity	4.13		0.0030	mS/cm		15-MAY-18	R4044635
Hardness (as CaCO3)	540000		1300	ug/L		18-MAY-18	
pH	7.72		0.10	pH units		15-MAY-18	R4044635
Total Dissolved Solids	2380	DLDS	20	mg/L		16-MAY-18	R4046600
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	310		10	mg/L		17-MAY-18	R4046936
Ammonia, Total (as N)	3.13	DLHC	0.10	mg/L		16-MAY-18	R4046688
Chloride (Cl)	1170	DLDS	2.5	mg/L		16-MAY-18	R4046897
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		16-MAY-18	R4046897
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		16-MAY-18	R4046897
Total Kjeldahl Nitrogen	3.40		0.15	mg/L	17-MAY-18	18-MAY-18	R4047847
Phosphorus, Total	0.0343		0.0030	mg/L	15-MAY-18	16-MAY-18	R4045211
Sulfate (SO4)	96.7	DLDS	1.5	mg/L		16-MAY-18	R4046897
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		18-MAY-18	R4050720
Organic / Inorganic Carbon							
Dissolved Organic Carbon	5.2	DLM	5.0	mg/L		16-MAY-18	R4046482
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					15-MAY-18	R4043931
Dissolved Metals Filtration Location	FIELD					15-MAY-18	R4043769
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Arsenic (As)-Dissolved	2.5	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Barium (Ba)-Dissolved	416	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Boron (B)-Dissolved	1640	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	15-MAY-18	15-MAY-18	R4044327
Calcium (Ca)-Dissolved	156000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Iron (Fe)-Dissolved	5980	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Magnesium (Mg)-Dissolved	36200	DLHC	50	ug/L	15-MAY-18	15-MAY-18	R4044327
Manganese (Mn)-Dissolved	1360	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	15-MAY-18	15-MAY-18	R4044019
Molybdenum (Mo)-Dissolved	2.52	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Sodium (Na)-Dissolved	606000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Uranium (U)-Dissolved	0.55	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-5 GW-11149990-051118-TW-006 Sampled By: T. WITTMAIER on 11-MAY-18 @ 12:50 Matrix: WATER							
Dissolved Metals							
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	15-MAY-18	15-MAY-18	R4044327
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		14-MAY-18	R4043214
Aggregate Organics							
Phenols (4AAP)	0.0021		0.0010	mg/L		14-MAY-18	R4043900
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328
Benzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	
Ethylbenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-5 GW-11149990-051118-TW-006 Sampled By: T. WITTMAIER on 11-MAY-18 @ 12:50 Matrix: WATER							
Volatile Organic Compounds							
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	<0.30		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	<0.40		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	<0.50		0.50	ug/L		17-MAY-18	
Surrogate: 4-Bromofluorobenzene	93.0		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	99.8		70-130	%		17-MAY-18	R4046328
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		17-MAY-18	R4046328
F1-BTEX	<25		25	ug/L		22-MAY-18	
F2 (C10-C16)	<100		100	ug/L	17-MAY-18	17-MAY-18	R4047463
F2-Naphth	<100		100	ug/L		22-MAY-18	
F3 (C16-C34)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
F3-PAH	<250		250	ug/L		22-MAY-18	
F4 (C34-C50)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
Total Hydrocarbons (C6-C50)	<370		370	ug/L		22-MAY-18	
Chrom. to baseline at nC50	YES				17-MAY-18	17-MAY-18	R4047463
Surrogate: 2-Bromobenzotrifluoride	83.4		60-140	%	17-MAY-18	17-MAY-18	R4047463
Surrogate: 3,4-Dichlorotoluene	86.9		60-140	%		17-MAY-18	R4046328
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	0.144		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Acenaphthylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)pyrene	<0.010		0.010	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(b)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(k)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Chrysene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluorene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		22-MAY-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
2-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Naphthalene	<0.050		0.050	ug/L	17-MAY-18	18-MAY-18	R4047455
Phenanthrene	0.025		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-5 GW-11149990-051118-TW-006 Sampled By: T. WITTMAIER on 11-MAY-18 @ 12:50 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Surrogate: d10-Acenaphthene	101.7		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d12-Chrysene	95.7		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d8-Naphthalene	106.5		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Phenanthrene	105.7		60-140	%	17-MAY-18	18-MAY-18	R4047455
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
4-Chloroaniline	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2-Chlorophenol	<0.30		0.30	ug/L	17-MAY-18	22-MAY-18	R4050092
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dichlorophenol	<0.30		0.30	ug/L	17-MAY-18	22-MAY-18	R4050092
Diethylphthalate	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
Dimethylphthalate	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dimethylphenol	<0.50		0.50	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dinitrophenol	<1.0		1.0	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4-Dinitrotoluene	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,6-Dinitrotoluene	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		22-MAY-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	17-MAY-18	22-MAY-18	R4050092
Pentachlorophenol	<0.50		0.50	ug/L	17-MAY-18	22-MAY-18	R4050092
Phenol	<0.50		0.50	ug/L	17-MAY-18	22-MAY-18	R4050092
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	17-MAY-18	22-MAY-18	R4050092
Surrogate: 2-Fluorobiphenyl	87.9		50-140	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: Nitrobenzene d5	93.9		50-140	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: Phenol d5	48.8		30-130	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: p-Terphenyl d14	96.8		60-140	%	17-MAY-18	22-MAY-18	R4050092
Surrogate: 2,4,6-Tribromophenol	98.4		50-140	%	17-MAY-18	22-MAY-18	R4050092
L2093541-6 GW-11149990-051118-TW-007 Sampled By: T. WITTMAIER on 11-MAY-18 @ 09:20 Matrix: WATER							
Physical Tests							
Conductivity	3.60		0.0030	mS/cm		15-MAY-18	R4044635
Hardness (as CaCO3)	670000		1300	ug/L		18-MAY-18	
pH	7.51		0.10	pH units		15-MAY-18	R4044635
Total Dissolved Solids	2240	DLDS	20	mg/L		16-MAY-18	R4046600
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	414		10	mg/L		17-MAY-18	R4046936
Ammonia, Total (as N)	1.88	DLHC	0.10	mg/L		16-MAY-18	R4046688
Chloride (Cl)	995	DLDS	2.5	mg/L		16-MAY-18	R4046897

* 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
L2093541-6 GW-11149990-051118-TW-007 Sampled By: T. WITTMAIER on 11-MAY-18 @ 09:20 Matrix: WATER							
Anions and Nutrients							
Nitrate (as N)	28.9	DLDS	0.10	mg/L		16-MAY-18	R4046897
Nitrite (as N)	0.209	DLDS	0.050	mg/L		16-MAY-18	R4046897
Total Kjeldahl Nitrogen	1.99	TKNI	0.15	mg/L	17-MAY-18	18-MAY-18	R4047847
Phosphorus, Total	0.0141		0.0030	mg/L	15-MAY-18	16-MAY-18	R4045211
Sulfate (SO4)	110	DLDS	1.5	mg/L		16-MAY-18	R4046897
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		18-MAY-18	R4050720
Organic / Inorganic Carbon							
Dissolved Organic Carbon	11.2		1.0	mg/L		16-MAY-18	R4046482
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					15-MAY-18	R4043931
Dissolved Metals Filtration Location	FIELD					15-MAY-18	R4043769
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Arsenic (As)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Barium (Ba)-Dissolved	107	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Boron (B)-Dissolved	270	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Cadmium (Cd)-Dissolved	0.356	DLHC	0.050	ug/L	15-MAY-18	15-MAY-18	R4044327
Calcium (Ca)-Dissolved	211000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Copper (Cu)-Dissolved	5.7	DLHC	2.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Iron (Fe)-Dissolved	<100	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Magnesium (Mg)-Dissolved	34900	DLHC	50	ug/L	15-MAY-18	15-MAY-18	R4044327
Manganese (Mn)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	15-MAY-18	15-MAY-18	R4044019
Molybdenum (Mo)-Dissolved	2.10	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Selenium (Se)-Dissolved	15.5	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Sodium (Na)-Dissolved	501000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Thallium (Tl)-Dissolved	0.11	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Uranium (U)-Dissolved	6.42	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Zinc (Zn)-Dissolved	174	DLHC	10	ug/L	15-MAY-18	15-MAY-18	R4044327
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		14-MAY-18	R4043214
Aggregate Organics							
Phenols (4AAP)	0.0017		0.0010	mg/L		14-MAY-18	R4043900
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-6 GW-11149990-051118-TW-007 Sampled By: T. WITTMAIER on 11-MAY-18 @ 09:20 Matrix: WATER							
Volatile Organic Compounds							
Benzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	
Ethylbenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	<0.30		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	<0.40		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	<0.50		0.50	ug/L		17-MAY-18	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-6 GW-11149990-051118-TW-007 Sampled By: T. WITTMAIER on 11-MAY-18 @ 09:20 Matrix: WATER							
Volatile Organic Compounds							
Surrogate: 4-Bromofluorobenzene	93.6		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	100.4		70-130	%		17-MAY-18	R4046328
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		17-MAY-18	R4046328
F1-BTEX	<25		25	ug/L		23-MAY-18	
F2 (C10-C16)	<100		100	ug/L	17-MAY-18	17-MAY-18	R4047463
F2-Naphth	<100		100	ug/L		23-MAY-18	
F3 (C16-C34)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
F3-PAH	<250		250	ug/L		23-MAY-18	
F4 (C34-C50)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
Total Hydrocarbons (C6-C50)	<370		370	ug/L		23-MAY-18	
Chrom. to baseline at nC50	YES				17-MAY-18	17-MAY-18	R4047463
Surrogate: 2-Bromobenzotrifluoride	84.5		60-140	%	17-MAY-18	17-MAY-18	R4047463
Surrogate: 3,4-Dichlorotoluene	86.7		60-140	%		17-MAY-18	R4046328
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Acenaphthylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)pyrene	<0.010		0.010	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(b)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(k)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Chrysene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluorene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		23-MAY-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
2-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Naphthalene	<0.050		0.050	ug/L	17-MAY-18	18-MAY-18	R4047455
Phenanthrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Acenaphthene	101.4		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d12-Chrysene	98.9		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d8-Naphthalene	104.8		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Phenanthrene	104.1		60-140	%	17-MAY-18	18-MAY-18	R4047455
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
4-Chloroaniline	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-6 GW-11149990-051118-TW-007 Sampled By: T. WITTMAIER on 11-MAY-18 @ 09:20 Matrix: WATER							
Semi-Volatile Organics							
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2-Chlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dichlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
Diethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Dimethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dimethylphenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrophenol	<1.0		1.0	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,6-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		23-MAY-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	18-MAY-18	23-MAY-18	R4053093
Pentachlorophenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
Phenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2-Fluorobiphenyl	88.8		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Nitrobenzene d5	90.4		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Phenol d5	50.2		30-130	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: p-Terphenyl d14	105.2		60-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2,4,6-Tribromophenol	93.9		50-140	%	18-MAY-18	23-MAY-18	R4053093
L2093541-7 GW-11149990-051118-TW-008 Sampled By: T. WITTMAIER on 11-MAY-18 @ 09:20 Matrix: WATER							
Physical Tests							
Conductivity	3.64		0.0030	mS/cm		15-MAY-18	R4044635
Hardness (as CaCO3)	703000		1300	ug/L		18-MAY-18	
pH	7.61		0.10	pH units		15-MAY-18	R4044635
Total Dissolved Solids	2260	DLDS	20	mg/L		16-MAY-18	R4046600
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	408		10	mg/L		17-MAY-18	R4046936
Ammonia, Total (as N)	7.45	DLHC	0.20	mg/L		16-MAY-18	R4046688
Chloride (Cl)	975	DLDS	2.5	mg/L		16-MAY-18	R4046897
Nitrate (as N)	28.3	DLDS	0.10	mg/L		16-MAY-18	R4046897
Nitrite (as N)	0.214	DLDS	0.050	mg/L		16-MAY-18	R4046897
Total Kjeldahl Nitrogen	6.49		0.15	mg/L	17-MAY-18	18-MAY-18	R4047847
Phosphorus, Total	0.0122		0.0030	mg/L	15-MAY-18	16-MAY-18	R4045211
Sulfate (SO4)	108	DLDS	1.5	mg/L		16-MAY-18	R4046897
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		18-MAY-18	R4050720
Organic / Inorganic Carbon							

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-7 GW-11149990-051118-TW-008 Sampled By: T. WITTMAIER on 11-MAY-18 @ 09:20 Matrix: WATER							
Organic / Inorganic Carbon							
Dissolved Organic Carbon	11.6		1.0	mg/L		16-MAY-18	R4046482
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					15-MAY-18	R4043931
Dissolved Metals Filtration Location	FIELD					15-MAY-18	R4043769
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Arsenic (As)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Barium (Ba)-Dissolved	109	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Boron (B)-Dissolved	280	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Cadmium (Cd)-Dissolved	0.325	DLHC	0.050	ug/L	15-MAY-18	15-MAY-18	R4044327
Calcium (Ca)-Dissolved	220000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Copper (Cu)-Dissolved	5.7	DLHC	2.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Iron (Fe)-Dissolved	<100	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Magnesium (Mg)-Dissolved	37300	DLHC	50	ug/L	15-MAY-18	15-MAY-18	R4044327
Manganese (Mn)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	15-MAY-18	15-MAY-18	R4044019
Molybdenum (Mo)-Dissolved	2.30	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Selenium (Se)-Dissolved	15.5	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Sodium (Na)-Dissolved	525000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Thallium (Tl)-Dissolved	0.13	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Uranium (U)-Dissolved	7.07	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Zinc (Zn)-Dissolved	179	DLHC	10	ug/L	15-MAY-18	15-MAY-18	R4044327
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		14-MAY-18	R4043214
Aggregate Organics							
Phenols (4AAP)	0.0019		0.0010	mg/L		14-MAY-18	R4043900
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328
Benzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328

* 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
L2093541-7 GW-11149990-051118-TW-008 Sampled By: T. WITTMAIER on 11-MAY-18 @ 09:20 Matrix: WATER							
Volatile Organic Compounds							
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	
Ethylbenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	<0.30		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	<0.40		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	<0.50		0.50	ug/L		17-MAY-18	
Surrogate: 4-Bromofluorobenzene	93.5		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	100.2		70-130	%		17-MAY-18	R4046328
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		17-MAY-18	R4046328
F1-BTEX	<25		25	ug/L		23-MAY-18	
F2 (C10-C16)	<100		100	ug/L	17-MAY-18	17-MAY-18	R4047463
F2-Naphth	<100		100	ug/L		23-MAY-18	
F3 (C16-C34)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-7 GW-11149990-051118-TW-008 Sampled By: T. WITTMAIER on 11-MAY-18 @ 09:20 Matrix: WATER							
Hydrocarbons							
F3-PAH	<250		250	ug/L		23-MAY-18	
F4 (C34-C50)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
Total Hydrocarbons (C6-C50)	<370		370	ug/L		23-MAY-18	
Chrom. to baseline at nC50	YES				17-MAY-18	17-MAY-18	R4047463
Surrogate: 2-Bromobenzotrifluoride	81.6		60-140	%	17-MAY-18	17-MAY-18	R4047463
Surrogate: 3,4-Dichlorotoluene	85.3		60-140	%		17-MAY-18	R4046328
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Acenaphthylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)pyrene	<0.010		0.010	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(b)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(k)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Chrysene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluorene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		23-MAY-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
2-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Naphthalene	<0.050		0.050	ug/L	17-MAY-18	18-MAY-18	R4047455
Phenanthrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Acenaphthene	99.0		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d12-Chrysene	92.8		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d8-Naphthalene	101.2		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Phenanthrene	102.1		60-140	%	17-MAY-18	18-MAY-18	R4047455
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
4-Chloroaniline	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2-Chlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dichlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
Diethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Dimethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dimethylphenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-7 GW-11149990-051118-TW-008 Sampled By: T. WITTMAIER on 11-MAY-18 @ 09:20 Matrix: WATER							
Semi-Volatile Organics							
2,4-Dinitrophenol	<1.0		1.0	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,6-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		23-MAY-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	18-MAY-18	23-MAY-18	R4053093
Pentachlorophenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
Phenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2-Fluorobiphenyl	85.7		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Nitrobenzene d5	87.5		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Phenol d5	49.5		30-130	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: p-Terphenyl d14	107.2		60-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2,4,6-Tribromophenol	98.6		50-140	%	18-MAY-18	23-MAY-18	R4053093
L2093541-8 GW-11149990-051118-TW-009 Sampled By: T. WITTMAIER on 11-MAY-18 @ 11:35 Matrix: WATER							
Physical Tests							
Conductivity	1.59		0.0030	mS/cm		15-MAY-18	R4044635
Hardness (as CaCO3)	673000		1300	ug/L		18-MAY-18	
pH	7.46		0.10	pH units		15-MAY-18	R4044635
Total Dissolved Solids	999	DLDS	20	mg/L		16-MAY-18	R4046600
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	538	DLHC	20	mg/L		17-MAY-18	R4046936
Ammonia, Total (as N)	10.6	DLHC	0.40	mg/L		16-MAY-18	R4046688
Chloride (Cl)	158	DLDS	2.5	mg/L		16-MAY-18	R4046897
Nitrate (as N)	2.28	DLDS	0.10	mg/L		16-MAY-18	R4046897
Nitrite (as N)	0.060	DLDS	0.050	mg/L		16-MAY-18	R4046897
Total Kjeldahl Nitrogen	9.95		0.15	mg/L	17-MAY-18	18-MAY-18	R4047847
Phosphorus, Total	0.0164		0.0030	mg/L	15-MAY-18	16-MAY-18	R4045211
Sulfate (SO4)	122	DLDS	1.5	mg/L		16-MAY-18	R4046897
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		18-MAY-18	R4050720
Organic / Inorganic Carbon							
Dissolved Organic Carbon	11.5		1.0	mg/L		16-MAY-18	R4046482
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					15-MAY-18	R4043931
Dissolved Metals Filtration Location	FIELD					15-MAY-18	R4043769
Antimony (Sb)-Dissolved	2.4	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Arsenic (As)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Barium (Ba)-Dissolved	111	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-8 GW-11149990-051118-TW-009 Sampled By: T. WITTMAIER on 11-MAY-18 @ 11:35 Matrix: WATER							
Dissolved Metals							
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Boron (B)-Dissolved	650	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Cadmium (Cd)-Dissolved	0.116	DLHC	0.050	ug/L	15-MAY-18	15-MAY-18	R4044327
Calcium (Ca)-Dissolved	192000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Cobalt (Co)-Dissolved	1.6	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Copper (Cu)-Dissolved	2.3	DLHC	2.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Iron (Fe)-Dissolved	980	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Magnesium (Mg)-Dissolved	47300	DLHC	50	ug/L	15-MAY-18	15-MAY-18	R4044327
Manganese (Mn)-Dissolved	550	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	15-MAY-18	15-MAY-18	R4044019
Molybdenum (Mo)-Dissolved	0.95	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Nickel (Ni)-Dissolved	7.9	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Sodium (Na)-Dissolved	100000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Uranium (U)-Dissolved	2.48	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Zinc (Zn)-Dissolved	296	DLHC	10	ug/L	15-MAY-18	15-MAY-18	R4044327
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		14-MAY-18	R4043214
Aggregate Organics							
Phenols (4AAP)	0.0026		0.0010	mg/L		14-MAY-18	R4043900
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328
Benzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-8 GW-11149990-051118-TW-009 Sampled By: T. WITTMAIER on 11-MAY-18 @ 11:35 Matrix: WATER							
Volatile Organic Compounds							
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	
Ethylbenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	<0.30		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	<0.40		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	<0.50		0.50	ug/L		17-MAY-18	
Surrogate: 4-Bromofluorobenzene	93.6		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	100.4		70-130	%		17-MAY-18	R4046328
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		17-MAY-18	R4046328
F1-BTEX	<25		25	ug/L		23-MAY-18	
F2 (C10-C16)	<100		100	ug/L	17-MAY-18	17-MAY-18	R4047463
F2-Naphth	<100		100	ug/L		23-MAY-18	
F3 (C16-C34)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
F3-PAH	<250		250	ug/L		23-MAY-18	
F4 (C34-C50)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
Total Hydrocarbons (C6-C50)	<370		370	ug/L		23-MAY-18	
Chrom. to baseline at nC50	YES				17-MAY-18	17-MAY-18	R4047463
Surrogate: 2-Bromobenzotrifluoride	88.9		60-140	%	17-MAY-18	17-MAY-18	R4047463
Surrogate: 3,4-Dichlorotoluene	86.3		60-140	%		17-MAY-18	R4046328
Polycyclic Aromatic Hydrocarbons							

* 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
L2093541-8 GW-11149990-051118-TW-009 Sampled By: T. WITTMAIER on 11-MAY-18 @ 11:35 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Acenaphthylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)pyrene	<0.010		0.010	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(b)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(k)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Chrysene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluorene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		23-MAY-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
2-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Naphthalene	<0.050		0.050	ug/L	17-MAY-18	18-MAY-18	R4047455
Phenanthrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Acenaphthene	105.9		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d12-Chrysene	99.6		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d8-Naphthalene	110.5		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Phenanthrene	109.5		60-140	%	17-MAY-18	18-MAY-18	R4047455
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
4-Chloroaniline	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2-Chlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dichlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
Diethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Dimethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dimethylphenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrophenol	<1.0		1.0	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,6-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		23-MAY-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	18-MAY-18	23-MAY-18	R4053093
Pentachlorophenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
Phenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-8 GW-11149990-051118-TW-009 Sampled By: T. WITTMAIER on 11-MAY-18 @ 11:35 Matrix: WATER							
Semi-Volatile Organics							
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2-Fluorobiphenyl	91.1		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Nitrobenzene d5	92.8		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Phenol d5	51.7		30-130	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: p-Terphenyl d14	94.6		60-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2,4,6-Tribromophenol	108.9		50-140	%	18-MAY-18	23-MAY-18	R4053093
L2093541-9 GW-11149990-051118-TW-010 Sampled By: T. WITTMAIER on 11-MAY-18 @ 10:25 Matrix: WATER							
Physical Tests							
Conductivity	1.15		0.0030	mS/cm		15-MAY-18	R4044635
Hardness (as CaCO3)	664000		1300	ug/L		18-MAY-18	
pH	7.36		0.10	pH units		15-MAY-18	R4044635
Total Dissolved Solids	711	DLDS	20	mg/L		16-MAY-18	R4046600
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	602	DLHC	20	mg/L		17-MAY-18	R4046936
Ammonia, Total (as N)	5.74	DLHC	0.20	mg/L		22-MAY-18	R4052334
Chloride (Cl)	18.3	DLDS	2.5	mg/L		16-MAY-18	R4046897
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		16-MAY-18	R4046897
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		16-MAY-18	R4046897
Total Kjeldahl Nitrogen	5.08	RRV	0.15	mg/L	22-MAY-18	22-MAY-18	R4050535
Phosphorus, Total	0.0158		0.0030	mg/L	15-MAY-18	16-MAY-18	R4045211
Sulfate (SO4)	32.8	DLDS	1.5	mg/L		16-MAY-18	R4046897
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		18-MAY-18	R4050720
Organic / Inorganic Carbon							
Dissolved Organic Carbon	11.0		1.0	mg/L		16-MAY-18	R4046482
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					15-MAY-18	R4043931
Dissolved Metals Filtration Location	FIELD					15-MAY-18	R4043769
Antimony (Sb)-Dissolved	1.8	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Arsenic (As)-Dissolved	1.1	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Barium (Ba)-Dissolved	220	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Boron (B)-Dissolved	830	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	15-MAY-18	15-MAY-18	R4044327
Calcium (Ca)-Dissolved	193000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Cobalt (Co)-Dissolved	1.5	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	15-MAY-18	15-MAY-18	R4044327

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-9 GW-11149990-051118-TW-010 Sampled By: T. WITTMAIER on 11-MAY-18 @ 10:25 Matrix: WATER							
Dissolved Metals							
Iron (Fe)-Dissolved	470	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Magnesium (Mg)-Dissolved	44100	DLHC	50	ug/L	15-MAY-18	15-MAY-18	R4044327
Manganese (Mn)-Dissolved	352	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	15-MAY-18	15-MAY-18	R4044019
Molybdenum (Mo)-Dissolved	2.13	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Nickel (Ni)-Dissolved	30.4	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Sodium (Na)-Dissolved	10200	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Uranium (U)-Dissolved	1.10	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Zinc (Zn)-Dissolved	40	DLHC	10	ug/L	15-MAY-18	15-MAY-18	R4044327
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		14-MAY-18	R4043214
Aggregate Organics							
Phenols (4AAP)	0.0040		0.0010	mg/L		14-MAY-18	R4043900
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328
Benzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-9 GW-11149990-051118-TW-010 Sampled By: T. WITTMAIER on 11-MAY-18 @ 10:25 Matrix: WATER							
Volatile Organic Compounds							
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	
Ethylbenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	<0.30		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	<0.40		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	<0.50		0.50	ug/L		17-MAY-18	
Surrogate: 4-Bromofluorobenzene	93.3		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	100.4		70-130	%		17-MAY-18	R4046328
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		17-MAY-18	R4046328
F1-BTEX	<25		25	ug/L		23-MAY-18	
F2 (C10-C16)	<100		100	ug/L	17-MAY-18	17-MAY-18	R4047463
F2-Naphth	<100		100	ug/L		23-MAY-18	
F3 (C16-C34)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
F3-PAH	<250		250	ug/L		23-MAY-18	
F4 (C34-C50)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
Total Hydrocarbons (C6-C50)	<370		370	ug/L		23-MAY-18	
Chrom. to baseline at nC50	YES				17-MAY-18	17-MAY-18	R4047463
Surrogate: 2-Bromobenzotrifluoride	93.1		60-140	%	17-MAY-18	17-MAY-18	R4047463
Surrogate: 3,4-Dichlorotoluene	75.7		60-140	%		17-MAY-18	R4046328
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	0.107		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Acenaphthylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)pyrene	<0.010		0.010	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(b)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-9 GW-11149990-051118-TW-010 Sampled By: T. WITTMAIER on 11-MAY-18 @ 10:25 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Benzo(k)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Chrysene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluoranthene	0.031		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluorene	0.042		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		23-MAY-18	
1-Methylnaphthalene	0.022		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
2-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Naphthalene	0.083		0.050	ug/L	17-MAY-18	18-MAY-18	R4047455
Phenanthrene	0.034		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Pyrene	0.025		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Acenaphthene	103.5		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d12-Chrysene	79.1		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d8-Naphthalene	109.5		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Phenanthrene	104.6		60-140	%	17-MAY-18	18-MAY-18	R4047455
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
4-Chloroaniline	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2-Chlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dichlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
Diethylphthalate	1.83		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Dimethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dimethylphenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrophenol	<1.0		1.0	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,6-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		23-MAY-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	18-MAY-18	23-MAY-18	R4053093
Pentachlorophenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
Phenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2-Fluorobiphenyl	90.1		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Nitrobenzene d5	92.7		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Phenol d5	53.3		30-130	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: p-Terphenyl d14	88.7		60-140	%	18-MAY-18	23-MAY-18	R4053093

* 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
L2093541-9 GW-11149990-051118-TW-010 Sampled By: T. WITTMAIER on 11-MAY-18 @ 10:25 Matrix: WATER							
Semi-Volatile Organics							
Surrogate: 2,4,6-Tribromophenol	112.4		50-140	%	18-MAY-18	23-MAY-18	R4053093
L2093541-10 GW-11149990-051118-TW-011 Sampled By: T. WITTMAIER on 11-MAY-18 @ 12:30 Matrix: WATER							
Physical Tests							
Conductivity	1.23		0.0030	mS/cm		15-MAY-18	R4044635
Hardness (as CaCO3)	631000		1300	ug/L		18-MAY-18	
pH	7.69		0.10	pH units		15-MAY-18	R4044635
Total Dissolved Solids	779	DLDS	20	mg/L		16-MAY-18	R4046600
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	473	DLHC	20	mg/L		17-MAY-18	R4046936
Ammonia, Total (as N)	1.90	DLHC	0.20	mg/L		16-MAY-18	R4046688
Chloride (Cl)	31.5	DLDS	2.5	mg/L		16-MAY-18	R4046897
Nitrate (as N)	23.7	DLDS	0.10	mg/L		16-MAY-18	R4046897
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		16-MAY-18	R4046897
Total Kjeldahl Nitrogen	2.30	TKNI	0.15	mg/L	17-MAY-18	18-MAY-18	R4047847
Phosphorus, Total	0.0124		0.0030	mg/L	15-MAY-18	16-MAY-18	R4045211
Sulfate (SO4)	61.1	DLDS	1.5	mg/L		16-MAY-18	R4046897
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		18-MAY-18	R4050720
Organic / Inorganic Carbon							
Dissolved Organic Carbon	8.4		1.0	mg/L		16-MAY-18	R4046482
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					15-MAY-18	R4043931
Dissolved Metals Filtration Location	FIELD					15-MAY-18	R4043769
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Arsenic (As)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Barium (Ba)-Dissolved	91.5	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Boron (B)-Dissolved	260	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Cadmium (Cd)-Dissolved	0.309	DLHC	0.050	ug/L	15-MAY-18	15-MAY-18	R4044327
Calcium (Ca)-Dissolved	179000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Copper (Cu)-Dissolved	3.6	DLHC	2.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Iron (Fe)-Dissolved	<100	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Magnesium (Mg)-Dissolved	44700	DLHC	50	ug/L	15-MAY-18	15-MAY-18	R4044327
Manganese (Mn)-Dissolved	13.2	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	15-MAY-18	15-MAY-18	R4044019
Molybdenum (Mo)-Dissolved	1.23	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-10 GW-11149990-051118-TW-011 Sampled By: T. WITTMAIER on 11-MAY-18 @ 12:30 Matrix: WATER							
Dissolved Metals							
Selenium (Se)-Dissolved	8.16	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Sodium (Na)-Dissolved	11700	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Uranium (U)-Dissolved	2.50	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Zinc (Zn)-Dissolved	187	DLHC	10	ug/L	15-MAY-18	15-MAY-18	R4044327
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		14-MAY-18	R4043214
Aggregate Organics							
Phenols (4AAP)	0.0038		0.0010	mg/L		14-MAY-18	R4043900
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328
Benzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	
Ethylbenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-10 GW-11149990-051118-TW-011 Sampled By: T. WITTMAIER on 11-MAY-18 @ 12:30 Matrix: WATER							
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	<0.30		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	<0.40		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	<0.50		0.50	ug/L		17-MAY-18	
Surrogate: 4-Bromofluorobenzene	93.1		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	99.9		70-130	%		17-MAY-18	R4046328
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		17-MAY-18	R4046328
F1-BTEX	<25		25	ug/L		23-MAY-18	
F2 (C10-C16)	<100		100	ug/L	17-MAY-18	17-MAY-18	R4047463
F2-Naphth	<100		100	ug/L		23-MAY-18	
F3 (C16-C34)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
F3-PAH	<250		250	ug/L		23-MAY-18	
F4 (C34-C50)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
Total Hydrocarbons (C6-C50)	<370		370	ug/L		23-MAY-18	
Chrom. to baseline at nC50	YES				17-MAY-18	17-MAY-18	R4047463
Surrogate: 2-Bromobenzotrifluoride	73.6		60-140	%	17-MAY-18	17-MAY-18	R4047463
Surrogate: 3,4-Dichlorotoluene	91.0		60-140	%		17-MAY-18	R4046328
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Acenaphthylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)pyrene	<0.010		0.010	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(b)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(k)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Chrysene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluorene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		23-MAY-18	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-10 GW-11149990-051118-TW-011 Sampled By: T. WITTMAIER on 11-MAY-18 @ 12:30 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
1-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
2-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Naphthalene	<0.050		0.050	ug/L	17-MAY-18	18-MAY-18	R4047455
Phenanthrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Acenaphthene	97.4		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d12-Chrysene	94.3		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d8-Naphthalene	100.3		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Phenanthrene	101.7		60-140	%	17-MAY-18	18-MAY-18	R4047455
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
4-Chloroaniline	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2-Chlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dichlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
Diethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Dimethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dimethylphenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrophenol	<1.0		1.0	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,6-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		23-MAY-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	18-MAY-18	23-MAY-18	R4053093
Pentachlorophenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
Phenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2-Fluorobiphenyl	82.9		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Nitrobenzene d5	90.1		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Phenol d5	49.4		30-130	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: p-Terphenyl d14	89.8		60-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2,4,6-Tribromophenol	100.1		50-140	%	18-MAY-18	23-MAY-18	R4053093
L2093541-11 GW-11149990-051118-TW-012 Sampled By: T. WITTMAIER on 11-MAY-18 @ 14:15 Matrix: WATER							
Physical Tests							
Conductivity	1.24		0.0030	mS/cm		15-MAY-18	R4044635
Hardness (as CaCO3)	494000		1300	ug/L		18-MAY-18	
pH	7.18		0.10	pH units		15-MAY-18	R4044635

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-11 GW-11149990-051118-TW-012 Sampled By: T. WITTMAIER on 11-MAY-18 @ 14:15 Matrix: WATER							
Physical Tests							
Total Dissolved Solids	716		20	mg/L		18-MAY-18	R4049497
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	556	DLHC	20	mg/L		17-MAY-18	R4046936
Ammonia, Total (as N)	17.4	DLHC	0.40	mg/L		16-MAY-18	R4046688
Chloride (Cl)	49.6	DLDS	2.5	mg/L		16-MAY-18	R4046897
Nitrate (as N)	<0.10	DLDS	0.10	mg/L		16-MAY-18	R4046897
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		16-MAY-18	R4046897
Total Kjeldahl Nitrogen	22.4	DLHC	3.0	mg/L	17-MAY-18	18-MAY-18	R4047847
Phosphorus, Total	0.426		0.0030	mg/L	15-MAY-18	16-MAY-18	R4045211
Sulfate (SO4)	12.1	DLDS	1.5	mg/L		16-MAY-18	R4046897
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		18-MAY-18	R4050720
Organic / Inorganic Carbon							
Dissolved Organic Carbon	12.9	DLHC	5.0	mg/L		16-MAY-18	R4046482
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					15-MAY-18	R4043931
Dissolved Metals Filtration Location	FIELD					15-MAY-18	R4043769
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Arsenic (As)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Barium (Ba)-Dissolved	271	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Boron (B)-Dissolved	1080	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	15-MAY-18	15-MAY-18	R4044327
Calcium (Ca)-Dissolved	156000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Iron (Fe)-Dissolved	28400	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Magnesium (Mg)-Dissolved	25300	DLHC	50	ug/L	15-MAY-18	15-MAY-18	R4044327
Manganese (Mn)-Dissolved	608	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	15-MAY-18	15-MAY-18	R4044019
Molybdenum (Mo)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Sodium (Na)-Dissolved	46600	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Uranium (U)-Dissolved	0.13	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	15-MAY-18	15-MAY-18	R4044327
Speciated Metals							

* 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
L2093541-11 GW-11149990-051118-TW-012 Sampled By: T. WITTMAIER on 11-MAY-18 @ 14:15 Matrix: WATER							
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		14-MAY-18	R4043214
Aggregate Organics							
Phenols (4AAP)	0.0046		0.0010	mg/L		14-MAY-18	R4043900
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328
Benzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	4.63		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	1.42		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	
Ethylbenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-11 GW-11149990-051118-TW-012 Sampled By: T. WITTMAIER on 11-MAY-18 @ 14:15 Matrix: WATER							
Volatile Organic Compounds							
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	<0.30		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	<0.40		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	<0.50		0.50	ug/L		17-MAY-18	
Surrogate: 4-Bromofluorobenzene	93.0		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	99.7		70-130	%		17-MAY-18	R4046328
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		17-MAY-18	R4046328
F1-BTEX	<25		25	ug/L		23-MAY-18	
F2 (C10-C16)	<100		100	ug/L	17-MAY-18	17-MAY-18	R4047463
F2-Naphth	<100		100	ug/L		23-MAY-18	
F3 (C16-C34)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
F3-PAH	<250		250	ug/L		23-MAY-18	
F4 (C34-C50)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
Total Hydrocarbons (C6-C50)	<370		370	ug/L		23-MAY-18	
Chrom. to baseline at nC50	YES				17-MAY-18	17-MAY-18	R4047463
Surrogate: 2-Bromobenzotrifluoride	82.7		60-140	%	17-MAY-18	17-MAY-18	R4047463
Surrogate: 3,4-Dichlorotoluene	77.8		60-140	%		17-MAY-18	R4046328
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	1.57		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Acenaphthylene	0.246		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Anthracene	0.321		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)anthracene	0.125		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)pyrene	0.089		0.010	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(b)fluoranthene	0.108		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(g,h,i)perylene	0.050		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(k)fluoranthene	0.045		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Chrysene	0.105		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluoranthene	0.633		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluorene	1.12		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Indeno(1,2,3-cd)pyrene	0.064		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
1+2-Methylnaphthalenes	2.22		0.028	ug/L		23-MAY-18	
1-Methylnaphthalene	1.37		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
2-Methylnaphthalene	0.852		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Naphthalene	0.747		0.050	ug/L	17-MAY-18	18-MAY-18	R4047455
Phenanthrene	1.77		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Pyrene	0.494		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Acenaphthene	95.2		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d12-Chrysene	92.5		60-140	%	17-MAY-18	18-MAY-18	R4047455

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-11 GW-11149990-051118-TW-012 Sampled By: T. WITTMAIER on 11-MAY-18 @ 14:15 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Surrogate: d8-Naphthalene	97.7		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Phenanthrene	102.1		60-140	%	17-MAY-18	18-MAY-18	R4047455
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
4-Chloroaniline	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2-Chlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dichlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
Diethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Dimethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dimethylphenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrophenol	<1.0		1.0	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,6-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		23-MAY-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	18-MAY-18	23-MAY-18	R4053093
Pentachlorophenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
Phenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2-Fluorobiphenyl	87.9		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Nitrobenzene d5	91.8		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Phenol d5	50.7		30-130	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: p-Terphenyl d14	86.2		60-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2,4,6-Tribromophenol	113.5		50-140	%	18-MAY-18	23-MAY-18	R4053093
L2093541-12 GW-11149990-051118-TW-013 Sampled By: T. WITTMAIER on 11-MAY-18 @ 17:25 Matrix: WATER							
Physical Tests							
Conductivity	2.08		0.0030	mS/cm		15-MAY-18	R4044635
Hardness (as CaCO3)	763000		1300	ug/L		18-MAY-18	
pH	7.46		0.10	pH units		15-MAY-18	R4044635
Total Dissolved Solids	1090		20	mg/L		18-MAY-18	R4049497
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	790	DLM	100	mg/L		17-MAY-18	R4046936
Ammonia, Total (as N)	30.3	DLHC	2.0	mg/L		16-MAY-18	R4046688
Chloride (Cl)	282	DLDS	2.5	mg/L		16-MAY-18	R4046897
Nitrate (as N)	0.19	DLDS	0.10	mg/L		16-MAY-18	R4046897
Nitrite (as N)	0.065	DLDS	0.050	mg/L		16-MAY-18	R4046897

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-12 GW-11149990-051118-TW-013 Sampled By: T. WITTMAIER on 11-MAY-18 @ 17:25 Matrix: WATER							
Anions and Nutrients							
Total Kjeldahl Nitrogen	39.1	DLHC	3.0	mg/L	17-MAY-18	18-MAY-18	R4047847
Phosphorus, Total	0.0406		0.0030	mg/L	15-MAY-18	16-MAY-18	R4045211
Sulfate (SO4)	11.4	DLDS	1.5	mg/L		16-MAY-18	R4046897
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		18-MAY-18	R4050720
Organic / Inorganic Carbon							
Dissolved Organic Carbon	14.6	DLHC	5.0	mg/L		16-MAY-18	R4046482
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					15-MAY-18	R4043931
Dissolved Metals Filtration Location	FIELD					15-MAY-18	R4043769
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Arsenic (As)-Dissolved	4.8	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Barium (Ba)-Dissolved	209	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Boron (B)-Dissolved	7120	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	15-MAY-18	15-MAY-18	R4044327
Calcium (Ca)-Dissolved	152000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Cobalt (Co)-Dissolved	1.7	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Iron (Fe)-Dissolved	15000	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Magnesium (Mg)-Dissolved	93000	DLHC	50	ug/L	15-MAY-18	15-MAY-18	R4044327
Manganese (Mn)-Dissolved	248	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	15-MAY-18	15-MAY-18	R4044019
Molybdenum (Mo)-Dissolved	3.49	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Sodium (Na)-Dissolved	144000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Uranium (U)-Dissolved	0.52	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	15-MAY-18	15-MAY-18	R4044327
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		14-MAY-18	R4043214
Aggregate Organics							
Phenols (4AAP)	0.0067		0.0010	mg/L		14-MAY-18	R4043900
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328
Benzene	1.92		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-12 GW-11149990-051118-TW-013 Sampled By: T. WITTMAIER on 11-MAY-18 @ 17:25 Matrix: WATER							
Volatile Organic Compounds							
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	0.76		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	1.35		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	
Ethylbenzene	0.86		0.50	ug/L		17-MAY-18	R4046328
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	4.18		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	0.75		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	1.92		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	2.67		0.50	ug/L		17-MAY-18	
Surrogate: 4-Bromofluorobenzene	93.9		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	99.4		70-130	%		17-MAY-18	R4046328

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-12 GW-11149990-051118-TW-013 Sampled By: T. WITTMAIER on 11-MAY-18 @ 17:25 Matrix: WATER							
Volatile Organic Compounds **Hydrocarbons**							
F1 (C6-C10)	35		25	ug/L		17-MAY-18	R4046328
F1-BTEX	25		25	ug/L		23-MAY-18	
F2 (C10-C16)	<100		100	ug/L	17-MAY-18	17-MAY-18	R4047463
F2-Naphth	<100		100	ug/L		23-MAY-18	
F3 (C16-C34)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
F3-PAH	<250		250	ug/L		23-MAY-18	
F4 (C34-C50)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
Total Hydrocarbons (C6-C50)	<370		370	ug/L		23-MAY-18	
Chrom. to baseline at nC50	YES				17-MAY-18	17-MAY-18	R4047463
Surrogate: 2-Bromobenzotrifluoride	83.8		60-140	%	17-MAY-18	17-MAY-18	R4047463
Surrogate: 3,4-Dichlorotoluene	78.3		60-140	%		17-MAY-18	R4046328
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	0.038		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Acenaphthylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)pyrene	<0.010		0.010	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(b)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(k)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Chrysene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluorene	0.026		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
1+2-Methylnaphthalenes	0.359		0.028	ug/L		23-MAY-18	
1-Methylnaphthalene	0.184		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
2-Methylnaphthalene	0.175		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Naphthalene	0.491		0.050	ug/L	17-MAY-18	18-MAY-18	R4047455
Phenanthrene	0.023		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Acenaphthene	97.4		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d12-Chrysene	79.5		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d8-Naphthalene	102.9		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Phenanthrene	99.1		60-140	%	17-MAY-18	18-MAY-18	R4047455
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
4-Chloroaniline	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2-Chlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-12 GW-11149990-051118-TW-013 Sampled By: T. WITTMAIER on 11-MAY-18 @ 17:25 Matrix: WATER							
Semi-Volatile Organics							
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dichlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
Diethylphthalate	0.81		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Dimethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dimethylphenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrophenol	<1.0		1.0	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,6-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		23-MAY-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	18-MAY-18	23-MAY-18	R4053093
Pentachlorophenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
Phenol	0.55		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2-Fluorobiphenyl	85.5		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Nitrobenzene d5	90.1		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Phenol d5	50.1		30-130	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: p-Terphenyl d14	91.4		60-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2,4,6-Tribromophenol	110.6		50-140	%	18-MAY-18	23-MAY-18	R4053093
L2093541-13 GW-11149990-051118-TW-014 Sampled By: T. WITTMAIER on 11-MAY-18 @ 17:40 Matrix: WATER							
Physical Tests							
Conductivity	2.52		0.0030	mS/cm		15-MAY-18	R4044635
Hardness (as CaCO3)	494000		1300	ug/L		18-MAY-18	
pH	7.72		0.10	pH units		15-MAY-18	R4044635
Total Dissolved Solids	1390		20	mg/L		18-MAY-18	R4049497
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	449		10	mg/L		17-MAY-18	R4046936
Ammonia, Total (as N)	4.42	DLHC	0.10	mg/L		16-MAY-18	R4046688
Chloride (Cl)	601	DLDS	2.5	mg/L		16-MAY-18	R4046897
Nitrate (as N)	0.17	DLDS	0.10	mg/L		16-MAY-18	R4046897
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		16-MAY-18	R4046897
Total Kjeldahl Nitrogen	4.98		0.15	mg/L	17-MAY-18	18-MAY-18	R4047847
Phosphorus, Total	0.0154		0.0030	mg/L	15-MAY-18	16-MAY-18	R4045211
Sulfate (SO4)	49.2	DLDS	1.5	mg/L		16-MAY-18	R4046897
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		18-MAY-18	R4050720
Organic / Inorganic Carbon							
Dissolved Organic Carbon	8.9	DLM	5.0	mg/L		16-MAY-18	R4046482
Dissolved Metals							

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-13 GW-11149990-051118-TW-014 Sampled By: T. WITTMAIER on 11-MAY-18 @ 17:40 Matrix: WATER							
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					15-MAY-18	R4043931
Dissolved Metals Filtration Location	FIELD					15-MAY-18	R4043769
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Arsenic (As)-Dissolved	2.1	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Barium (Ba)-Dissolved	126	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Boron (B)-Dissolved	350	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	15-MAY-18	15-MAY-18	R4044327
Calcium (Ca)-Dissolved	133000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Iron (Fe)-Dissolved	3820	DLHC	100	ug/L	15-MAY-18	15-MAY-18	R4044327
Lead (Pb)-Dissolved	0.81	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Magnesium (Mg)-Dissolved	39000	DLHC	50	ug/L	15-MAY-18	15-MAY-18	R4044327
Manganese (Mn)-Dissolved	390	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	15-MAY-18	15-MAY-18	R4044019
Molybdenum (Mo)-Dissolved	1.62	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	15-MAY-18	15-MAY-18	R4044327
Sodium (Na)-Dissolved	353000	DLHC	500	ug/L	15-MAY-18	15-MAY-18	R4044327
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Uranium (U)-Dissolved	0.82	DLHC	0.10	ug/L	15-MAY-18	15-MAY-18	R4044327
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	15-MAY-18	15-MAY-18	R4044327
Zinc (Zn)-Dissolved	12	DLHC	10	ug/L	15-MAY-18	15-MAY-18	R4044327
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		14-MAY-18	R4043214
Aggregate Organics							
Phenols (4AAP)	0.0024		0.0010	mg/L		14-MAY-18	R4043900
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328
Benzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-13 GW-11149990-051118-TW-014 Sampled By: T. WITTMAIER on 11-MAY-18 @ 17:40 Matrix: WATER							
Volatile Organic Compounds							
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	
Ethylbenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	<0.30		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	<0.40		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	<0.50		0.50	ug/L		17-MAY-18	
Surrogate: 4-Bromofluorobenzene	91.8		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	99.7		70-130	%		17-MAY-18	R4046328
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		17-MAY-18	R4046328
F1-BTEX	<25		25	ug/L		23-MAY-18	
F2 (C10-C16)	<100		100	ug/L	17-MAY-18	17-MAY-18	R4047463
F2-Naphth	<100		100	ug/L		23-MAY-18	
F3 (C16-C34)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463
F3-PAH	<250		250	ug/L		23-MAY-18	
F4 (C34-C50)	<250		250	ug/L	17-MAY-18	17-MAY-18	R4047463

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2093541-13 GW-11149990-051118-TW-014 Sampled By: T. WITTMAIER on 11-MAY-18 @ 17:40 Matrix: WATER							
Hydrocarbons							
Total Hydrocarbons (C6-C50)	<370		370	ug/L		23-MAY-18	
Chrom. to baseline at nC50	YES				17-MAY-18	17-MAY-18	R4047463
Surrogate: 2-Bromobenzotrifluoride	80.0		60-140	%	17-MAY-18	17-MAY-18	R4047463
Surrogate: 3,4-Dichlorotoluene	90.8		60-140	%		17-MAY-18	R4046328
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Acenaphthylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(a)pyrene	<0.010		0.010	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(b)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Benzo(k)fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Chrysene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluoranthene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Fluorene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		23-MAY-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
2-Methylnaphthalene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Naphthalene	<0.050		0.050	ug/L	17-MAY-18	18-MAY-18	R4047455
Phenanthrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Pyrene	<0.020		0.020	ug/L	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Acenaphthene	94.0		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d12-Chrysene	91.4		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d8-Naphthalene	101.0		60-140	%	17-MAY-18	18-MAY-18	R4047455
Surrogate: d10-Phenanthrene	97.6		60-140	%	17-MAY-18	18-MAY-18	R4047455
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
4-Chloroaniline	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2-Chlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dichlorophenol	<0.30		0.30	ug/L	18-MAY-18	23-MAY-18	R4053093
Diethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Dimethylphthalate	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dimethylphenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrophenol	<1.0		1.0	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093

* 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
L2093541-13 GW-11149990-051118-TW-014 Sampled By: T. WITTMAIER on 11-MAY-18 @ 17:40 Matrix: WATER							
Semi-Volatile Organics							
2,6-Dinitrotoluene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		23-MAY-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	18-MAY-18	23-MAY-18	R4053093
Pentachlorophenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
Phenol	<0.50		0.50	ug/L	18-MAY-18	23-MAY-18	R4053093
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2-Fluorobiphenyl	92.1		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Nitrobenzene d5	100.4		50-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: Phenol d5	55.7		30-130	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: p-Terphenyl d14	98.8		60-140	%	18-MAY-18	23-MAY-18	R4053093
Surrogate: 2,4,6-Tribromophenol	112.2		50-140	%	18-MAY-18	23-MAY-18	R4053093
L2093541-14 TB-11149990-051118-TW-001 Sampled By: T. WITTMAIER on 11-MAY-18 Matrix: WATER							
Volatile Organic Compounds							
Acetone	<30		30	ug/L		17-MAY-18	R4046328
Benzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Bromodichloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Bromoform	<5.0		5.0	ug/L		17-MAY-18	R4046328
Bromomethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Carbon tetrachloride	<0.20		0.20	ug/L		17-MAY-18	R4046328
Chlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dibromochloromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
Chloroform	<1.0		1.0	ug/L		17-MAY-18	R4046328
1,2-Dibromoethane	<0.20		0.20	ug/L		17-MAY-18	R4046328
1,2-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,3-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,4-Dichlorobenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Dichlorodifluoromethane	<2.0		2.0	ug/L		17-MAY-18	R4046328
1,1-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,2-Dichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methylene Chloride	<5.0		5.0	ug/L		17-MAY-18	R4046328
1,2-Dichloropropane	<0.50		0.50	ug/L		17-MAY-18	R4046328
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		17-MAY-18	R4046328
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		17-MAY-18	
Ethylbenzene	<0.50		0.50	ug/L		17-MAY-18	R4046328

* 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
L2093541-14 TB-11149990-051118-TW-001 Sampled By: T. WITTMAIER on 11-MAY-18 Matrix: WATER							
Volatile Organic Compounds							
n-Hexane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Methyl Ethyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
Methyl Isobutyl Ketone	<20		20	ug/L		17-MAY-18	R4046328
MTBE	<2.0		2.0	ug/L		17-MAY-18	R4046328
Styrene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Tetrachloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Toluene	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,1-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
1,1,2-Trichloroethane	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichloroethylene	<0.50		0.50	ug/L		17-MAY-18	R4046328
Trichlorofluoromethane	<5.0		5.0	ug/L		17-MAY-18	R4046328
Vinyl chloride	<0.50		0.50	ug/L		17-MAY-18	R4046328
o-Xylene	<0.30		0.30	ug/L		17-MAY-18	R4046328
m+p-Xylenes	<0.40		0.40	ug/L		17-MAY-18	R4046328
Xylenes (Total)	<0.50		0.50	ug/L		17-MAY-18	
Surrogate: 4-Bromofluorobenzene	92.8		70-130	%		17-MAY-18	R4046328
Surrogate: 1,4-Difluorobenzene	99.6		70-130	%		17-MAY-18	R4046328
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		17-MAY-18	R4046328
F1-BTEX	<25		25	ug/L		17-MAY-18	
Surrogate: 3,4-Dichlorotoluene	99.4		60-140	%		17-MAY-18	R4046328

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2093541-1, -10, -11, -12, -13, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L2093541-1, -10, -11, -12, -13, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2093541-1, -10, -11, -12, -13, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2093541-1, -10, -11, -12, -13, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2093541-1, -10, -11, -12, -13, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2093541-1, -10, -11, -12, -13, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2093541-1, -10, -11, -12, -13, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2093541-1, -10, -11, -12, -13, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L2093541-1, -10, -11, -12, -13, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Ammonia, Total (as N)	MS-B	L2093541-10, -11, -12, -13, -3, -4, -5, -6, -7, -8

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
625-511-WT	Water	ABN,CP,PAH-O.Reg 153/04	SW846 8270 (511)

Ground water sample extraction is carried out at a pH <2 (acid extractables) and pH>11 (base neutral extractables). Extracts are dried, concentrated and exchanged into a solvent compatible with the cleanup. Analysis is by GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

C-DIS-ORG-WT	Water	Dissolved Organic Carbon	APHA 5310B

Sample is filtered through a 0.45um filter, then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.

CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CN-WAD-R511-WT	Water	Cyanide (WAD)-O.Reg 153/04	APHA 4500CN I-Weak acid Dist Colorimet

Weak acid dissociable cyanide (WAD) is determined by undergoing a distillation procedure. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-R511-WT	Water	Hex Chrom-O.Reg 153/04 (July 2011)	EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

DINITROTOL-CALC-WT	Water	ABN-Calculated Parameters	SW846 8270
EC-R511-WT	Water	Conductivity-O.Reg 153/04 (July 2011)	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental

Reference Information

Protection Act (July 1, 2011).

F1-F4-511-CALC-WT	Water	F1-F4 Hydrocarbon Calculated Parameters	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.

F1-HS-511-WT	Water	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS

Fraction F1 is determined by analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT	Water	F2-F4-O.Reg 153/04 (July 2011)	EPA 3511/CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-UG/L-CVAA-WT	Water	Diss. Mercury in Water by CVAAS (ug/L)	EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-D-UG/L-MS-WT	Water	Diss. Metals in Water by ICPMS (ug/L)	EPA 200.8

The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT	Water	PAH-Calculated Parameters	SW846 8270

NH3-WT	Water	Ammonia, Total as N	EPA 350.1

Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is deteremined colourimetrically

Reference Information

after persulphate digestion of the sample.

PAH-511-WT Water PAH-O. Reg 153/04 (July 2011) SW846 3510/8270
Aqueous samples, fortified with surrogates, are extracted using liquid/liquid extraction technique. The sample extracts are concentrated and then analyzed using GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

PH-WT Water pH APHA 4500 H-Electrode
Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

PHENOLS-4AAP-WT Water Phenol (4AAP) EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

SO4-IC-N-WT Water Sulfate in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-WT Water Total Dissolved Solids APHA 2540C
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-WT Water Total Kjeldahl Nitrogen APHA 4500-Norg D
This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 Celsius with analysis using an automated colorimetric method.

VOC-1,3-DCP-CALC-WT Water Regulation 153 VOCs SW8260B/SW8270C

VOC-511-HS-WT Water VOC by GCMS HS O.Reg 153/04 (July 2011) SW846 8260
Liquid samples are analyzed by headspace GC/MSD.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT Water Sum of Xylene Isomer Concentrations CALCULATION
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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

Reference Information

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 weight of sample
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: L2093541 Report Date: 26-JUL-18

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Water**							
Batch R4050092								
WG2774969-2 LCS								
1,2,4-Trichlorobenzene			60.1		%		50-140	22-MAY-18
2-Chlorophenol			77.3		%		50-140	22-MAY-18
2,4-Dichlorophenol			87.6		%		50-140	22-MAY-18
2,4-Dimethylphenol			84.6		%		30-130	22-MAY-18
2,4-Dinitrophenol			109.2		%		50-140	22-MAY-18
2,4-Dinitrotoluene			99.4		%		50-140	22-MAY-18
2,4,5-Trichlorophenol			97.4		%		50-140	22-MAY-18
2,4,6-Trichlorophenol			92.0		%		50-140	22-MAY-18
2,6-Dinitrotoluene			93.3		%		50-140	22-MAY-18
3,3'-Dichlorobenzidine			77.3		%		30-130	22-MAY-18
4-Chloroaniline			64.9		%		30-130	22-MAY-18
Biphenyl			78.8		%		50-140	22-MAY-18
Bis(2-chloroethyl)ether			81.5		%		50-140	22-MAY-18
Bis(2-chloroisopropyl)ether			82.6		%		50-140	22-MAY-18
Bis(2-ethylhexyl)phthalate			116.8		%		50-140	22-MAY-18
Diethylphthalate			96.1		%		50-140	22-MAY-18
Dimethylphthalate			92.8		%		50-140	22-MAY-18
Pentachlorophenol			104.0		%		50-140	22-MAY-18
Phenol			46.0		%		30-130	22-MAY-18
WG2774969-3 LCSD		**WG2774969-2**						
1,2,4-Trichlorobenzene		60.1	62.4		%	3.7	50	22-MAY-18
2-Chlorophenol		77.3	83.1		%	7.2	50	22-MAY-18
2,4-Dichlorophenol		87.6	92.5		%	5.4	50	22-MAY-18
2,4-Dimethylphenol		84.6	92.2		%	8.7	50	22-MAY-18
2,4-Dinitrophenol		109.2	115.2		%	5.3	50	22-MAY-18
2,4-Dinitrotoluene		99.4	104.4		%	4.9	50	22-MAY-18
2,4,5-Trichlorophenol		97.4	101.4		%	4.1	50	22-MAY-18
2,4,6-Trichlorophenol		92.0	97.7		%	6.0	50	22-MAY-18
2,6-Dinitrotoluene		93.3	100.2		%	7.1	50	22-MAY-18
3,3'-Dichlorobenzidine		77.3	78.8		%	2.0	50	22-MAY-18
4-Chloroaniline		64.9	59.7		%	8.3	50	22-MAY-18
Biphenyl		78.8	81.8		%	3.7	50	22-MAY-18
Bis(2-chloroethyl)ether		81.5	85.0		%	4.2	50	22-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Water**							
Batch R4050092								
WG2774969-3 LCSD		**WG2774969-2**						
Bis(2-chloroisopropyl)ether		82.6	84.7		%	2.6	50	22-MAY-18
Bis(2-ethylhexyl)phthalate		116.8	123.9		%	5.9	50	22-MAY-18
Diethylphthalate		96.1	99.99		%	4.0	50	22-MAY-18
Dimethylphthalate		92.8	98.2		%	5.6	50	22-MAY-18
Pentachlorophenol		104.0	107.0		%	2.8	50	22-MAY-18
Phenol		46.0	50.6		%	9.5	50	22-MAY-18
WG2774969-1 MB								
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	22-MAY-18
2-Chlorophenol			<0.30		ug/L		0.3	22-MAY-18
2,4-Dichlorophenol			<0.30		ug/L		0.3	22-MAY-18
2,4-Dimethylphenol			<0.50		ug/L		0.5	22-MAY-18
2,4-Dinitrophenol			<1.0		ug/L		1	22-MAY-18
2,4-Dinitrotoluene			<0.40		ug/L		0.4	22-MAY-18
2,4,5-Trichlorophenol			<0.20		ug/L		0.2	22-MAY-18
2,4,6-Trichlorophenol			<0.20		ug/L		0.2	22-MAY-18
2,6-Dinitrotoluene			<0.40		ug/L		0.4	22-MAY-18
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	22-MAY-18
4-Chloroaniline			<0.40		ug/L		0.4	22-MAY-18
Biphenyl			<0.40		ug/L		0.4	22-MAY-18
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	22-MAY-18
Bis(2-chloroisopropyl)ether			<0.40		ug/L		0.4	22-MAY-18
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	22-MAY-18
Diethylphthalate			<0.20		ug/L		0.2	22-MAY-18
Dimethylphthalate			<0.20		ug/L		0.2	22-MAY-18
Pentachlorophenol			<0.50		ug/L		0.5	22-MAY-18
Phenol			<0.50		ug/L		0.5	22-MAY-18
Surrogate: 2-Fluorobiphenyl			87.5		%		50-140	22-MAY-18
Surrogate: 2,4,6-Tribromophenol			75.0		%		50-140	22-MAY-18
Surrogate: Nitrobenzene d5			88.8		%		50-140	22-MAY-18
Surrogate: p-Terphenyl d14			115.5		%		60-140	22-MAY-18
Surrogate: Phenol d5			45.9		%		30-130	22-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Water**							
Batch R4053093								
WG2775491-2 LCS								
1,2,4-Trichlorobenzene			75.6		%		50-140	23-MAY-18
2-Chlorophenol			72.2		%		50-140	23-MAY-18
2,4-Dichlorophenol			84.5		%		50-140	23-MAY-18
2,4-Dimethylphenol			85.1		%		30-130	23-MAY-18
2,4-Dinitrophenol			137.1		%		50-140	23-MAY-18
2,4-Dinitrotoluene			96.5		%		50-140	23-MAY-18
2,4,5-Trichlorophenol			94.8		%		50-140	23-MAY-18
2,4,6-Trichlorophenol			92.0		%		50-140	23-MAY-18
2,6-Dinitrotoluene			91.2		%		50-140	23-MAY-18
3,3'-Dichlorobenzidine			93.9		%		30-130	23-MAY-18
4-Chloroaniline			60.4		%		30-130	23-MAY-18
Biphenyl			83.7		%		50-140	23-MAY-18
Bis(2-chloroethyl)ether			73.7		%		50-140	23-MAY-18
Bis(2-chloroisopropyl)ether			76.3		%		50-140	23-MAY-18
Bis(2-ethylhexyl)phthalate			129.8		%		50-140	23-MAY-18
Diethylphthalate			90.1		%		50-140	23-MAY-18
Dimethylphthalate			87.9		%		50-140	23-MAY-18
Pentachlorophenol			127.0		%		50-140	23-MAY-18
Phenol			47.7		%		30-130	23-MAY-18
WG2775491-3 LCSD		**WG2775491-2**						
1,2,4-Trichlorobenzene		75.6	85.3		%	12	50	23-MAY-18
2-Chlorophenol		72.2	86.5		%	18	50	23-MAY-18
2,4-Dichlorophenol		84.5	98.4		%	15	50	23-MAY-18
2,4-Dimethylphenol		85.1	94.8		%	11	50	23-MAY-18
2,4-Dinitrophenol		137.1	147.0		%	6.9	50	23-MAY-18
2,4-Dinitrotoluene		96.5	108.7		%	12	50	23-MAY-18
2,4,5-Trichlorophenol		94.8	105.7		%	11	50	23-MAY-18
2,4,6-Trichlorophenol		92.0	103.5		%	12	50	23-MAY-18
2,6-Dinitrotoluene		91.2	102.3		%	11	50	23-MAY-18
3,3'-Dichlorobenzidine		93.9	64.5		%	37	50	23-MAY-18
4-Chloroaniline		60.4	65.5		%	8.2	50	23-MAY-18
Biphenyl		83.7	94.4		%	12	50	23-MAY-18
Bis(2-chloroethyl)ether		73.7	83.4		%	12	50	23-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Water**							
Batch R4053093								
WG2775491-3 LCSD		**WG2775491-2**						
Bis(2-chloroisopropyl)ether		76.3	87.5		%	14	50	23-MAY-18
Bis(2-ethylhexyl)phthalate		129.8	128.3		%	1.2	50	23-MAY-18
Diethylphthalate		90.1	97.1		%	7.5	50	23-MAY-18
Dimethylphthalate		87.9	97.6		%	10	50	23-MAY-18
Pentachlorophenol		127.0	131.0		%	3.1	50	23-MAY-18
Phenol		47.7	55.1		%	14	50	23-MAY-18
WG2775491-1 MB								
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	23-MAY-18
2-Chlorophenol			<0.30		ug/L		0.3	23-MAY-18
2,4-Dichlorophenol			<0.30		ug/L		0.3	23-MAY-18
2,4-Dimethylphenol			<0.50		ug/L		0.5	23-MAY-18
2,4-Dinitrophenol			<1.0		ug/L		1	23-MAY-18
2,4-Dinitrotoluene			<0.40		ug/L		0.4	23-MAY-18
2,4,5-Trichlorophenol			<0.20		ug/L		0.2	23-MAY-18
2,4,6-Trichlorophenol			<0.20		ug/L		0.2	23-MAY-18
2,6-Dinitrotoluene			<0.40		ug/L		0.4	23-MAY-18
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	23-MAY-18
4-Chloroaniline			<0.40		ug/L		0.4	23-MAY-18
Biphenyl			<0.40		ug/L		0.4	23-MAY-18
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	23-MAY-18
Bis(2-chloroisopropyl)ether			<0.40		ug/L		0.4	23-MAY-18
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	23-MAY-18
Diethylphthalate			<0.20		ug/L		0.2	23-MAY-18
Dimethylphthalate			<0.20		ug/L		0.2	23-MAY-18
Pentachlorophenol			<0.50		ug/L		0.5	23-MAY-18
Phenol			<0.50		ug/L		0.5	23-MAY-18
Surrogate: 2-Fluorobiphenyl			86.4		%		50-140	23-MAY-18
Surrogate: 2,4,6-Tribromophenol			88.0		%		50-140	23-MAY-18
Surrogate: Nitrobenzene d5			84.0		%		50-140	23-MAY-18
Surrogate: p-Terphenyl d14			112.6		%		60-140	23-MAY-18
Surrogate: Phenol d5			45.7		%		30-130	23-MAY-18
ALK-WT	**Water**							

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-WT	**Water**							
Batch R4046936								
WG2775016-3 CRM		**WT-ALK-CRM**						
Alkalinity, Total (as CaCO3)			93.4		%		80-120	17-MAY-18
WG2775016-4 DUP		**L2093887-1**						
Alkalinity, Total (as CaCO3)		260	266		mg/L	2.2	20	17-MAY-18
WG2775016-2 LCS								
Alkalinity, Total (as CaCO3)			98.6		%		85-115	17-MAY-18
WG2775016-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	17-MAY-18
C-DIS-ORG-WT	**Water**							
Batch R4046482								
WG2773357-3 DUP		**L2093543-4**						
Dissolved Organic Carbon		1.8	2.8	J	mg/L	1.0	2	16-MAY-18
WG2773357-2 LCS								
Dissolved Organic Carbon			98.0		%		80-120	16-MAY-18
WG2773357-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	16-MAY-18
WG2773357-4 MS		**L2093543-4**						
Dissolved Organic Carbon			90.7		%		70-130	16-MAY-18
CL-IC-N-WT	**Water**							
Batch R4046897								
WG2773735-4 DUP		**WG2773735-3**						
Chloride (Cl)		15.3	15.3		mg/L	0.1	20	16-MAY-18
WG2773735-2 LCS								
Chloride (Cl)			101.7		%		90-110	16-MAY-18
WG2773735-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	16-MAY-18
WG2773735-5 MS		**WG2773735-3**						
Chloride (Cl)			103.9		%		75-125	16-MAY-18
CN-WAD-R511-WT	**Water**							
Batch R4050720								
WG2776030-3 DUP		**L2093541-1**						
Cyanide, Weak Acid Diss		<2.0	<2.0	RPD-NA	ug/L	N/A	20	18-MAY-18
WG2776030-2 LCS								
Cyanide, Weak Acid Diss			91.7		%		80-120	18-MAY-18
WG2776030-1 MB								
Cyanide, Weak Acid Diss			<2.0		ug/L		2	18-MAY-18
WG2776030-4 MS		**L2093541-1**						

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-WAD-R511-WT	**Water**							
Batch R4050720								
WG2776030-4 MS		**L2093541-1**						
Cyanide, Weak Acid Diss			80.8		%		75-125	18-MAY-18
CR-CR6-IC-R511-WT	**Water**							
Batch R4043214								
WG2770335-19 DUP		**WG2770335-18**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	14-MAY-18
WG2770335-24 DUP		**WG2770335-23**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	14-MAY-18
WG2770335-17 LCS								
Chromium, Hexavalent			100.9		%		80-120	14-MAY-18
WG2770335-22 LCS								
Chromium, Hexavalent			107.6		%		80-120	14-MAY-18
WG2770335-16 MB								
Chromium, Hexavalent			<1.0		ug/L		1	14-MAY-18
WG2770335-21 MB								
Chromium, Hexavalent			<1.0		ug/L		1	14-MAY-18
WG2770335-20 MS		**WG2770335-18**						
Chromium, Hexavalent			100.9		%		70-130	14-MAY-18
WG2770335-25 MS		**WG2770335-23**						
Chromium, Hexavalent			99.9		%		70-130	14-MAY-18
EC-R511-WT	**Water**							
Batch R4044635								
WG2772432-12 DUP		**WG2772432-11**						
Conductivity		3.70	3.67		mS/cm	0.8	10	15-MAY-18
WG2772432-4 DUP		**WG2772432-3**						
Conductivity		0.735	0.734		mS/cm	0.1	10	15-MAY-18
WG2772432-8 DUP		**WG2772432-7**						
Conductivity		1.57	1.56		mS/cm	0.4	10	15-MAY-18
WG2772432-10 LCS								
Conductivity			97.5		%		90-110	15-MAY-18
WG2772432-2 LCS								
Conductivity			99.5		%		90-110	15-MAY-18
WG2772432-6 LCS								
Conductivity			98.9		%		90-110	15-MAY-18
WG2772432-1 MB								
Conductivity			<0.0030		mS/cm		0.003	15-MAY-18
WG2772432-5 MB								

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-R511-WT	**Water**							
Batch R4044635								
WG2772432-5 MB								
Conductivity			<0.0030		mS/cm		0.003	15-MAY-18
WG2772432-9 MB								
Conductivity			<0.0030		mS/cm		0.003	15-MAY-18
F1-HS-511-WT	**Water**							
Batch R4046328								
WG2770660-4 DUP		**WG2770660-3**						
F1 (C6-C10)		<25	<25	RPD-NA	ug/L	N/A	30	17-MAY-18
WG2770660-1 LCS								
F1 (C6-C10)			95.0		%		80-120	16-MAY-18
WG2770660-2 MB								
F1 (C6-C10)			<25		ug/L		25	17-MAY-18
Surrogate: 3,4-Dichlorotoluene			95.4		%		60-140	17-MAY-18
WG2770660-5 MS		**WG2770660-3**						
F1 (C6-C10)			89.4		%		60-140	17-MAY-18
F2-F4-511-WT	**Water**							
Batch R4047463								
WG2774417-2 LCS								
F2 (C10-C16)			106.8		%		70-130	17-MAY-18
F3 (C16-C34)			113.2		%		70-130	17-MAY-18
F4 (C34-C50)			109.6		%		70-130	17-MAY-18
WG2774417-1 MB								
F2 (C10-C16)			<100		ug/L		100	17-MAY-18
F3 (C16-C34)			<250		ug/L		250	17-MAY-18
F4 (C34-C50)			<250		ug/L		250	17-MAY-18
Surrogate: 2-Bromobenzotrifluoride			95.9		%		60-140	17-MAY-18
HG-D-UG/L-CVAA-WT	**Water**							
Batch R4044019								
WG2772487-3 DUP		**L2093541-1**						
Mercury (Hg)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	15-MAY-18
WG2772487-2 LCS								
Mercury (Hg)-Dissolved			96.1		%		80-120	15-MAY-18
WG2772487-1 MB								
Mercury (Hg)-Dissolved			<0.010		ug/L		0.01	15-MAY-18
WG2772487-4 MS		**L2093541-2**						
Mercury (Hg)-Dissolved			86.4		%		70-130	15-MAY-18
MET-D-UG/L-MS-WT	**Water**							

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4044327								
WG2772238-4 DUP		**WG2772238-3**						
Antimony (Sb)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	15-MAY-18
Arsenic (As)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	15-MAY-18
Barium (Ba)-Dissolved		118	115		ug/L	2.0	20	15-MAY-18
Beryllium (Be)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	15-MAY-18
Boron (B)-Dissolved		380	320		ug/L	15	20	15-MAY-18
Cadmium (Cd)-Dissolved		0.153	0.154		ug/L	1.2	20	15-MAY-18
Calcium (Ca)-Dissolved		268000	247000		ug/L	8.5	20	15-MAY-18
Chromium (Cr)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	15-MAY-18
Cobalt (Co)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	15-MAY-18
Copper (Cu)-Dissolved		5.7	5.4		ug/L	4.2	20	15-MAY-18
Iron (Fe)-Dissolved		260	270		ug/L	1.3	20	15-MAY-18
Lead (Pb)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	15-MAY-18
Magnesium (Mg)-Dissolved		36500	36300		ug/L	0.7	20	15-MAY-18
Manganese (Mn)-Dissolved		184	185		ug/L	0.5	20	15-MAY-18
Molybdenum (Mo)-Dissolved		0.96	0.92		ug/L	4.3	20	15-MAY-18
Nickel (Ni)-Dissolved		<5.0	5.0	RPD-NA	ug/L	N/A	20	15-MAY-18
Selenium (Se)-Dissolved		1.98	1.63		ug/L	19	20	15-MAY-18
Silver (Ag)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	15-MAY-18
Sodium (Na)-Dissolved		421000	420000		ug/L	0.2	20	15-MAY-18
Thallium (Tl)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	15-MAY-18
Uranium (U)-Dissolved		3.08	3.05		ug/L	1.0	20	15-MAY-18
Vanadium (V)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	15-MAY-18
Zinc (Zn)-Dissolved		95	94		ug/L	1.2	20	15-MAY-18
WG2772238-2 LCS								
Antimony (Sb)-Dissolved			102.2		%		80-120	15-MAY-18
Arsenic (As)-Dissolved			99.1		%		80-120	15-MAY-18
Barium (Ba)-Dissolved			102.5		%		80-120	15-MAY-18
Beryllium (Be)-Dissolved			98.0		%		80-120	15-MAY-18
Boron (B)-Dissolved			97.3		%		80-120	15-MAY-18
Cadmium (Cd)-Dissolved			99.1		%		80-120	15-MAY-18
Calcium (Ca)-Dissolved			99.99		%		80-120	15-MAY-18
Chromium (Cr)-Dissolved			97.0		%		80-120	15-MAY-18
Cobalt (Co)-Dissolved			97.0		%		80-120	15-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4044327								
WG2772238-2 LCS								
Copper (Cu)-Dissolved			98.7		%		80-120	15-MAY-18
Iron (Fe)-Dissolved			96.0		%		80-120	15-MAY-18
Lead (Pb)-Dissolved			101.6		%		80-120	15-MAY-18
Magnesium (Mg)-Dissolved			103.9		%		80-120	15-MAY-18
Manganese (Mn)-Dissolved			97.8		%		80-120	15-MAY-18
Molybdenum (Mo)-Dissolved			98.8		%		80-120	15-MAY-18
Nickel (Ni)-Dissolved			98.9		%		80-120	15-MAY-18
Selenium (Se)-Dissolved			97.5		%		80-120	15-MAY-18
Silver (Ag)-Dissolved			98.5		%		80-120	15-MAY-18
Sodium (Na)-Dissolved			99.3		%		80-120	15-MAY-18
Thallium (Tl)-Dissolved			100.1		%		80-120	15-MAY-18
Uranium (U)-Dissolved			100.6		%		80-120	15-MAY-18
Vanadium (V)-Dissolved			100.2		%		80-120	15-MAY-18
Zinc (Zn)-Dissolved			96.7		%		80-120	15-MAY-18
WG2772238-1 MB								
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	15-MAY-18
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	15-MAY-18
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	15-MAY-18
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	15-MAY-18
Boron (B)-Dissolved			<10		ug/L		10	15-MAY-18
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	15-MAY-18
Calcium (Ca)-Dissolved			<50		ug/L		50	15-MAY-18
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	15-MAY-18
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	15-MAY-18
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	15-MAY-18
Iron (Fe)-Dissolved			<10		ug/L		10	15-MAY-18
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	15-MAY-18
Magnesium (Mg)-Dissolved			<5.0		ug/L		5	15-MAY-18
Manganese (Mn)-Dissolved			<0.50		ug/L		0.5	15-MAY-18
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	15-MAY-18
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	15-MAY-18
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	15-MAY-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	15-MAY-18
Sodium (Na)-Dissolved			<50		ug/L		50	15-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4044327								
WG2772238-1 MB								
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	15-MAY-18
Uranium (U)-Dissolved			<0.010		ug/L		0.01	15-MAY-18
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	15-MAY-18
Zinc (Zn)-Dissolved			<1.0		ug/L		1	15-MAY-18
WG2772238-5 MS		**WG2772238-6**						
Antimony (Sb)-Dissolved			97.0		%		70-130	15-MAY-18
Arsenic (As)-Dissolved			105.3		%		70-130	15-MAY-18
Barium (Ba)-Dissolved			N/A	MS-B	%		-	15-MAY-18
Beryllium (Be)-Dissolved			97.2		%		70-130	15-MAY-18
Boron (B)-Dissolved			N/A	MS-B	%		-	15-MAY-18
Cadmium (Cd)-Dissolved			94.5		%		70-130	15-MAY-18
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	15-MAY-18
Chromium (Cr)-Dissolved			98.6		%		70-130	15-MAY-18
Cobalt (Co)-Dissolved			91.8		%		70-130	15-MAY-18
Copper (Cu)-Dissolved			87.6		%		70-130	15-MAY-18
Iron (Fe)-Dissolved			N/A	MS-B	%		-	15-MAY-18
Lead (Pb)-Dissolved			89.8		%		70-130	15-MAY-18
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	15-MAY-18
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	15-MAY-18
Molybdenum (Mo)-Dissolved			97.2		%		70-130	15-MAY-18
Nickel (Ni)-Dissolved			89.0		%		70-130	15-MAY-18
Selenium (Se)-Dissolved			108.4		%		70-130	15-MAY-18
Silver (Ag)-Dissolved			92.2		%		70-130	15-MAY-18
Sodium (Na)-Dissolved			N/A	MS-B	%		-	15-MAY-18
Thallium (Tl)-Dissolved			89.9		%		70-130	15-MAY-18
Uranium (U)-Dissolved			N/A	MS-B	%		-	15-MAY-18
Vanadium (V)-Dissolved			104.7		%		70-130	15-MAY-18
Zinc (Zn)-Dissolved			N/A	MS-B	%		-	15-MAY-18
NH3-WT	**Water**							
Batch R4046688								
WG2773553-3 DUP		**L2093271-1**						
Ammonia, Total (as N)		0.251	0.254		mg/L	1.1	20	16-MAY-18
WG2773553-7 DUP		**L2093541-12**						
Ammonia, Total (as N)		30.3	29.7		mg/L	2.0	20	16-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-WT	**Water**							
Batch R4046688								
WG2773553-2 LCS								
Ammonia, Total (as N)			94.6		%		85-115	16-MAY-18
WG2773553-6 LCS								
Ammonia, Total (as N)			101.8		%		85-115	16-MAY-18
WG2773553-1 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	16-MAY-18
WG2773553-5 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	16-MAY-18
WG2773553-4 MS		**L2093271-1**						
Ammonia, Total (as N)			99.6		%		75-125	16-MAY-18
WG2773553-8 MS		**L2093541-12**						
Ammonia, Total (as N)			N/A	MS-B	%		-	16-MAY-18
Batch R4052334								
WG2777297-7 DUP		**L2095678-1**						
Ammonia, Total (as N)		0.101	0.097		mg/L	3.8	20	22-MAY-18
WG2777297-6 LCS								
Ammonia, Total (as N)			92.0		%		85-115	22-MAY-18
WG2777297-5 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	22-MAY-18
WG2777297-8 MS		**L2095678-1**						
Ammonia, Total (as N)			92.9		%		75-125	22-MAY-18
NO2-IC-WT	**Water**							
Batch R4046897								
WG2773735-4 DUP		**WG2773735-3**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	25	16-MAY-18
WG2773735-2 LCS								
Nitrite (as N)			101.4		%		70-130	16-MAY-18
WG2773735-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	16-MAY-18
WG2773735-5 MS		**WG2773735-3**						
Nitrite (as N)			103.3		%		70-130	16-MAY-18
NO3-IC-WT	**Water**							
Batch R4046897								
WG2773735-4 DUP		**WG2773735-3**						
Nitrate (as N)		0.386	0.388		mg/L	0.6	25	16-MAY-18
WG2773735-2 LCS								
Nitrate (as N)			101.3		%		70-130	16-MAY-18
WG2773735-1 MB								

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-WT	**Water**							
Batch R4046897								
WG2773735-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	16-MAY-18
WG2773735-5 MS		**WG2773735-3**						
Nitrate (as N)			103.4		%		70-130	16-MAY-18
P-T-COL-WT	**Water**							
Batch R4045211								
WG2772913-3 DUP		**L2093541-4**						
Phosphorus, Total		0.0265	0.0284		mg/L	7.0	20	16-MAY-18
WG2772913-2 LCS								
Phosphorus, Total			92.7		%		80-120	16-MAY-18
WG2772913-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	16-MAY-18
WG2772913-4 MS		**L2093541-4**						
Phosphorus, Total			98.4		%		70-130	16-MAY-18
PAH-511-WT	**Water**							
Batch R4047455								
WG2774417-2 LCS								
1-Methylnaphthalene			97.3		%		50-140	18-MAY-18
2-Methylnaphthalene			91.6		%		50-140	18-MAY-18
Acenaphthene			100.4		%		50-140	18-MAY-18
Acenaphthylene			103.3		%		50-140	18-MAY-18
Anthracene			106.6		%		50-140	18-MAY-18
Benzo(a)anthracene			114.2		%		50-140	18-MAY-18
Benzo(a)pyrene			104.3		%		50-140	18-MAY-18
Benzo(b)fluoranthene			99.8		%		50-140	18-MAY-18
Benzo(g,h,i)perylene			107.4		%		50-140	18-MAY-18
Benzo(k)fluoranthene			104.7		%		50-140	18-MAY-18
Chrysene			118.5		%		50-140	18-MAY-18
Dibenzo(ah)anthracene			106.2		%		50-140	18-MAY-18
Fluoranthene			110.8		%		50-140	18-MAY-18
Fluorene			106.0		%		50-140	18-MAY-18
Indeno(1,2,3-cd)pyrene			117.4		%		50-140	18-MAY-18
Naphthalene			100.1		%		50-140	18-MAY-18
Phenanthrene			109.5		%		50-140	18-MAY-18
Pyrene			110.3		%		50-140	18-MAY-18
WG2774417-3 LCSD		**WG2774417-2**						

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4047455								
WG2774417-3 LCSD		**WG2774417-2**						
1-Methylnaphthalene		97.3	93.0		%	4.5	50	18-MAY-18
2-Methylnaphthalene		91.6	87.2		%	4.9	50	18-MAY-18
Acenaphthene		100.4	95.1		%	5.4	50	18-MAY-18
Acenaphthylene		103.3	97.4		%	5.9	50	18-MAY-18
Anthracene		106.6	99.4		%	7.0	50	18-MAY-18
Benzo(a)anthracene		114.2	109.2		%	4.5	50	18-MAY-18
Benzo(a)pyrene		104.3	99.3		%	5.0	50	18-MAY-18
Benzo(b)fluoranthene		99.8	95.8		%	4.1	50	18-MAY-18
Benzo(g,h,i)perylene		107.4	102.9		%	4.3	50	18-MAY-18
Benzo(k)fluoranthene		104.7	101.0		%	3.7	50	18-MAY-18
Chrysene		118.5	112.6		%	5.1	50	18-MAY-18
Dibenzo(ah)anthracene		106.2	101.3		%	4.7	50	18-MAY-18
Fluoranthene		110.8	104.6		%	5.8	50	18-MAY-18
Fluorene		106.0	100.6		%	5.2	50	18-MAY-18
Indeno(1,2,3-cd)pyrene		117.4	111.3		%	5.3	50	18-MAY-18
Naphthalene		100.1	95.2		%	5.0	50	18-MAY-18
Phenanthrene		109.5	102.7		%	6.4	50	18-MAY-18
Pyrene		110.3	104.2		%	5.7	50	18-MAY-18
WG2774417-1 MB								
1-Methylnaphthalene			<0.020		ug/L		0.02	18-MAY-18
2-Methylnaphthalene			<0.020		ug/L		0.02	18-MAY-18
Acenaphthene			<0.020		ug/L		0.02	18-MAY-18
Acenaphthylene			<0.020		ug/L		0.02	18-MAY-18
Anthracene			<0.020		ug/L		0.02	18-MAY-18
Benzo(a)anthracene			<0.020		ug/L		0.02	18-MAY-18
Benzo(a)pyrene			<0.010		ug/L		0.01	18-MAY-18
Benzo(b)fluoranthene			<0.020		ug/L		0.02	18-MAY-18
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	18-MAY-18
Benzo(k)fluoranthene			<0.020		ug/L		0.02	18-MAY-18
Chrysene			<0.020		ug/L		0.02	18-MAY-18
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	18-MAY-18
Fluoranthene			<0.020		ug/L		0.02	18-MAY-18
Fluorene			<0.020		ug/L		0.02	18-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4047455								
WG2774417-1 MB								
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	18-MAY-18
Naphthalene			<0.050		ug/L		0.05	18-MAY-18
Phenanthrene			<0.020		ug/L		0.02	18-MAY-18
Pyrene			<0.020		ug/L		0.02	18-MAY-18
Surrogate: d8-Naphthalene			118.5		%		60-140	18-MAY-18
Surrogate: d10-Phenanthrene			114.5		%		60-140	18-MAY-18
Surrogate: d12-Chrysene			109.2		%		60-140	18-MAY-18
Surrogate: d10-Acenaphthene			110.5		%		60-140	18-MAY-18
PH-WT	**Water**							
Batch R4044635								
WG2772432-12 DUP		**WG2772432-11**						
pH		6.73	6.79	J	pH units	0.06	0.2	15-MAY-18
WG2772432-4 DUP		**WG2772432-3**						
pH		9.09	9.09	J	pH units	0.00	0.2	15-MAY-18
WG2772432-8 DUP		**WG2772432-7**						
pH		7.41	7.41	J	pH units	0.01	0.2	15-MAY-18
WG2772432-10 LCS								
pH			6.98		pH units		6.9-7.1	15-MAY-18
WG2772432-2 LCS								
pH			6.98		pH units		6.9-7.1	15-MAY-18
WG2772432-6 LCS								
pH			6.99		pH units		6.9-7.1	15-MAY-18
PHENOLS-4AAP-WT	**Water**							
Batch R4043900								
WG2771723-19 DUP		**L2093271-2**						
Phenols (4AAP)		0.0022	0.0019		mg/L	10	20	14-MAY-18
WG2771723-23 DUP		**L2093541-12**						
Phenols (4AAP)		0.0067	0.0057		mg/L	17	20	14-MAY-18
WG2771723-18 LCS								
Phenols (4AAP)			104.6		%		85-115	14-MAY-18
WG2771723-22 LCS								
Phenols (4AAP)			106.9		%		85-115	14-MAY-18
WG2771723-17 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	14-MAY-18
WG2771723-21 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	14-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	**Water**							
Batch R4043900								
WG2771723-20 MS		**L2093271-2**						
Phenols (4AAP)			93.9		%		75-125	14-MAY-18
WG2771723-24 MS		**L2093541-12**						
Phenols (4AAP)			102.3		%		75-125	14-MAY-18
SO4-IC-N-WT	**Water**							
Batch R4046897								
WG2773735-4 DUP		**WG2773735-3**						
Sulfate (SO4)		13.8	13.8		mg/L	0.2	20	16-MAY-18
WG2773735-2 LCS								
Sulfate (SO4)			102.8		%		90-110	16-MAY-18
WG2773735-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	16-MAY-18
WG2773735-5 MS		**WG2773735-3**						
Sulfate (SO4)			105.3		%		75-125	16-MAY-18
SOLIDS-TDS-WT	**Water**							
Batch R4046600								
WG2773339-3 DUP		**L2092995-3**						
Total Dissolved Solids		406	398		mg/L	2.1	20	16-MAY-18
WG2773339-2 LCS								
Total Dissolved Solids			101.6		%		85-115	16-MAY-18
WG2773339-1 MB								
Total Dissolved Solids			<10		mg/L		10	17-MAY-18
Batch R4049497								
WG2775516-3 DUP		**L2093180-2**						
Total Dissolved Solids		40400	38300		mg/L	5.4	20	18-MAY-18
WG2775516-2 LCS								
Total Dissolved Solids			99.1		%		85-115	18-MAY-18
WG2775516-1 MB								
Total Dissolved Solids			<10		mg/L		10	18-MAY-18
TKN-WT	**Water**							
Batch R4046628								
WG2773886-3 DUP		**L2093233-3**						
Total Kjeldahl Nitrogen		0.35	0.23	J	mg/L	0.12	0.3	17-MAY-18
WG2773886-2 LCS								
Total Kjeldahl Nitrogen			109.6		%		75-125	17-MAY-18
WG2773886-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	17-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TKN-WT	**Water**							
Batch R4046628								
WG2773886-4 MS		**L2093233-3**						
Total Kjeldahl Nitrogen			102.7		%		70-130	17-MAY-18
Batch R4047847								
WG2774439-3 DUP		**L2093541-5**						
Total Kjeldahl Nitrogen		3.40	3.44		mg/L	1.2	20	18-MAY-18
WG2774439-2 LCS								
Total Kjeldahl Nitrogen			111.1		%		75-125	18-MAY-18
WG2774439-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	18-MAY-18
WG2774439-4 MS		**L2093541-5**						
Total Kjeldahl Nitrogen			108.6		%		70-130	18-MAY-18
Batch R4050535								
WG2777205-3 DUP		**L2092255-2**						
Total Kjeldahl Nitrogen		<0.15	<0.15	RPD-NA	mg/L	N/A	20	22-MAY-18
WG2777205-2 LCS								
Total Kjeldahl Nitrogen			100.6		%		75-125	22-MAY-18
WG2777205-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	22-MAY-18
WG2777205-4 MS		**L2092255-2**						
Total Kjeldahl Nitrogen			104.5		%		70-130	22-MAY-18
VOC-511-HS-WT	**Water**							
Batch R4046328								
WG2770660-4 DUP		**WG2770660-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	17-MAY-18
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4046328								
WG2770660-4 DUP		**WG2770660-3**						
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	17-MAY-18
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	17-MAY-18
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	17-MAY-18
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	17-MAY-18
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	17-MAY-18
cis-1,2-Dichloroethylene		0.58	0.54		ug/L	7.1	30	17-MAY-18
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	17-MAY-18
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	17-MAY-18
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	17-MAY-18
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	17-MAY-18
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	17-MAY-18
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	17-MAY-18
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	17-MAY-18
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	17-MAY-18
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	17-MAY-18
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	17-MAY-18
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	17-MAY-18
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	17-MAY-18
WG2770660-1 LCS								
1,1,1,2-Tetrachloroethane			95.3		%		70-130	16-MAY-18
1,1,2,2-Tetrachloroethane			97.9		%		70-130	16-MAY-18
1,1,1-Trichloroethane			97.4		%		70-130	16-MAY-18
1,1,2-Trichloroethane			104.8		%		70-130	16-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4046328								
WG2770660-1 LCS								
1,1-Dichloroethane			104.3		%		70-130	16-MAY-18
1,1-Dichloroethylene			94.0		%		70-130	16-MAY-18
1,2-Dibromoethane			103.2		%		70-130	16-MAY-18
1,2-Dichlorobenzene			96.4		%		70-130	16-MAY-18
1,2-Dichloroethane			105.4		%		70-130	16-MAY-18
1,2-Dichloropropane			101.9		%		70-130	16-MAY-18
1,3-Dichlorobenzene			94.5		%		70-130	16-MAY-18
1,4-Dichlorobenzene			95.9		%		70-130	16-MAY-18
Acetone			120.2		%		60-140	16-MAY-18
Benzene			102.6		%		70-130	16-MAY-18
Bromodichloromethane			94.9		%		70-130	16-MAY-18
Bromoform			104.3		%		70-130	16-MAY-18
Bromomethane			102.9		%		60-140	16-MAY-18
Carbon tetrachloride			94.8		%		70-130	16-MAY-18
Chlorobenzene			97.8		%		70-130	16-MAY-18
Chloroform			101.1		%		70-130	16-MAY-18
cis-1,2-Dichloroethylene			101.0		%		70-130	16-MAY-18
cis-1,3-Dichloropropene			97.4		%		70-130	16-MAY-18
Dibromochloromethane			99.2		%		70-130	16-MAY-18
Dichlorodifluoromethane			106.0		%		50-140	16-MAY-18
Ethylbenzene			95.1		%		70-130	16-MAY-18
n-Hexane			111.2		%		70-130	16-MAY-18
m+p-Xylenes			95.6		%		70-130	16-MAY-18
Methyl Ethyl Ketone			115.3		%		60-140	16-MAY-18
Methyl Isobutyl Ketone			98.6		%		60-140	16-MAY-18
Methylene Chloride			109.9		%		70-130	16-MAY-18
MTBE			100.5		%		70-130	16-MAY-18
o-Xylene			94.6		%		70-130	16-MAY-18
Styrene			92.8		%		70-130	16-MAY-18
Tetrachloroethylene			95.8		%		70-130	16-MAY-18
Toluene			98.4		%		70-130	16-MAY-18
trans-1,2-Dichloroethylene			101.6		%		70-130	16-MAY-18
trans-1,3-Dichloropropene			100.3		%		70-130	16-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4046328								
WG2770660-1 LCS								
Trichloroethylene			99.97		%		70-130	16-MAY-18
Trichlorofluoromethane			99.8		%		60-140	16-MAY-18
Vinyl chloride			96.6		%		60-140	16-MAY-18
WG2770660-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	17-MAY-18
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	17-MAY-18
1,1,1-Trichloroethane			<0.50		ug/L		0.5	17-MAY-18
1,1,2-Trichloroethane			<0.50		ug/L		0.5	17-MAY-18
1,1-Dichloroethane			<0.50		ug/L		0.5	17-MAY-18
1,1-Dichloroethylene			<0.50		ug/L		0.5	17-MAY-18
1,2-Dibromoethane			<0.20		ug/L		0.2	17-MAY-18
1,2-Dichlorobenzene			<0.50		ug/L		0.5	17-MAY-18
1,2-Dichloroethane			<0.50		ug/L		0.5	17-MAY-18
1,2-Dichloropropane			<0.50		ug/L		0.5	17-MAY-18
1,3-Dichlorobenzene			<0.50		ug/L		0.5	17-MAY-18
1,4-Dichlorobenzene			<0.50		ug/L		0.5	17-MAY-18
Acetone			<30		ug/L		30	17-MAY-18
Benzene			<0.50		ug/L		0.5	17-MAY-18
Bromodichloromethane			<2.0		ug/L		2	17-MAY-18
Bromoform			<5.0		ug/L		5	17-MAY-18
Bromomethane			<0.50		ug/L		0.5	17-MAY-18
Carbon tetrachloride			<0.20		ug/L		0.2	17-MAY-18
Chlorobenzene			<0.50		ug/L		0.5	17-MAY-18
Chloroform			<1.0		ug/L		1	17-MAY-18
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	17-MAY-18
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	17-MAY-18
Dibromochloromethane			<2.0		ug/L		2	17-MAY-18
Dichlorodifluoromethane			<2.0		ug/L		2	17-MAY-18
Ethylbenzene			<0.50		ug/L		0.5	17-MAY-18
n-Hexane			<0.50		ug/L		0.5	17-MAY-18
m+p-Xylenes			<0.40		ug/L		0.4	17-MAY-18
Methyl Ethyl Ketone			<20		ug/L		20	17-MAY-18
Methyl Isobutyl Ketone			<20		ug/L		20	17-MAY-18
Methylene Chloride			<5.0		ug/L		5	17-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4046328								
WG2770660-2 MB								
MTBE			<2.0		ug/L		2	17-MAY-18
o-Xylene			<0.30		ug/L		0.3	17-MAY-18
Styrene			<0.50		ug/L		0.5	17-MAY-18
Tetrachloroethylene			<0.50		ug/L		0.5	17-MAY-18
Toluene			<0.50		ug/L		0.5	17-MAY-18
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	17-MAY-18
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	17-MAY-18
Trichloroethylene			<0.50		ug/L		0.5	17-MAY-18
Trichlorofluoromethane			<5.0		ug/L		5	17-MAY-18
Vinyl chloride			<0.50		ug/L		0.5	17-MAY-18
Surrogate: 1,4-Difluorobenzene			100.2		%		70-130	17-MAY-18
Surrogate: 4-Bromofluorobenzene			92.6		%		70-130	17-MAY-18
WG2770660-5 MS		**WG2770660-3**						
1,1,1,2-Tetrachloroethane			95.0		%		50-140	17-MAY-18
1,1,2,2-Tetrachloroethane			99.9		%		50-140	17-MAY-18
1,1,1-Trichloroethane			96.4		%		50-140	17-MAY-18
1,1,2-Trichloroethane			105.6		%		50-140	17-MAY-18
1,1-Dichloroethane			93.6		%		50-140	17-MAY-18
1,1-Dichloroethylene			93.1		%		50-140	17-MAY-18
1,2-Dibromoethane			104.4		%		50-140	17-MAY-18
1,2-Dichlorobenzene			96.2		%		50-140	17-MAY-18
1,2-Dichloroethane			106.8		%		50-140	17-MAY-18
1,2-Dichloropropane			103.2		%		50-140	17-MAY-18
1,3-Dichlorobenzene			92.9		%		50-140	17-MAY-18
1,4-Dichlorobenzene			95.1		%		50-140	17-MAY-18
Acetone			121.4		%		50-140	17-MAY-18
Benzene			102.6		%		50-140	17-MAY-18
Bromodichloromethane			96.0		%		50-140	17-MAY-18
Bromoform			104.7		%		50-140	17-MAY-18
Bromomethane			101.6		%		50-140	17-MAY-18
Carbon tetrachloride			93.8		%		50-140	17-MAY-18
Chlorobenzene			97.4		%		50-140	17-MAY-18
Chloroform			101.5		%		50-140	17-MAY-18
cis-1,2-Dichloroethylene			100.6		%		50-140	17-MAY-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4046328								
WG2770660-5 MS		**WG2770660-3**						
cis-1,3-Dichloropropene			95.6		%		50-140	17-MAY-18
Dibromochloromethane			99.4		%		50-140	17-MAY-18
Dichlorodifluoromethane			117.7		%		50-140	17-MAY-18
Ethylbenzene			93.2		%		50-140	17-MAY-18
n-Hexane			109.4		%		50-140	17-MAY-18
m+p-Xylenes			93.7		%		50-140	17-MAY-18
Methyl Ethyl Ketone			115.6		%		50-140	17-MAY-18
Methyl Isobutyl Ketone			102.5		%		50-140	17-MAY-18
Methylene Chloride			110.5		%		50-140	17-MAY-18
MTBE			100.7		%		50-140	17-MAY-18
o-Xylene			93.1		%		50-140	17-MAY-18
Styrene			91.9		%		50-140	17-MAY-18
Tetrachloroethylene			93.7		%		50-140	17-MAY-18
Toluene			96.9		%		50-140	17-MAY-18
trans-1,2-Dichloroethylene			101.3		%		50-140	17-MAY-18
trans-1,3-Dichloropropene			96.3		%		50-140	17-MAY-18
Trichloroethylene			99.5		%		50-140	17-MAY-18
Trichlorofluoromethane			99.4		%		50-140	17-MAY-18
Vinyl chloride			98.9		%		50-140	17-MAY-18

Quality Control Report

Workorder: L2093541 Report Date: 26-JUL-18

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

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
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
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.

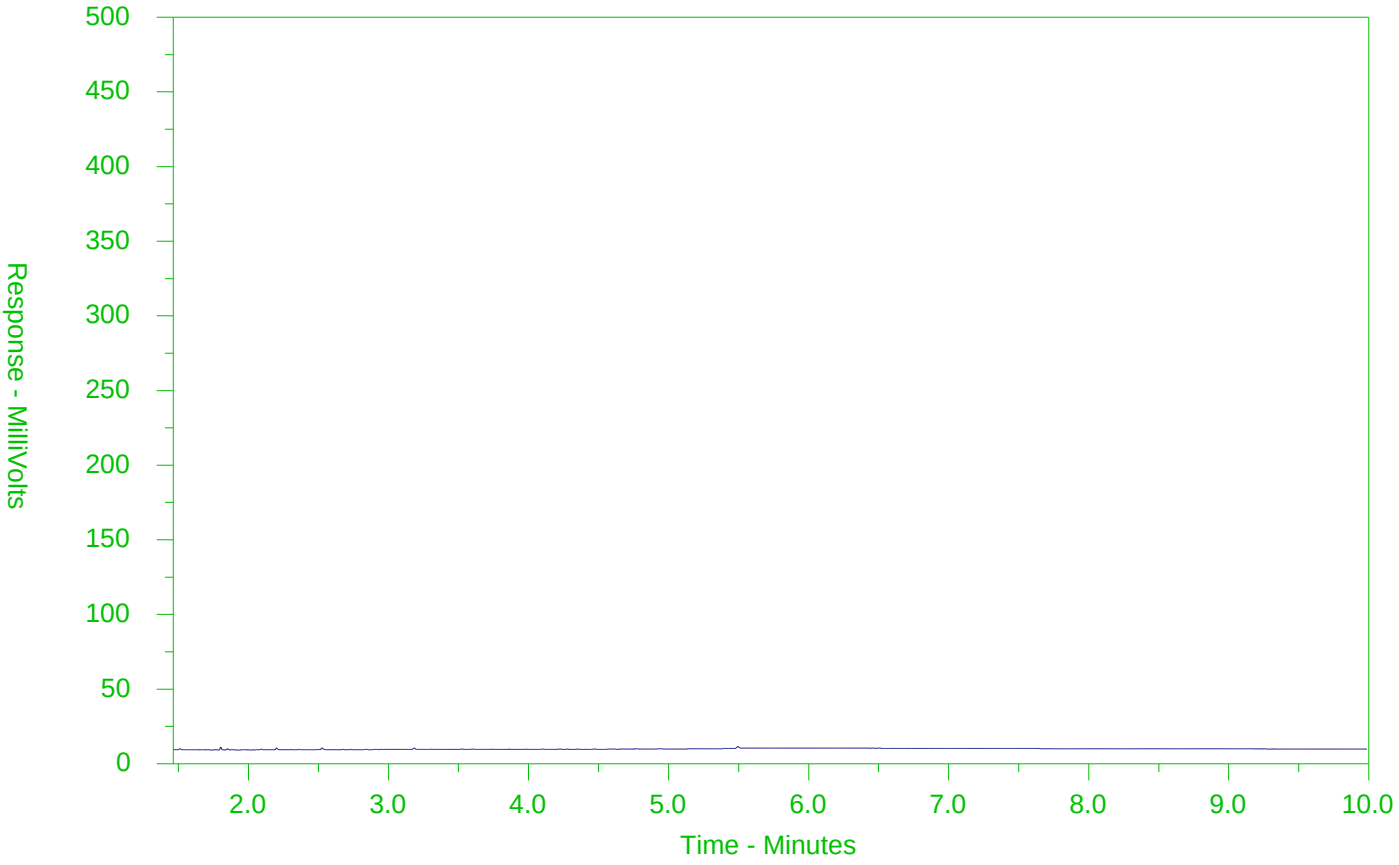
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2093541-1
Client Sample ID: GW-11149990-051118-TW-001



←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.

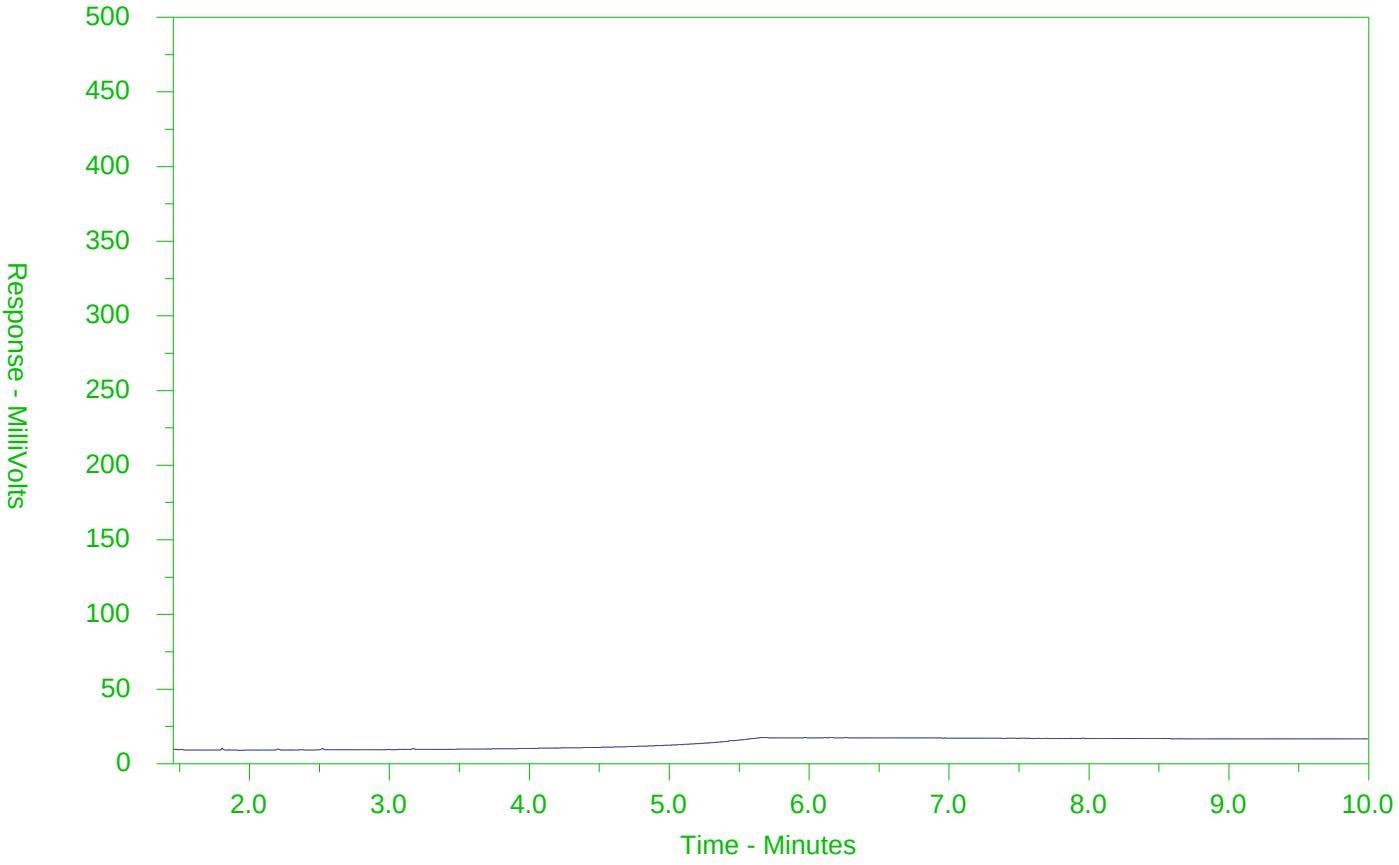
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2093541-2
Client Sample ID: GW-11149990-051118-TW-003



←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.

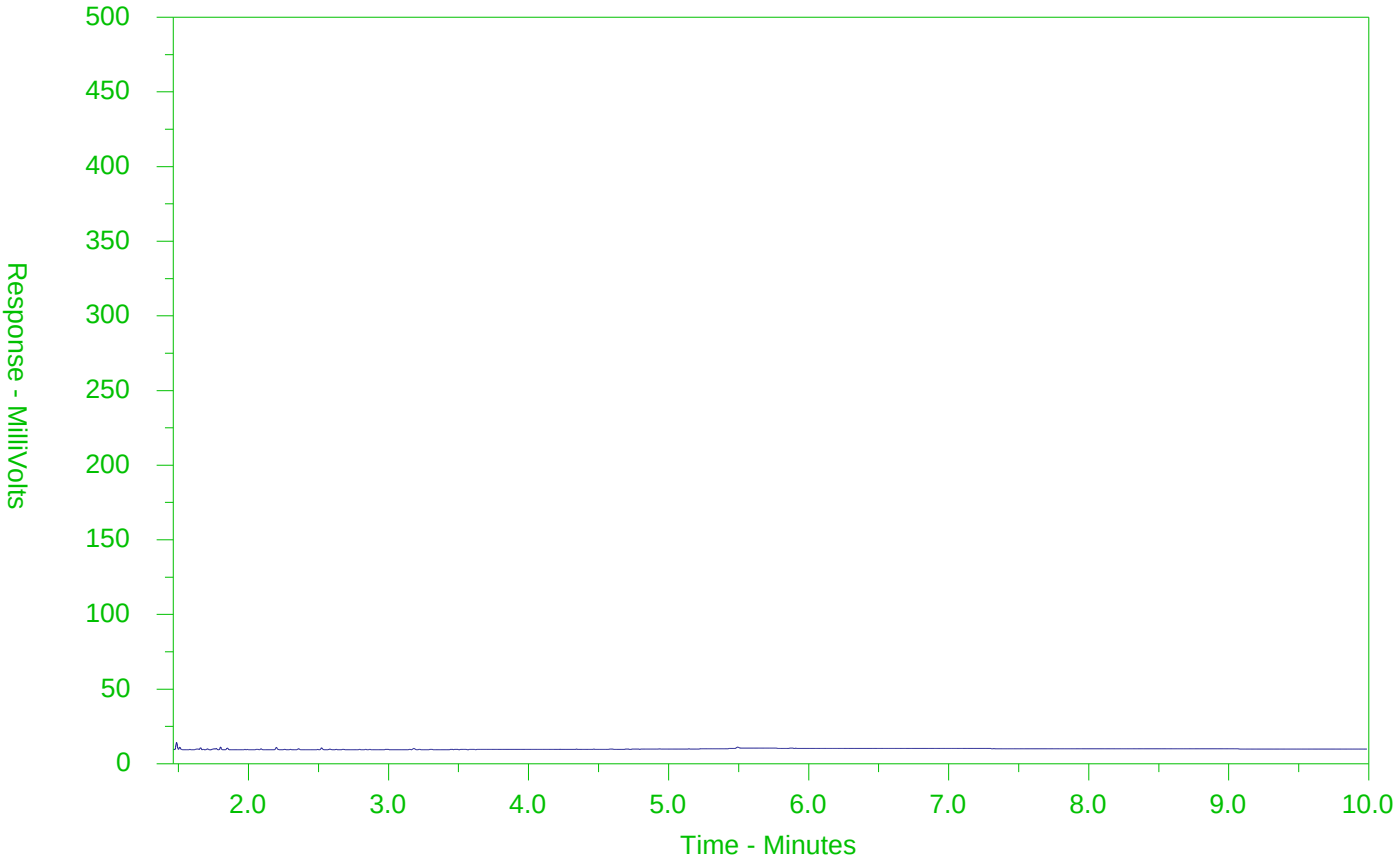
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2093541-3
Client Sample ID: GW-11149990-051118-TW-004



←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.

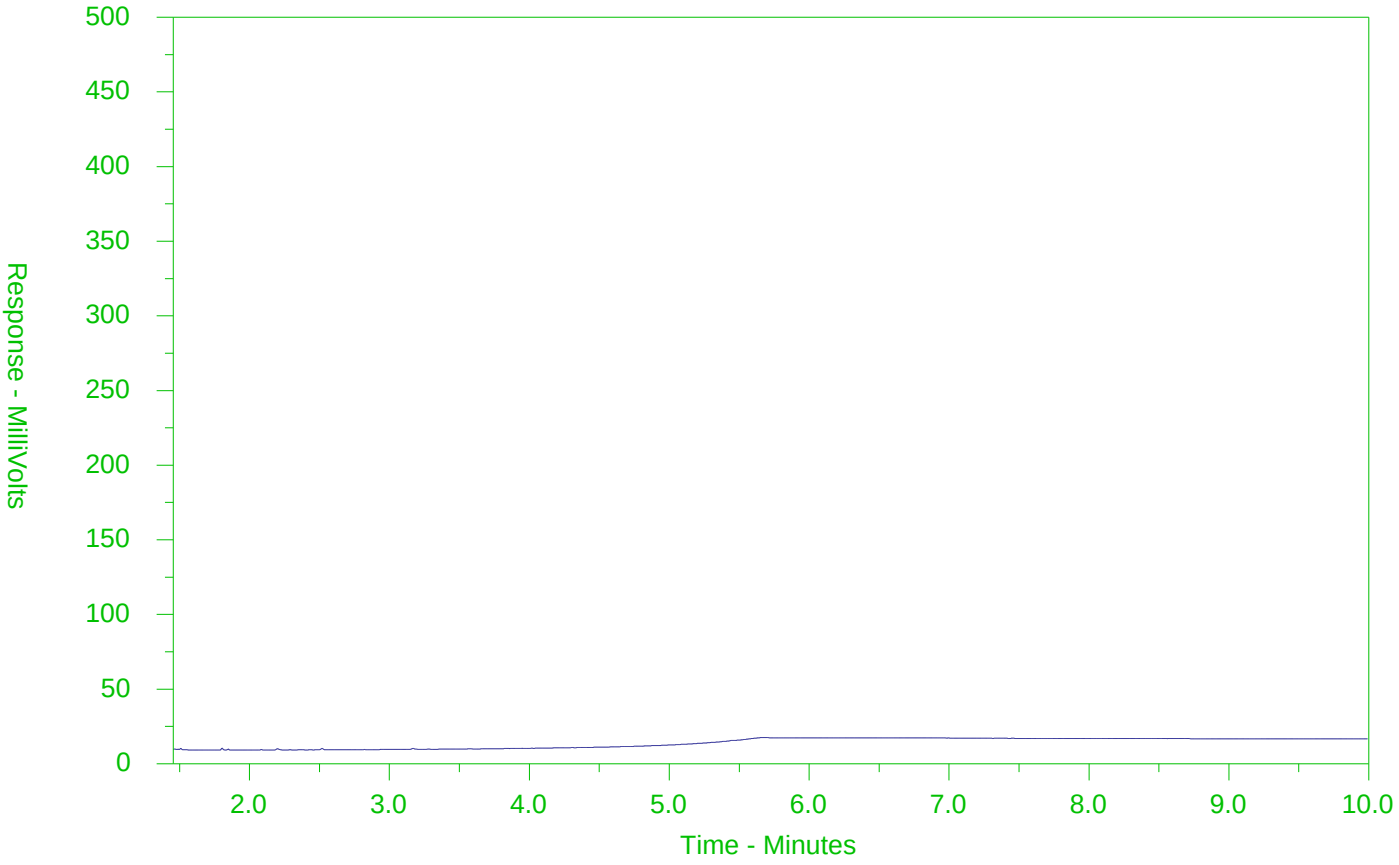
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2093541-4
Client Sample ID: GW-11149990-051118-TW-005



←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.

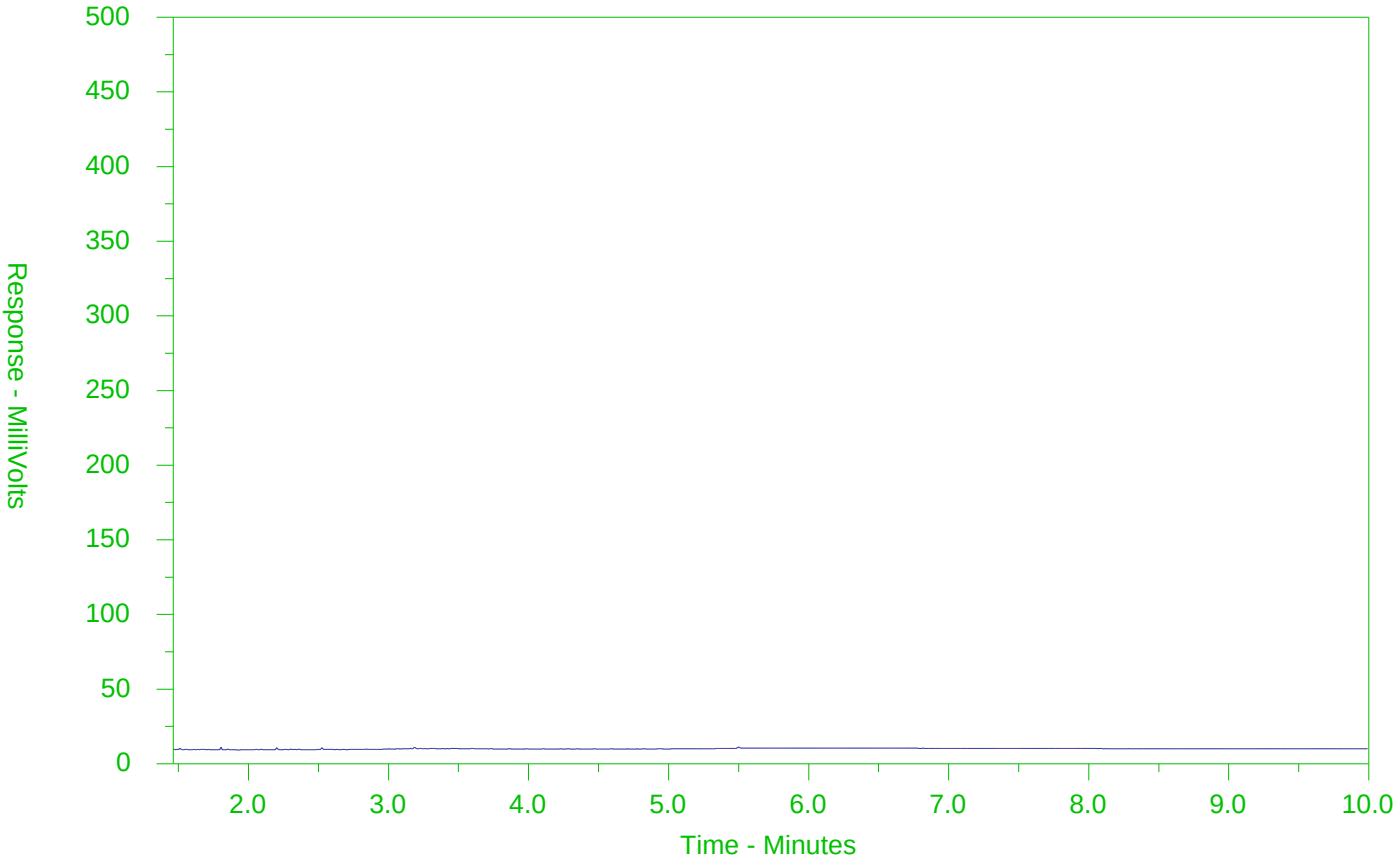
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2093541-5
Client Sample ID: GW-11149990-051118-TW-006



←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.

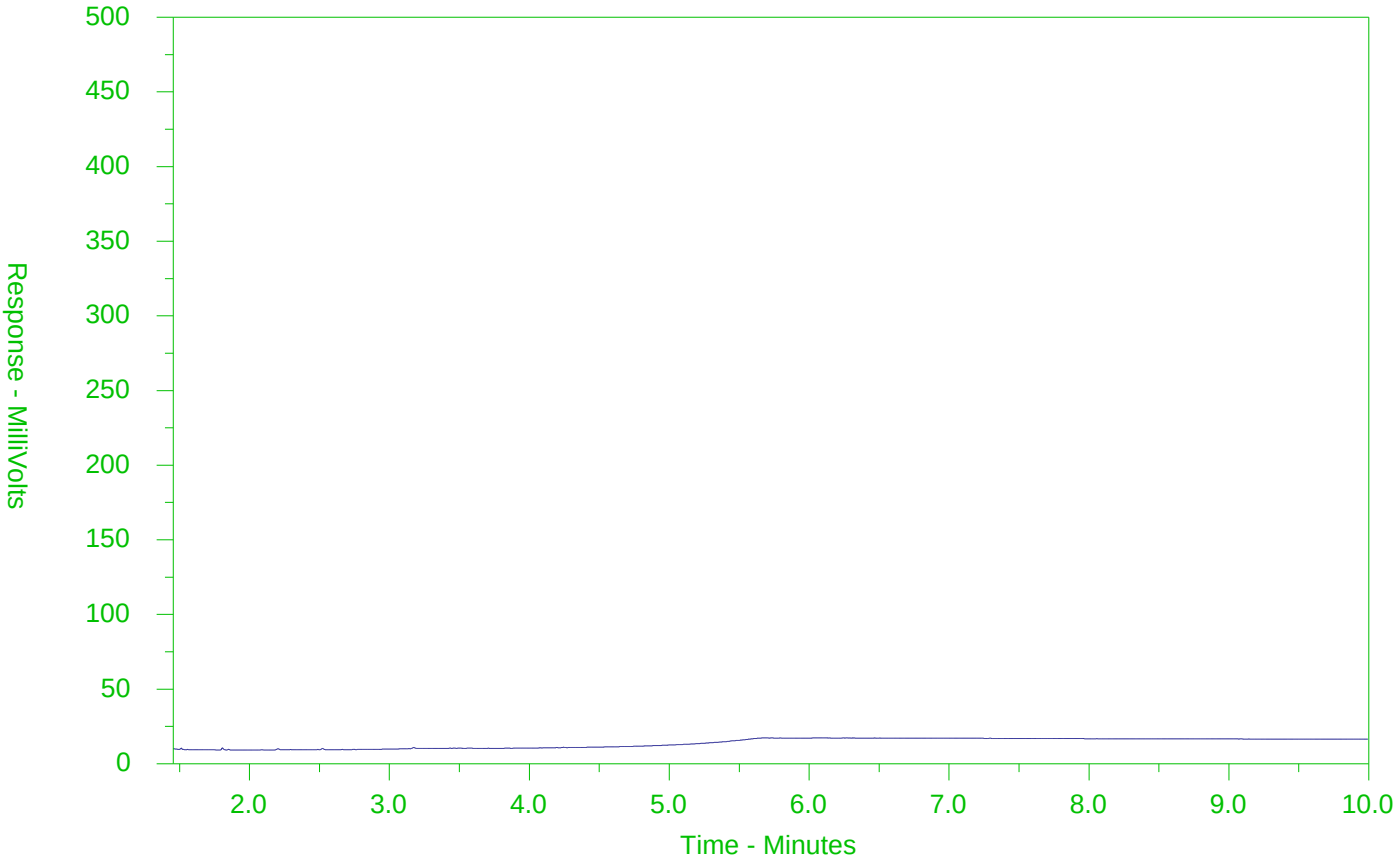
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2093541-6
Client Sample ID: GW-11149990-051118-TW-007



←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.

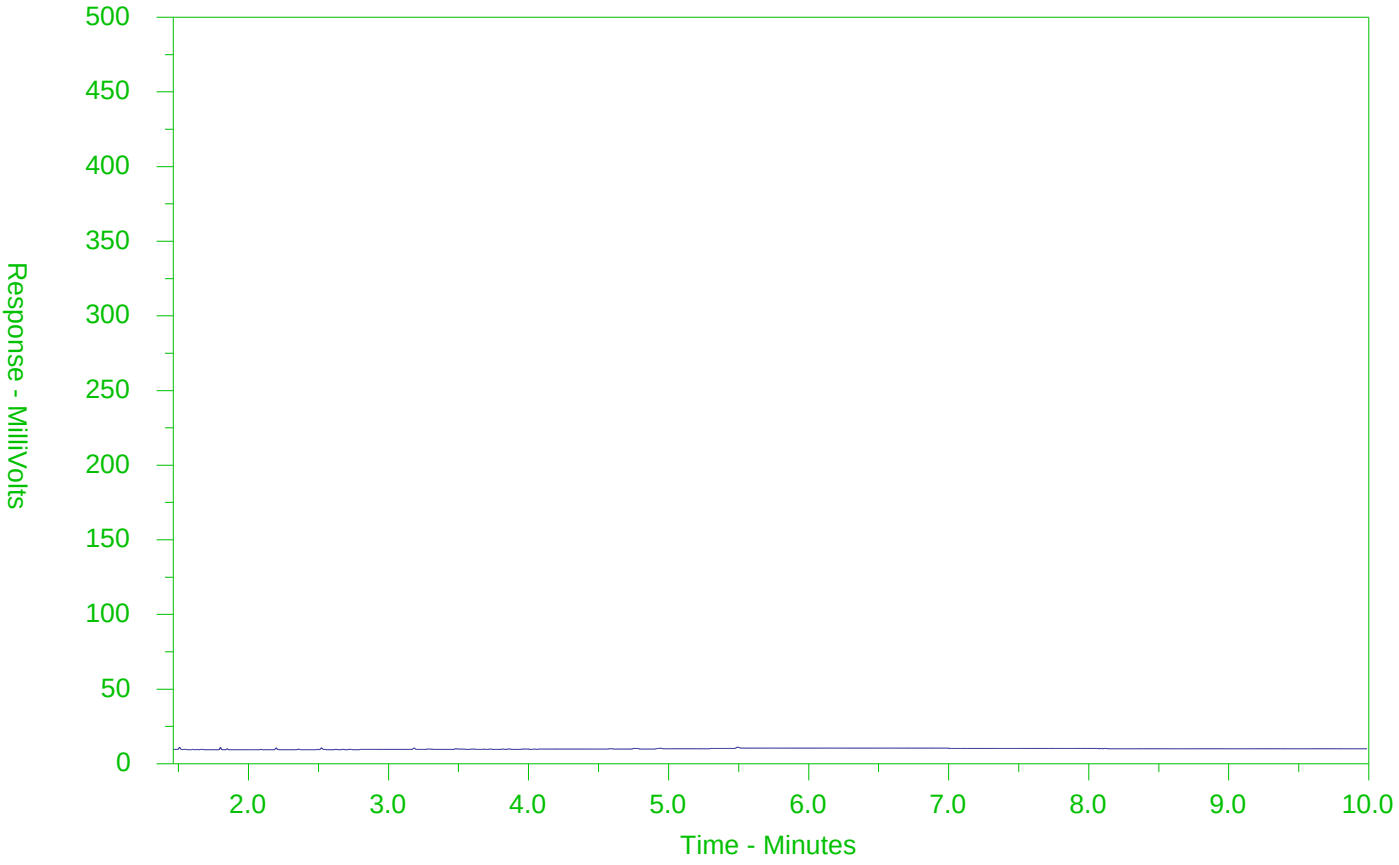
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2093541-7
Client Sample ID: GW-11149990-051118-TW-008



←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.

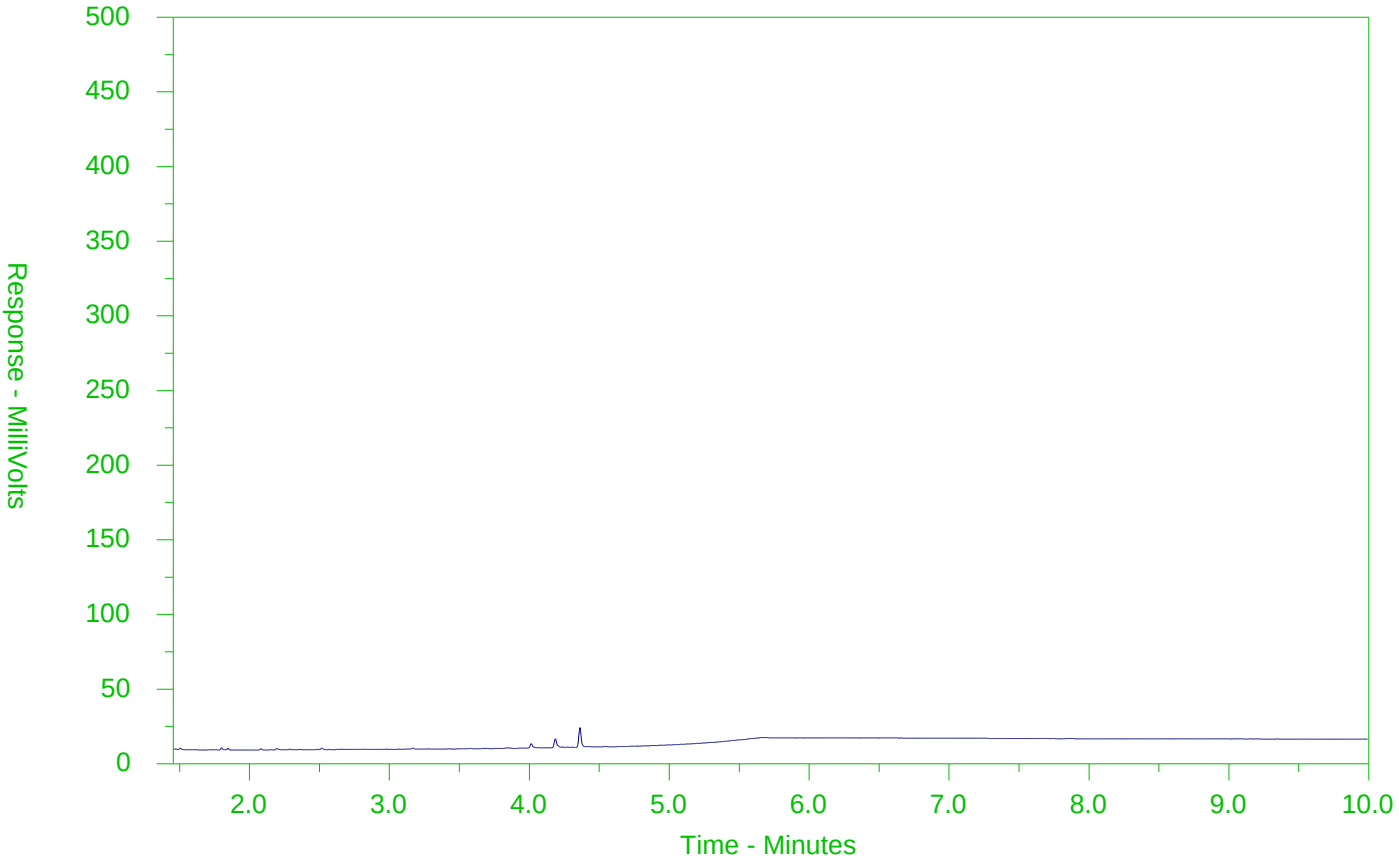
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2093541-8
Client Sample ID: GW-11149990-051118-TW-009



←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.

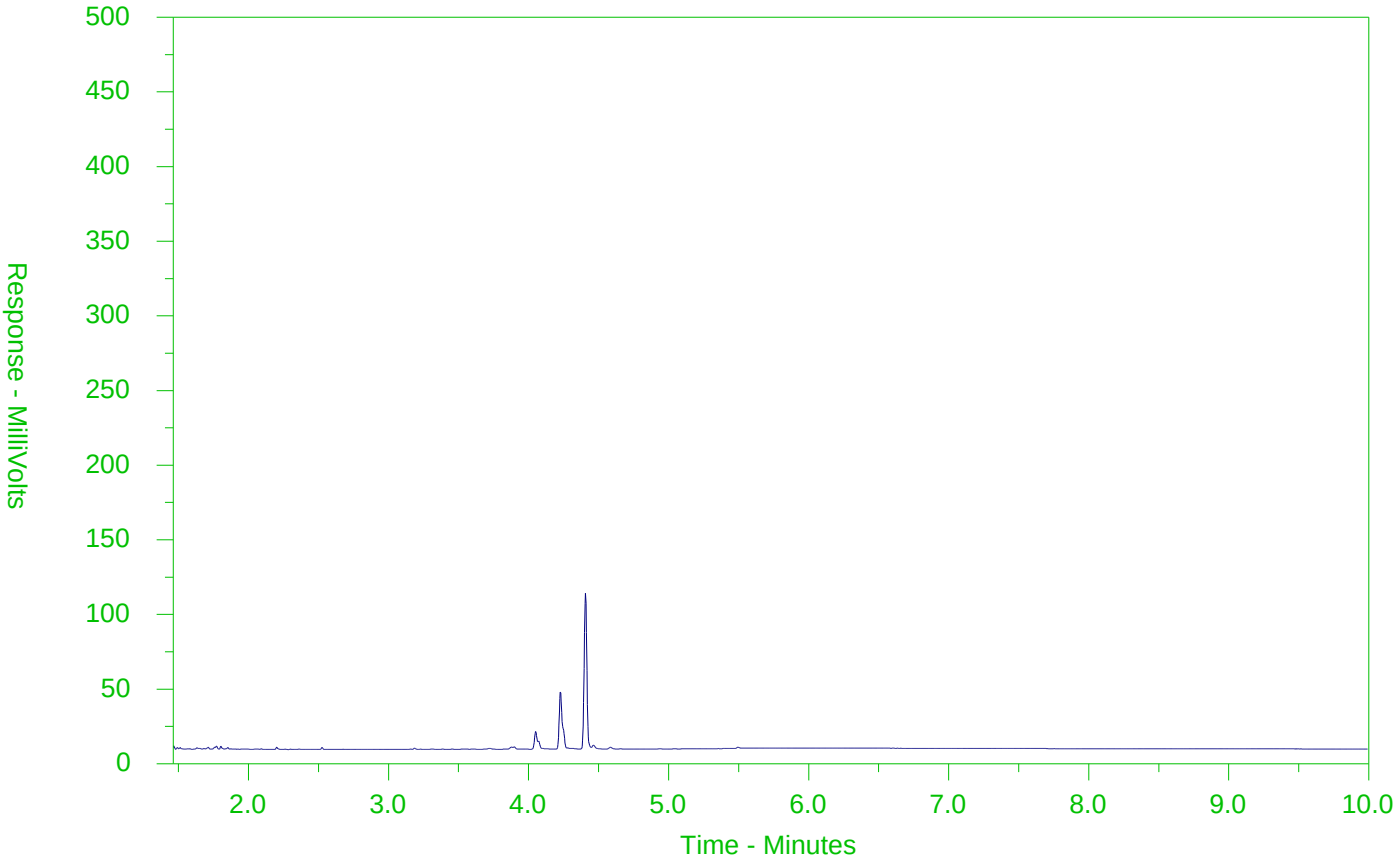
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2093541-9
Client Sample ID: GW-11149990-051118-TW-010



←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.

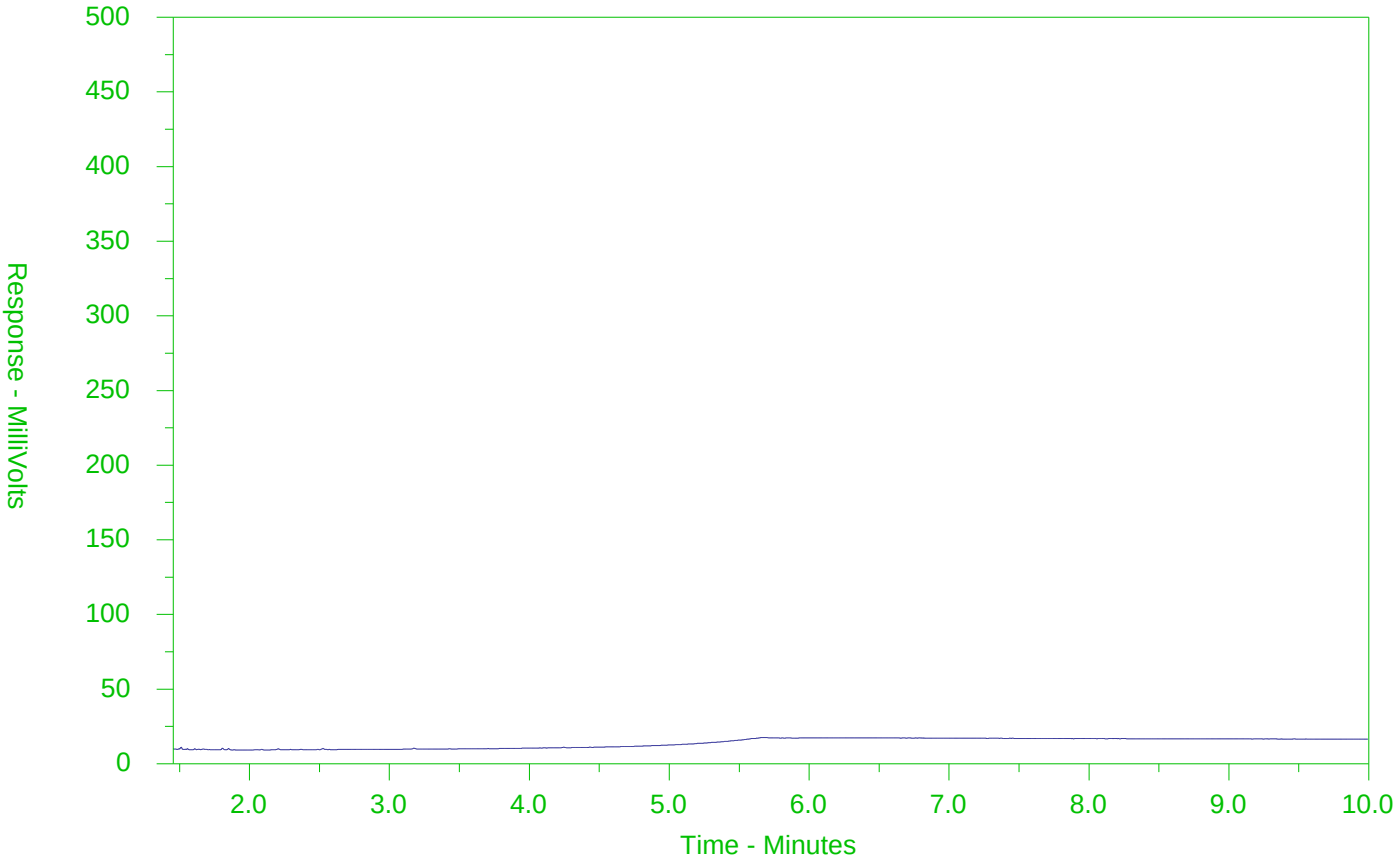
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2093541-10
Client Sample ID: GW-11149990-051118-TW-011



←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.

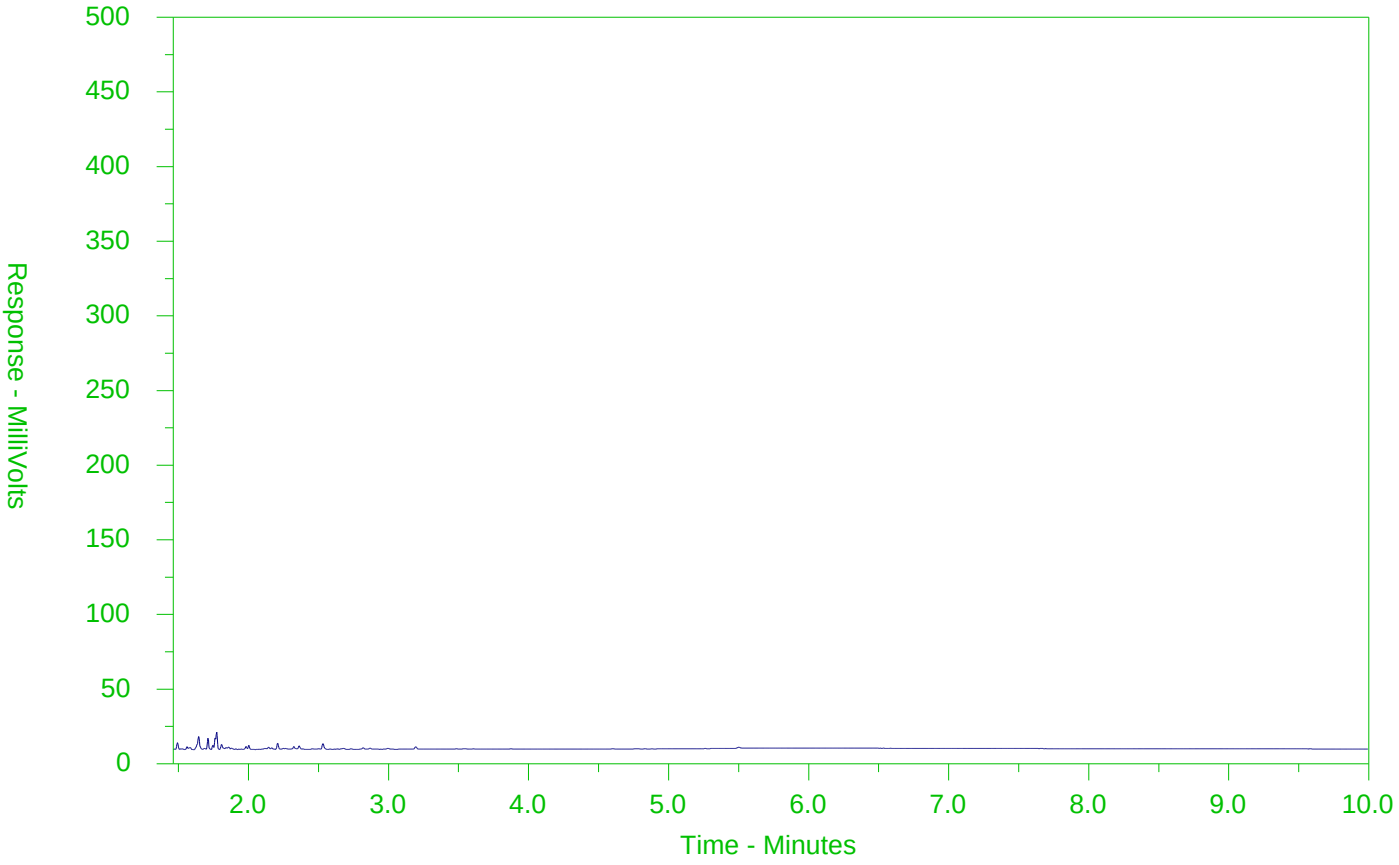
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2093541-11
Client Sample ID: GW-11149990-051118-TW-012



←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.

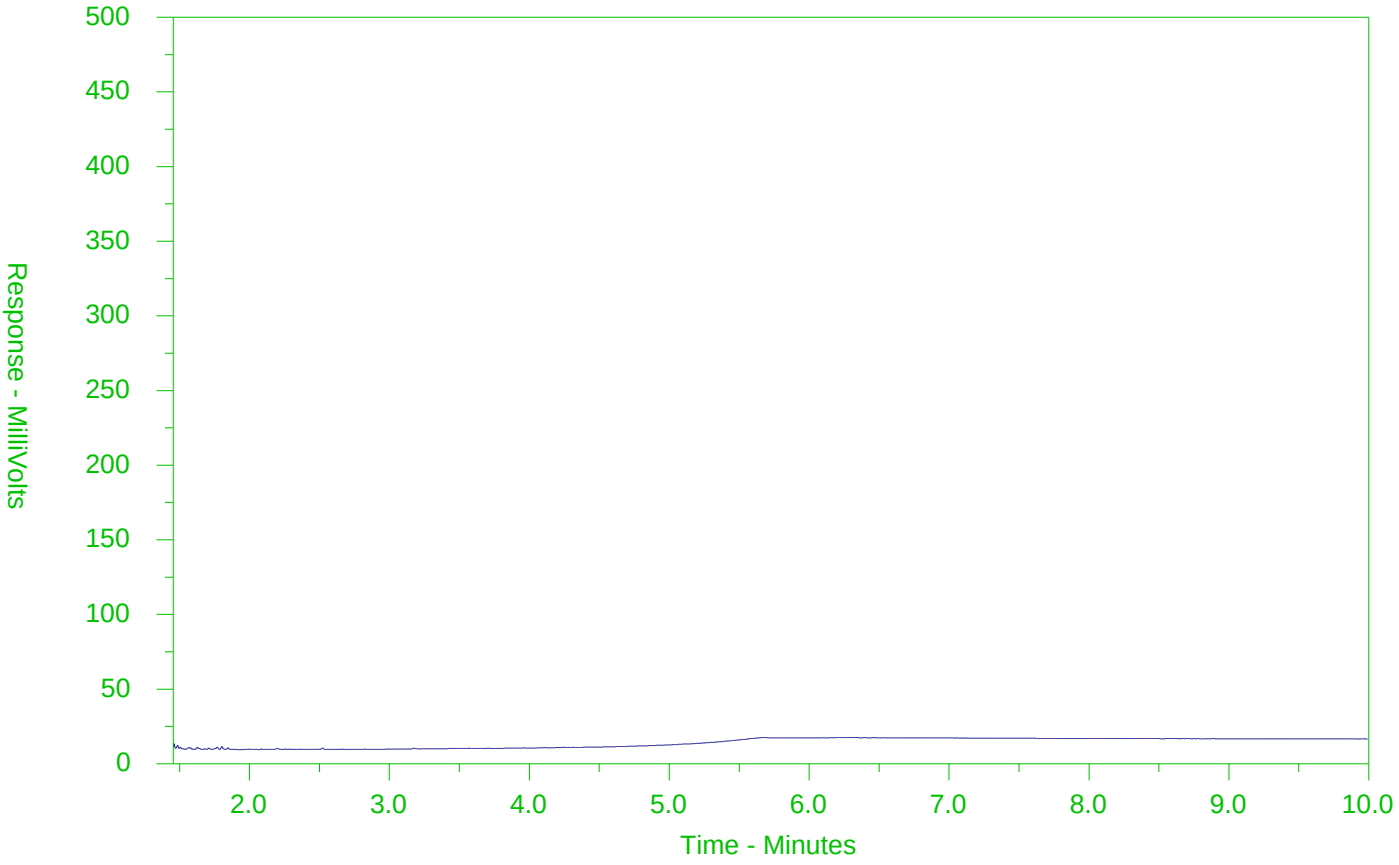
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2093541-12
Client Sample ID: GW-11149990-051118-TW-013



←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.

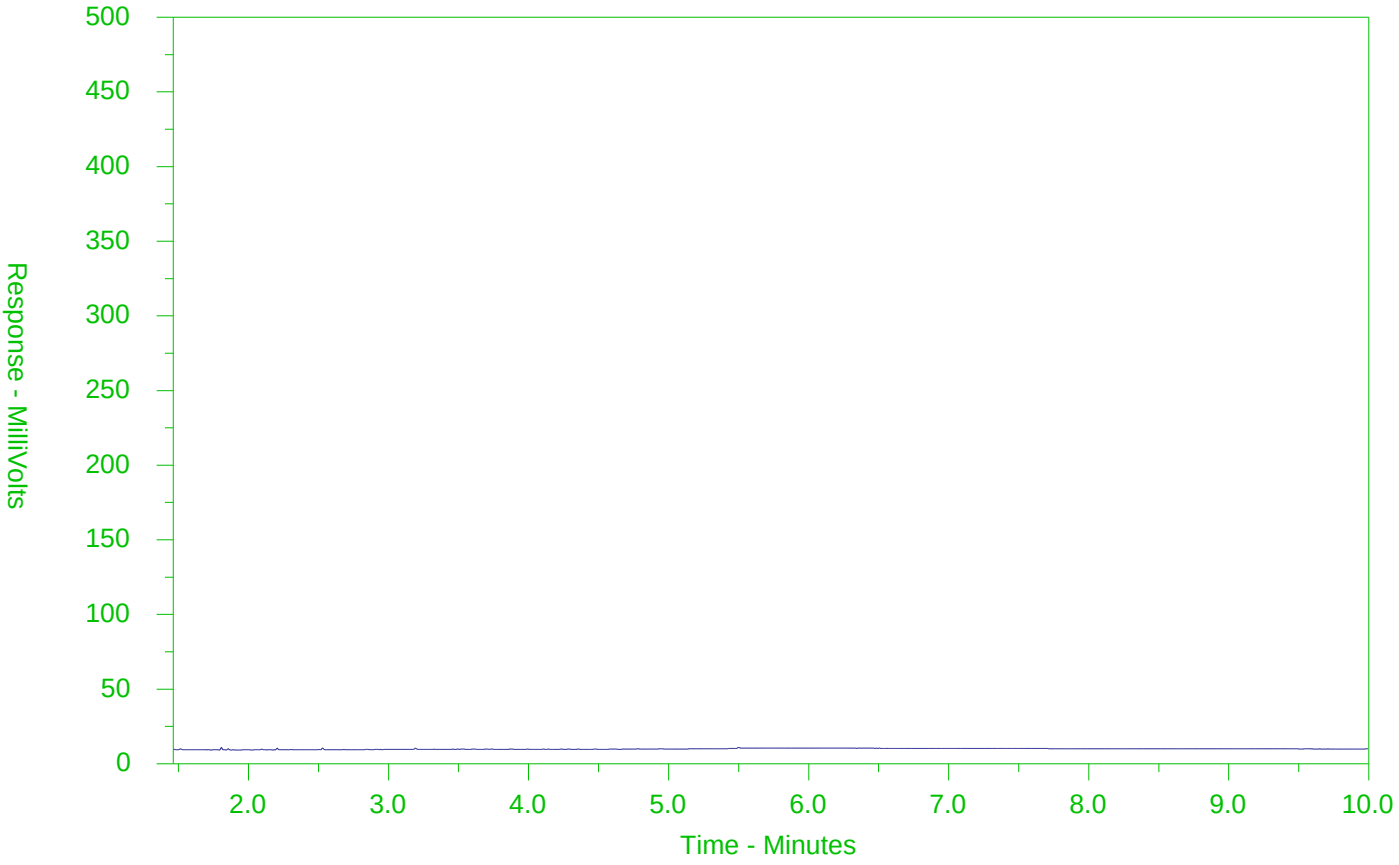
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2093541-13
Client Sample ID: GW-11149990-051118-TW-014



←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 the 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.

ALS Environmental

www.alsglobal.com

L2093541-COFC

Affix ALS barcode label here (lab use only)

COC Number: 15 - - -

Page 1 of 2

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply
Company:	GHD LIMITED Acct# 13791	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Jennifer Balkwill	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days): 4 day [P4] ☐ / 3 day [P3] ☐ / 2 day [P2] ☐ — EMERGENCY: 1 Business day [E1] ☐ / Same Day, Weekend or Statutory holiday [E0] ☐
Phone:	519-884-0510	☐ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs:
Street:	651 Colby Drive	Email 1 or Fax Jennifer.Balkwill@ghd.com	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Waterloo / Ontario	Email 2 See PO	
Postal Code:	N2V 1C2	Email 3	
Invoice To	Same as Report To ☑ YES ☐ NO	Invoice Distribution	
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:	GHD LIMITED	Email 1 or Fax Jennifer.Balkwill@ghd.com	
Contact:	Jennifer Balkwill	Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote#:		AFE/Cost Center:	PO#
Job #:	11149990-04	Major/Minor Code:	Routing Code:
PO / AFE:	73511036-1	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L2093541 CG 12B

ALS Contact: Rick H

Sampler: T. Wiltmaier

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	VOC,F1-F4	SVOCs	153 M&I pkg	Phenols-4AAP	ALK, TDS	TKN,TP	DOC	NH3	Anions3 (N2N3,SO4)	WT-CA-D, WT-MG-D, WT-FE-D, WT-MN-D	Hardness-Calc		VOC,F1 (Trip Blank)	Number of Containers
1	GW-11149990-05_11_18-TW-001	11-May-18	10:00	Water	R	R	R											
~~—~~	~~GW-11149990-05_18-TW-002~~			~~Water~~	~~R~~	~~R~~	~~R~~											
2	GW-11149990-05_11_18-TW-003	11-May-18	15:20	Water	R	R	R											
3	GW-11149990-05_11_18-TW-004	"	16:05	Water	R	R	R	R	R	R	R	R	R	R	R			
4	GW-11149990-05_11_18-TW-005		12:50	Water	R	R	R	R	R	R	R	R	R	R	R			
5	GW-11149990-05_11_18-TW-006		12:50	Water	R	R	R	R	R	R	R	R	R	R	R			
6	GW-11149990-05_11_18-TW-007		9:20	Water	R	R	R	R	R	R	R	R	R	R	R			
7	GW-11149990-05_11_18-TW-008		9:20	Water	R	R	R	R	R	R	R	R	R	R	R			
8	GW-11149990-05_11_18-TW-009		11:35	Water	R	R	R	R	R	R	R	R	R	R	R			
9	GW-11149990-05_11_18-TW-010		10:25	Water	R	R	R	R	R	R	R	R	R	R	R			
10	GW-11149990-05_11_18-TW-011		12:30	Water	R	R	R	R	R	R	R	R	R	R	R			
11	GW-11149990-05_11_18-TW-012		14:15	Water	R	R	R	R	R	R	R	R	R	R	R			

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	All metals, CrVI, Hg and DOC bottles are field filtered.
Are samples for human drinking water use? ☐ YES ☑ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☒ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			8.9°C	5.9°C	8.7°C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Tyler Wiltmaier	Date: 11-May-2018	Time:	Received by:	Date:	Time:	Received by:	Date: 11-May-18	Time: 19:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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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 back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

L2093541-COFC

COC Number: 15 -

Page 2 of 2

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply
Company:	GHD LIMITED Acct# 13791	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Jennifer Balkwill	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days): 4 day [P4] ☐ / 3 day [P3] ☐ / 2 day [P2] ☐ — EMERGENCY: 1 Business day [E1] ☐ / Same Day, Weekend or Statutory holiday [E0] ☐
Phone:	519-884-0510	☐ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs:
Street:	651 Colby Drive	Email 1 or Fax Jennifer.Balkwill@ghd.com	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Waterloo / Ontario	Email 2 See PO	
Postal Code:	N2V 1C2	Email 3	
Invoice To	Same as Report To ☑ YES ☐ NO	**Invoice Distribution**	
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:	GHD LIMITED	Email 1 or Fax Jennifer.Balkwill@ghd.com	
Contact:	Jennifer Balkwill	Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote#:		AFE/Cost Center:	PO#
Job #:	11149990-04	Major/Minor Code:	Routing Code:
PO / AFE:	73511036-1	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L2093541 CG 12B

ALS Contact: Rick H Sampler: T. Whittaker

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	VOC,F1-F4	SVOCs	153 M&I pkg	Phenols-4AAP	ALK, TDS	TKN,TP	DOC	NH3	Anions3 (N2N3,SO4)	WT-CA-D, WT-MG-D, WT-FE-D, WT-MN-D	Hardness-Calc		VOC,F1 (Trip Blank)	Number of Containers
12	GW-11149990-05 11 18-TW-013	11-May-18	17:25	Water	R	R	R	R	R	R	R	R	R	R	R			
13	GW-11149990-05 11 18-TW-014	11-May-18	17:40	Water	R	R	R	R	R	R	R	R	R	R	R			
	~~GW-11149990-05 18-TW-015~~			~~Water~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~			
	~~GW-11149990-05 18-TW-016~~			~~Water~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~			
	~~GW-11149990-05 18-TW-017~~			~~Water~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~			
	~~GW-11149990-05 18-TW-~~			~~Water~~														
	~~GW-11149990-05 18-TW-~~			~~Water~~														
14	TB-11149990-05118 Trip Blank -TW-001	11-May-18	~	Water													R	2
				Water														
				Water														
				Water														
				Water														

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human drinking water use? ☐ YES ☒ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☒ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C	
			8.9°C	5.9°C 7.9°C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: T. Whittaker, Mer Whittmaier	Date: 11-May-2018	Time:	Received by:	Date:	Time:	Received by:	Date: 11-May-18	Time: 19:39

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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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 back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY DRIVE
WATERLOO ON N2V 1C2

Date Received: 01-JUN-18
Report Date: 26-JUL-18 10:33 (MT)
Version: FINAL REV. 3

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L2105012

Project P.O. #: 73511036-2
Job Reference: 11149990-04
C of C Numbers: 17-622302
Legal Site Desc:

Comments: Report #2

Rick Hawthorne
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2105012-1 S-11149990-053018-TW-22 Sampled By: TYLER W on 30-MAY-18 @ 09:20 Matrix: SOIL							
Physical Tests							
Conductivity	0.610		0.0040	mS/cm		08-JUN-18	R4076428
% Moisture	21.1		0.10	%	08-JUN-18	09-JUN-18	R4076824
pH	7.34		0.10	pH units		07-JUN-18	R4075396
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	07-JUN-18	08-JUN-18	R4078048
Saturated Paste Extractables							
SAR	4.61		0.10	SAR		08-JUN-18	R4076234
Calcium (Ca)	18.0		1.0	mg/L		08-JUN-18	R4076234
Magnesium (Mg)	1.4		1.0	mg/L		08-JUN-18	R4076234
Sodium (Na)	75.3		1.0	mg/L		08-JUN-18	R4076234
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Arsenic (As)	2.7		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Barium (Ba)	35.2		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Beryllium (Be)	<0.50		0.50	ug/g	06-JUN-18	07-JUN-18	R4075827
Boron (B)	<5.0		5.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Boron (B), Hot Water Ext.	0.53		0.10	ug/g	08-JUN-18	08-JUN-18	R4076044
Cadmium (Cd)	0.84		0.50	ug/g	06-JUN-18	07-JUN-18	R4075827
Chromium (Cr)	13.8		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Cobalt (Co)	2.6		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Copper (Cu)	19.1		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Lead (Pb)	34.0		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Mercury (Hg)	0.268		0.0050	ug/g	06-JUN-18	07-JUN-18	R4075062
Molybdenum (Mo)	<1.0		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Nickel (Ni)	6.1		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Selenium (Se)	<1.0		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Silver (Ag)	<0.20		0.20	ug/g	06-JUN-18	07-JUN-18	R4075827
Thallium (Tl)	<0.50		0.50	ug/g	06-JUN-18	07-JUN-18	R4075827
Uranium (U)	<1.0		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Vanadium (V)	19.5		1.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Zinc (Zn)	258		5.0	ug/g	06-JUN-18	07-JUN-18	R4075827
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	08-JUN-18	11-JUN-18	R4078441
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	04-JUN-18	05-JUN-18	R4069217
Benzene	<0.0068		0.0068	ug/g	04-JUN-18	05-JUN-18	R4069217
Bromodichloromethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Bromoform	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Bromomethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Carbon tetrachloride	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Chlorobenzene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Dibromochloromethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2105012-1 S-11149990-053018-TW-22 Sampled By: TYLER W on 30-MAY-18 @ 09:20 Matrix: SOIL							
Volatile Organic Compounds							
Chloroform	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,2-Dibromoethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,2-Dichlorobenzene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,3-Dichlorobenzene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,4-Dichlorobenzene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Dichlorodifluoromethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1-Dichloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,2-Dichloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1-Dichloroethylene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Methylene Chloride	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,2-Dichloropropane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	04-JUN-18	05-JUN-18	R4069217
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	04-JUN-18	05-JUN-18	R4069217
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-JUN-18	
Ethylbenzene	<0.018		0.018	ug/g	04-JUN-18	05-JUN-18	R4069217
n-Hexane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Methyl Ethyl Ketone	<0.50		0.50	ug/g	04-JUN-18	05-JUN-18	R4069217
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	04-JUN-18	05-JUN-18	R4069217
MTBE	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Styrene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Tetrachloroethylene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Toluene	<0.080		0.080	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1,1-Trichloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1,2-Trichloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Trichloroethylene	<0.010		0.010	ug/g	04-JUN-18	05-JUN-18	R4069217
Trichlorofluoromethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Vinyl chloride	<0.020		0.020	ug/g	04-JUN-18	05-JUN-18	R4069217
o-Xylene	<0.020		0.020	ug/g	04-JUN-18	05-JUN-18	R4069217
m+p-Xylenes	<0.030		0.030	ug/g	04-JUN-18	05-JUN-18	R4069217
Xylenes (Total)	<0.050		0.050	ug/g		11-JUN-18	
Surrogate: 4-Bromofluorobenzene	98.3		50-140	%	04-JUN-18	05-JUN-18	R4069217
Surrogate: 1,4-Difluorobenzene	102.2		50-140	%	04-JUN-18	05-JUN-18	R4069217
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	04-JUN-18	05-JUN-18	R4069217
F1-BTEX	<5.0		5.0	ug/g		13-JUN-18	
F2 (C10-C16)	<10		10	ug/g	07-JUN-18	08-JUN-18	R4076279
F2-Naphth	<10		10	ug/g		13-JUN-18	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2105012-1 S-11149990-053018-TW-22 Sampled By: TYLER W on 30-MAY-18 @ 09:20 Matrix: SOIL							
Hydrocarbons							
F3 (C16-C34)	66		50	ug/g	07-JUN-18	08-JUN-18	R4076279
F3-PAH	63		50	ug/g		13-JUN-18	
F4 (C34-C50)	54		50	ug/g	07-JUN-18	08-JUN-18	R4076279
Total Hydrocarbons (C6-C50)	120		72	ug/g		13-JUN-18	
Chrom. to baseline at nC50	YES				07-JUN-18	08-JUN-18	R4076279
Surrogate: 2-Bromobenzotrifluoride	92.5		60-140	%	07-JUN-18	08-JUN-18	R4076279
Surrogate: 3,4-Dichlorotoluene	90.5		60-140	%	04-JUN-18	05-JUN-18	R4069217
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		13-JUN-18	
Semi-Volatile Organics							
Acenaphthene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Acenaphthylene	0.073		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Anthracene	0.068		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Benzo(a)anthracene	0.458	R	0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Benzo(a)pyrene	0.664		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Benzo(b)fluoranthene	0.428		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Benzo(ghi)perylene	0.437		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Benzo(k)fluoranthene	0.459		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Biphenyl	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
4-Chloroaniline	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Bis(2-chloroethyl)ether	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Bis(2-chloroisopropyl)ether	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2-Chlorophenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Chrysene	0.478		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Dibenzo(a,h)anthracene	0.067		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
3,3'-Dichlorobenzidine	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4-Dichlorophenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Diethylphthalate	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Dimethylphthalate	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4-Dimethylphenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4-Dinitrophenol	<1.0		1.0	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4-Dinitrotoluene	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2,6-Dinitrotoluene	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4+2,6-Dinitrotoluene	<0.14		0.14	ug/g		13-JUN-18	
Bis(2-ethylhexyl)phthalate	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Fluoranthene	0.389		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Fluorene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Indeno(1,2,3-cd)pyrene	0.439		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
1-Methylnaphthalene	<0.030		0.030	ug/g	08-JUN-18	13-JUN-18	R4081248
2-Methylnaphthalene	<0.030		0.030	ug/g	08-JUN-18	13-JUN-18	R4081248
Naphthalene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2105012-1 S-11149990-053018-TW-22 Sampled By: TYLER W on 30-MAY-18 @ 09:20 Matrix: SOIL							
Semi-Volatile Organics							
Pentachlorophenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Phenanthrene	0.121		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Phenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Pyrene	0.525		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
1,2,4-Trichlorobenzene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4,5-Trichlorophenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4,6-Trichlorophenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Surrogate: 2-Fluorobiphenyl	87.2		50-140	%	08-JUN-18	13-JUN-18	R4081248
Surrogate: Nitrobenzene d5	83.1		50-140	%	08-JUN-18	13-JUN-18	R4081248
Surrogate: Phenol d5	86.3		30-130	%	08-JUN-18	13-JUN-18	R4081248
Surrogate: p-Terphenyl d14	88.6		50-140	%	08-JUN-18	13-JUN-18	R4081248
Surrogate: 2,4,6-Tribromophenol	79.4		50-140	%	08-JUN-18	13-JUN-18	R4081248
Polychlorinated Biphenyls							
Aroclor 1242	<0.010		0.010	ug/g	11-JUN-18	11-JUN-18	R4077931
Aroclor 1248	<0.010		0.010	ug/g	11-JUN-18	11-JUN-18	R4077931
Aroclor 1254	<0.010		0.010	ug/g	11-JUN-18	11-JUN-18	R4077931
Aroclor 1260	<0.010		0.010	ug/g	11-JUN-18	11-JUN-18	R4077931
Total PCBs	<0.020		0.020	ug/g	11-JUN-18	11-JUN-18	R4077931
Surrogate: d14-Terphenyl	109.8		60-140	%	11-JUN-18	11-JUN-18	R4077931
L2105012-2 S-11149990-053018-TW-23 Sampled By: TYLER W on 30-MAY-18 @ 12:30 Matrix: SOIL							
Physical Tests							
Conductivity	0.707		0.0040	mS/cm		08-JUN-18	R4076428
% Moisture	22.5		0.10	%	08-JUN-18	09-JUN-18	R4076824
pH	7.50		0.10	pH units		07-JUN-18	R4075396
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	07-JUN-18	08-JUN-18	R4078048
Saturated Paste Extractables							
SAR	13.1		0.10	SAR		08-JUN-18	R4076234
Calcium (Ca)	4.5		1.0	mg/L		08-JUN-18	R4076234
Magnesium (Mg)	2.9		1.0	mg/L		08-JUN-18	R4076234
Sodium (Na)	145		1.0	mg/L		08-JUN-18	R4076234
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Arsenic (As)	7.5		1.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Barium (Ba)	242		1.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Beryllium (Be)	<0.50		0.50	ug/g	07-JUN-18	08-JUN-18	R4076202
Boron (B)	6.2		5.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Boron (B), Hot Water Ext.	0.38		0.10	ug/g	07-JUN-18	07-JUN-18	R4075761
Cadmium (Cd)	4.11		0.50	ug/g	07-JUN-18	08-JUN-18	R4076202
Chromium (Cr)	19.3		1.0	ug/g	07-JUN-18	08-JUN-18	R4076202

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2105012-2 S-11149990-053018-TW-23 Sampled By: TYLER W on 30-MAY-18 @ 12:30 Matrix: SOIL							
Metals							
Cobalt (Co)	7.5		1.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Copper (Cu)	23.9		1.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Lead (Pb)	26.2		1.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Mercury (Hg)	0.124		0.0050	ug/g	07-JUN-18	08-JUN-18	R4076045
Molybdenum (Mo)	2.8		1.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Nickel (Ni)	13.5		1.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Selenium (Se)	<1.0		1.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Silver (Ag)	<0.20		0.20	ug/g	07-JUN-18	08-JUN-18	R4076202
Thallium (Tl)	<0.50		0.50	ug/g	07-JUN-18	08-JUN-18	R4076202
Uranium (U)	<1.0		1.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Vanadium (V)	27.8		1.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Zinc (Zn)	2030		5.0	ug/g	07-JUN-18	08-JUN-18	R4076202
Speciated Metals							
Chromium, Hexavalent	0.29		0.20	ug/g	08-JUN-18	11-JUN-18	R4078441
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	04-JUN-18	05-JUN-18	R4069217
Benzene	<0.0068		0.0068	ug/g	04-JUN-18	05-JUN-18	R4069217
Bromodichloromethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Bromoform	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Bromomethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Carbon tetrachloride	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Chlorobenzene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Dibromochloromethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Chloroform	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,2-Dibromoethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,2-Dichlorobenzene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,3-Dichlorobenzene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,4-Dichlorobenzene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Dichlorodifluoromethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1-Dichloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,2-Dichloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1-Dichloroethylene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Methylene Chloride	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,2-Dichloropropane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	04-JUN-18	05-JUN-18	R4069217
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	04-JUN-18	05-JUN-18	R4069217
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-JUN-18	
Ethylbenzene	<0.018		0.018	ug/g	04-JUN-18	05-JUN-18	R4069217
n-Hexane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2105012-2 S-11149990-053018-TW-23 Sampled By: TYLER W on 30-MAY-18 @ 12:30 Matrix: SOIL							
Volatile Organic Compounds							
Methyl Ethyl Ketone	<0.50		0.50	ug/g	04-JUN-18	05-JUN-18	R4069217
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	04-JUN-18	05-JUN-18	R4069217
MTBE	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Styrene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Tetrachloroethylene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Toluene	<0.080		0.080	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1,1-Trichloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1,2-Trichloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Trichloroethylene	<0.010		0.010	ug/g	04-JUN-18	05-JUN-18	R4069217
Trichlorofluoromethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Vinyl chloride	<0.020		0.020	ug/g	04-JUN-18	05-JUN-18	R4069217
o-Xylene	<0.020		0.020	ug/g	04-JUN-18	05-JUN-18	R4069217
m+p-Xylenes	<0.030		0.030	ug/g	04-JUN-18	05-JUN-18	R4069217
Xylenes (Total)	<0.050		0.050	ug/g		11-JUN-18	
Surrogate: 4-Bromofluorobenzene	96.4		50-140	%	04-JUN-18	05-JUN-18	R4069217
Surrogate: 1,4-Difluorobenzene	94.1		50-140	%	04-JUN-18	05-JUN-18	R4069217
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	04-JUN-18	05-JUN-18	R4069217
F1-BTEX	<5.0		5.0	ug/g		13-JUN-18	
F2 (C10-C16)	<10		10	ug/g	07-JUN-18	08-JUN-18	R4076279
F2-Naphth	<10		10	ug/g		13-JUN-18	
F3 (C16-C34)	<50		50	ug/g	07-JUN-18	08-JUN-18	R4076279
F3-PAH	<50		50	ug/g		13-JUN-18	
F4 (C34-C50)	<50		50	ug/g	07-JUN-18	08-JUN-18	R4076279
Total Hydrocarbons (C6-C50)	<72		72	ug/g		13-JUN-18	
Chrom. to baseline at nC50	YES				07-JUN-18	08-JUN-18	R4076279
Surrogate: 2-Bromobenzotrifluoride	86.5		60-140	%	07-JUN-18	08-JUN-18	R4076279
Surrogate: 3,4-Dichlorotoluene	91.7		60-140	%	04-JUN-18	05-JUN-18	R4069217
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		13-JUN-18	
Semi-Volatile Organics							
Acenaphthene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Acenaphthylene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Anthracene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Benzo(a)anthracene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Benzo(a)pyrene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Benzo(b)fluoranthene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Benzo(ghi)perylene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Benzo(k)fluoranthene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Biphenyl	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248

* 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
L2105012-2 S-11149990-053018-TW-23 Sampled By: TYLER W on 30-MAY-18 @ 12:30 Matrix: SOIL							
Semi-Volatile Organics							
4-Chloroaniline	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Bis(2-chloroethyl)ether	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Bis(2-chloroisopropyl)ether	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2-Chlorophenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Chrysene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Dibenzo(a,h)anthracene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
3,3'-Dichlorobenzidine	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4-Dichlorophenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Diethylphthalate	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Dimethylphthalate	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4-Dimethylphenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4-Dinitrophenol	<1.0		1.0	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4-Dinitrotoluene	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2,6-Dinitrotoluene	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4+2,6-Dinitrotoluene	<0.14		0.14	ug/g		13-JUN-18	
Bis(2-ethylhexyl)phthalate	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Fluoranthene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Fluorene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
1-Methylnaphthalene	<0.030		0.030	ug/g	08-JUN-18	13-JUN-18	R4081248
2-Methylnaphthalene	<0.030		0.030	ug/g	08-JUN-18	13-JUN-18	R4081248
Naphthalene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Pentachlorophenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Phenanthrene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
Phenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Pyrene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
1,2,4-Trichlorobenzene	<0.050		0.050	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4,5-Trichlorophenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
2,4,6-Trichlorophenol	<0.10		0.10	ug/g	08-JUN-18	13-JUN-18	R4081248
Surrogate: 2-Fluorobiphenyl	89.0		50-140	%	08-JUN-18	13-JUN-18	R4081248
Surrogate: Nitrobenzene d5	85.6		50-140	%	08-JUN-18	13-JUN-18	R4081248
Surrogate: Phenol d5	85.5		30-130	%	08-JUN-18	13-JUN-18	R4081248
Surrogate: p-Terphenyl d14	93.2		50-140	%	08-JUN-18	13-JUN-18	R4081248
Surrogate: 2,4,6-Tribromophenol	77.9		50-140	%	08-JUN-18	13-JUN-18	R4081248
Polychlorinated Biphenyls							
Aroclor 1242	<0.010		0.010	ug/g	11-JUN-18	11-JUN-18	R4077931
Aroclor 1248	<0.010		0.010	ug/g	11-JUN-18	11-JUN-18	R4077931
Aroclor 1254	<0.010		0.010	ug/g	11-JUN-18	11-JUN-18	R4077931
Aroclor 1260	<0.010		0.010	ug/g	11-JUN-18	11-JUN-18	R4077931
Total PCBs	<0.020		0.020	ug/g	11-JUN-18	11-JUN-18	R4077931
Surrogate: d14-Terphenyl	109.7		60-140	%	11-JUN-18	11-JUN-18	R4077931

* 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
L2105012-5 TB-11149990-053018-TW-02 Sampled By: TYLER W on 30-MAY-18 Matrix: SOIL							
Physical Tests							
% Moisture	<0.10		0.10	%	08-JUN-18	09-JUN-18	R4076824
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	04-JUN-18	05-JUN-18	R4069217
Benzene	<0.0068		0.0068	ug/g	04-JUN-18	05-JUN-18	R4069217
Bromodichloromethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Bromoform	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Bromomethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Carbon tetrachloride	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Chlorobenzene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Dibromochloromethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Chloroform	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,2-Dibromoethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,2-Dichlorobenzene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,3-Dichlorobenzene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,4-Dichlorobenzene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Dichlorodifluoromethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1-Dichloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,2-Dichloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1-Dichloroethylene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Methylene Chloride	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,2-Dichloropropane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	04-JUN-18	05-JUN-18	R4069217
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	04-JUN-18	05-JUN-18	R4069217
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		11-JUN-18	
Ethylbenzene	<0.018		0.018	ug/g	04-JUN-18	05-JUN-18	R4069217
n-Hexane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Methyl Ethyl Ketone	<0.50		0.50	ug/g	04-JUN-18	05-JUN-18	R4069217
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	04-JUN-18	05-JUN-18	R4069217
MTBE	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Styrene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Tetrachloroethylene	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Toluene	<0.080		0.080	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1,1-Trichloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
1,1,2-Trichloroethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Trichloroethylene	<0.010		0.010	ug/g	04-JUN-18	05-JUN-18	R4069217
Trichlorofluoromethane	<0.050		0.050	ug/g	04-JUN-18	05-JUN-18	R4069217
Vinyl chloride	<0.020		0.020	ug/g	04-JUN-18	05-JUN-18	R4069217

* 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
L2105012-5 TB-11149990-053018-TW-02 Sampled By: TYLER W on 30-MAY-18 Matrix: SOIL							
Volatile Organic Compounds							
o-Xylene	<0.020		0.020	ug/g	04-JUN-18	05-JUN-18	R4069217
m+p-Xylenes	<0.030		0.030	ug/g	04-JUN-18	05-JUN-18	R4069217
Xylenes (Total)	<0.050		0.050	ug/g		11-JUN-18	
Surrogate: 4-Bromofluorobenzene	113.4		50-140	%	04-JUN-18	05-JUN-18	R4069217
Surrogate: 1,4-Difluorobenzene	117.3		50-140	%	04-JUN-18	05-JUN-18	R4069217
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	04-JUN-18	05-JUN-18	R4069217
Surrogate: 3,4-Dichlorotoluene	97.6		60-140	%	04-JUN-18	05-JUN-18	R4069217

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

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
R	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
625-511-WT	Soil	ABN-O.Reg 153/04 (July 2011)	SW846 8270 (511)

Soil and sediment samples are dried by mixing with a desiccant prior to extraction. The extracts are dried, concentrated and exchanged into a solvent and analyzed by GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

B-HWS-R511-WT	Soil	Boron-HWE-O.Reg 153/04 (July 2011)	HW EXTR, EPA 6010B

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CN-WAD-R511-WT	Soil	Cyanide (WAD)-O.Reg 153/04 (July 2011)	MOE 3015/APHA 4500CN I-WAD

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-WT	Soil	Hexavalent Chromium in Soil	SW846 3060A/7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

DINITROTOL-CALC-WT	Soil	ABN-Calculated Parameters	SW846 8270
EC-WT	Soil	Conductivity (EC)	MOEE E3138

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	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.

Hydrocarbon results are expressed on a dry weight basis.

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.

Reference Information

4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT Soil F1-O.Reg 153/04 (July 2011) E3398/CCME TIER 1-HS
Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT Soil F2-F4-O.Reg 153/04 (July 2011) CCME Tier 1
Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F4G-ADD-511-WT Soil F4G SG-O.Reg 153/04 (July 2011) MOE DECPH-E3398/CCME TIER 1
F4G, gravimetric analysis, is determined if the chromatogram does not return to baseline at or before C50. A soil sample is extracted with a solvent mix, the solvent is evaporated and the weight of the residue is determined.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

HG-200.2-CVAA-WT Soil Mercury in Soil by CVAAS EPA 200.2/1631E (mod)
Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-200.2-CCMS-WT Soil Metals in Soil by CRC ICPMS EPA 200.2/6020A (mod)

This method uses a heated strong acid digestion with HNO3 and HCl and is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT Soil ABN-Calculated Parameters SW846 8270

MOISTURE-WT Soil % Moisture Gravimetric: Oven Dried

PCB-511-WT Soil PCB-O.Reg 153/04 (July 2011) SW846 3510/8082
An aliquot of a solid sample is extracted with a solvent, extract is cleaned up and analyzed on the GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

PH-WT Soil pH MOEE E3137A
A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

SAR-R511-WT Soil SAR-O.Reg 153/04 (July 2011) SW846 6010C

Reference Information

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

VOC-1,3-DCP-CALC-WT	Soil	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Soil	VOC-O.Reg 153/04 (July 2011)	SW846 8260 (511)

Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION

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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

17-622302

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 weight of sample
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: L2105012 Report Date: 26-JUL-18

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4081248								
WG2792266-4 DUP		**WG2792266-3**						
1-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	12-JUN-18
1,2,4-Trichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
2-Chlorophenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	12-JUN-18
2,4-Dichlorophenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
2,4-Dimethylphenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
2,4-Dinitrophenol		<1.0	<1.0	RPD-NA	ug/g	N/A	40	12-JUN-18
2,4-Dinitrotoluene		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
2,4,5-Trichlorophenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
2,4,6-Trichlorophenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
2,6-Dinitrotoluene		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
3,3'-Dichlorobenzidine		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
4-Chloroaniline		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Benzo(ghi)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Biphenyl		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Bis(2-chloroethyl)ether		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
Bis(2-chloroisopropyl)ether		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
Bis(2-ethylhexyl)phthalate		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Dibenzo(a,h)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Diethylphthalate		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
Dimethylphthalate		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Naphthalene		<0.050	<0.050		ug/g			12-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4081248								
WG2792266-4 DUP		**WG2792266-3**						
Naphthalene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Pentachlorophenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
Phenanthrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
Phenol		<0.10	<0.10	RPD-NA	ug/g	N/A	40	12-JUN-18
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	12-JUN-18
WG2792266-2 LCS								
1-Methylnaphthalene			88.2		%		50-140	12-JUN-18
1,2,4-Trichlorobenzene			82.3		%		50-140	12-JUN-18
2-Chlorophenol			91.6		%		50-140	12-JUN-18
2-Methylnaphthalene			87.5		%		50-140	12-JUN-18
2,4-Dichlorophenol			93.4		%		50-140	12-JUN-18
2,4-Dimethylphenol			108.9		%		30-130	12-JUN-18
2,4-Dinitrophenol			97.5		%		30-130	12-JUN-18
2,4-Dinitrotoluene			83.4		%		50-140	12-JUN-18
2,4,5-Trichlorophenol			93.7		%		50-140	12-JUN-18
2,4,6-Trichlorophenol			95.0		%		50-140	12-JUN-18
2,6-Dinitrotoluene			83.7		%		50-140	12-JUN-18
3,3'-Dichlorobenzidine			66.5		%		30-130	12-JUN-18
4-Chloroaniline			77.8		%		30-130	12-JUN-18
Acenaphthene			84.1		%		50-140	12-JUN-18
Acenaphthylene			81.6		%		50-140	12-JUN-18
Anthracene			81.9		%		50-140	12-JUN-18
Benzo(a)anthracene			84.1		%		50-140	12-JUN-18
Benzo(a)pyrene			90.1		%		50-140	12-JUN-18
Benzo(b)fluoranthene			99.8		%		50-140	12-JUN-18
Benzo(ghi)perylene			74.6		%		50-140	12-JUN-18
Benzo(k)fluoranthene			93.1		%		50-140	12-JUN-18
Biphenyl			90.3		%		50-140	12-JUN-18
Bis(2-chloroethyl)ether			86.7		%		50-140	12-JUN-18
Bis(2-chloroisopropyl)ether			85.2		%		50-140	12-JUN-18
Bis(2-ethylhexyl)phthalate			83.8		%		50-140	12-JUN-18
Chrysene			97.0		%		50-140	12-JUN-18
Dibenzo(a,h)anthracene			72.0		%		50-140	12-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4081248								
WG2792266-2 LCS								
Diethylphthalate			89.4		%		50-140	12-JUN-18
Dimethylphthalate			89.4		%		50-140	12-JUN-18
Fluoranthene			89.6		%		50-140	12-JUN-18
Fluorene			86.0		%		50-140	12-JUN-18
Indeno(1,2,3-cd)pyrene			70.6		%		50-140	12-JUN-18
Naphthalene			82.6		%		50-140	12-JUN-18
Pentachlorophenol			94.7		%		50-140	12-JUN-18
Phenanthrene			84.8		%		50-140	12-JUN-18
Phenol			98.1		%		30-130	12-JUN-18
Pyrene			90.7		%		50-140	12-JUN-18
WG2792266-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	12-JUN-18
1,2,4-Trichlorobenzene			<0.050		ug/g		0.05	12-JUN-18
2-Chlorophenol			<0.10		ug/g		0.1	12-JUN-18
2-Methylnaphthalene			<0.030		ug/g		0.03	12-JUN-18
2,4-Dichlorophenol			<0.10		ug/g		0.1	12-JUN-18
2,4-Dimethylphenol			<0.10		ug/g		0.1	12-JUN-18
2,4-Dinitrophenol			<1.0		ug/g		1	12-JUN-18
2,4-Dinitrotoluene			<0.10		ug/g		0.1	12-JUN-18
2,4,5-Trichlorophenol			<0.10		ug/g		0.1	12-JUN-18
2,4,6-Trichlorophenol			<0.10		ug/g		0.1	12-JUN-18
2,6-Dinitrotoluene			<0.10		ug/g		0.1	12-JUN-18
3,3'-Dichlorobenzidine			<0.10		ug/g		0.1	12-JUN-18
4-Chloroaniline			<0.10		ug/g		0.1	12-JUN-18
Acenaphthene			<0.050		ug/g		0.05	12-JUN-18
Acenaphthylene			<0.050		ug/g		0.05	12-JUN-18
Anthracene			<0.050		ug/g		0.05	12-JUN-18
Benzo(a)anthracene			<0.050		ug/g		0.05	12-JUN-18
Benzo(a)pyrene			<0.050		ug/g		0.05	12-JUN-18
Benzo(b)fluoranthene			<0.050		ug/g		0.05	12-JUN-18
Benzo(ghi)perylene			<0.050		ug/g		0.05	12-JUN-18
Benzo(k)fluoranthene			<0.050		ug/g		0.05	12-JUN-18
Biphenyl			<0.050		ug/g		0.05	12-JUN-18
Bis(2-chloroethyl)ether			<0.10		ug/g		0.1	12-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4081248								
WG2792266-1 MB								
Bis(2-chloroisopropyl)ether			<0.10		ug/g		0.1	12-JUN-18
Bis(2-ethylhexyl)phthalate			<0.10		ug/g		0.1	12-JUN-18
Chrysene			<0.050		ug/g		0.05	12-JUN-18
Dibenzo(a,h)anthracene			<0.050		ug/g		0.05	12-JUN-18
Diethylphthalate			<0.10		ug/g		0.1	12-JUN-18
Dimethylphthalate			<0.10		ug/g		0.1	12-JUN-18
Fluoranthene			<0.050		ug/g		0.05	12-JUN-18
Fluorene			<0.050		ug/g		0.05	12-JUN-18
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	12-JUN-18
Naphthalene			<0.050		ug/g		0.05	12-JUN-18
Pentachlorophenol			<0.10		ug/g		0.1	12-JUN-18
Phenanthrene			<0.050		ug/g		0.05	12-JUN-18
Phenol			<0.10		ug/g		0.1	12-JUN-18
Pyrene			<0.050		ug/g		0.05	12-JUN-18
Surrogate: 2-Fluorobiphenyl			66.9		%		50-140	12-JUN-18
Surrogate: 2,4,6-Tribromophenol			56.1		%		50-140	12-JUN-18
Surrogate: Nitrobenzene d5			86.1		%		50-140	12-JUN-18
Surrogate: p-Terphenyl d14			110.8		%		50-140	12-JUN-18
Surrogate: Phenol d5			92.4		%		30-130	12-JUN-18
WG2792266-5 MS		**WG2792266-3**						
1-Methylnaphthalene			95.3		%		50-140	12-JUN-18
1,2,4-Trichlorobenzene			93.7		%		50-140	12-JUN-18
2-Chlorophenol			96.5		%		50-140	12-JUN-18
2-Methylnaphthalene			95.9		%		50-140	12-JUN-18
2,4-Dichlorophenol			100.4		%		50-140	12-JUN-18
2,4-Dimethylphenol			117.8		%		30-150	12-JUN-18
2,4-Dinitrophenol			104.7		%		30-150	12-JUN-18
2,4-Dinitrotoluene			91.7		%		50-140	12-JUN-18
2,4,5-Trichlorophenol			102.2		%		50-140	12-JUN-18
2,4,6-Trichlorophenol			103.0		%		50-140	12-JUN-18
2,6-Dinitrotoluene			92.5		%		50-140	12-JUN-18
3,3'-Dichlorobenzidine			81.6		%		30-130	12-JUN-18
4-Chloroaniline			84.4		%		30-130	12-JUN-18
Acenaphthene			91.0		%		50-140	12-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Soil**							
Batch R4081248								
WG2792266-5 MS		**WG2792266-3**						
Acenaphthylene			90.6		%		50-140	12-JUN-18
Anthracene			88.4		%		50-140	12-JUN-18
Benzo(a)anthracene			96.4		%		50-140	12-JUN-18
Benzo(a)pyrene			98.8		%		50-140	12-JUN-18
Benzo(b)fluoranthene			107.2		%		50-140	12-JUN-18
Benzo(ghi)perylene			85.8		%		50-140	12-JUN-18
Benzo(k)fluoranthene			95.0		%		50-140	12-JUN-18
Biphenyl			99.4		%		50-140	12-JUN-18
Bis(2-chloroethyl)ether			91.4		%		50-140	12-JUN-18
Bis(2-chloroisopropyl)ether			91.8		%		50-140	12-JUN-18
Bis(2-ethylhexyl)phthalate			91.8		%		50-140	12-JUN-18
Chrysene			103.9		%		50-140	12-JUN-18
Dibenzo(a,h)anthracene			83.5		%		50-140	12-JUN-18
Diethylphthalate			95.9		%		50-140	12-JUN-18
Dimethylphthalate			97.9		%		50-140	12-JUN-18
Fluoranthene			90.1		%		50-140	12-JUN-18
Fluorene			92.1		%		50-140	12-JUN-18
Indeno(1,2,3-cd)pyrene			87.2		%		50-140	12-JUN-18
Naphthalene			91.0		%		50-140	12-JUN-18
Pentachlorophenol			107.6		%		50-140	12-JUN-18
Phenanthrene			91.9		%		50-140	12-JUN-18
Phenol			102.2		%		30-130	12-JUN-18
Pyrene			90.1		%		50-140	12-JUN-18
B-HWS-R511-WT	**Soil**							
Batch R4075761								
WG2791424-4 DUP		**L2100878-1**						
Boron (B), Hot Water Ext.		<0.10	<0.10	RPD-NA	ug/g	N/A	30	07-JUN-18
WG2791424-2 IRM		**HOTB-SAL_SOIL5**						
Boron (B), Hot Water Ext.			105.3		%		70-130	07-JUN-18
WG2791424-3 LCS								
Boron (B), Hot Water Ext.			106.3		%		70-130	07-JUN-18
WG2791424-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	07-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	**Soil**							
Batch R4076044								
WG2791782-4 DUP		**L2105662-6**						
Boron (B), Hot Water Ext.		0.20	0.19		ug/g	2.9	30	08-JUN-18
WG2791782-2 IRM		**HOTB-SAL_SOIL5**						
Boron (B), Hot Water Ext.			108.0		%		70-130	08-JUN-18
WG2791782-3 LCS								
Boron (B), Hot Water Ext.			108.3		%		70-130	08-JUN-18
WG2791782-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	08-JUN-18
CN-WAD-R511-WT	**Soil**							
Batch R4078048								
WG2791101-3 DUP		**L2105552-1**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	08-JUN-18
WG2791101-2 LCS								
Cyanide, Weak Acid Diss			92.2		%		80-120	08-JUN-18
WG2791101-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	08-JUN-18
WG2791101-4 MS		**L2105552-1**						
Cyanide, Weak Acid Diss			97.2		%		70-130	08-JUN-18
CR-CR6-IC-WT	**Soil**							
Batch R4078441								
WG2792368-3 CRM		**WT-SQC012**						
Chromium, Hexavalent			92.8		%		70-130	11-JUN-18
WG2792368-4 DUP		**L2105012-2**						
Chromium, Hexavalent		0.29	<0.20	RPD-NA	ug/g	N/A	35	11-JUN-18
WG2792368-2 LCS								
Chromium, Hexavalent			99.0		%		80-120	11-JUN-18
WG2792368-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	11-JUN-18
EC-WT	**Soil**							
Batch R4076428								
WG2791786-4 DUP		**WG2791786-3**						
Conductivity		0.675	0.670		mS/cm	0.7	20	08-JUN-18
WG2791976-1 LCS								
Conductivity			98.4		%		90-110	08-JUN-18
WG2791786-1 MB								
Conductivity			<0.0040		mS/cm		0.004	08-JUN-18
F1-HS-511-WT	**Soil**							

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Soil**							
Batch R4069217								
WG2787662-4 DUP		**WG2787662-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	05-JUN-18
WG2787662-2 LCS								
F1 (C6-C10)			106.9		%		80-120	05-JUN-18
WG2787662-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	05-JUN-18
Surrogate: 3,4-Dichlorotoluene			111.1		%		60-140	05-JUN-18
WG2787662-6 MS		**L2104927-1**						
F1 (C6-C10)			77.0		%		60-140	05-JUN-18
F2-F4-511-WT	**Soil**							
Batch R4076279								
WG2791173-3 DUP		**WG2791173-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	08-JUN-18
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	08-JUN-18
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	08-JUN-18
WG2791173-2 LCS								
F2 (C10-C16)			105.2		%		80-120	08-JUN-18
F3 (C16-C34)			104.1		%		80-120	08-JUN-18
F4 (C34-C50)			106.8		%		80-120	08-JUN-18
WG2791173-1 MB								
F2 (C10-C16)			<10		ug/g		10	08-JUN-18
F3 (C16-C34)			<50		ug/g		50	08-JUN-18
F4 (C34-C50)			<50		ug/g		50	08-JUN-18
Surrogate: 2-Bromobenzotrifluoride			91.1		%		60-140	08-JUN-18
WG2791173-4 MS		**WG2791173-5**						
F2 (C10-C16)			107.4		%		60-140	08-JUN-18
F3 (C16-C34)			105.2		%		60-140	08-JUN-18
F4 (C34-C50)			109.6		%		60-140	08-JUN-18
HG-200.2-CVAA-WT	**Soil**							
Batch R4075062								
WG2790526-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			119.7		%		70-130	07-JUN-18
WG2790526-6 DUP		**WG2790526-5**						
Mercury (Hg)		0.0398	0.0595		ug/g	40	40	07-JUN-18
WG2790526-3 LCS								
Mercury (Hg)			109.5		%		80-120	07-JUN-18
WG2790526-1 MB								

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAA-WT	**Soil**							
Batch R4075062								
WG2790526-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	07-JUN-18
Batch R4076045								
WG2791355-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			99.0		%		70-130	08-JUN-18
WG2791355-6 DUP		**WG2791355-5**						
Mercury (Hg)		0.0090	0.0091		ug/g	1.6	40	08-JUN-18
WG2791355-3 LCS								
Mercury (Hg)			101.0		%		80-120	08-JUN-18
WG2791355-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	08-JUN-18
MET-200.2-CCMS-WT	**Soil**							
Batch R4075827								
WG2790526-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			104.4		%		70-130	07-JUN-18
Arsenic (As)			105.4		%		70-130	07-JUN-18
Barium (Ba)			112.9		%		70-130	07-JUN-18
Beryllium (Be)			104.5		%		70-130	07-JUN-18
Boron (B)			3.1		mg/kg		0-8.2	07-JUN-18
Cadmium (Cd)			96.9		%		70-130	07-JUN-18
Chromium (Cr)			104.0		%		70-130	07-JUN-18
Cobalt (Co)			104.9		%		70-130	07-JUN-18
Copper (Cu)			105.6		%		70-130	07-JUN-18
Lead (Pb)			93.1		%		70-130	07-JUN-18
Molybdenum (Mo)			102.9		%		70-130	07-JUN-18
Nickel (Ni)			102.7		%		70-130	07-JUN-18
Selenium (Se)			0.34		mg/kg		0.11-0.51	07-JUN-18
Silver (Ag)			0.23		mg/kg		0.13-0.33	07-JUN-18
Thallium (Tl)			0.116		mg/kg		0.077-0.18	07-JUN-18
Uranium (U)			92.1		%		70-130	07-JUN-18
Vanadium (V)			103.8		%		70-130	07-JUN-18
Zinc (Zn)			100.9		%		70-130	07-JUN-18
WG2790526-6 DUP		**WG2790526-5**						
Antimony (Sb)		0.63	0.73		ug/g	13	30	07-JUN-18
Arsenic (As)		2.39	2.25		ug/g	6.4	30	07-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4075827								
WG2790526-6 DUP		**WG2790526-5**						
Barium (Ba)		30.8	29.0		ug/g	6.2	40	07-JUN-18
Beryllium (Be)		0.25	0.25		ug/g	0.7	30	07-JUN-18
Boron (B)		5.3	<5.0	RPD-NA	ug/g	N/A	30	07-JUN-18
Cadmium (Cd)		0.273	0.260		ug/g	5.0	30	07-JUN-18
Chromium (Cr)		10.4	9.98		ug/g	3.6	30	07-JUN-18
Cobalt (Co)		3.35	3.20		ug/g	4.5	30	07-JUN-18
Copper (Cu)		13.0	12.1		ug/g	7.6	30	07-JUN-18
Lead (Pb)		28.8	29.5		ug/g	2.5	40	07-JUN-18
Molybdenum (Mo)		0.34	0.32		ug/g	3.7	40	07-JUN-18
Nickel (Ni)		7.92	7.13		ug/g	10	30	07-JUN-18
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	07-JUN-18
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	07-JUN-18
Thallium (Tl)		0.060	0.057		ug/g	4.9	30	07-JUN-18
Uranium (U)		0.458	0.415		ug/g	9.9	30	07-JUN-18
Vanadium (V)		24.2	21.7		ug/g	11	30	07-JUN-18
Zinc (Zn)		67.9	60.0		ug/g	12	30	07-JUN-18
WG2790526-4 LCS								
Antimony (Sb)			109.6		%		80-120	07-JUN-18
Arsenic (As)			112.6		%		80-120	07-JUN-18
Barium (Ba)			112.4		%		80-120	07-JUN-18
Beryllium (Be)			111.4		%		80-120	07-JUN-18
Boron (B)			113.7		%		80-120	07-JUN-18
Cadmium (Cd)			103.6		%		80-120	07-JUN-18
Chromium (Cr)			112.0		%		80-120	07-JUN-18
Cobalt (Co)			108.5		%		80-120	07-JUN-18
Copper (Cu)			107.4		%		80-120	07-JUN-18
Lead (Pb)			107.0		%		80-120	07-JUN-18
Molybdenum (Mo)			106.6		%		80-120	07-JUN-18
Nickel (Ni)			108.4		%		80-120	07-JUN-18
Selenium (Se)			110.4		%		80-120	07-JUN-18
Silver (Ag)			102.4		%		80-120	07-JUN-18
Thallium (Tl)			107.1		%		80-120	07-JUN-18
Uranium (U)			100.2		%		80-120	07-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4075827								
WG2790526-4 LCS								
Vanadium (V)			113.6		%		80-120	07-JUN-18
Zinc (Zn)			102.9		%		80-120	07-JUN-18
WG2790526-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	07-JUN-18
Arsenic (As)			<0.10		mg/kg		0.1	07-JUN-18
Barium (Ba)			<0.50		mg/kg		0.5	07-JUN-18
Beryllium (Be)			<0.10		mg/kg		0.1	07-JUN-18
Boron (B)			<5.0		mg/kg		5	07-JUN-18
Cadmium (Cd)			<0.020		mg/kg		0.02	07-JUN-18
Chromium (Cr)			<0.50		mg/kg		0.5	07-JUN-18
Cobalt (Co)			<0.10		mg/kg		0.1	07-JUN-18
Copper (Cu)			<0.50		mg/kg		0.5	07-JUN-18
Lead (Pb)			<0.50		mg/kg		0.5	07-JUN-18
Molybdenum (Mo)			<0.10		mg/kg		0.1	07-JUN-18
Nickel (Ni)			<0.50		mg/kg		0.5	07-JUN-18
Selenium (Se)			<0.20		mg/kg		0.2	07-JUN-18
Silver (Ag)			<0.10		mg/kg		0.1	07-JUN-18
Thallium (Tl)			<0.050		mg/kg		0.05	07-JUN-18
Uranium (U)			<0.050		mg/kg		0.05	07-JUN-18
Vanadium (V)			<0.20		mg/kg		0.2	07-JUN-18
Zinc (Zn)			<2.0		mg/kg		2	07-JUN-18
Batch R4076202								
WG2791355-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			101.7		%		70-130	08-JUN-18
Arsenic (As)			103.8		%		70-130	08-JUN-18
Barium (Ba)			111.5		%		70-130	08-JUN-18
Beryllium (Be)			102.7		%		70-130	08-JUN-18
Boron (B)			3.4		mg/kg		0-8.2	08-JUN-18
Cadmium (Cd)			102.9		%		70-130	08-JUN-18
Chromium (Cr)			100.2		%		70-130	08-JUN-18
Cobalt (Co)			104.5		%		70-130	08-JUN-18
Copper (Cu)			105.2		%		70-130	08-JUN-18
Lead (Pb)			92.7		%		70-130	08-JUN-18
Molybdenum (Mo)			105.8		%		70-130	08-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4076202								
WG2791355-2 CRM		**WT-CANMET-TILL1**						
Nickel (Ni)			103.7		%		70-130	08-JUN-18
Selenium (Se)			0.32		mg/kg		0.11-0.51	08-JUN-18
Silver (Ag)			0.22		mg/kg		0.13-0.33	08-JUN-18
Thallium (Tl)			0.105		mg/kg		0.077-0.18	08-JUN-18
Uranium (U)			87.6		%		70-130	08-JUN-18
Vanadium (V)			102.9		%		70-130	08-JUN-18
Zinc (Zn)			97.3		%		70-130	08-JUN-18
WG2791355-6 DUP		**WG2791355-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	08-JUN-18
Arsenic (As)		1.43	1.34		ug/g	6.4	30	08-JUN-18
Barium (Ba)		23.8	21.6		ug/g	9.6	40	08-JUN-18
Beryllium (Be)		0.19	0.18		ug/g	3.6	30	08-JUN-18
Boron (B)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	08-JUN-18
Cadmium (Cd)		0.037	0.036		ug/g	2.0	30	08-JUN-18
Chromium (Cr)		7.42	6.69		ug/g	10	30	08-JUN-18
Cobalt (Co)		3.31	3.03		ug/g	9.0	30	08-JUN-18
Copper (Cu)		5.50	5.04		ug/g	8.7	30	08-JUN-18
Lead (Pb)		4.89	4.71		ug/g	3.8	40	08-JUN-18
Molybdenum (Mo)		0.26	0.24		ug/g	9.3	40	08-JUN-18
Nickel (Ni)		7.07	6.53		ug/g	7.9	30	08-JUN-18
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	08-JUN-18
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	08-JUN-18
Thallium (Tl)		<0.050	<0.050	RPD-NA	ug/g	N/A	30	08-JUN-18
Uranium (U)		0.300	0.308		ug/g	2.8	30	08-JUN-18
Vanadium (V)		10.3	10.3		ug/g	0.4	30	08-JUN-18
Zinc (Zn)		19.7	18.9		ug/g	4.2	30	08-JUN-18
WG2791355-4 LCS								
Antimony (Sb)			100.5		%		80-120	08-JUN-18
Arsenic (As)			96.4		%		80-120	08-JUN-18
Barium (Ba)			96.9		%		80-120	08-JUN-18
Beryllium (Be)			99.8		%		80-120	08-JUN-18
Boron (B)			101.1		%		80-120	08-JUN-18
Cadmium (Cd)			96.4		%		80-120	08-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4076202								
WG2791355-4 LCS								
Chromium (Cr)			97.0		%		80-120	08-JUN-18
Cobalt (Co)			96.0		%		80-120	08-JUN-18
Copper (Cu)			96.2		%		80-120	08-JUN-18
Lead (Pb)			96.5		%		80-120	08-JUN-18
Molybdenum (Mo)			99.96		%		80-120	08-JUN-18
Nickel (Ni)			95.9		%		80-120	08-JUN-18
Selenium (Se)			98.2		%		80-120	08-JUN-18
Silver (Ag)			89.7		%		80-120	08-JUN-18
Thallium (Tl)			95.2		%		80-120	08-JUN-18
Uranium (U)			91.1		%		80-120	08-JUN-18
Vanadium (V)			100.8		%		80-120	08-JUN-18
Zinc (Zn)			89.4		%		80-120	08-JUN-18
WG2791355-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	08-JUN-18
Arsenic (As)			<0.10		mg/kg		0.1	08-JUN-18
Barium (Ba)			<0.50		mg/kg		0.5	08-JUN-18
Beryllium (Be)			<0.10		mg/kg		0.1	08-JUN-18
Boron (B)			<5.0		mg/kg		5	08-JUN-18
Cadmium (Cd)			<0.020		mg/kg		0.02	08-JUN-18
Chromium (Cr)			<0.50		mg/kg		0.5	08-JUN-18
Cobalt (Co)			<0.10		mg/kg		0.1	08-JUN-18
Copper (Cu)			<0.50		mg/kg		0.5	08-JUN-18
Lead (Pb)			<0.50		mg/kg		0.5	08-JUN-18
Molybdenum (Mo)			<0.10		mg/kg		0.1	08-JUN-18
Nickel (Ni)			<0.50		mg/kg		0.5	08-JUN-18
Selenium (Se)			<0.20		mg/kg		0.2	08-JUN-18
Silver (Ag)			<0.10		mg/kg		0.1	08-JUN-18
Thallium (Tl)			<0.050		mg/kg		0.05	08-JUN-18
Uranium (U)			<0.050		mg/kg		0.05	08-JUN-18
Vanadium (V)			<0.20		mg/kg		0.2	08-JUN-18
Zinc (Zn)			<2.0		mg/kg		2	08-JUN-18
MOISTURE-WT	**Soil**							

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	**Soil**							
Batch R4076824								
WG2792290-3 DUP		**L2105977-3**						
% Moisture		7.98	7.76		%	2.8	20	09-JUN-18
WG2792290-2 LCS								
% Moisture			99.3		%		90-110	09-JUN-18
WG2792290-1 MB								
% Moisture			<0.10		%		0.1	09-JUN-18
PCB-511-WT	**Soil**							
Batch R4077931								
WG2792156-3 DUP		**WG2792156-5**						
Aroclor 1242		<0.010	<0.010	RPD-NA	ug/g	N/A	40	11-JUN-18
Aroclor 1248		<0.010	<0.010	RPD-NA	ug/g	N/A	40	11-JUN-18
Aroclor 1254		<0.010	<0.010	RPD-NA	ug/g	N/A	40	11-JUN-18
Aroclor 1260		<0.010	<0.010	RPD-NA	ug/g	N/A	40	11-JUN-18
WG2792156-2 LCS								
Aroclor 1242			94.3		%		60-140	11-JUN-18
Aroclor 1248			97.7		%		60-140	11-JUN-18
Aroclor 1254			103.8		%		60-140	11-JUN-18
Aroclor 1260			109.7		%		60-140	11-JUN-18
WG2792156-1 MB								
Aroclor 1242			<0.010		ug/g		0.01	11-JUN-18
Aroclor 1248			<0.010		ug/g		0.01	11-JUN-18
Aroclor 1254			<0.010		ug/g		0.01	11-JUN-18
Aroclor 1260			<0.010		ug/g		0.01	11-JUN-18
Surrogate: d14-Terphenyl			99.6		%		60-140	11-JUN-18
WG2792156-4 MS		**WG2792156-5**						
Aroclor 1242			90.8		%		60-140	11-JUN-18
Aroclor 1254			103.9		%		60-140	11-JUN-18
Aroclor 1260			112.3		%		60-140	11-JUN-18
PH-WT	**Soil**							
Batch R4075396								
WG2789617-1 DUP		**L2106497-3**						
pH		8.50	8.51	J	pH units	0.01	0.3	07-JUN-18
WG2790996-1 LCS								
pH			6.98		pH units		6.9-7.1	07-JUN-18
SAR-R511-WT	**Soil**							

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	**Soil**							
Batch R4076234								
WG2791786-4 DUP		**WG2791786-3**						
Calcium (Ca)		11.0	10.5		mg/L	5.0	30	08-JUN-18
Sodium (Na)		118	119		mg/L	1.2	30	08-JUN-18
Magnesium (Mg)		13.4	13.6		mg/L	1.5	30	08-JUN-18
WG2791786-2 IRM		**WT SAR2**						
Calcium (Ca)			106.7		%		70-130	08-JUN-18
Sodium (Na)			98.4		%		70-130	08-JUN-18
Magnesium (Mg)			105.1		%		70-130	08-JUN-18
WG2791786-1 MB								
Calcium (Ca)			<1.0		mg/L		1	08-JUN-18
Sodium (Na)			<1.0		mg/L		1	08-JUN-18
Magnesium (Mg)			<1.0		mg/L		1	08-JUN-18
VOC-511-HS-WT	**Soil**							
Batch R4069217								
WG2787662-4 DUP		**WG2787662-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	05-JUN-18
Benzene		0.0128	0.0125		ug/g	2.4	40	05-JUN-18
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4069217								
WG2787662-4 DUP		**WG2787662-3**						
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	05-JUN-18
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	05-JUN-18
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
m+p-Xylenes		0.118	0.115		ug/g	2.6	40	05-JUN-18
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	05-JUN-18
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	05-JUN-18
o-Xylene		0.054	0.052		ug/g	3.4	40	05-JUN-18
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	05-JUN-18
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	05-JUN-18
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	05-JUN-18
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-JUN-18
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	05-JUN-18
WG2787662-2 LCS								
1,1,1,2-Tetrachloroethane			103.0		%		60-130	05-JUN-18
1,1,2,2-Tetrachloroethane			111.8		%		60-130	05-JUN-18
1,1,1-Trichloroethane			101.6		%		60-130	05-JUN-18
1,1,2-Trichloroethane			113.0		%		60-130	05-JUN-18
1,1-Dichloroethane			102.1		%		60-130	05-JUN-18
1,1-Dichloroethylene			93.7		%		60-130	05-JUN-18
1,2-Dibromoethane			113.2		%		70-130	05-JUN-18
1,2-Dichlorobenzene			107.5		%		70-130	05-JUN-18
1,2-Dichloroethane			116.7		%		60-130	05-JUN-18
1,2-Dichloropropane			109.8		%		70-130	05-JUN-18
1,3-Dichlorobenzene			104.3		%		70-130	05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4069217								
WG2787662-2 LCS								
1,4-Dichlorobenzene			106.4		%		70-130	05-JUN-18
Acetone			125.8		%		60-140	05-JUN-18
Benzene			108.5		%		70-130	05-JUN-18
Bromodichloromethane			106.3		%		50-140	05-JUN-18
Bromoform			102.2		%		70-130	05-JUN-18
Bromomethane			103.2		%		50-140	05-JUN-18
Carbon tetrachloride			98.4		%		70-130	05-JUN-18
Chlorobenzene			106.7		%		70-130	05-JUN-18
Chloroform			107.7		%		70-130	05-JUN-18
cis-1,2-Dichloroethylene			109.5		%		70-130	05-JUN-18
cis-1,3-Dichloropropene			113.0		%		70-130	05-JUN-18
Dibromochloromethane			108.5		%		60-130	05-JUN-18
Dichlorodifluoromethane			74.2		%		50-140	05-JUN-18
Ethylbenzene			103.6		%		70-130	05-JUN-18
n-Hexane			102.5		%		70-130	05-JUN-18
Methylene Chloride			110.2		%		70-130	05-JUN-18
MTBE			107.1		%		70-130	05-JUN-18
m+p-Xylenes			104.4		%		70-130	05-JUN-18
Methyl Ethyl Ketone			122.8		%		60-140	05-JUN-18
Methyl Isobutyl Ketone			119.4		%		60-140	05-JUN-18
o-Xylene			104.1		%		70-130	05-JUN-18
Styrene			105.2		%		70-130	05-JUN-18
Tetrachloroethylene			101.9		%		60-130	05-JUN-18
Toluene			105.7		%		70-130	05-JUN-18
trans-1,2-Dichloroethylene			104.9		%		60-130	05-JUN-18
trans-1,3-Dichloropropene			110.7		%		70-130	05-JUN-18
Trichloroethylene			106.6		%		60-130	05-JUN-18
Trichlorofluoromethane			99.7		%		50-140	05-JUN-18
Vinyl chloride			93.2		%		60-140	05-JUN-18
WG2787662-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	05-JUN-18
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	05-JUN-18
1,1,1-Trichloroethane			<0.050		ug/g		0.05	05-JUN-18
1,1,2-Trichloroethane			<0.050		ug/g		0.05	05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4069217								
WG2787662-1 MB								
1,1-Dichloroethane			<0.050		ug/g		0.05	05-JUN-18
1,1-Dichloroethylene			<0.050		ug/g		0.05	05-JUN-18
1,2-Dibromoethane			<0.050		ug/g		0.05	05-JUN-18
1,2-Dichlorobenzene			<0.050		ug/g		0.05	05-JUN-18
1,2-Dichloroethane			<0.050		ug/g		0.05	05-JUN-18
1,2-Dichloropropane			<0.050		ug/g		0.05	05-JUN-18
1,3-Dichlorobenzene			<0.050		ug/g		0.05	05-JUN-18
1,4-Dichlorobenzene			<0.050		ug/g		0.05	05-JUN-18
Acetone			<0.50		ug/g		0.5	05-JUN-18
Benzene			<0.0068		ug/g		0.0068	05-JUN-18
Bromodichloromethane			<0.050		ug/g		0.05	05-JUN-18
Bromoform			<0.050		ug/g		0.05	05-JUN-18
Bromomethane			<0.050		ug/g		0.05	05-JUN-18
Carbon tetrachloride			<0.050		ug/g		0.05	05-JUN-18
Chlorobenzene			<0.050		ug/g		0.05	05-JUN-18
Chloroform			<0.050		ug/g		0.05	05-JUN-18
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	05-JUN-18
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	05-JUN-18
Dibromochloromethane			<0.050		ug/g		0.05	05-JUN-18
Dichlorodifluoromethane			<0.050		ug/g		0.05	05-JUN-18
Ethylbenzene			<0.018		ug/g		0.018	05-JUN-18
n-Hexane			<0.050		ug/g		0.05	05-JUN-18
Methylene Chloride			<0.050		ug/g		0.05	05-JUN-18
MTBE			<0.050		ug/g		0.05	05-JUN-18
m+p-Xylenes			<0.030		ug/g		0.03	05-JUN-18
Methyl Ethyl Ketone			<0.50		ug/g		0.5	05-JUN-18
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	05-JUN-18
o-Xylene			<0.020		ug/g		0.02	05-JUN-18
Styrene			<0.050		ug/g		0.05	05-JUN-18
Tetrachloroethylene			<0.050		ug/g		0.05	05-JUN-18
Toluene			<0.080		ug/g		0.08	05-JUN-18
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	05-JUN-18
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4069217								
WG2787662-1 MB								
Trichloroethylene			<0.010		ug/g		0.01	05-JUN-18
Trichlorofluoromethane			<0.050		ug/g		0.05	05-JUN-18
Vinyl chloride			<0.020		ug/g		0.02	05-JUN-18
Surrogate: 1,4-Difluorobenzene			104.5		%		50-140	05-JUN-18
Surrogate: 4-Bromofluorobenzene			102.7		%		50-140	05-JUN-18
WG2787662-5 MS		**L2104880-1**						
1,1,1,2-Tetrachloroethane			103.7		%		50-140	05-JUN-18
1,1,2,2-Tetrachloroethane			102.4		%		50-140	05-JUN-18
1,1,1-Trichloroethane			102.4		%		50-140	05-JUN-18
1,1,2-Trichloroethane			114.3		%		50-140	05-JUN-18
1,1-Dichloroethane			102.8		%		50-140	05-JUN-18
1,1-Dichloroethylene			95.3		%		50-140	05-JUN-18
1,2-Dibromoethane			113.8		%		50-140	05-JUN-18
1,2-Dichlorobenzene			105.7		%		50-140	05-JUN-18
1,2-Dichloroethane			116.2		%		50-140	05-JUN-18
1,2-Dichloropropane			110.0		%		50-140	05-JUN-18
1,3-Dichlorobenzene			101.3		%		50-140	05-JUN-18
1,4-Dichlorobenzene			103.9		%		50-140	05-JUN-18
Acetone			126.6		%		50-140	05-JUN-18
Benzene			109.1		%		50-140	05-JUN-18
Bromodichloromethane			105.8		%		50-140	05-JUN-18
Bromoform			100.9		%		50-140	05-JUN-18
Bromomethane			94.9		%		50-140	05-JUN-18
Carbon tetrachloride			99.3		%		50-140	05-JUN-18
Chlorobenzene			106.8		%		50-140	05-JUN-18
Chloroform			107.9		%		50-140	05-JUN-18
cis-1,2-Dichloroethylene			110.1		%		50-140	05-JUN-18
cis-1,3-Dichloropropene			108.1		%		50-140	05-JUN-18
Dibromochloromethane			109.0		%		50-140	05-JUN-18
Dichlorodifluoromethane			77.5		%		50-140	05-JUN-18
Ethylbenzene			104.1		%		50-140	05-JUN-18
n-Hexane			106.9		%		50-140	05-JUN-18
Methylene Chloride			110.8		%		50-140	05-JUN-18
MTBE			107.9		%		50-140	05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4069217								
WG2787662-5 MS		**L2104880-1**						
m+p-Xylenes			104.2		%		50-140	05-JUN-18
Methyl Ethyl Ketone			121.0		%		50-140	05-JUN-18
Methyl Isobutyl Ketone			111.4		%		50-140	05-JUN-18
o-Xylene			104.4		%		50-140	05-JUN-18
Styrene			101.8		%		50-140	05-JUN-18
Tetrachloroethylene			101.7		%		50-140	05-JUN-18
Toluene			106.4		%		50-140	05-JUN-18
trans-1,2-Dichloroethylene			105.2		%		50-140	05-JUN-18
trans-1,3-Dichloropropene			107.1		%		50-140	05-JUN-18
Trichloroethylene			112.2		%		50-140	05-JUN-18
Trichlorofluoromethane			103.5		%		50-140	05-JUN-18
Vinyl chloride			96.5		%		50-140	05-JUN-18

Quality Control Report

Workorder: L2105012 Report Date: 26-JUL-18

Client: GHD Limited (Waterloo)
651 COLBY DRIVE
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

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
J	Duplicate results and limits are expressed in terms of absolute difference.
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.

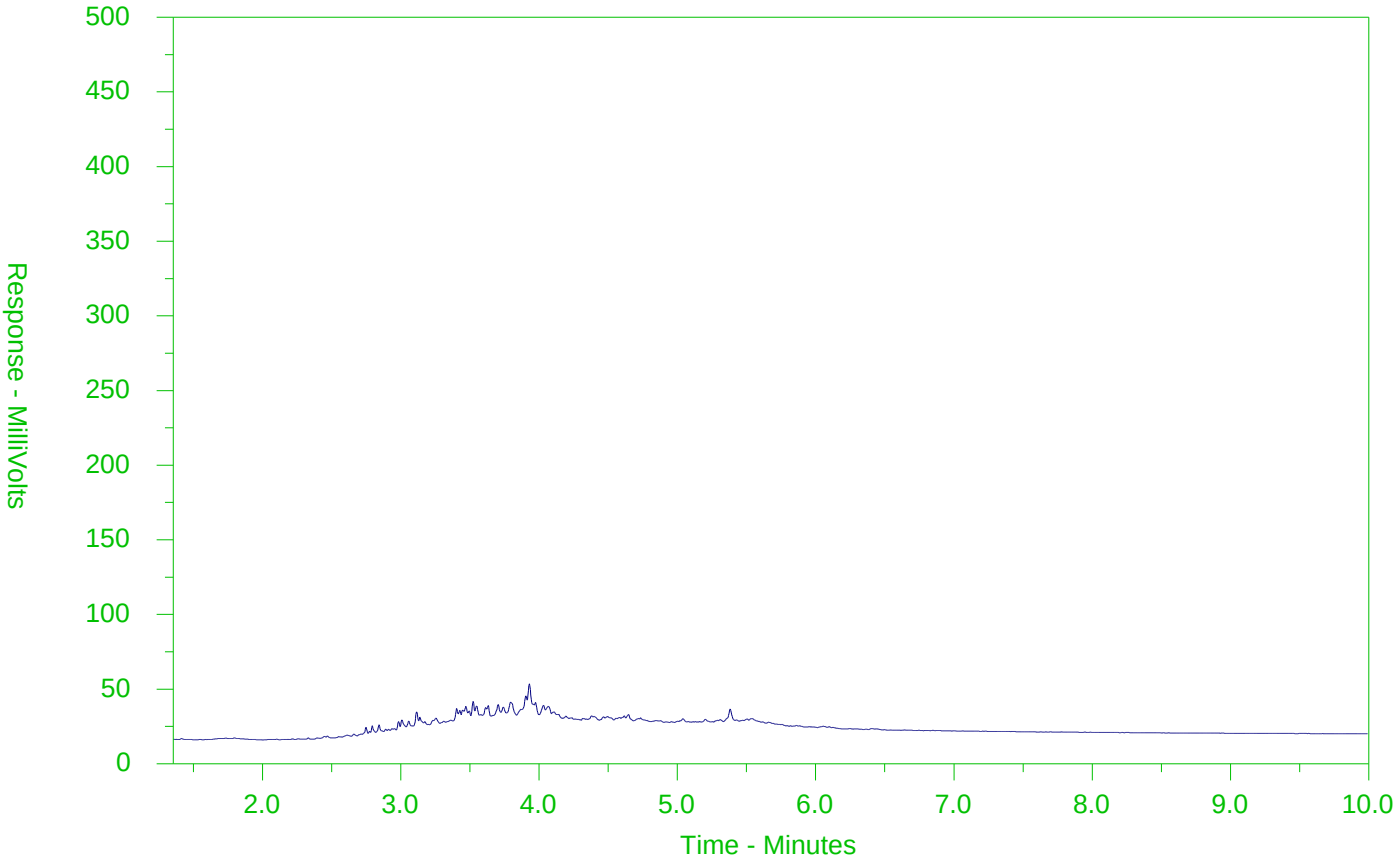
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2105012-1
Client Sample ID: S-11149990-053018-TW-22



←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.

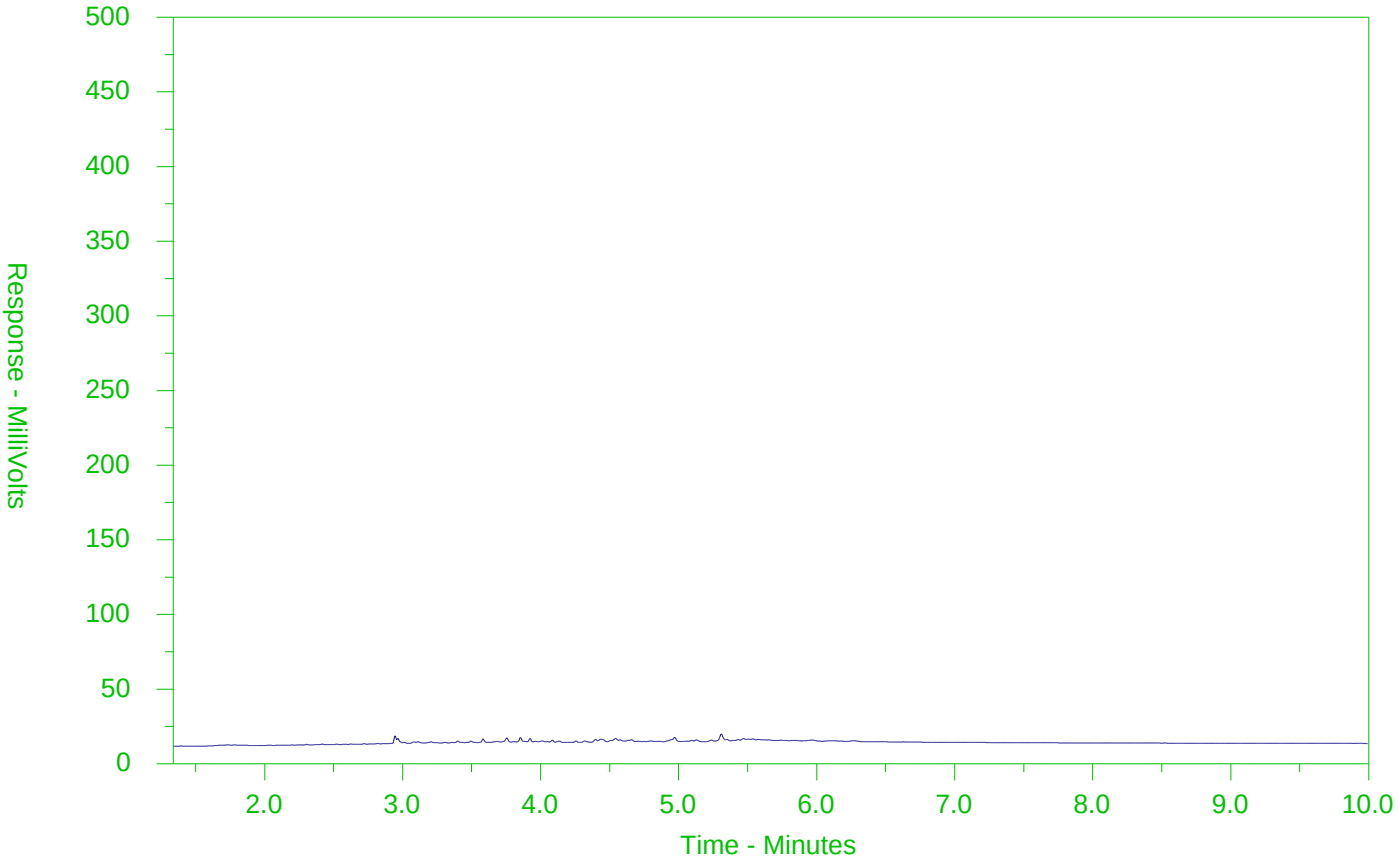
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2105012-2
Client Sample ID: S-11149990-053018-TW-23



←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.

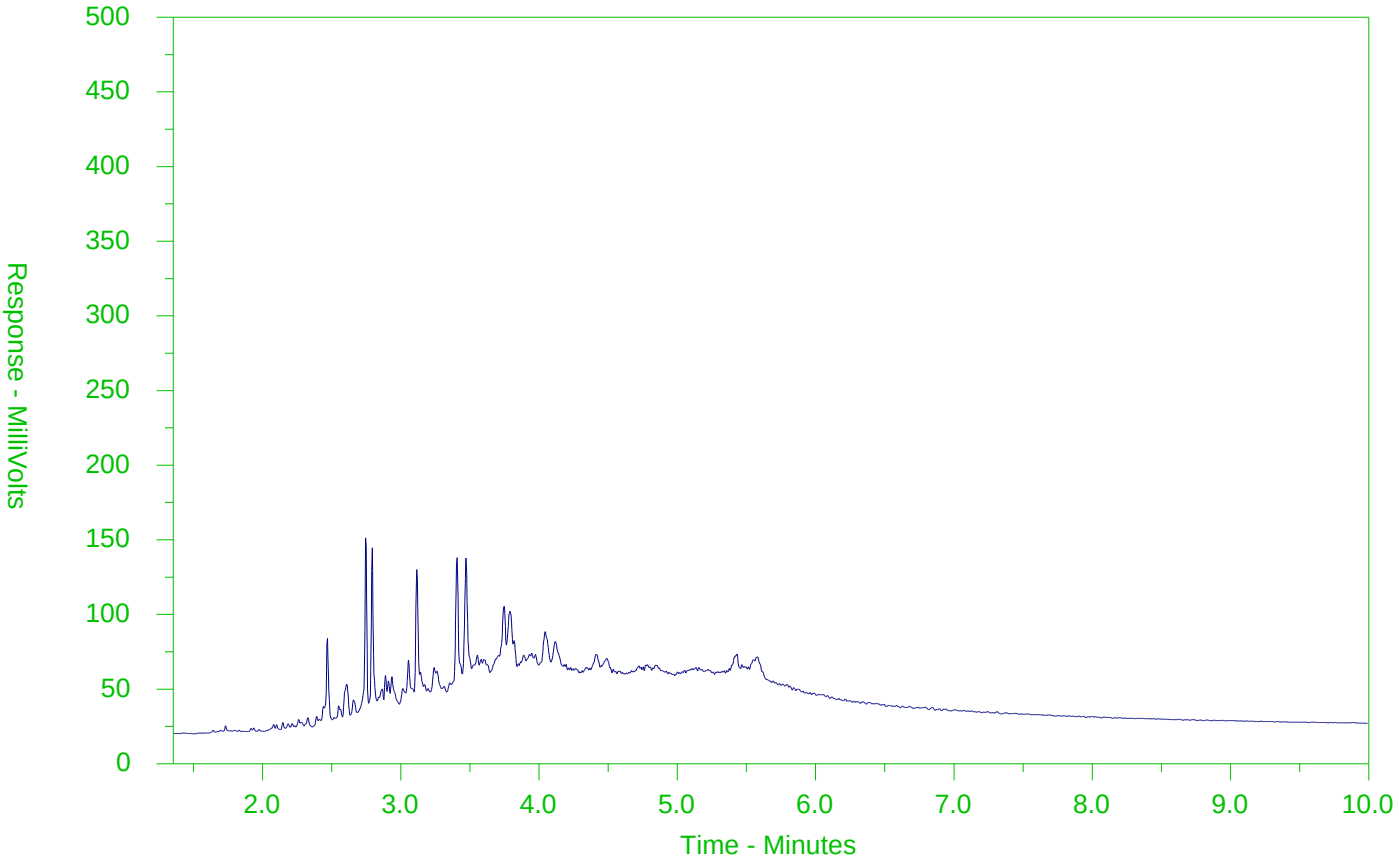
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2105012-3
Client Sample ID: S-11149990-053018-TW-24



←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.

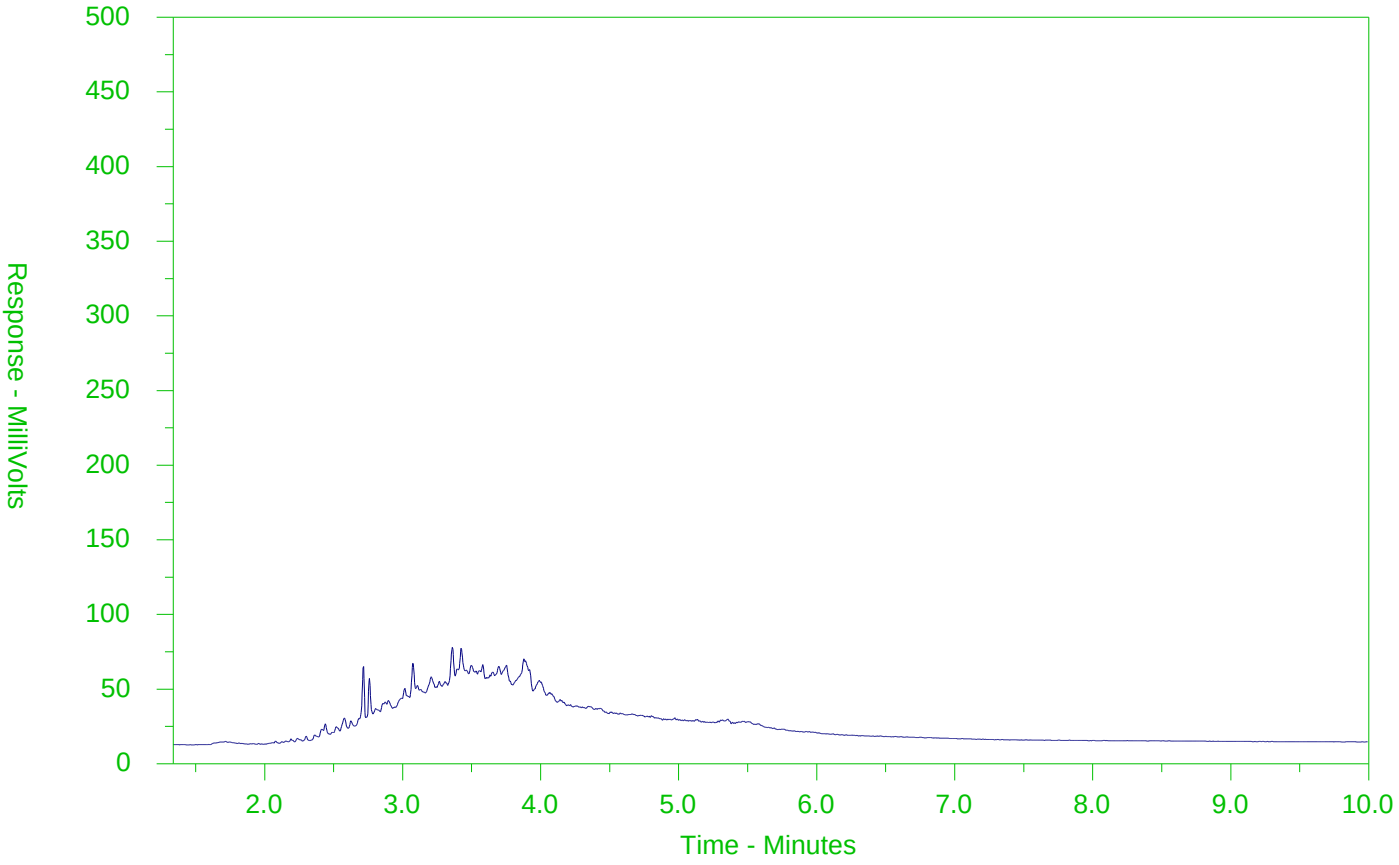
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2105012-4
Client Sample ID: S-11149990-053018-TW-25



←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 the 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.

(ALS) Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2105012-COFC

COC Number: 17 - 622302

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	GHD Limited Acct A13791
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	651 Colby Drive
City/Province:	Waterloo, Ontario
Postal Code:	N2V 1C2

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Jennifer.Balkwill@ghd.com
Email 2	See PO
Email 3	

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

- Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
- PRIORITY (Business Days): 4 day [P4-20%] ☐; 3 day [P3-25%] ☐; 2 day [P2-50%] ☐
- EMERGENCY: 1 Business day [E-100%] ☐; Same Day, Weekend or Statutory holiday [E2-200% (Laboratory opening fees may apply)] ☐
- Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
- For tests that can not be performed according to the service level selected, you will be contacted.

Invoice To	
Same as Report To	☑ YES ☐ NO
Copy of Invoice with Report	☐ YES ☑ NO
Company:	
Contact:	

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	JenniferBalkwill@ghd.com
Email 2	

Project Information	
ALS Account # / Quote #:	
Job #:	11149990-04
PO / AFE:	73511036-2
LSD:	
ALS Lab Work Order # (lab use only):	L2105012 RH OZA

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: Rich H	Sampler: Tyler W

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	VOCs, F1-F4	SVOCs	153 Mand 1 Pkg	PCBs	VOC, F1 (Trip Blank)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	S-1149990-053018-TW-22	30-May-18	9:20	S	X	X	X	X				4
	S-1149990-053018-TW-23	↓	12:30	↓	↓	↓	↓	↓				4
	S-1149990-053018-TW-24	↓	14:00	↓	↓	↓	↓	↓				4
	S-1149990-053018-TW-25	↓	14:15	↓	↓	↓	↓	↓				4
	TB-1149990-053018-TW-02	↓	—	—					X			1

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

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)

Frozen ☐		SIF Observations	Yes ☐	No ☐	
Ice Packs ☐	Ice Cubes ☐	Custody seal intact	Yes ☐	No ☐	
Cooling Initiated ☐					

INITIAL COOLER TEMPERATURES °C:

FINAL COOLER TEMPERATURES °C: 5.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use on		FINAL SHIPMENT RECEPTION (lab use only)		
Released by: [signature]	Date: 1-June-2018	Time: 19:05	Received by:	Date:	Received by: RameelC	Date: June 01	Time: 17:05

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY … COPY

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 sp… white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

JULY 2017 FRONT

GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
651 COLBY STREET
WATERLOO ON N2V 1C2

Date Received: 01-JUN-18
Report Date: 26-JUL-18 11:40 (MT)
Version: FINAL REV. 2

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L2105017

Project P.O. #: 73511036-1
Job Reference: 11149990-04
C of C Numbers: 17-621916
Legal Site Desc:

Comments: Report #2

Rick Hawthorne
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2105017-2 GW-11149990-060118-TW-015 Sampled By: TYLER W on 01-JUN-18 @ 14:40 Matrix: WATER							
Physical Tests							
Conductivity	4.60		0.0030	mS/cm		05-JUN-18	R4071849
Hardness (as CaCO3)	625000		1300	ug/L		08-JUN-18	
pH	7.72		0.10	pH units		06-JUN-18	R4072214
Total Dissolved Solids	2700	DLDS	20	mg/L		05-JUN-18	R4072403
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	376		10	mg/L		06-JUN-18	R4075282
Ammonia, Total (as N)	5.88	DLHC	0.20	mg/L		04-JUN-18	R4067594
Nitrate (as N)	<0.20	DLDS	0.20	mg/L		05-JUN-18	R4072827
Nitrite (as N)	<0.10	DLDS	0.10	mg/L		05-JUN-18	R4072827
Total Kjeldahl Nitrogen	6.76		0.15	mg/L	05-JUN-18	05-JUN-18	R4070848
Phosphorus, Total	0.0588		0.0030	mg/L	06-JUN-18	07-JUN-18	R4074392
Sulfate (SO4)	42.9	DLDS	3.0	mg/L		05-JUN-18	R4072827
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		08-JUN-18	R4078221
Organic / Inorganic Carbon							
Dissolved Organic Carbon	6.1		1.0	mg/L		05-JUN-18	R4074147
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-JUN-18	R4069151
Dissolved Metals Filtration Location	FIELD					04-JUN-18	R4066051
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Arsenic (As)-Dissolved	4.7	DLHC	1.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Barium (Ba)-Dissolved	395	DLHC	1.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Boron (B)-Dissolved	200	DLHC	100	ug/L	04-JUN-18	05-JUN-18	R4071168
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	04-JUN-18	05-JUN-18	R4071168
Calcium (Ca)-Dissolved	194000	DLHC	500	ug/L	04-JUN-18	05-JUN-18	R4071168
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Iron (Fe)-Dissolved	11000	DLHC	100	ug/L	04-JUN-18	05-JUN-18	R4071168
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	04-JUN-18	05-JUN-18	R4071168
Magnesium (Mg)-Dissolved	34300	DLHC	50	ug/L	04-JUN-18	05-JUN-18	R4071168
Manganese (Mn)-Dissolved	953	DLHC	5.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	05-JUN-18	05-JUN-18	R4069634
Molybdenum (Mo)-Dissolved	2.72	DLHC	0.50	ug/L	04-JUN-18	05-JUN-18	R4071168
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	04-JUN-18	05-JUN-18	R4071168
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	04-JUN-18	05-JUN-18	R4071168
Sodium (Na)-Dissolved	718000	DLHC	500	ug/L	04-JUN-18	05-JUN-18	R4071168
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	04-JUN-18	05-JUN-18	R4071168
Uranium (U)-Dissolved	0.42	DLHC	0.10	ug/L	04-JUN-18	05-JUN-18	R4071168
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	04-JUN-18	05-JUN-18	R4071168

* 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
L2105017-2 GW-11149990-060118-TW-015 Sampled By: TYLER W on 01-JUN-18 @ 14:40 Matrix: WATER							
Dissolved Metals							
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	04-JUN-18	05-JUN-18	R4071168
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		04-JUN-18	R4068987
Aggregate Organics							
Phenols (4AAP)	0.0045		0.0010	mg/L		08-JUN-18	R4078356
Volatile Organic Compounds							
Acetone	<30		30	ug/L		05-JUN-18	R4068789
Benzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Bromodichloromethane	<2.0		2.0	ug/L		05-JUN-18	R4068789
Bromoform	<5.0		5.0	ug/L		05-JUN-18	R4068789
Bromomethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
Carbon tetrachloride	<0.20		0.20	ug/L		05-JUN-18	R4068789
Chlorobenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Dibromochloromethane	<2.0		2.0	ug/L		05-JUN-18	R4068789
Chloroform	<1.0		1.0	ug/L		05-JUN-18	R4068789
1,2-Dibromoethane	<0.20		0.20	ug/L		05-JUN-18	R4068789
1,2-Dichlorobenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,3-Dichlorobenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,4-Dichlorobenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Dichlorodifluoromethane	<2.0		2.0	ug/L		05-JUN-18	R4068789
1,1-Dichloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,2-Dichloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1-Dichloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Methylene Chloride	<5.0		5.0	ug/L		05-JUN-18	R4068789
1,2-Dichloropropane	<0.50		0.50	ug/L		05-JUN-18	R4068789
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		05-JUN-18	R4068789
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		05-JUN-18	R4068789
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		05-JUN-18	
Ethylbenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
n-Hexane	<0.50		0.50	ug/L		05-JUN-18	R4068789
Methyl Ethyl Ketone	<20		20	ug/L		05-JUN-18	R4068789
Methyl Isobutyl Ketone	<20		20	ug/L		05-JUN-18	R4068789
MTBE	<2.0		2.0	ug/L		05-JUN-18	R4068789
Styrene	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
Tetrachloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Toluene	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1,1-Trichloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1,2-Trichloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789

* 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
L2105017-2 GW-11149990-060118-TW-015 Sampled By: TYLER W on 01-JUN-18 @ 14:40 Matrix: WATER							
Volatile Organic Compounds							
Trichloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Trichlorofluoromethane	<5.0		5.0	ug/L		05-JUN-18	R4068789
Vinyl chloride	<0.50		0.50	ug/L		05-JUN-18	R4068789
o-Xylene	<0.30		0.30	ug/L		05-JUN-18	R4068789
m+p-Xylenes	<0.40		0.40	ug/L		05-JUN-18	R4068789
Xylenes (Total)	<0.50		0.50	ug/L		05-JUN-18	
Surrogate: 4-Bromofluorobenzene	103.8		70-130	%		05-JUN-18	R4068789
Surrogate: 1,4-Difluorobenzene	103.6		70-130	%		05-JUN-18	R4068789
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		05-JUN-18	R4068789
F1-BTEX	<25		25	ug/L		12-JUN-18	
F2 (C10-C16)	<100		100	ug/L	07-JUN-18	07-JUN-18	R4075917
F2-Naphth	<100		100	ug/L		12-JUN-18	
F3 (C16-C34)	<250		250	ug/L	07-JUN-18	07-JUN-18	R4075917
F3-PAH	<250		250	ug/L		12-JUN-18	
F4 (C34-C50)	<250		250	ug/L	07-JUN-18	07-JUN-18	R4075917
Total Hydrocarbons (C6-C50)	<370		370	ug/L		12-JUN-18	
Chrom. to baseline at nC50	YES				07-JUN-18	07-JUN-18	R4075917
Surrogate: 2-Bromobenzotrifluoride	86.7		60-140	%	07-JUN-18	07-JUN-18	R4075917
Surrogate: 3,4-Dichlorotoluene	90.7		60-140	%		05-JUN-18	R4068789
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Acenaphthylene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Anthracene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Benzo(a)anthracene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Benzo(a)pyrene	<0.010		0.010	ug/L	07-JUN-18	11-JUN-18	R4076297
Benzo(b)fluoranthene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Benzo(k)fluoranthene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Chrysene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Fluoranthene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Fluorene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
1+2-Methylnaphthalenes	<0.028		0.028	ug/L		12-JUN-18	
1-Methylnaphthalene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
2-Methylnaphthalene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Naphthalene	<0.050		0.050	ug/L	07-JUN-18	11-JUN-18	R4076297
Phenanthrene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Pyrene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Surrogate: d10-Acenaphthene	105.2		60-140	%	07-JUN-18	11-JUN-18	R4076297

* 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
L2105017-2 GW-11149990-060118-TW-015 Sampled By: TYLER W on 01-JUN-18 @ 14:40 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Surrogate: d12-Chrysene	104.8		60-140	%	07-JUN-18	11-JUN-18	R4076297
Surrogate: d8-Naphthalene	118.0		60-140	%	07-JUN-18	11-JUN-18	R4076297
Surrogate: d10-Phenanthrene	113.1		60-140	%	07-JUN-18	11-JUN-18	R4076297
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
4-Chloroaniline	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
2-Chlorophenol	<0.30		0.30	ug/L	08-JUN-18	12-JUN-18	R4080027
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4-Dichlorophenol	<0.30		0.30	ug/L	08-JUN-18	12-JUN-18	R4080027
Diethylphthalate	<0.20		0.20	ug/L	08-JUN-18	12-JUN-18	R4080027
Dimethylphthalate	<0.20		0.20	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4-Dimethylphenol	<0.50		0.50	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4-Dinitrophenol	<1.0		1.0	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4-Dinitrotoluene	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
2,6-Dinitrotoluene	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		12-JUN-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	08-JUN-18	12-JUN-18	R4080027
Pentachlorophenol	<0.50		0.50	ug/L	08-JUN-18	12-JUN-18	R4080027
Phenol	<2.0	RRR	2.0	ug/L	08-JUN-18	12-JUN-18	R4080027
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	08-JUN-18	12-JUN-18	R4080027
Surrogate: 2-Fluorobiphenyl	84.0		50-140	%	08-JUN-18	12-JUN-18	R4080027
Surrogate: Nitrobenzene d5	88.0		50-140	%	08-JUN-18	12-JUN-18	R4080027
Surrogate: Phenol d5	16.9	RRR	30-130	%	08-JUN-18	12-JUN-18	R4080027
Surrogate: p-Terphenyl d14	122.3		60-140	%	08-JUN-18	12-JUN-18	R4080027
Surrogate: 2,4,6-Tribromophenol	94.1		50-140	%	08-JUN-18	12-JUN-18	R4080027
Report Remarks : RRR: Detection limit raised due to low surrogate recovery & low phenol recovery in laboratory control sample.							
L2105017-3 GW-11149990-060118-TW-016 Sampled By: TYLER W on 01-JUN-18 @ 15:55 Matrix: WATER							
Physical Tests							
Conductivity	5.45		0.0030	mS/cm		05-JUN-18	R4071849
Hardness (as CaCO3)	756000		1300	ug/L		08-JUN-18	
pH	7.78		0.10	pH units		06-JUN-18	R4072214
Total Dissolved Solids	3170	DLDS	20	mg/L		05-JUN-18	R4072403
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	467		10	mg/L		06-JUN-18	R4075282
Ammonia, Total (as N)	4.00	DLHC	0.20	mg/L		06-JUN-18	R4072713
Nitrate (as N)	<0.20	DLDS	0.20	mg/L		05-JUN-18	R4072827

* 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
L2105017-3 GW-11149990-060118-TW-016 Sampled By: TYLER W on 01-JUN-18 @ 15:55 Matrix: WATER							
Anions and Nutrients							
Nitrite (as N)	<0.10	DLDS	0.10	mg/L		05-JUN-18	R4072827
Total Kjeldahl Nitrogen	4.98		0.15	mg/L	07-JUN-18	07-JUN-18	R4075576
Phosphorus, Total	0.0403		0.0030	mg/L	06-JUN-18	07-JUN-18	R4074392
Sulfate (SO4)	40.6	DLDS	3.0	mg/L		05-JUN-18	R4072827
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		08-JUN-18	R4078221
Organic / Inorganic Carbon							
Dissolved Organic Carbon	7.0		1.0	mg/L		05-JUN-18	R4074147
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					05-JUN-18	R4069151
Dissolved Metals Filtration Location	FIELD					04-JUN-18	R4066051
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Arsenic (As)-Dissolved	5.2	DLHC	1.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Barium (Ba)-Dissolved	292	DLHC	1.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Boron (B)-Dissolved	200	DLHC	100	ug/L	04-JUN-18	05-JUN-18	R4071168
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	04-JUN-18	05-JUN-18	R4071168
Calcium (Ca)-Dissolved	160000	DLHC	500	ug/L	04-JUN-18	05-JUN-18	R4071168
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Iron (Fe)-Dissolved	5950	DLHC	100	ug/L	04-JUN-18	05-JUN-18	R4071168
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	04-JUN-18	05-JUN-18	R4071168
Magnesium (Mg)-Dissolved	86600	DLHC	50	ug/L	04-JUN-18	05-JUN-18	R4071168
Manganese (Mn)-Dissolved	635	DLHC	5.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	05-JUN-18	05-JUN-18	R4069634
Molybdenum (Mo)-Dissolved	2.94	DLHC	0.50	ug/L	04-JUN-18	05-JUN-18	R4071168
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	04-JUN-18	05-JUN-18	R4071168
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	04-JUN-18	05-JUN-18	R4071168
Sodium (Na)-Dissolved	891000	DLHC	500	ug/L	04-JUN-18	05-JUN-18	R4071168
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	04-JUN-18	05-JUN-18	R4071168
Uranium (U)-Dissolved	0.68	DLHC	0.10	ug/L	04-JUN-18	05-JUN-18	R4071168
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	04-JUN-18	05-JUN-18	R4071168
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	04-JUN-18	05-JUN-18	R4071168
Speciated Metals							
Chromium, Hexavalent	<1.0		1.0	ug/L		04-JUN-18	R4068987
Aggregate Organics							
Phenols (4AAP)	0.0029		0.0010	mg/L		08-JUN-18	R4078356
Volatile Organic Compounds							
Acetone	<30		30	ug/L		05-JUN-18	R4068789
Benzene	<0.50		0.50	ug/L		05-JUN-18	R4068789

* 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
L2105017-3 GW-11149990-060118-TW-016 Sampled By: TYLER W on 01-JUN-18 @ 15:55 Matrix: WATER							
Volatile Organic Compounds							
Bromodichloromethane	<2.0		2.0	ug/L		05-JUN-18	R4068789
Bromoform	<5.0		5.0	ug/L		05-JUN-18	R4068789
Bromomethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
Carbon tetrachloride	<0.20		0.20	ug/L		05-JUN-18	R4068789
Chlorobenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Dibromochloromethane	<2.0		2.0	ug/L		05-JUN-18	R4068789
Chloroform	<1.0		1.0	ug/L		05-JUN-18	R4068789
1,2-Dibromoethane	<0.20		0.20	ug/L		05-JUN-18	R4068789
1,2-Dichlorobenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,3-Dichlorobenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,4-Dichlorobenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Dichlorodifluoromethane	<2.0		2.0	ug/L		05-JUN-18	R4068789
1,1-Dichloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,2-Dichloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1-Dichloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Methylene Chloride	<5.0		5.0	ug/L		05-JUN-18	R4068789
1,2-Dichloropropane	<0.50		0.50	ug/L		05-JUN-18	R4068789
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		05-JUN-18	R4068789
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		05-JUN-18	R4068789
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		05-JUN-18	
Ethylbenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
n-Hexane	<0.50		0.50	ug/L		05-JUN-18	R4068789
Methyl Ethyl Ketone	<20		20	ug/L		05-JUN-18	R4068789
Methyl Isobutyl Ketone	<20		20	ug/L		05-JUN-18	R4068789
MTBE	<2.0		2.0	ug/L		05-JUN-18	R4068789
Styrene	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
Tetrachloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Toluene	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1,1-Trichloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1,2-Trichloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
Trichloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Trichlorofluoromethane	<5.0		5.0	ug/L		05-JUN-18	R4068789
Vinyl chloride	<0.50		0.50	ug/L		05-JUN-18	R4068789
o-Xylene	<0.30		0.30	ug/L		05-JUN-18	R4068789
m+p-Xylenes	<0.40		0.40	ug/L		05-JUN-18	R4068789
Xylenes (Total)	<0.50		0.50	ug/L		05-JUN-18	
Surrogate: 4-Bromofluorobenzene	103.8		70-130	%		05-JUN-18	R4068789

* 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
L2105017-3 GW-11149990-060118-TW-016 Sampled By: TYLER W on 01-JUN-18 @ 15:55 Matrix: WATER							
Volatile Organic Compounds							
Surrogate: 1,4-Difluorobenzene	103.9		70-130	%		05-JUN-18	R4068789
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		05-JUN-18	R4068789
F1-BTEX	<25		25	ug/L		12-JUN-18	
F2 (C10-C16)	<100		100	ug/L	07-JUN-18	08-JUN-18	R4075917
F2-Naphth	<100		100	ug/L		12-JUN-18	
F3 (C16-C34)	<250		250	ug/L	07-JUN-18	08-JUN-18	R4075917
F3-PAH	<250		250	ug/L		12-JUN-18	
F4 (C34-C50)	<250		250	ug/L	07-JUN-18	08-JUN-18	R4075917
Total Hydrocarbons (C6-C50)	<370		370	ug/L		12-JUN-18	
Chrom. to baseline at nC50	YES				07-JUN-18	08-JUN-18	R4075917
Surrogate: 2-Bromobenzotrifluoride	84.1		60-140	%	07-JUN-18	08-JUN-18	R4075917
Surrogate: 3,4-Dichlorotoluene	88.9		60-140	%		05-JUN-18	R4068789
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Acenaphthylene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Anthracene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Benzo(a)anthracene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Benzo(a)pyrene	<0.010		0.010	ug/L	07-JUN-18	11-JUN-18	R4076297
Benzo(b)fluoranthene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Benzo(k)fluoranthene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Chrysene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Fluoranthene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Fluorene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
1+2-Methylnaphthalenes	0.042		0.028	ug/L		12-JUN-18	
1-Methylnaphthalene	0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
2-Methylnaphthalene	0.022		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Naphthalene	<0.050		0.050	ug/L	07-JUN-18	11-JUN-18	R4076297
Phenanthrene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Pyrene	<0.020		0.020	ug/L	07-JUN-18	11-JUN-18	R4076297
Surrogate: d10-Acenaphthene	105.8		60-140	%	07-JUN-18	11-JUN-18	R4076297
Surrogate: d12-Chrysene	90.8		60-140	%	07-JUN-18	11-JUN-18	R4076297
Surrogate: d8-Naphthalene	115.8		60-140	%	07-JUN-18	11-JUN-18	R4076297
Surrogate: d10-Phenanthrene	105.8		60-140	%	07-JUN-18	11-JUN-18	R4076297
Semi-Volatile Organics							
Biphenyl	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
4-Chloroaniline	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
Bis(2-chloroethyl)ether	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
Bis(2-chloroisopropyl)ether	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027

* 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
L2105017-3 GW-11149990-060118-TW-016 Sampled By: TYLER W on 01-JUN-18 @ 15:55 Matrix: WATER							
Semi-Volatile Organics							
2-Chlorophenol	<0.30		0.30	ug/L	08-JUN-18	12-JUN-18	R4080027
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4-Dichlorophenol	<0.30		0.30	ug/L	08-JUN-18	12-JUN-18	R4080027
Diethylphthalate	<0.20		0.20	ug/L	08-JUN-18	12-JUN-18	R4080027
Dimethylphthalate	<0.20		0.20	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4-Dimethylphenol	<0.50		0.50	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4-Dinitrophenol	<1.0		1.0	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4-Dinitrotoluene	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
2,6-Dinitrotoluene	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4+2,6-Dinitrotoluene	<0.57		0.57	ug/L		12-JUN-18	
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	08-JUN-18	12-JUN-18	R4080027
Pentachlorophenol	<0.50		0.50	ug/L	08-JUN-18	12-JUN-18	R4080027
Phenol	<2.0	RRR	2.0	ug/L	08-JUN-18	12-JUN-18	R4080027
1,2,4-Trichlorobenzene	<0.40		0.40	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4,5-Trichlorophenol	<0.20		0.20	ug/L	08-JUN-18	12-JUN-18	R4080027
2,4,6-Trichlorophenol	<0.20		0.20	ug/L	08-JUN-18	12-JUN-18	R4080027
Surrogate: 2-Fluorobiphenyl	95.4		50-140	%	08-JUN-18	12-JUN-18	R4080027
Surrogate: Nitrobenzene d5	98.7		50-140	%	08-JUN-18	12-JUN-18	R4080027
Surrogate: Phenol d5	20.0	RRR	30-130	%	08-JUN-18	12-JUN-18	R4080027
Surrogate: p-Terphenyl d14	106.9		60-140	%	08-JUN-18	12-JUN-18	R4080027
Surrogate: 2,4,6-Tribromophenol	99.9		50-140	%	08-JUN-18	12-JUN-18	R4080027
Report Remarks : RRR: Detection limit raised due to low surrogate recovery & low phenol recovery in laboratory control sample.							
L2105017-4 TB-11149990-060118-TW-002 Sampled By: TYLER W on 01-JUN-18 Matrix: WATER							
Volatile Organic Compounds							
Acetone	<30		30	ug/L		05-JUN-18	R4068789
Benzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Bromodichloromethane	<2.0		2.0	ug/L		05-JUN-18	R4068789
Bromoform	<5.0		5.0	ug/L		05-JUN-18	R4068789
Bromomethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
Carbon tetrachloride	<0.20		0.20	ug/L		05-JUN-18	R4068789
Chlorobenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Dibromochloromethane	<2.0		2.0	ug/L		05-JUN-18	R4068789
Chloroform	<1.0		1.0	ug/L		05-JUN-18	R4068789
1,2-Dibromoethane	<0.20		0.20	ug/L		05-JUN-18	R4068789
1,2-Dichlorobenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,3-Dichlorobenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,4-Dichlorobenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Dichlorodifluoromethane	<2.0		2.0	ug/L		05-JUN-18	R4068789
1,1-Dichloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,2-Dichloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789

* 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
L2105017-4 TB-11149990-060118-TW-002 Sampled By: TYLER W on 01-JUN-18 Matrix: WATER							
Volatile Organic Compounds							
1,1-Dichloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Methylene Chloride	<5.0		5.0	ug/L		05-JUN-18	R4068789
1,2-Dichloropropane	<0.50		0.50	ug/L		05-JUN-18	R4068789
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		05-JUN-18	R4068789
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		05-JUN-18	R4068789
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		05-JUN-18	
Ethylbenzene	<0.50		0.50	ug/L		05-JUN-18	R4068789
n-Hexane	<0.50		0.50	ug/L		05-JUN-18	R4068789
Methyl Ethyl Ketone	<20		20	ug/L		05-JUN-18	R4068789
Methyl Isobutyl Ketone	<20		20	ug/L		05-JUN-18	R4068789
MTBE	<2.0		2.0	ug/L		05-JUN-18	R4068789
Styrene	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
Tetrachloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Toluene	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1,1-Trichloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
1,1,2-Trichloroethane	<0.50		0.50	ug/L		05-JUN-18	R4068789
Trichloroethylene	<0.50		0.50	ug/L		05-JUN-18	R4068789
Trichlorofluoromethane	<5.0		5.0	ug/L		05-JUN-18	R4068789
Vinyl chloride	<0.50		0.50	ug/L		05-JUN-18	R4068789
o-Xylene	<0.30		0.30	ug/L		05-JUN-18	R4068789
m+p-Xylenes	<0.40		0.40	ug/L		05-JUN-18	R4068789
Xylenes (Total)	<0.50		0.50	ug/L		05-JUN-18	
Surrogate: 4-Bromofluorobenzene	104.2		70-130	%		05-JUN-18	R4068789
Surrogate: 1,4-Difluorobenzene	103.6		70-130	%		05-JUN-18	R4068789
Hydrocarbons							
F1 (C6-C10)	<25		25	ug/L		05-JUN-18	R4068789
F1-BTEX	<25		25	ug/L		05-JUN-18	
Surrogate: 3,4-Dichlorotoluene	99.7		60-140	%		05-JUN-18	R4068789

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	2,4-Dinitrophenol	LCS-H	L2105017-2, -3
Comments:	RRQC:Recovery is outside ALS control limits. Detection limits in associated samples have been raised accordingly.		
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2105017-2, -3
Matrix Spike	Boron (B)-Dissolved	MS-B	L2105017-2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2105017-2, -3
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2105017-2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2105017-2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2105017-2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2105017-2, -3
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2105017-2, -3
Matrix Spike	Phosphorus, Total	MS-B	L2105017-2
Matrix Spike	Phosphorus, Total	MS-B	L2105017-3
Laboratory Control Sample	Phenol	RRQC	L2105017-2, -3
Comments:	RRQC:Recovery is outside ALS control limits. Detection limits in associated samples have been raised accordingly.		

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRQC	Refer to report remarks for information regarding this QC result.
RRR	Refer to Report Remarks for issues regarding this analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
625-511-WT	Water	ABN,CP,PAH-O.Reg 153/04	SW846 8270 (511)

Ground water sample extraction is carried out at a pH <2 (acid extractables) and pH>11 (base neutral extractables). Extracts are dried, concentrated and exchanged into a solvent compatible with the cleanup. Analysis is by GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

C-DIS-ORG-WT	Water	Dissolved Organic Carbon	APHA 5310B

Sample is filtered through a 0.45um filter, then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.

CN-WAD-R511-WT	Water	Cyanide (WAD)-O.Reg 153/04	APHA 4500CN I-Weak acid Dist Colorimet

Weak acid dissociable cyanide (WAD) is determined by undergoing a distillation procedure. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-R511-WT	Water	Hex Chrom-O.Reg 153/04 (July 2011)	EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

DINITROTOL-CALC-WT	Water	ABN-Calculated Parameters	SW846 8270

EC-R511-WT	Water	Conductivity-O.Reg 153/04 (July 2011)	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

Reference Information

F1-F4-511-CALC-WT	Water	F1-F4 Hydrocarbon Calculated Parameters	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.

F1-HS-511-WT	Water	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS

Fraction F1 is determined by analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT	Water	F2-F4-O.Reg 153/04 (July 2011)	EPA 3511/CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-UG/L-CVAA-WT	Water	Diss. Mercury in Water by CVAAS (ug/L)	EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-D-UG/L-MS-WT	Water	Diss. Metals in Water by ICPMS (ug/L)	EPA 200.8

The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT	Water	PAH-Calculated Parameters	SW846 8270

NH3-WT	Water	Ammonia, Total as N	EPA 350.1

Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is deteremined colourimetrically after persulphate digestion of the sample.

Reference Information

PAH-511-WT	Water	PAH-O. Reg 153/04 (July 2011)	SW846 3510/8270

Aqueous samples, fortified with surrogates, are extracted using liquid/liquid extraction technique. The sample extracts are concentrated and then analyzed using GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

PH-WT	Water	pH	APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TKN-WT	Water	Total Kjeldahl Nitrogen	APHA 4500-Norg D

This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 Celsius with analysis using an automated colorimetric method.

VOC-1,3-DCP-CALC-WT	Water	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260

Liquid samples are analyzed by headspace GC/MSD.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION

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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

17-621916

Reference Information

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 weight of sample
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: L2105017 Report Date: 26-JUL-18

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Water**							
Batch R4080027								
WG2792366-2 LCS								
1,2,4-Trichlorobenzene			69.5		%		50-140	12-JUN-18
2-Chlorophenol			74.3		%		50-140	12-JUN-18
2,4-Dichlorophenol			98.4		%		50-140	12-JUN-18
2,4-Dimethylphenol			85.4		%		30-130	12-JUN-18
2,4-Dinitrophenol			150.0	LCS-H	%		50-140	12-JUN-18
2,4-Dinitrotoluene			102.7		%		50-140	12-JUN-18
2,4,5-Trichlorophenol			110.3		%		50-140	12-JUN-18
2,4,6-Trichlorophenol			106.2		%		50-140	12-JUN-18
2,6-Dinitrotoluene			103.9		%		50-140	12-JUN-18
3,3'-Dichlorobenzidine			68.8		%		30-130	12-JUN-18
4-Chloroaniline			69.4		%		30-130	12-JUN-18
Biphenyl			87.8		%		50-140	12-JUN-18
Bis(2-chloroethyl)ether			103.6		%		50-140	12-JUN-18
Bis(2-chloroisopropyl)ether			87.8		%		50-140	12-JUN-18
Bis(2-ethylhexyl)phthalate			124.4		%		50-140	12-JUN-18
Diethylphthalate			98.2		%		50-140	12-JUN-18
Dimethylphthalate			97.0		%		50-140	12-JUN-18
Pentachlorophenol			134.6		%		50-140	12-JUN-18
Phenol			17.7	RRQC	%		30-130	12-JUN-18
COMMENTS: RRQC:Recovery is outside ALS control limits. Detection limits in associated samples have been raised accordingly.								
WG2792366-3 LCSD		**WG2792366-2**						
1,2,4-Trichlorobenzene		69.5	60.0		%	15	50	12-JUN-18
2-Chlorophenol		74.3	72.3		%	2.8	50	12-JUN-18
2,4-Dichlorophenol		98.4	98.9		%	0.5	50	12-JUN-18
2,4-Dimethylphenol		85.4	76.6		%	11	50	12-JUN-18
2,4-Dinitrophenol		150.0	145.1		%	3.3	50	12-JUN-18
2,4-Dinitrotoluene		102.7	106.7		%	3.8	50	12-JUN-18
2,4,5-Trichlorophenol		110.3	112.8		%	2.3	50	12-JUN-18
2,4,6-Trichlorophenol		106.2	107.9		%	1.7	50	12-JUN-18
2,6-Dinitrotoluene		103.9	108.1		%	3.9	50	12-JUN-18
3,3'-Dichlorobenzidine		68.8	75.5		%	9.3	50	12-JUN-18
4-Chloroaniline		69.4	71.5		%	3.0	50	12-JUN-18
Biphenyl		87.8	82.7		%	6.1	50	12-JUN-18
Bis(2-chloroethyl)ether		103.6	103.5		%	0.1	50	12-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-511-WT	**Water**							
Batch R4080027								
WG2792366-3 LCSD		**WG2792366-2**						
Bis(2-chloroisopropyl)ether		87.8	86.7		%	1.3	50	12-JUN-18
Bis(2-ethylhexyl)phthalate		124.4	123.1		%	1.1	50	12-JUN-18
Diethylphthalate		98.2	103.2		%	5.0	50	12-JUN-18
Dimethylphthalate		97.0	101.7		%	4.7	50	12-JUN-18
Pentachlorophenol		134.6	130.9		%	2.7	50	12-JUN-18
Phenol		17.7	15.9		%	11	50	12-JUN-18
COMMENTS: RRQC:Recovery is outside ALS control limits. Detection limits in associated samples have been raised accordingly.								
WG2792366-1 MB								
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	12-JUN-18
2-Chlorophenol			<0.30		ug/L		0.3	12-JUN-18
2,4-Dichlorophenol			<0.30		ug/L		0.3	12-JUN-18
2,4-Dimethylphenol			<0.50		ug/L		0.5	12-JUN-18
2,4-Dinitrophenol			<1.0		ug/L		1	12-JUN-18
2,4-Dinitrotoluene			<0.40		ug/L		0.4	12-JUN-18
2,4,5-Trichlorophenol			<0.20		ug/L		0.2	12-JUN-18
2,4,6-Trichlorophenol			<0.20		ug/L		0.2	12-JUN-18
2,6-Dinitrotoluene			<0.40		ug/L		0.4	12-JUN-18
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	12-JUN-18
4-Chloroaniline			<0.40		ug/L		0.4	12-JUN-18
Biphenyl			<0.40		ug/L		0.4	12-JUN-18
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	12-JUN-18
Bis(2-chloroisopropyl)ether			<0.40		ug/L		0.4	12-JUN-18
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	12-JUN-18
Diethylphthalate			<0.20		ug/L		0.2	12-JUN-18
Dimethylphthalate			<0.20		ug/L		0.2	12-JUN-18
Pentachlorophenol			<0.50		ug/L		0.5	12-JUN-18
Phenol			<0.50		ug/L		0.5	12-JUN-18
Surrogate: 2-Fluorobiphenyl			87.9		%		50-140	12-JUN-18
Surrogate: 2,4,6-Tribromophenol			92.4		%		50-140	12-JUN-18
Surrogate: Nitrobenzene d5			92.5		%		50-140	12-JUN-18
Surrogate: p-Terphenyl d14			117.8		%		60-140	12-JUN-18
Surrogate: Phenol d5			18.5	MBS	%		30-130	12-JUN-18
ALK-WT	**Water**							

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-WT	**Water**							
Batch R4075282								
WG2790210-3 CRM		**WT-ALK-CRM**						
Alkalinity, Total (as CaCO3)			88.8		%		80-120	06-JUN-18
WG2790210-4 DUP		**L2105025-8**						
Alkalinity, Total (as CaCO3)		191	189		mg/L	1.1	20	06-JUN-18
WG2790210-2 LCS								
Alkalinity, Total (as CaCO3)			98.0		%		85-115	06-JUN-18
WG2790210-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	06-JUN-18
C-DIS-ORG-WT	**Water**							
Batch R4074147								
WG2789510-3 DUP		**L2105015-4**						
Dissolved Organic Carbon		<1.0	<1.0	RPD-NA	mg/L	N/A	20	05-JUN-18
WG2789510-2 LCS								
Dissolved Organic Carbon			98.0		%		80-120	05-JUN-18
WG2789510-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	05-JUN-18
WG2789510-4 MS		**L2105015-4**						
Dissolved Organic Carbon			96.5		%		70-130	05-JUN-18
CN-WAD-R511-WT	**Water**							
Batch R4078221								
WG2792444-3 DUP		**L2105017-1**						
Cyanide, Weak Acid Diss		<2.0	<2.0	RPD-NA	ug/L	N/A	20	08-JUN-18
WG2792444-2 LCS								
Cyanide, Weak Acid Diss			95.9		%		80-120	08-JUN-18
WG2792444-1 MB								
Cyanide, Weak Acid Diss			<2.0		ug/L		2	08-JUN-18
WG2792444-4 MS		**L2105017-1**						
Cyanide, Weak Acid Diss			88.3		%		75-125	08-JUN-18
CR-CR6-IC-R511-WT	**Water**							
Batch R4068987								
WG2787888-9 DUP		**WG2787888-8**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	04-JUN-18
WG2787888-7 LCS								
Chromium, Hexavalent			101.8		%		80-120	04-JUN-18
WG2787888-6 MB								
Chromium, Hexavalent			<1.0		ug/L		1	04-JUN-18
WG2787888-10 MS		**WG2787888-8**						

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-R511-WT	**Water**							
Batch R4068987								
WG2787888-10 MS		**WG2787888-8**						
Chromium, Hexavalent			100.9		%		70-130	04-JUN-18
F1-HS-511-WT	**Water**							
Batch R4068789								
WG2786511-4 DUP		**WG2786511-3**						
F1 (C6-C10)		<25	<25	RPD-NA	ug/L	N/A	30	05-JUN-18
WG2786511-1 LCS								
F1 (C6-C10)			105.8		%		80-120	05-JUN-18
WG2786511-2 MB								
F1 (C6-C10)			<25		ug/L		25	05-JUN-18
Surrogate: 3,4-Dichlorotoluene			107.6		%		60-140	05-JUN-18
WG2786511-5 MS		**WG2786511-3**						
F1 (C6-C10)			86.4		%		60-140	05-JUN-18
F2-F4-511-WT	**Water**							
Batch R4075917								
WG2790808-2 LCS								
F2 (C10-C16)			104.0		%		70-130	07-JUN-18
F3 (C16-C34)			101.8		%		70-130	07-JUN-18
F4 (C34-C50)			111.0		%		70-130	07-JUN-18
WG2790808-3 LCSD		**WG2790808-2**						
F2 (C10-C16)		104.0	103.2		%	0.8	50	07-JUN-18
F3 (C16-C34)		101.8	101.8		%	0.1	50	07-JUN-18
F4 (C34-C50)		111.0	105.8		%	4.8	50	07-JUN-18
WG2790808-1 MB								
F2 (C10-C16)			<100		ug/L		100	07-JUN-18
F3 (C16-C34)			<250		ug/L		250	07-JUN-18
F4 (C34-C50)			<250		ug/L		250	07-JUN-18
Surrogate: 2-Bromobenzotrifluoride			104.7		%		60-140	07-JUN-18
HG-D-UG/L-CVAA-WT	**Water**							
Batch R4069634								
WG2788727-4 DUP		**WG2788727-3**						
Mercury (Hg)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	05-JUN-18
WG2788727-2 LCS								
Mercury (Hg)-Dissolved			95.6		%		80-120	05-JUN-18
WG2788727-1 MB								
							0.01	

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-UG/L-CVAA-WT	**Water**							
Batch R4069634								
WG2788727-1 MB								
Mercury (Hg)-Dissolved			<0.010		ug/L		0.01	05-JUN-18
WG2788727-6 MS		**WG2788727-5**						
Mercury (Hg)-Dissolved			91.0		%		70-130	05-JUN-18
MET-D-UG/L-MS-WT	**Water**							
Batch R4071168								
WG2787661-4 DUP		**WG2787661-3**						
Antimony (Sb)-Dissolved		0.37	0.36		ug/L	3.0	20	05-JUN-18
Arsenic (As)-Dissolved		0.30	0.31		ug/L	4.9	20	05-JUN-18
Barium (Ba)-Dissolved		356	347		ug/L	2.5	20	05-JUN-18
Beryllium (Be)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	05-JUN-18
Boron (B)-Dissolved		45	45		ug/L	0.9	20	05-JUN-18
Cadmium (Cd)-Dissolved		0.0174	0.0156		ug/L	11	20	05-JUN-18
Calcium (Ca)-Dissolved		76100	74200		ug/L	2.6	20	05-JUN-18
Chromium (Cr)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	05-JUN-18
Cobalt (Co)-Dissolved		0.14	0.13		ug/L	2.6	20	05-JUN-18
Copper (Cu)-Dissolved		4.14	4.17		ug/L	0.9	20	05-JUN-18
Iron (Fe)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	05-JUN-18
Lead (Pb)-Dissolved		3.85	3.97		ug/L	2.9	20	05-JUN-18
Magnesium (Mg)-Dissolved		14900	15200		ug/L	1.5	20	05-JUN-18
Manganese (Mn)-Dissolved		61.6	62.1		ug/L	0.7	20	05-JUN-18
Molybdenum (Mo)-Dissolved		2.14	2.17		ug/L	1.2	20	05-JUN-18
Nickel (Ni)-Dissolved		0.68	0.70		ug/L	3.0	20	05-JUN-18
Selenium (Se)-Dissolved		0.124	0.137		ug/L	11	20	05-JUN-18
Silver (Ag)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	05-JUN-18
Sodium (Na)-Dissolved		110000	106000		ug/L	3.5	20	05-JUN-18
Thallium (Tl)-Dissolved		<0.025	<0.025	RPD-NA	ug/L	2.9	20	05-JUN-18
Uranium (U)-Dissolved		0.591	0.613		ug/L	3.8	20	05-JUN-18
Vanadium (V)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	05-JUN-18
Zinc (Zn)-Dissolved		13.0	12.8		ug/L	1.4	20	05-JUN-18
WG2787661-2 LCS								
Antimony (Sb)-Dissolved			103.7		%		80-120	05-JUN-18
Arsenic (As)-Dissolved			96.4		%		80-120	05-JUN-18
Barium (Ba)-Dissolved			103.5		%		80-120	05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4071168								
WG2787661-2 LCS								
Beryllium (Be)-Dissolved			98.1		%		80-120	05-JUN-18
Boron (B)-Dissolved			98.7		%		80-120	05-JUN-18
Cadmium (Cd)-Dissolved			98.9		%		80-120	05-JUN-18
Calcium (Ca)-Dissolved			102.3		%		80-120	05-JUN-18
Chromium (Cr)-Dissolved			97.9		%		80-120	05-JUN-18
Cobalt (Co)-Dissolved			99.5		%		80-120	05-JUN-18
Copper (Cu)-Dissolved			98.6		%		80-120	05-JUN-18
Iron (Fe)-Dissolved			96.0		%		80-120	05-JUN-18
Lead (Pb)-Dissolved			104.1		%		80-120	05-JUN-18
Magnesium (Mg)-Dissolved			101.9		%		80-120	05-JUN-18
Manganese (Mn)-Dissolved			98.9		%		80-120	05-JUN-18
Molybdenum (Mo)-Dissolved			100.5		%		80-120	05-JUN-18
Nickel (Ni)-Dissolved			99.7		%		80-120	05-JUN-18
Selenium (Se)-Dissolved			97.9		%		80-120	05-JUN-18
Silver (Ag)-Dissolved			103.8		%		80-120	05-JUN-18
Sodium (Na)-Dissolved			99.0		%		80-120	05-JUN-18
Thallium (Tl)-Dissolved			101.0		%		80-120	05-JUN-18
Uranium (U)-Dissolved			106.2		%		80-120	05-JUN-18
Vanadium (V)-Dissolved			100.1		%		80-120	05-JUN-18
Zinc (Zn)-Dissolved			94.3		%		80-120	05-JUN-18
WG2787661-1 MB								
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	05-JUN-18
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	05-JUN-18
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	05-JUN-18
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	05-JUN-18
Boron (B)-Dissolved			<10		ug/L		10	05-JUN-18
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	05-JUN-18
Calcium (Ca)-Dissolved			<50		ug/L		50	05-JUN-18
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	05-JUN-18
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	05-JUN-18
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	05-JUN-18
Iron (Fe)-Dissolved			<10		ug/L		10	05-JUN-18
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	05-JUN-18
Magnesium (Mg)-Dissolved			<5.0		ug/L		5	05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4071168								
WG2787661-1 MB								
Manganese (Mn)-Dissolved			<0.50		ug/L		0.5	05-JUN-18
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	05-JUN-18
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	05-JUN-18
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	05-JUN-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	05-JUN-18
Sodium (Na)-Dissolved			<50		ug/L		50	05-JUN-18
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	05-JUN-18
Uranium (U)-Dissolved			<0.010		ug/L		0.01	05-JUN-18
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	05-JUN-18
Zinc (Zn)-Dissolved			<1.0		ug/L		1	05-JUN-18
WG2787661-5 MS		**WG2787661-6**						
Antimony (Sb)-Dissolved			97.6		%		70-130	05-JUN-18
Arsenic (As)-Dissolved			94.6		%		70-130	05-JUN-18
Barium (Ba)-Dissolved			N/A	MS-B	%		-	05-JUN-18
Beryllium (Be)-Dissolved			99.7		%		70-130	05-JUN-18
Boron (B)-Dissolved			N/A	MS-B	%		-	05-JUN-18
Cadmium (Cd)-Dissolved			96.3		%		70-130	05-JUN-18
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	05-JUN-18
Chromium (Cr)-Dissolved			92.1		%		70-130	05-JUN-18
Cobalt (Co)-Dissolved			92.7		%		70-130	05-JUN-18
Copper (Cu)-Dissolved			93.1		%		70-130	05-JUN-18
Iron (Fe)-Dissolved			N/A	MS-B	%		-	05-JUN-18
Lead (Pb)-Dissolved			90.3		%		70-130	05-JUN-18
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	05-JUN-18
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	05-JUN-18
Molybdenum (Mo)-Dissolved			95.1		%		70-130	05-JUN-18
Nickel (Ni)-Dissolved			92.1		%		70-130	05-JUN-18
Selenium (Se)-Dissolved			94.9		%		70-130	05-JUN-18
Silver (Ag)-Dissolved			87.1		%		70-130	05-JUN-18
Sodium (Na)-Dissolved			N/A	MS-B	%		-	05-JUN-18
Thallium (Tl)-Dissolved			90.8		%		70-130	05-JUN-18
Uranium (U)-Dissolved			N/A	MS-B	%		-	05-JUN-18
Vanadium (V)-Dissolved			96.3		%		70-130	05-JUN-18
Zinc (Zn)-Dissolved			92.7		%		70-130	05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-WT	**Water**							
Batch R4067594								
WG2787748-24 DUP		**L2104969-9**						
Ammonia, Total (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	04-JUN-18
WG2787748-22 LCS								
Ammonia, Total (as N)			99.96		%		85-115	04-JUN-18
WG2787748-21 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	04-JUN-18
WG2787748-23 MS		**L2104969-9**						
Ammonia, Total (as N)			86.8		%		75-125	04-JUN-18
Batch R4072713								
WG2789677-3 DUP		**L2105688-6**						
Ammonia, Total (as N)		0.379	0.374		mg/L	1.2	20	06-JUN-18
WG2789677-2 LCS								
Ammonia, Total (as N)			91.5		%		85-115	06-JUN-18
WG2789677-1 MB								
Ammonia, Total (as N)			<0.020		mg/L		0.02	06-JUN-18
WG2789677-4 MS		**L2105688-6**						
Ammonia, Total (as N)			83.5		%		75-125	06-JUN-18
NO2-IC-WT	**Water**							
Batch R4072827								
WG2788750-15 DUP		**WG2788750-13**						
Nitrite (as N)		0.153	0.151		mg/L	1.4	25	05-JUN-18
WG2788750-12 LCS								
Nitrite (as N)			101.6		%		70-130	05-JUN-18
WG2788750-11 MB								
Nitrite (as N)			<0.010		mg/L		0.01	05-JUN-18
WG2788750-14 MS		**WG2788750-13**						
Nitrite (as N)			96.4		%		70-130	05-JUN-18
NO3-IC-WT	**Water**							
Batch R4072827								
WG2788750-15 DUP		**WG2788750-13**						
Nitrate (as N)		1.59	1.58		mg/L	0.4	25	05-JUN-18
WG2788750-12 LCS								
Nitrate (as N)			102.5		%		70-130	05-JUN-18
WG2788750-11 MB								
Nitrate (as N)			<0.020		mg/L		0.02	05-JUN-18
WG2788750-14 MS		**WG2788750-13**						
Nitrate (as N)			99.97		%		70-130	05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-WT	**Water**							
Batch R4074392								
WG2790321-3 DUP		**L2105015-5**						
Phosphorus, Total		0.138	0.135		mg/L	2.1	20	07-JUN-18
WG2790328-3 DUP		**L2105183-1**						
Phosphorus, Total		0.514	0.556		mg/L	7.8	20	07-JUN-18
WG2790321-2 LCS								
Phosphorus, Total			96.7		%		80-120	07-JUN-18
WG2790328-2 LCS								
Phosphorus, Total			92.8		%		80-120	07-JUN-18
WG2790321-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	07-JUN-18
WG2790328-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	07-JUN-18
WG2790321-4 MS		**L2105015-5**						
Phosphorus, Total			N/A	MS-B	%		-	07-JUN-18
WG2790328-4 MS		**L2105183-1**						
Phosphorus, Total			N/A	MS-B	%		-	07-JUN-18
PAH-511-WT	**Water**							
Batch R4076297								
WG2790808-2 LCS								
1-Methylnaphthalene			103.3		%		50-140	08-JUN-18
2-Methylnaphthalene			98.4		%		50-140	08-JUN-18
Acenaphthene			101.6		%		50-140	08-JUN-18
Acenaphthylene			102.8		%		50-140	08-JUN-18
Anthracene			90.8		%		50-140	08-JUN-18
Benzo(a)anthracene			97.8		%		50-140	08-JUN-18
Benzo(a)pyrene			96.0		%		50-140	08-JUN-18
Benzo(b)fluoranthene			87.7		%		50-140	08-JUN-18
Benzo(g,h,i)perylene			108.4		%		50-140	08-JUN-18
Benzo(k)fluoranthene			110.9		%		50-140	08-JUN-18
Chrysene			123.5		%		50-140	08-JUN-18
Dibenzo(ah)anthracene			107.0		%		50-140	08-JUN-18
Fluoranthene			108.6		%		50-140	08-JUN-18
Fluorene			105.6		%		50-140	08-JUN-18
Indeno(1,2,3-cd)pyrene			103.0		%		50-140	08-JUN-18
Naphthalene			104.2		%		50-140	08-JUN-18
Phenanthrene			106.1		%		50-140	08-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4076297								
WG2790808-2 LCS								
Pyrene			108.2		%		50-140	08-JUN-18
WG2790808-3 LCSD		**WG2790808-2**						
1-Methylnaphthalene		103.3	105.8		%	2.4	50	08-JUN-18
2-Methylnaphthalene		98.4	100.2		%	1.9	50	08-JUN-18
Acenaphthene		101.6	102.6		%	1.0	50	08-JUN-18
Acenaphthylene		102.8	103.5		%	0.7	50	08-JUN-18
Anthracene		90.8	90.0		%	0.9	50	08-JUN-18
Benzo(a)anthracene		97.8	97.1		%	0.7	50	08-JUN-18
Benzo(a)pyrene		96.0	97.0		%	1.0	50	08-JUN-18
Benzo(b)fluoranthene		87.7	86.2		%	1.7	50	08-JUN-18
Benzo(g,h,i)perylene		108.4	114.8		%	5.7	50	08-JUN-18
Benzo(k)fluoranthene		110.9	112.2		%	1.2	50	08-JUN-18
Chrysene		123.5	123.1		%	0.3	50	08-JUN-18
Dibenzo(ah)anthracene		107.0	106.2		%	0.8	50	08-JUN-18
Fluoranthene		108.6	108.5		%	0.1	50	08-JUN-18
Fluorene		105.6	105.2		%	0.4	50	08-JUN-18
Indeno(1,2,3-cd)pyrene		103.0	102.2		%	0.8	50	08-JUN-18
Naphthalene		104.2	107.5		%	3.2	50	08-JUN-18
Phenanthrene		106.1	105.4		%	0.7	50	08-JUN-18
Pyrene		108.2	110.3		%	2.0	50	08-JUN-18
WG2790808-1 MB								
1-Methylnaphthalene			<0.020		ug/L		0.02	08-JUN-18
2-Methylnaphthalene			<0.020		ug/L		0.02	08-JUN-18
Acenaphthene			<0.020		ug/L		0.02	08-JUN-18
Acenaphthylene			<0.020		ug/L		0.02	08-JUN-18
Anthracene			<0.020		ug/L		0.02	08-JUN-18
Benzo(a)anthracene			<0.020		ug/L		0.02	08-JUN-18
Benzo(a)pyrene			<0.010		ug/L		0.01	08-JUN-18
Benzo(b)fluoranthene			<0.020		ug/L		0.02	08-JUN-18
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	08-JUN-18
Benzo(k)fluoranthene			<0.020		ug/L		0.02	08-JUN-18
Chrysene			<0.020		ug/L		0.02	08-JUN-18
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	08-JUN-18

COMMENTS: RRQC - surrogate slightly above ALS DQO.

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4076297								
WG2790808-1 MB								
Fluoranthene			<0.020		ug/L		0.02	08-JUN-18
Fluorene			<0.020		ug/L		0.02	08-JUN-18
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	08-JUN-18
Naphthalene			<0.050		ug/L		0.05	08-JUN-18
Phenanthrene			<0.020		ug/L		0.02	08-JUN-18
Pyrene			<0.020		ug/L		0.02	08-JUN-18
Surrogate: d8-Naphthalene			141.2	RRQC	%		60-140	08-JUN-18
Surrogate: d10-Phenanthrene			118.5		%		60-140	08-JUN-18
Surrogate: d12-Chrysene			116.1		%		60-140	08-JUN-18
Surrogate: d10-Acenaphthene			120.9		%		60-140	08-JUN-18
COMMENTS: RRQC - surrogate slightly above ALS DQO.								
PH-WT	**Water**							
Batch R4072214								
WG2789629-6 DUP		**WG2789629-5**						
pH		8.63	8.62	J	pH units	0.01	0.2	06-JUN-18
WG2789629-4 LCS								
pH			7.00		pH units		6.9-7.1	06-JUN-18
PHENOLS-4AAP-WT	**Water**							
Batch R4078356								
WG2792491-15 DUP		**L2104160-3**						
Phenols (4AAP)		<0.0010	0.0012	RPD-NA	mg/L	N/A	20	08-JUN-18
WG2792491-14 LCS								
Phenols (4AAP)			99.8		%		85-115	08-JUN-18
WG2792491-13 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	08-JUN-18
WG2792491-16 MS		**L2104160-3**						
Phenols (4AAP)			108.3		%		75-125	08-JUN-18
SO4-IC-N-WT	**Water**							
Batch R4072827								
WG2788750-15 DUP		**WG2788750-13**						
Sulfate (SO4)		59.4	59.0		mg/L	0.7	20	05-JUN-18
WG2788750-12 LCS								
Sulfate (SO4)			102.4		%		90-110	05-JUN-18
WG2788750-11 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	05-JUN-18
WG2788750-14 MS		**WG2788750-13**						

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WT	**Water**							
Batch R4072827								
WG2788750-14 MS		**WG2788750-13**						
Sulfate (SO4)			99.7		%		75-125	05-JUN-18
SOLIDS-TDS-WT	**Water**							
Batch R4072403								
WG2788934-3 DUP		**L2104877-2**						
Total Dissolved Solids		21	23		mg/L	6.9	20	05-JUN-18
WG2788934-2 LCS								
Total Dissolved Solids			101.1		%		85-115	05-JUN-18
WG2788934-1 MB								
Total Dissolved Solids			<10		mg/L		10	05-JUN-18
TKN-WT	**Water**							
Batch R4070848								
WG2788682-3 DUP		**L2105015-1**						
Total Kjeldahl Nitrogen		1.01	0.96		mg/L	4.7	20	05-JUN-18
WG2788682-2 LCS								
Total Kjeldahl Nitrogen			96.3		%		75-125	05-JUN-18
WG2788682-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	05-JUN-18
WG2788682-4 MS		**L2105015-1**						
Total Kjeldahl Nitrogen			95.6		%		70-130	05-JUN-18
Batch R4075576								
WG2790844-3 DUP		**L2106661-1**						
Total Kjeldahl Nitrogen		<0.15	<0.15	RPD-NA	mg/L	N/A	20	07-JUN-18
WG2790844-2 LCS								
Total Kjeldahl Nitrogen			105.0		%		75-125	07-JUN-18
WG2790844-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	07-JUN-18
WG2790844-4 MS		**L2106661-1**						
Total Kjeldahl Nitrogen			101.7		%		70-130	07-JUN-18
VOC-511-HS-WT	**Water**							
Batch R4068789								
WG2786511-4 DUP		**WG2786511-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4068789								
WG2786511-4 DUP		**WG2786511-3**						
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	05-JUN-18
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	05-JUN-18
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	05-JUN-18
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	05-JUN-18
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	05-JUN-18
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	05-JUN-18
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	05-JUN-18
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	05-JUN-18
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	05-JUN-18
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	05-JUN-18
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	05-JUN-18
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	05-JUN-18
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	05-JUN-18
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	05-JUN-18
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	05-JUN-18
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
trans-1,3-Dichloropropene		<0.30	<0.30		ug/L			05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4068789								
WG2786511-4 DUP		**WG2786511-3**						
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	05-JUN-18
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	05-JUN-18
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-JUN-18
WG2786511-1 LCS								
1,1,1,2-Tetrachloroethane			103.2		%		70-130	05-JUN-18
1,1,2,2-Tetrachloroethane			95.9		%		70-130	05-JUN-18
1,1,1-Trichloroethane			108.9		%		70-130	05-JUN-18
1,1,2-Trichloroethane			101.7		%		70-130	05-JUN-18
1,1-Dichloroethane			107.2		%		70-130	05-JUN-18
1,1-Dichloroethylene			99.9		%		70-130	05-JUN-18
1,2-Dibromoethane			102.3		%		70-130	05-JUN-18
1,2-Dichlorobenzene			100.0		%		70-130	05-JUN-18
1,2-Dichloroethane			110.6		%		70-130	05-JUN-18
1,2-Dichloropropane			103.0		%		70-130	05-JUN-18
1,3-Dichlorobenzene			100.3		%		70-130	05-JUN-18
1,4-Dichlorobenzene			102.4		%		70-130	05-JUN-18
Acetone			110.9		%		60-140	05-JUN-18
Benzene			103.9		%		70-130	05-JUN-18
Bromodichloromethane			104.0		%		70-130	05-JUN-18
Bromoform			98.5		%		70-130	05-JUN-18
Bromomethane			109.0		%		60-140	05-JUN-18
Carbon tetrachloride			110.2		%		70-130	05-JUN-18
Chlorobenzene			103.0		%		70-130	05-JUN-18
Chloroform			108.6		%		70-130	05-JUN-18
cis-1,2-Dichloroethylene			106.5		%		70-130	05-JUN-18
cis-1,3-Dichloropropene			106.9		%		70-130	05-JUN-18
Dibromochloromethane			107.8		%		70-130	05-JUN-18
Dichlorodifluoromethane			102.5		%		50-140	05-JUN-18
Ethylbenzene			96.9		%		70-130	05-JUN-18
n-Hexane			110.4		%		70-130	05-JUN-18
m+p-Xylenes			99.7		%		70-130	05-JUN-18
Methyl Ethyl Ketone			99.2		%		60-140	05-JUN-18
Methyl Isobutyl Ketone			100.5				60-140	

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4068789								
WG2786511-1 LCS								
Methyl Isobutyl Ketone			100.5		%		60-140	05-JUN-18
Methylene Chloride			109.7		%		70-130	05-JUN-18
MTBE			105.1		%		70-130	05-JUN-18
o-Xylene			97.6		%		70-130	05-JUN-18
Styrene			95.3		%		70-130	05-JUN-18
Tetrachloroethylene			106.2		%		70-130	05-JUN-18
Toluene			98.3		%		70-130	05-JUN-18
trans-1,2-Dichloroethylene			108.3		%		70-130	05-JUN-18
trans-1,3-Dichloropropene			102.8		%		70-130	05-JUN-18
Trichloroethylene			111.2		%		70-130	05-JUN-18
Trichlorofluoromethane			114.8		%		60-140	05-JUN-18
Vinyl chloride			100.6		%		60-140	05-JUN-18
WG2786511-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	05-JUN-18
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	05-JUN-18
1,1,1-Trichloroethane			<0.50		ug/L		0.5	05-JUN-18
1,1,2-Trichloroethane			<0.50		ug/L		0.5	05-JUN-18
1,1-Dichloroethane			<0.50		ug/L		0.5	05-JUN-18
1,1-Dichloroethylene			<0.50		ug/L		0.5	05-JUN-18
1,2-Dibromoethane			<0.20		ug/L		0.2	05-JUN-18
1,2-Dichlorobenzene			<0.50		ug/L		0.5	05-JUN-18
1,2-Dichloroethane			<0.50		ug/L		0.5	05-JUN-18
1,2-Dichloropropane			<0.50		ug/L		0.5	05-JUN-18
1,3-Dichlorobenzene			<0.50		ug/L		0.5	05-JUN-18
1,4-Dichlorobenzene			<0.50		ug/L		0.5	05-JUN-18
Acetone			<30		ug/L		30	05-JUN-18
Benzene			<0.50		ug/L		0.5	05-JUN-18
Bromodichloromethane			<2.0		ug/L		2	05-JUN-18
Bromoform			<5.0		ug/L		5	05-JUN-18
Bromomethane			<0.50		ug/L		0.5	05-JUN-18
Carbon tetrachloride			<0.20		ug/L		0.2	05-JUN-18
Chlorobenzene			<0.50		ug/L		0.5	05-JUN-18
Chloroform			<1.0		ug/L		1	05-JUN-18
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4068789								
WG2786511-2 MB								
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	05-JUN-18
Dibromochloromethane			<2.0		ug/L		2	05-JUN-18
Dichlorodifluoromethane			<2.0		ug/L		2	05-JUN-18
Ethylbenzene			<0.50		ug/L		0.5	05-JUN-18
n-Hexane			<0.50		ug/L		0.5	05-JUN-18
m+p-Xylenes			<0.40		ug/L		0.4	05-JUN-18
Methyl Ethyl Ketone			<20		ug/L		20	05-JUN-18
Methyl Isobutyl Ketone			<20		ug/L		20	05-JUN-18
Methylene Chloride			<5.0		ug/L		5	05-JUN-18
MTBE			<2.0		ug/L		2	05-JUN-18
o-Xylene			<0.30		ug/L		0.3	05-JUN-18
Styrene			<0.50		ug/L		0.5	05-JUN-18
Tetrachloroethylene			<0.50		ug/L		0.5	05-JUN-18
Toluene			<0.50		ug/L		0.5	05-JUN-18
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	05-JUN-18
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	05-JUN-18
Trichloroethylene			<0.50		ug/L		0.5	05-JUN-18
Trichlorofluoromethane			<5.0		ug/L		5	05-JUN-18
Vinyl chloride			<0.50		ug/L		0.5	05-JUN-18
Surrogate: 1,4-Difluorobenzene			103.6		%		70-130	05-JUN-18
Surrogate: 4-Bromofluorobenzene			103.9		%		70-130	05-JUN-18
WG2786511-5 MS		**WG2786511-3**						
1,1,1,2-Tetrachloroethane			103.8		%		50-140	05-JUN-18
1,1,2,2-Tetrachloroethane			107.1		%		50-140	05-JUN-18
1,1,1-Trichloroethane			105.7		%		50-140	05-JUN-18
1,1,2-Trichloroethane			110.6		%		50-140	05-JUN-18
1,1-Dichloroethane			108.0		%		50-140	05-JUN-18
1,1-Dichloroethylene			95.1		%		50-140	05-JUN-18
1,2-Dibromoethane			113.1		%		50-140	05-JUN-18
1,2-Dichlorobenzene			99.6		%		50-140	05-JUN-18
1,2-Dichloroethane			122.4		%		50-140	05-JUN-18
1,2-Dichloropropane			107.8		%		50-140	05-JUN-18
1,3-Dichlorobenzene			96.1		%		50-140	05-JUN-18
1,4-Dichlorobenzene			99.2		%		50-140	05-JUN-18

Quality Control Report

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4068789								
WG2786511-5 MS		**WG2786511-3**						
Acetone			135.5		%		50-140	05-JUN-18
Benzene			104.3		%		50-140	05-JUN-18
Bromodichloromethane			109.8		%		50-140	05-JUN-18
Bromoform			108.1		%		50-140	05-JUN-18
Bromomethane			105.5		%		50-140	05-JUN-18
Carbon tetrachloride			105.9		%		50-140	05-JUN-18
Chlorobenzene			102.5		%		50-140	05-JUN-18
Chloroform			111.0		%		50-140	05-JUN-18
cis-1,2-Dichloroethylene			109.1		%		50-140	05-JUN-18
cis-1,3-Dichloropropene			108.0		%		50-140	05-JUN-18
Dibromochloromethane			114.3		%		50-140	05-JUN-18
Dichlorodifluoromethane			90.8		%		50-140	05-JUN-18
Ethylbenzene			91.5		%		50-140	05-JUN-18
n-Hexane			102.1		%		50-140	05-JUN-18
m+p-Xylenes			94.2		%		50-140	05-JUN-18
Methyl Ethyl Ketone			120.3		%		50-140	05-JUN-18
Methyl Isobutyl Ketone			119.3		%		50-140	05-JUN-18
Methylene Chloride			114.6		%		50-140	05-JUN-18
MTBE			104.5		%		50-140	05-JUN-18
o-Xylene			93.8		%		50-140	05-JUN-18
Styrene			92.3		%		50-140	05-JUN-18
Tetrachloroethylene			98.8		%		50-140	05-JUN-18
Toluene			94.4		%		50-140	05-JUN-18
trans-1,2-Dichloroethylene			105.2		%		50-140	05-JUN-18
trans-1,3-Dichloropropene			102.7		%		50-140	05-JUN-18
Trichloroethylene			108.3		%		50-140	05-JUN-18
Trichlorofluoromethane			107.0		%		50-140	05-JUN-18
Vinyl chloride			93.7		%		50-140	05-JUN-18

Quality Control Report

Workorder: L2105017 Report Date: 26-JUL-18

Client: GHD Limited (Waterloo)
651 COLBY STREET
WATERLOO ON N2V 1C2
Contact: JENNIFER BALKWILL

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
J	Duplicate results and limits are expressed in terms of absolute difference.
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
MBS	Surrogate recovery in Method Blank was outside ALS DQO. Moderately low-biased results in the MB do not significantly affect its purpose.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
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.

Hold Time Exceedances:

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

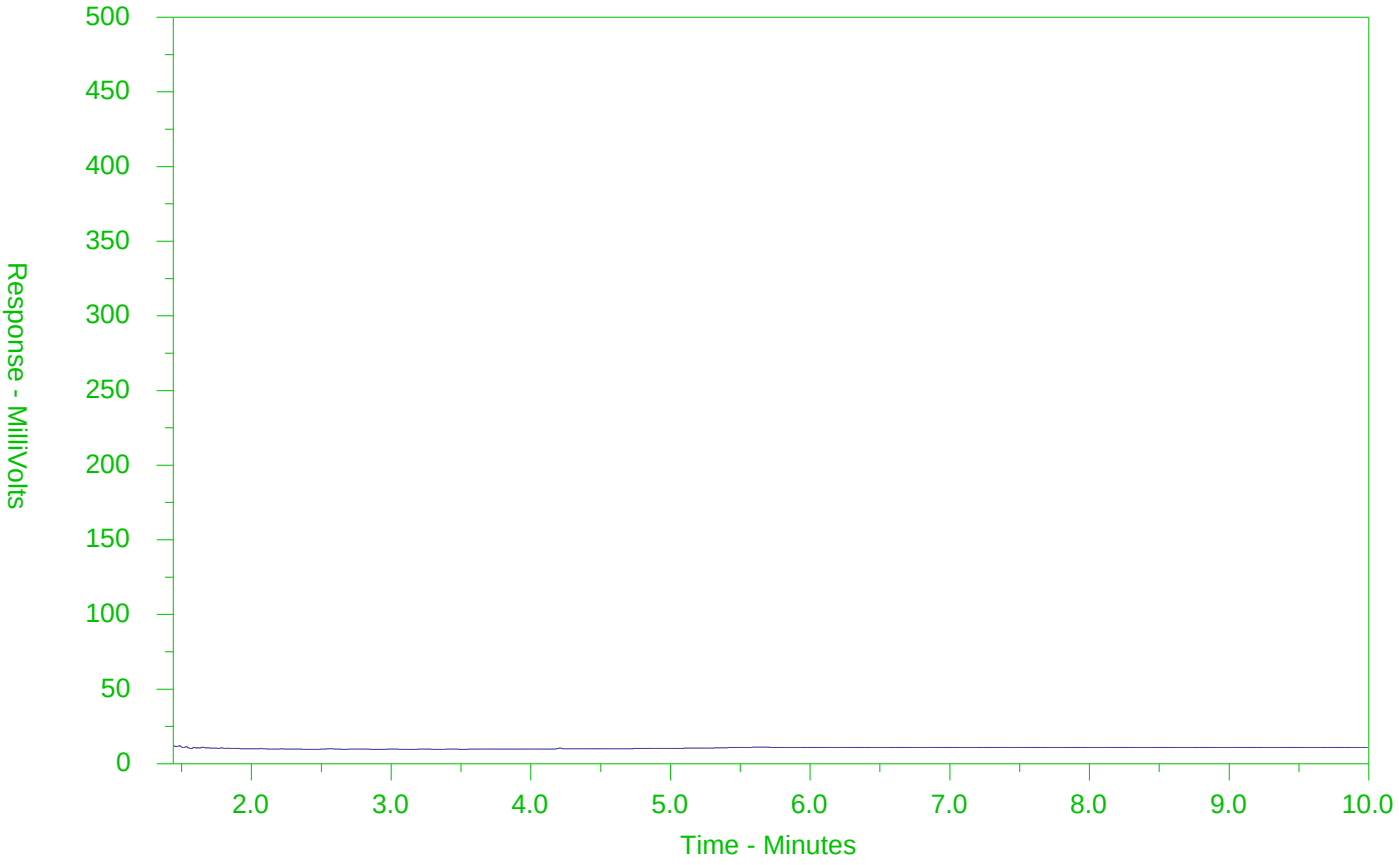
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2105017-1
Client Sample ID: GW-11149990-060118-TW-002



←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.

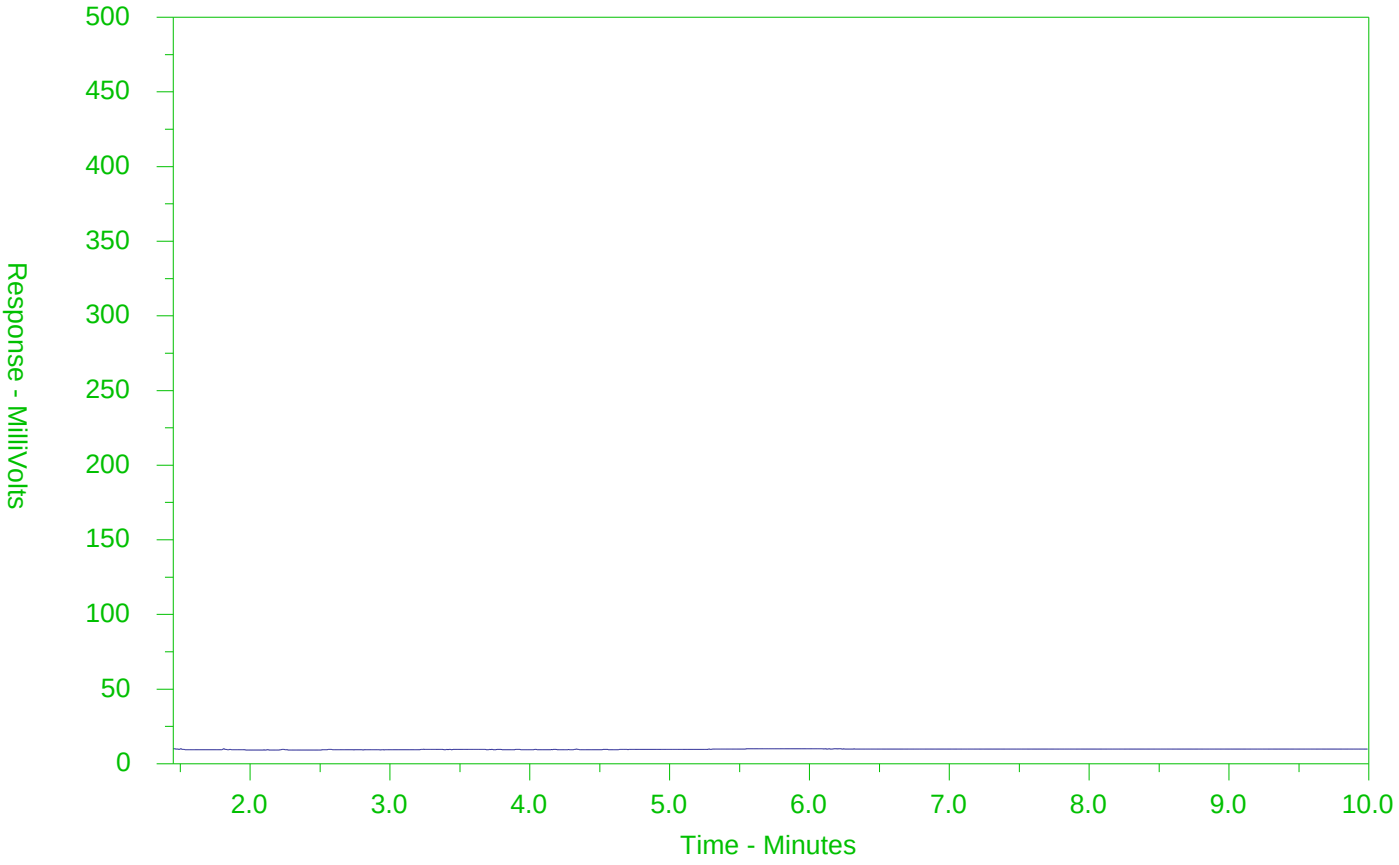
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2105017-2
Client Sample ID: GW-11149990-060118-TW-015



←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.

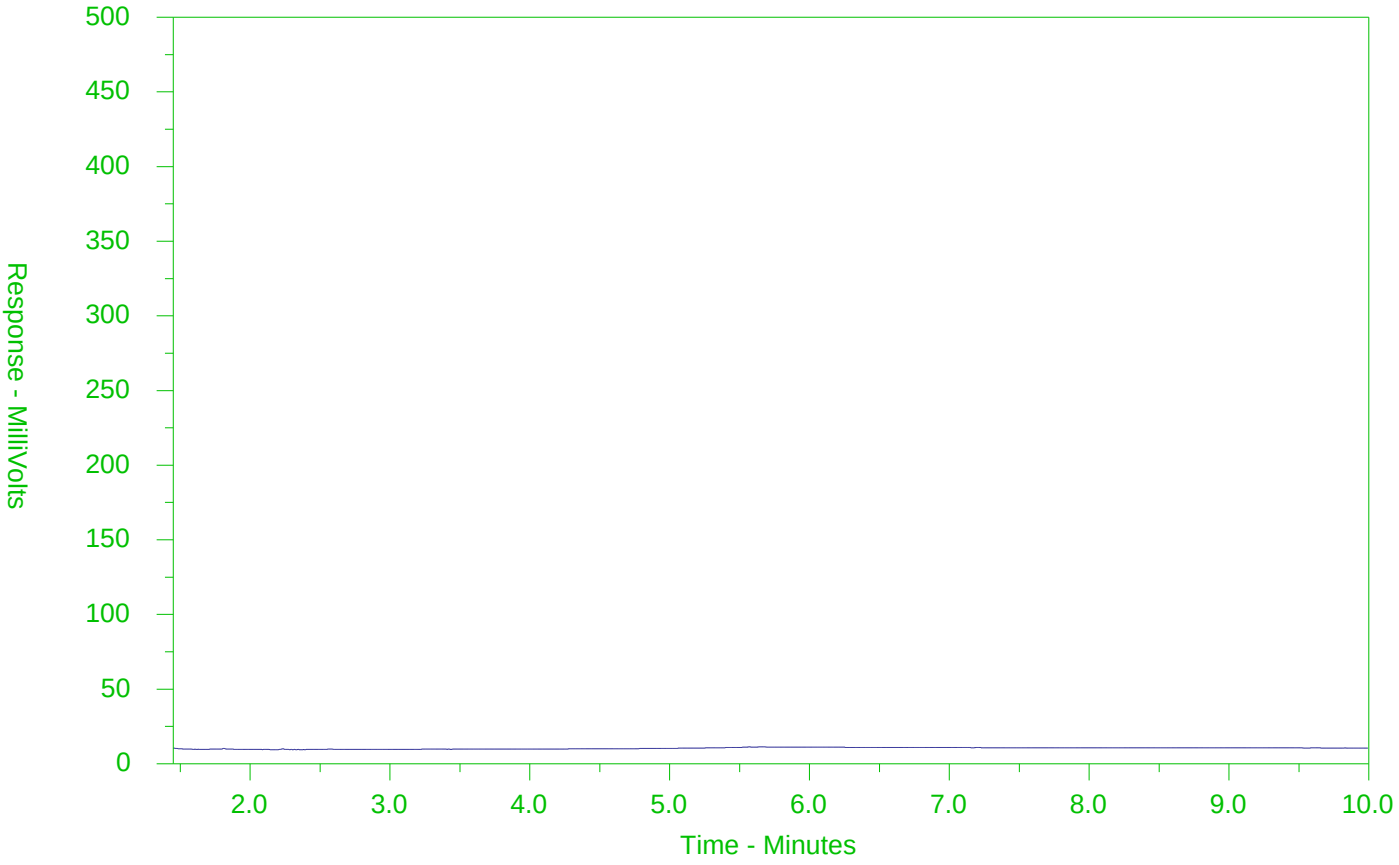
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the 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: L2105017-3
Client Sample ID: GW-11149990-060118-TW-016



←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 the 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.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2105017-COFC

COC Number: 17 - 621916

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	GHD Limited Acct# 13791
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	651 Colby Drive
City/Province:	Waterloo/Ontario
Postal Code:	N2V 1C2

Report Format / Distribution

Select Report Format: [✓] PDF [✓] EXCEL [✓] EDD (DIGITAL)

Quality Control (QC) Report with Report [✓] YES [ ] NO

[ ] Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: [✓] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax: Jennifer.Balkwill@ghd.com

Email 2: See PO

Email 3:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [X] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days):
- 4 day [P4-20%] [ ]
- 3 day [P3-25%] [ ]
- 2 day [P2-50%] [ ]

EMERGENCY:
- 1 Business day [E-100%] [ ]
- Same Day, Weekend or Statutory holiday [E2-200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Invoice To

Same as Report To [✓] YES [ ] NO

Copy of Invoice with Report [ ] YES [✓] NO

Company: GHD Limited

Contact: Jennifer Balkwill

Invoice Distribution

Select Invoice Distribution: [✓] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax: Jennifer Balkwill

Email 2:

Project Information

ALS Account # / Quote #:

Job #: 11149990-04

PO / AFE: 7351036-1

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: | PO#:

Major/Minor Code: | Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only): L2105017 RK

ALS Contact: Rick H

Sampler: Tyler W

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	VOC,F1-F4	SVOCs	153 Mod I Pkg	Phenols-4AAP	Alk,TDS	TKN,TP	DOC	NH3	Anions3 (NO2,NO3,SO4)	WT-CA-D,WT-MG-D,WT-FE-D	WT-MN-D	Hardness-Calc	VOU,F1 (TripBlank)			SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	GW-11149990-060118-TW-002	01-June-18	13:10	GW	X	X	X															10
	GW-11149990-060118-TW-015	↓	14:40	↓	X	X	X	X	X	X	X	X	X	X	X	X						12
	GW-11149990-060118-TW-016	↓	15:56	↓	X	X	X	X	X	X	X	X	X	X	X	X						12
	TB-11149990-060118-TW-002	↓	-	-													X					2

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? [ ] YES [✓] NO

Are samples for human consumption/ use? [ ] YES [✓] NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

All metals, CrG+, Hg and DOC bottles are field filtered.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] | SIF Observations Yes [ ] No [ ]

Ice Packs [ ] Ice Cubes [ ] | Custody seal intact Yes [ ] No [ ]

Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C:

FINAL COOLER TEMPERATURES °C: 9.6

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Tyler Williams	Date: 1-June-2018	Time: 19:00	Received by:	Date:	Time:	Received by: Ramneek	Date: June 01 2018	Time: 19:05pm

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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 back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

JULY 2017 FRONT

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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