# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 16 EDGEWATER STREET, KANATA, ON



Project No.: CP-17-0635

Prepared for:

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October 6, 2021

# **Executive Summary**

McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) was retained by McCluskey Group to conduct a Phase Two Environmental Site Assessment (ESA) for the property addressed as 16 Edgewater Street, formerly a portion of 6 Edgewater Street, Kanata, Ontario. The property is currently divided into two sections; the southeast section is occupied by a one-storey commercial building (Tim Horton's and Wendy's restaurant) with associated parking. The northwest section ("the Site") is a vacant lot covered in grass.

It is understood that this Phase Two ESA is being completed as a component of the City of Ottawa site plan submission process, in support of an application to construct an industrial showroom and office building on the vacant portion of the lot.

McIntosh Perry completed a Phase One Environmental Site Assessment (ESA) (December 5, 2018, updated October 5, 2021) for the subject property. The Phase One ESA identified potential contaminating activities (PCAs) and Areas of Potential Environmental Concern (APECs) on site and/or in the Phase One Study area. These included:

- 6 Edgewater Street (On-Site)
  - o Former above ground fuel storage tanks (Previous Phase I and II ESA report)
  - o Cashway Building Centre material storage yard (Aerial Photos and Interviews)
- 5 Edgewater Street
  - Heavy equipment garage and storage yard (Site visit)
  - o Former private fuel outlet with fuel storage tanks (ERIS Eco Logs)
  - o Former trichloroethane spill (Former Phase I and II ESA report)
- 501 Hazeldean Road
  - Former retail fuel outlet (Aerial photos and ERIS Eco Log)
- 21 Young Road
  - o Spill of heating oil (ERIS EcoLog report)

Based on this information, a Phase Two Environmental Site Assessment (ESA) was recommended for Site to assess soil and groundwater quality.

The Phase Two ESA involved the drilling of three boreholes and installation of three monitoring wells on the Site (two along the southwest property by Edgewater Street and one in the south east corner by the Tim Horton's Parking lot). Soil and groundwater samples were collected and submitted for laboratory analysis of benzene, toluene, ethylbenzene and xylenes (BTEX), petroleum hydrocarbons (PHCs) in four fractions (F1-F4), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), metals and inorganics.

The findings of the Phase Two ESA are summarized as follows:

• Site stratigraphy consists of a thin layer of topsoil overlying silt, underlain by clay.

# **Executive Summary**

 No exceedances for the analyzed parameters in soil were detected above applicable site condition standards at the Site.

From the initial groundwater sampling event, concentrations of PHC F2 and F3 in BH/MW 18-1 and F2 in BH/MW18-2 were above the applicable Site Condition Standard. However due to observed sediment in the groundwater samples and the lack of elevated soil vapour readings and/or soil vapour exceedances at the Site, two additional groundwater sampling events were completed to confirm the exceedances. The second ground water sampling event in BH/MW18-1 and BH/MW18-2 indicated that the concentrations of F2-F4 PHC fraction were below laboratory detections. The third sampling event indicated that all parameter concentrations in all groundwater monitoring wells including PHC F2-F4 were in compliance with applicable SCS. These results are considered representative of conditions at the Site.

McIntosh Perry does not recommend any further investigative or remedial action for the Site at this time. The environmental condition of the Site is considered suitable for the proposed development.

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### **1.0** INTRODUCTION

McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) was retained by McCluskey Group to conduct a Phase Two Environmental Site Assessment (ESA) for 16 Edgewater Street (formerly a portion of 6 Edgewater Street), Kanata, Ontario. The Site is bounded to the northwest by a commercial building 20 Edgewater Street, to the northeast by residential dwellings along Foulis Crescent and a multi-unit commercial building, to the southwest by Edgewater Street followed by Toromont CAT maintenance garage and storage yard and southeast by Hazeldean Road followed by commercial buildings. The property is currently divided into two sections; the southeast section is occupied by a one-storey commercial building (Tim Horton's and Wendy's restaurant) with associated parking. The northwest section ("the Site") is a vacant lot covered in grass. Borehole/monitoring well locations are indicated on Figure 2.

It is understood that this Phase Two ESA is being completed as a component of the City of Ottawa site plan submission process, in support of an application to construct an industrial showroom and office building on the vacant portion of the lot.

McIntosh Perry completed a Phase One Environmental Site Assessment (ESA) (December 5, 2018, updated October 5, 2021) for the subject property. The Phase One ESA identified potential contaminating activities (PCAs) and Areas of Potential Environmental Concern (APECs) on site and/or in the Phase One Study area. These included:

- 6 Edgewater Street (On-Site)
  - o Former above ground fuel storage tanks (Previous Phase I and II ESA report)
  - o Cashway Building Centre material storage yard (Aerial Photos and Interviews)
- 5 Edgewater Street
  - Heavy equipment garage and storage yard (Site visit)
  - o Former private fuel outlet with fuel storage tanks (ERIS Eco Logs)
  - o Former trichloroethane spill (Former Phase I and II ESA report)
- 501 Hazeldean Road
  - o Former retail fuel outlet (Aerial photos and ERIS Eco Log)
- 21 Young Road
  - o Spill of heating oil (ERIS EcoLog report)

Based on this information, a Phase Two Environmental Site Assessment (ESA) was recommended for Site to assess soil and groundwater quality.

A Phase Two ESA is typically used to confirm the presence (or absence) of contaminant(s) of concern and to characterize impacts, if any, to soil and/or groundwater. The Phase Two ESA was conducted in accordance with McIntosh Perry's standard procedures.

# **1.1** Property Information

The property is addressed as 16 Edgewater Street and is currently vacant. Previously, the Site was combined with 6 Edgewater Street but has since been severed (approximately 2019).

Site zoning is IG2 (General Industrial Zone, Subzone 2) as described under section 199-200 of the City of Ottawa Zoning by-laws, which currently does not allow for residential housing.

The total area of the Site is approximately 0.62 hectares (ha).

### 1.1.1 Property Identification

The legal description of the entire property is as follows;

Part Lot 30 Concession 12 Part 1 4R31503 City of Ottawa; (PIN 044980170)

### 1.1.2 Property Ownership and Contact Details

McIntosh Perry was retained to complete this Phase One ESA by Chris McCluskey of McCluskey Group. Mr. McCluskey can be contacted at (613) 627-0611. The property is currently owned by 11143921 Canada Inc.

### 1.1.3 Current and Proposed Future Uses

The Site is currently vacant. The intended future use of the Site will be residential housing.

# **1.2** Applicable Site Condition Standard

The following parameters were used to select the most appropriate Site Condition Standards (SCS) for the site:

- Proposed property use is residential;
- The Site and surrounding properties in the area are serviced by municipal water supply and not by water wells (i.e., the subject site will continue to have treated potable water available, and potable groundwater standards do not need to be applied);
- Soil depth across the property is more than two metres on average (i.e., the site does not have shallow soil);
- The site is not located within 30 metres of a water body; the closest significant water body, the Carp River, is approximately 650 m to the southwest;
- The site is not located near any areas of natural significance (e.g. Provincially Significant Wetland),
   and
- Native soil at the site is fine textured (based on classification of borehole samples collected during the geotechnical investigation completed at the Site by McIntosh Perry).

Given these parameters, it was determined that Ministry of the Environment, Conservation, and Parks (MECP) Ontario Regulation (O.Reg.) 153/04, as amended (Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act) is the most applicable reference criteria for the site. The following SCS were selected:

MECP Table 3 – Full Depth Generic Site Condition Standards in a non-potable groundwater condition, for residential land use, with coarse textured soils.

# 2.0 BACKGROUND INFORMATION

# **2.1** Physical Setting

### 2.1.1 Water Bodies and Areas of Natural Significance

The closest permanent waterbody is the Carp River (located 0.65 km southwest of the Site at its closest point).

When completing a Phase One ESA, considerations are made for the following Areas of Natural Significance as defined by O.Reg. 153/04:

- Provincial Parks and conservation reserves
- Areas of Natural and Scientific Interest (ANSIs)
- Provincially Significant Wetlands (PSWs)
- Environmentally/ecologically sensitive/significant areas per the City of Ottawa Official Plan
- Areas designated by the Niagara Escarpment Plan
- Areas identified by MNRF as significant habitat of a threatened or endangered species or areas of habitat of a species classified under section 7 of the Endangered Species Act
- Areas designated by the Oak Ridges Moraine Conservation Plan
- Areas set apart under the Wilderness Areas Act

No areas of natural significance were observed within the Study Area.

### 2.1.2 Topography and Surface Water Drainage Features

The elevation at the Site is approximately 101-102 m above sea level (m asl). The topography is generally flat.

The Site occurs within the Mississippi River watershed. The Carp River is approximately 650 m southwest of the Site. Drainage at the Site consists primarily of infiltration to the permeable ground surface. A drainage ditch is present along the southwest boundary of the Site along Edgewater Street.

### 2.1.3 Geology and Hydrogeology

Geological maps of the area classify the overburden at the Site as fine-textured glaciomarine deposits, consisting predominantly of silt and clay. (OGS, 2018).

Geological maps of the area classify the bedrock at the Site as predominantly limestone, dolostone, shale, arkose and sandstone of the Ottawa Group (OGS, 2018).

Based on a review of site geology and topography, groundwater is likely to flow southwest toward the Carp River. Groundwater flow may be influenced by underground service trenches along Edgewater Street and Hazeldean Road.

#### 2.1.4 Potable Water Source

The Phase Two Property and properties within the Phase One Study Area are situated in the City of Ottawa. It is our understanding that the Phase Two Property and other properties within the Phase One Study Area are currently serviced by the City of Ottawa municipal water distribution system; ground water is not used as a source of potable water.

During the Site reconnaissance conducted during the 2021 McIntosh Perry Phase One ESA, potable water wells were not observed on the Phase Two Property or on properties within the Phase One Study Area.

# **2.2** Past Investigations

A Phase One ESA was conducted on the subject property by McIntosh Perry in December of 2018 and updated in October 2021. The Phase One ESA identified potential contaminating activities (PCAs) and Areas of Potential Environmental Concern (APECs) on site and/or in the Phase One Study area.

The following potentially contaminating activity (PCA) were identified on the Phase One ESA property:

- Former above ground fuel storage tanks (Previous Phase I and II ESA report)
- Cashway Building Center material storage yard (Aerial Photos and Interviews)

The following potentially contaminating activities (PCAs) were identified in the Phase One ESA Study area:

- 5 Edgewater Street
  - Heavy equipment garage and storage yard (Site visit)
  - Former private fuel outlet with fuel storage tanks (ERIS Eco Logs)
  - o Former trichloroethane spill (Former Phase I and II ESA report)
- 501 Hazeldean Road
  - Former retail fuel outlet (Aerial photos and ERIS Eco Log)
- 21 Young Road
  - o Spill of heating oil (ERIS EcoLog report)

Based on the nature of these records and their proximity to the Site, these PCAs are considered to have the potential to result in environmental impacts to the Site, and are therefore considered APECs with respect to the Site. Contaminants of concern include benzene, toluene, ethylbenzene, and xylenes (BTEX) and petroleum hydrocarbons, fractions 1 through 4 (PHC F1-F4), associated with the retail fuel outlet, fuel storage tanks and maintenance garage, and volatile organic compounds (VOCs) associated with former spill and material storage yard, and Polycyclic Aromatic Hydrocarbons (PAHs) and inorganics including metals associated with the material storage yard.

McIntosh Perry also completed a geotechnical investigation for the Site concurrently with the original Phase Two ESA. The geotechnical investigation did not identify any environmental concerns at the Site. Grain size analysis results completed as a part of the geotechnical investigation are included in this report as Appendix D.

# 2.3 Overview of Soil and Groundwater Data and Regulation Changes

It is noted that in December of 2019, new regulation amendments associated with salt impacts were enacted. These amendments permitted the exemption of salt impacts if the impacts were deemed by the Qualified Person (QP) to be resultant from de-icing activities for the purpose of human and vehicular safety.

A data analysis was completed to re-evaluate existing soil results in the context of current regulations. Based on this re-evaluation, the QP determined that as EC and SAR were eligible for the exemption application. Accordingly, with application of the regulatory amendment that provides exemption relief for impact resulting from de-icing activities, EC, SAR, sodium and chloride are not considered contaminants of concern for the Phase Two Property. However, these parameters must still be considered when determining destinations for excess soil from the Site, per the requirements of O.Reg. 406/19 (On-Site and Excess Soil Management).

# 3.0 SCOPE OF THE INVESTIGATION

The Phase Two ESA site investigation at the Site consisted of the following components:

- Underground service locate clearance was provided by public utility service provides through Ontario One Call and a private utility locating service;
- In coordination with a geotechnical investigation at the Site, the advancement of three (3) boreholes at the Phase Two Property to a maximum depth of 6.1 m mbgs, all three (3) of which were completed as monitoring wells by a licensed water well contractor to the requirements of O.Reg. 903;
- Submission of select "worst case" soil samples collected from each borehole, as determined through field screening, for laboratory analyses of VOCs (including BTEX), PHCs, PAHs, metals & inorganics;
- Submission of ground water samples collected from each monitoring well for laboratory analysis of VOCs (including BTEX), PHCs, PAHs, and metals & inorganics;
- Submission of representative soil samples for analysis of pH and grain size, for determination of the appropriate MECP standards for the Phase Two Property (undertaken as part of the geotechnical investigation);
- Completion of a quality assurance/quality control (QA/QC) program consisting of the submission of field duplicate samples; and
- Completion of a relative elevation survey of the ground surface elevation of each borehole advanced at the Site.

The Phase Two ESA was completed in general accordance with the requirements of O. Reg. 153/04 (as amended).

# **3.1** Media Investigated

Soil samples were obtained from each borehole advanced during the investigation and submitted for laboratory analyses of the selected contaminants of potential concern (COPCs). Each borehole was instrumented with a monitoring well and subsequently sampled for each of the selected COPCs.

No water bodies were present on the Phase Two Property and, as such, no sediment samples were collected as part of this Phase Two ESA.

### 3.1.1 Contaminants of Potential Concern

The following contaminants of potential concern (COCs) are suspected and should be tested at the Phase One Property:

• Petroleum hydrocarbons Fractions 1 to 4 (PHCs): This parameter group consists of petroleum hydrocarbons of various carbon chain lengths commonly encountered in gasoline (PHC F1), diesel and furnace oil (PHC F2), and heavy oils and asphalts (PHC F3-F4). This parameter group was selected as COPCs for the Site due to the historic presence of ASTs at the Site, the historic presence of a retail fuel outlet at 501 Hazeldean Road, a record of a fuel oil spill at 21 Young Road, and ASTs and garage activities at 5 Edgewater Street.

- Volatile organic compounds (VOCs) including benzene, toluene, ethylbenzene, and xylenes (BTEX): This parameter group consists of soluble components in gasoline, diesel, and fuel oil, as well as various chlorinated solvents used in degreasing, dry cleaning, and industrial applications. VOCs were selected as COPCs for the Site due to the historic presence of ASTs at the Site, the historic presence of a retail fuel outlet at 501 Hazeldean Road, a record of a fuel oil spill at 21 Young Road, and ASTs and garage activities at 5 Edgewater Street, as well as the historic TCE spill record noted in a previous environmental report at 5 Edgewater Street.
- Polycyclic aromatic hydrocarbons (PAHs): This parameter group consists of various complex hydrocarbons associated with heavy oils as well as combustion byproducts, coal, etc. PAHs were selected as COPCs for the Site due to the historic use of the Site as a building materials storage yard and garage activities at 5 Edgewater Street.

Metals and inorganic parameters (As, Sb, Se, B, B-HWS, Na, Hg, CI-, CN, Cr-VI, pH, EC and SAR) were selected as COPCs for the Site based on the historic use of the Site as a building materials storage yard.

# **3.2** Phase One Conceptual Site Model

During the 2021 McIntosh Perry Phase One ESA, a Phase One Conceptual Site Model (CSM) was developed. A Phase One CSM provides a summary of environmental conditions at the Site, as identified through the completion of a Phase One ESA. The purpose of the CSM is to identify the location and nature of all PCAs within the Phase One Study Area, including the Phase One Property, and to determine whether these PCAs result in APECs in relation to the Phase One Property. The Phase One CSM is presents the following information:

- The locations of existing buildings and structures;
- The location of any water bodies within the Phase One Study Area;
- The locations of any areas of natural significance within the Phase One Study Area;
- The locations of any potable drinking water wells on the Phase One Property;
- Roads within the Phase One Study Area;
- Uses of properties within the Phase One Study Area outside of the Phase One Property;
- Areas where any PCAs have occurred within the Phase One Study Area; and
- The locations of APECs on the Phase One Property.

The following subsections provide a discussion of the above-noted information.

### 3.2.1 Phase One Property and Phase One Study Area

The Phase One Study Area includes the following properties:

- The Site
- All properties within approximately 250m of the Site boundary (Phase One ESA Study Area)

The Phase One ESA Study Area, including surrounding land uses, is shown on Figure 2 (Study Area) and Figure 3 (Surrounding Land Use).

### 3.2.2 Existing Buildings and Structures on the Phase One Property

There are currently no existing buildings, structures, or below ground structures on the Phase One Property.

#### 3.2.3 Water Bodies

There are no water bodies within the Phase One Study Area. The closest permanent waterbody is the Carp River (located 0.65 km southwest of the Site at its closest point).

### 3.2.4 Areas of Natural Significance

When completing a Phase One ESA, considerations are made for the following Areas of Natural Significance as defined by O.Reg. 153/04:

- Provincial Parks and conservation reserves
- Areas of Natural and Scientific Interest (ANSIs)
- Provincially Significant Wetlands (PSWs)
- Environmentally/ecologically sensitive/significant areas per the City of Ottawa Official Plan
- Areas designated by the Niagara Escarpment Plan
- Areas identified by MNRF as significant habitat of a threatened or endangered species or areas of habitat of a species classified under section 7 of the Endangered Species Act
- Areas designated by the Oak Ridges Moraine Conservation Plan
- Areas set apart under the Wilderness Areas Act

No areas of natural significance were observed within the Study Area.

### 3.2.5 Water Wells

No potable water wells were observed on the Phase One Property or within the Phase One Study Area during the Site reconnaissance. Three (3) groundwater monitoring wells installed by McIntosh Perry during the 2018 subsurface investigation were observed during the 2021 Phase One ESA Update.

The Phase Two Property and properties within the Phase One Study Area are situated in the City of Ottawa. It is our understanding that the Phase Two Property and other properties within the Phase One Study Area are currently serviced by the City of Ottawa municipal water distribution system; ground water is not used as a source of potable water.

### 3.2.6 Potentially Contaminating Activities

The following potentially contaminating activity (PCA) were identified on the Phase One ESA property:

- Former above ground fuel storage tanks (Previous Phase I and II ESA report)
- Cashway Building Center material storage yard (Aerial Photos and Interviews)

The following potentially contaminating activities (PCAs) were identified in the Phase One ESA Study area:

- 5 Edgewater Street
  - Heavy equipment garage and storage yard (Site visit)
  - Former private fuel outlet with fuel storage tanks (ERIS Eco Logs)
  - o Former trichloroethane spill (Former Phase I and II ESA report)
- 501 Hazeldean Road
  - o Former retail fuel outlet (Aerial photos and ERIS Eco Log)
- 21 Young Road
  - Spill of heating oil (ERIS EcoLog report)

Based on the nature of these records and their proximity to the Site, these PCAs are considered to have the potential to result in environmental impacts to the Site, and are therefore considered APECs with respect to the Site. Contaminants of concern include benzene, toluene, ethylbenzene, and xylenes (BTEX) and petroleum hydrocarbons, fractions 1 through 4 (PHC F1-F4), associated with the retail fuel outlet, fuel storage tanks and maintenance garage, and volatile organic compounds (VOCs) associated with former spill and material storage yard, and Polycyclic Aromatic Hydrocarbons (PAHs) and inorganics including metals associated with the material storage yard.

### 3.2.7 Underground Utilities

In general, there is the potential for underground service trenches to serve as preferential contaminant transport pathways. Underground service trenches are interpreted to be present along Edgewater Street and Hazeldean Road; however, it is unknown whether these trenches will act as preferential flowpaths enabling contaminant transport towards the Site, or will intercept off-site contamination away from the Site.

#### 3.2.8 Validity of Conceptual Site Model

During the Phase One ESA, McIntosh Perry obtained and reviewed all readily available historical and regulatory information available. In our review of the information, no data gaps that would question the validity of this CSM were identified.

# **3.3** Deviations from Sampling and Analysis Plan

The field investigative and sampling program was carried out following the requirements of the Sampling and analysis plan (SAP). No deviations occurred to the SAP.

The SAP are provided in Appendix B.

# 3.4 Impediments

There were no physical impediments or denial of access to the Phase Two Property during this Phase Two ESA.

# **4.0** METHODOLOGY

### **4.1** General

Prior to the commencement of subsurface investigations, a private underground service locating company, Ottawa Locates of Ottawa, Ontario, obtained all applicable public and private underground service location reports/clearances (i.e., hydro, natural gas, telephone and cable).

# **4.2** Drilling

McIntosh Perry advanced three boreholes BH/MW18-1 to BH/MW18-3 as part of the Phase Two ESA on December 13, 2018, at the locations indicated on Figure 2. Boreholes BH/MW18-1 and BH/MW18-3 were completed to address the on-site PCA (former material storage yard and fuel storage tanks) and off-site PCA (maintenance garage and VOC spill). BH/MW18-2 was completed to address the off-site PCA (retail fuel outlet) and the on-site PCAs (former material storage yard and fuel storage tanks). All boreholes were instrumented with monitoring wells.

Drilling services were provided by Canadian Environmental Drilling and Contracting Inc (Canadian Environmental), of Inverary, Ontario, using a truck mounted drill rig. Boreholes were advanced using Standard Penetration Test (SPT) 0.61 m (2') split spoon sampling rod and hollow stem augers. All drilling was conducted under the supervision of McIntosh Perry personnel.

# **4.3** Soil Sampling

Soil samples were taken from the 0.61 m (2') split spoons at regular intervals across multiple stratigraphic layers. In general, one sample per stratigraphic layer was considered sufficient, unless an area of concern was noted or change in moisture content. Soil samples were collected with a gloved hand and deposited directly into sealed bags. The samples were then divided into two representative portions; one portion in a glass container for possible laboratory analysis (if selected based on screening results), and one portion in a plastic bag for soil headspace combustible gas screening, which was performed on site. Recovered soil samples were generally logged for soil type, moisture, colour, texture, and visual evidence of impacts.

Based on field observations and CGI/PID readings it was determined that the submission of three soils samples, one from BH/MW18-1, one from BH/MW18-2, one from BH/MW18-3 and one blind duplicate for QA/QC purposes from BH/MW18-3 would be sufficient to determine potential impacts to the Study Area. Samples that were chosen for laboratory analysis were placed into laboratory supplied sample jars, stored in a cooler with ice, and delivered directly to ALS Laboratories (ALS) of Ottawa, Ontario.

Soil samples that were selected for VOC, BTEX and F1 Hydrocarbon analysis were preserved immediately after sampling with laboratory supplied vials containing methanol.

Soil sample identification and details are included on the graphic borehole logs presented in Appendix B.

# **4.4** Field Screening Measurements

Soil headspace vapour concentration readings of soil samples obtained from the boreholes were taken using a RKI Eagle 2 Gas (combined CGI and PID). The CGI was operated in methane elimination mode and both the CGI and PID were calibrated prior to use in the field. Calibration was performed following the manufacturer's instructions.

# **4.5** Groundwater – Monitoring Well Installation

Three monitoring wells (BH/MW18-1, BH/MW18-2 and BH/MW18-3) were installed December 13, 2018 by Canadian Environmental, under the supervision of McIntosh Perry personnel.

The boreholes were instrumented with PVC monitoring well components and protected at the surface with a stick-up monument well casing (Photo 5).

BH(MW)18-1, BH(MW)18-2 and BH(MW)18-3 was constructed using 50.8 mm (2") diameter, Schedule 40 PVC well screen (10 slot), flush-threaded to Schedule 40 PVC riser pipe. A silica sand 'filter pack' was installed in the annular space around the well screen. A bentonite clay seal was installed above the screened interval to prevent infiltration of surface water into the well. The screened interval was positioned to intersect the estimated water table elevation, based on moisture content observations of recovered soil samples obtained during drilling and from measured water levels in existing on-site wells. Monitoring well installation was conducted in conformance with O.Reg. 903, as amended.

Detailed graphic logs showing the monitoring well installation details are included in Appendix B.

# **4.6** Field Measurement of Water Quality Parameters

Field measurement of water quality parameters was not undertaken as part of this investigation.

# **4.7** Groundwater – Monitoring and Sampling

McIntosh Perry carried out initial groundwater level monitoring and sampling activities on December 14 and 17, 2018. Groundwater level monitoring and sampling activities occurred again following the receipt of initial 2018 sample results on January 4 and 7, 2019. Following the receipt of the 2019 results, groundwater level monitoring and sampling activities occurred again on May 20, 2021 to confirm groundwater quality. The static water level was measured at the well using an electronic water level tape. Groundwater levels in 2019 ranged between 0.82 and 1.38 m below ground surface. During the 2021 groundwater investigation, groundwater levels ranged between 1.82 and 2.14 m below ground surface.

Prior to water sample collection, an attempt was made to purge the wells by removing a minimum of three well volumes using dedicated polyethylene tubing and a positive displacement foot valve. During the 2018 groundwater investigation, the recharge rate of BH/MW18-1 was slow due to shallow bedrock and was purged dry three times. To allow ensure proper development of the wells, the wells were purged on December 14 and sampled on December 17, 2018.

Groundwater was sampled directly into laboratory provided bottles and delivered directly to ALS Laboratory Group of Ottawa, Ontario.

BH/MW18-1, BH/MW18-2 and BH/MW18-3 were sampled for BTEX, F1-F4 PHCs, VOC, PAHs and inorganics including metals.

A confirmatory sampling event was completed on January 7, 2019 to confirm the PHC concentrations within BH/MW18-1 and BH/MW18-2. Wells were purged on January 3, 2019 and again on January 7, 2019 prior to sampling. BH/MW18-1 remains a low recharge well, as such only approximately one well volume could be purged prior to sampling.

Groundwater was resampled directly into laboratory provided bottles and delivered directly to ALS Laboratory Group of Ottawa, Ontario.

In the 2019 sampling event, BH/MW18-1 and BH/MW18-2 were sampled for F1-F4 PHCs.

To confirm groundwater quality, another sampling event was completed on May 20, 2021 within BH/MW18-1, BH/MW18-2, and BH/MW18-3. Wells were purged and then sampled on May 20, 2021.

Groundwater was resampled directly into laboratory provided bottles and delivered directly to ALS Laboratory Group of Ottawa, Ontario.

In the 2021 sampling event, BH/MW18-1, BH/MW18-2 and BH/MW18-3 were sampled for BTEX, F1-F4 PHCs, VOC, PAHs and inorganics including metals.

# 4.8 Sediment: Sampling

No water bodies are present on the Phase Two Property. As such, sediment sampling was not conducted as part of this Phase Two ESA.

# 4.9 Analytical Testing

All soil and water samples selected for laboratory analysis were submitted to ALS Laboratory Group of Ottawa, Ontario, under strict 'chain of custody' documentation protocols.

Samples were submitted for laboratory analysis of the following parameter groups:

- Volatile organic compounds (VOC)
- Benzene, toluene, ethylbenzene and xylenes (BTEX), which are a sub-set of the volatile organic compound (VOC) parameter set
- Petroleum hydrocarbons (PHCs) in four fractions (F1-F4) according to MECP requirements
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Metals and inorganic parameters (M&I)

Copies of all laboratory Certificates of Analysis and chain of custody documentation are included in Appendix C.

# **4.10** Residue Management Procedures

Soil cuttings and purge water generated as part a of this Phase Two ESA were retained on-Site.

# **4.11** Elevation Surveying

Geodetic elevations of the ground surface of each borehole were surveyed during a topographical survey of the Site by McIntosh Perry Surveying Inc. Ground surface elevations at each borehole are provided on the borehole logs in Appendix C and are shown on Figure 3 – Groundwater Contour Plan.

# **4.12** Quality Assurance and Quality Control Measures

All activities completed as part of this Phase Two ESA were conducted in accordance with McIntosh Perry's Standard Operating Procedures (SOPs). Details of QA/QC measures, including sampling containers, preservation, labelling, handling, and custody, equipment cleaning procedures, and field quality control measurements can be provided upon request.

Additionally, all soil and ground water samples submitted as part of this assessment were handled in accordance with laboratory analytical protocols with respect to holding time, preservation method, storage requirements, and container type. All Certificates of Analysis provided by the laboratory are appended to this report in Appendix D.

No deviations were made from the QA/QC program outlined in the Sampling and Analysis Plan.

### **5.0** RESULTS

# **5.1** Geology

Overburden at the site consisted of topsoil from ground surface to approximately 0.2 meters below ground surface (m bgs), underlain by silt with clay and sand, at depths ranging between 0.1 and 5.5 m bgs. Clay with silt was found underlying the silt material from depths of 3.1 m bgs to 5.5 m bgs. BH/MW18-3 boreholes were terminated in clay, and BH/MW18-1 and BH/MW18-2 were terminated on inferred bedrock.

Geological maps of the area classify the bedrock under the Site as predominantly Limestone, Sandstone and Dolostone (OGS, 2017). Based on the results of this investigation, and on additional boreholes drilled on-site for a geotechnical investigation by McIntosh Perry, bedrock was encountered at depths ranging from 4.0 to 8.0 m bgs.

### **5.2** Groundwater: Elevations and Flow Direction

Groundwater elevations were calculated for all groundwater monitoring and sampling events and are summarized in Table 1, appended to this report. Groundwater elevations varied between approximately 99.8 and 101.6 m ASL at the Site.

Using the groundwater elevations from the May 2021 sampling event, groundwater contour mapping was completed for the Site. Groundwater elevation contours are shown on Figure 3. Groundwater at the Site is interpreted to flow in a southerly direction.

# **5.3** Groundwater: Hydraulic Gradients

The horizontal hydraulic gradient was estimated for the Site based on May 2021 groundwater elevations. The horizontal hydraulic gradient is calculated using the following equation:

 $i = \Delta h/\Delta s$ 

Where,

i = horizontal hydraulic gradient

 $\Delta h$  (m) = ground water elevation difference; and,

 $\Delta s$  (m) = separation distance.

Based on measured ground water elevations, the on-site hydraulic gradient was calculated to be approximately 0.015 m/m.

It should be noted that vertical hydraulic gradients were not evaluated for the Site as a second water bearing unit was not encountered at the depths investigated at the Site.

### **5.4** Coarse Soil Texture

Based on the grain size analysis completed by McIntosh Perry's geotechnical laboratory, the results of the analysis indicated the following soil composition for the native soil at the Site:

- Gravel Composition Average of 41.0 %;
- Sand Composition Average of 40.0%;
- Silt Composition Average of 16.0%; and
- Clay Composition Average of 3.0%.

The grain size analysis results are provided in Appendix E.

Based on the results of grain size analysis conducted during this Phase Two ESA, as well as the soil type observed within the boreholes advanced at the Phase Two Property, it is our opinion that the soil type at the Phase Two Property is medium-fine-grained for the purposes of this Phase Two ESA.

# **5.5** Soil: Field Screening

Soil headspace for combustible gas readings and volatile organic compounds were taken using a combustible gas indicator (CGI) operated in methane elimination mode and a photoionization detector (PID) respectively. The CGI/PID readings were intended to identify "worst-case" samples from each borehole. However, the CGI and PID readings were not indicative of significant contamination.

# **5.6** Soil Quality

Based on field observations and CGI/PID readings it was determined that one submission of soil from each borehole would be sufficient to determine potential impacts to the Site; no evidence of impacts (visual, olfactory or screening) were observed in the soil samples.

All soil analysis results were compared to the applicable SCS, as presented in the following table:

• Table 2 – Soil Analytical Results: VOC, BTEX, PHCs, PAHs, Metals and Inorganics

Sample depths are indicated on the tables and on the borehole logs presented in Appendix B. Laboratory Certificates of Analysis are included in Appendix C.

#### **VOCs**

Results for the boreholes BH/MW18-1, BH/MW18-2 and BH/MW18-3 soil samples that were submitted for analysis of VOC parameters indicate that all parameters were below laboratory detection limits and therefore in compliance with MECP Table 3 SCS.

#### **BTEX**

Results for the boreholes BH/MW18-1, BH/MW18-2 and BH/MW18-3 soil samples that were submitted for analysis of BTEX parameters indicate that all parameters were below laboratory detection limits and therefore in compliance with MECP Table 3 SCS.

#### **PHCs**

Results for the boreholes BH/MW18-1, BH/MW18-2 and BH/MW18-3 soil samples that were submitted for analysis of PHCs parameters indicated that all parameters were below laboratory detection and therefore in compliance with MECP Table 3 SCS.

### **PAHs**

Results for the boreholes BH/MW18-1, BH/MW18-2 and BH/MW18-3 soil samples that were submitted for analysis of PAH parameters indicated detections of benzo(a)anthracene, benzo(a)pyrene, benzon(b)fluoranthene, benzo(g,h,i)perylene, chrysene, fluoranthene and indeno(1,2,3-cd)pyrene in BH/MW18-1, however all detection were in compliance with MECP Table 3 SCS. All PAH parameters in BH/MW18-2 and BH/MW18-3 were below laboratory detection and therefore in compliance with MECP Table 3 SCS.

### Metals and Inorganics

Results for the boreholes BH/MW18-1, BH/MW18-2 and BH/MW18-3 soil samples that were submitted for analysis of metals and inorganic parameters indicated multiple detections of many metals, however all were below laboratory detection and therefore below MECP Table 3 SCS.

# **5.7** Groundwater Quality

All groundwater analysis results were compared to the applicable SCS, as shown on the following table:

• Table 3 – Groundwater Analytical Results: VOC, BTEX, PHCs, PAHs, Metals and Inorganics

Laboratory Certificates of Analysis are included in Appendix C.

### **VOCs**

Results for the boreholes BH/MW18-1, BH/MW18-2 and BH/MW18-3 groundwater samples that were submitted for analysis of VOC parameters in 2018 and 2021 indicate that all parameters were below laboratory detection limits and therefore below MFCP Table 3 SCS.

### **BTEX**

Results for the boreholes BH/MW18-1, BH/MW18-2 and BH/MW18-3 groundwater samples that were submitted for analysis of VOC parameters in 2018 and 2021 indicate that all parameters were below laboratory detection limits and therefore below MECP Table 3 SCS.

#### **PHCs**

Initial results for the boreholes BH/MW18-1, BH/MW18-2 and BH/MW18-3 groundwater samples collected for PHCs indicate that PHCs exceeded MECP Table 3 SCS for F2 in BH/MW18-1 and BH/MW18-2, and F3 in BH/MW18-2. BH/MW18-1 had detectable concentrations of F3 and F4 and BH/MW18-3 had detectable concentrations of F3, however these did not exceed MECP Table 3 SCS. BH/MW18-1, BH/MW18-2 and BH/MW18-3 had non-detectable concentrations of F1, therefore are below MECP Table 3 SCS.

Results for the confirmatory groundwater sampling of boreholes BH/MW18-1 and BH/MW18-2 for PHCs in 2019 indicate that concentrations of PHC F2, F3, and F4 in BH/MW18-1 and BH/MW18-2 were below laboratory detection limits, and therefore are below MECP Table 3 SCS.

Results for the confirmatory groundwater sampling of boreholes BH/MW18-1, BH/MW18-2, and BH/MW18-3 for PHCs in 2021 indicate that concentrations of PHC F2, F3, and F4 in BH/MW18-1 and BH/MW18-2 were below laboratory detection limits, and therefore are below MECP Table 3 SCS.

#### **PAHs**

Results for the boreholes BH/MW18-1, BH/MW18-2 and BH/MW18-3 groundwater samples that were submitted for analysis of PAH parameters in 2018 indicated numerous PAH detections. However, all detections were below MECP Table 3 SCS. In the 2021 analytical results, all PAH parameters were below laboratory detection limits, suggesting that the detected parameters in 2018 may have been false positives similar to the PHC exceedances identified in the 2018 sampling event.

### Metals and Inorganics

Results for the boreholes BH/MW18-1, BH/MW18-2 and BH/MW18-3 groundwater samples that were submitted for analysis of metals and inorganic parameters in 2018 and 2021 indicated multiple detections of dissolved metals and inorganics in each sample. However, all detections were below MECP Table 3 SCS.

# **5.8** Sediment Quality

Sediment quality was not assessed as part of this Phase Two ESA.

# **5.9** Quality Assurance and Quality Control Results

All soil and groundwater samples submitted as part of this assessment were handled in accordance with laboratory analytical protocols with respect to holding time, preservation method, storage requirements, and container type. A Certificate of Analysis has been received for each sample submitted for analysis, and all Certificates of Analysis are appended to this report.

Overall, the quality of the field data collected during this Phase Two ESA are considered to be sufficient to meet the overall objectives of this assessment. No significant discrepancies between soils samples BH/MW18-3 SS 3 and BH/MW18-99, which was a blind duplicate of BH/MW18-3 SS3 were noted. Relative present differences

between the two samples was very small, with a maximum calculated difference between parameters of 14.8%. Data sets with relive present differences less that 20% are considered to be accurate.

Groundwater samples from MW18-2 and MW-18-3 were noted by the laboratory to have visible sediment within the water samples. This can cause false positives within the PHC fraction parameters, however BH/MW18-1 had exceedances of PHC F2 with no laboratory indication of excessive sediment. However, BH/MW18-1 is a low recovery well and due to time constraints could not be purged the standard 3 well volumes. This could have been a contributing factor to a false positive detection of PHC F2 as the sample may not have been representative. This was a factor in recommending a confirmatory sampling event. All metal samples were field filtered.

Due to the observed sediment in the groundwater samples and the lack of elevated soil vapour readings and/or soil vapour exceedances at the Site, two (2) additional groundwater sampling events were completed to confirm the exceedances.

Confirmatory samples indicated that the initial exceedances in BH/MW18-1 and BH/MW18-2 for PHCs was likely a result of excessive sediment within the initial samples. Excessive sediment in samples can produce false positives due to interference within the laboratory detection method from organic materials in the sediment. This is a common occurrence in wells that have not had the opportunity to be developed properly. Following additional well development and purging on January 3 and January 7, 2019, less sediment was present within the wells and the follow-up samples were considered to be more representative of groundwater conditions.

# **5.10** Phase Two Conceptual Site Model

The Phase Two Property is located at 16 Edgewater Street, Kanata (Ottawa) ("the Site") is approximately 0.62 hectares in area. The Site Building is currently vacant, and was previously occupied by the materials storage yard of a hardware store/building centre. The Phase Two Property is at an elevation of approximately 101-102 mAMSL. The Site configuration is shown on Figure 2 – Site Layout.

Properties surrounding the Phase Two Property generally consist of residential and commercial land uses and are shown on Figure 2.

### 5.10.1 Potentially Contaminating Activities

The following PCAs were identified in on the Phase Two Property:

	Table 1: Potentially Contaminating Activities							
No.	Potential Contaminating Activity (PCA)	Location of PCA	Proximity of PCA to Phase One ESA Property	Time Frame Associated with PCA	Information Source	Does the PCA warrant an area of potential environmental concern (APEC)		
1	Item 28, Column A, Table 2, Schedule D, O.Reg. 153/04: Gasoline and Associated Products Storage in Fixed Tanks (on-site ASTs)	On-Site	On-Site	1970s- 1995	Interviews, previous report	YES – on-site PCA		
2	No item under Column A, Table 2, Schedule D, O.Reg. 153/04: Building materials storage yard	On-Site	On-Site	1970s- 1995	Interviews, air photos, previous report	YES – on-site PCA		
3a	Item 27, Column A, Table 2, Schedule D, O.Reg. 153/04: Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles (heavy equipment garage)	5 Edgewater Street	45 m southwest	1980s- present	Aerial photos, site visit, previous report, ERIS report	YES, based on proximity		
3b	Item 28, Column A, Table 2, Schedule D, O.Reg. 153/04: Gasoline and Associated Products Storage in Fixed Tanks (AST records)	5 Edgewater Street	45 m southwest	1980s- present	ERIS report	YES, based on proximity		
3c	No item under Column A, Table 2, Schedule D, O.Reg. 153/04: historical spill record (TCE)	5 Edgewater Street	45 m southwest	Unknown	Report by others	YES, based on proximity		

	Table 1: Potentially Contaminating Activities							
No.	Potential Contaminating Activity (PCA)	Location of PCA	Proximity of PCA to Phase One ESA Property	Time Frame Associated with PCA	Information Source	Does the PCA warrant an area of potential environmental concern (APEC)		
4	Item 28, Column A, Table 2, Schedule D, O.Reg. 153/04: Gasoline and Associated Products Storage in Fixed Tanks (former retail fuel outlet)	501 Hazeldean Road	150 m south	Prior to 1994	ERIS report, air photos	YES, based on proximity		
5	No item under Column A, Table 2, Schedule D, O.Reg. 153/04: Spill of fuel oil from residential fuel storage tank	21 Young Road	80 m north	2008	ERIS report	YES, based on proximity		

No additional PCAs were identified within the Phase Two Study Area, including on the Phase Two Property, during the 2021 McIntosh Perry Phase Two ESA. The location of the PCAs are shown on Figure 2.

### 5.10.2 Area of Potential Environmental Concern

The above noted on-site PCAs are considered to result in APECs for the Site. Due to the limited information available for type of materials and operational procedures of the Cashway Building Centers stock yard, it is possible that the operations have had impacts to the soil and groundwater in the vicinity of the materials storage yard.

The above noted off-site PCAs are considered to represent APECs at the Site due to their proximity.

### 5.10.3 Subsurface Structures and Utilities

As part of the Phase Two ESA, utility service clearances were provided by public and private locating companies. n general, there is the potential for underground service trenches to serve as preferential contaminant transport pathways. Underground service trenches were identified along Edgewater Street and Hazeldean Road by the underground service locates. No underground service trenches were identified on the Site itself, and based on the results of the Phase Two ESA, and no other subsurface structures were identified. Subsurface structures and utilities are not considered to significantly affect contaminant distribution at the Site.

### 5.10.4 Physical Setting

### 5.10.4.1 Stratigraphy

Overburden at the site consisted of topsoil from ground surface to approximately 0.2 meters below ground surface (m bgs), underlain by silt with clay and sand, at depths ranging between 0.1 and 5.5 m bgs. Clay with silt was found underlying the silt material from depths of 3.1 m bgs to 5.5 m bgs. BH/MW18-3 boreholes were terminated in clay, and BH/MW18-1 and BH/MW18-2 were terminated on inferred bedrock.

Borehole logs are included in this report as Appendix C.

### 5.10.4.2 Hydrogeology

Groundwater elevations were calculated for all groundwater monitoring and sampling events and are summarized in Table 1, appended to this report. Groundwater elevations varied between approximately 99.8 and 101.6 m ASL at the Site.

Using the groundwater elevations from the May 2021 sampling event, groundwater contour mapping was completed for the Site. Groundwater elevation contours are shown on Figure 3. Groundwater at the Site is interpreted to flow in a southerly direction.

The horizontal hydraulic gradient was estimated for the Site based on May 2021 groundwater elevations.

Based on measured ground water elevations, the on-site hydraulic gradient was calculated to be approximately 0.015 m/m.

It should be noted that vertical hydraulic gradients were not evaluated for the Site as a second water bearing unit was not encountered at the depths investigated at the Site.

### 5.10.4.3 Bedrock

Geological maps of the area classify the bedrock under the Site as predominantly Limestone, Sandstone and Dolostone (OGS, 2017). Based on the results of this investigation, and on additional boreholes drilled on-site for a geotechnical investigation by McIntosh Perry, bedrock was encountered at depths ranging from 4.0 to 8.0 m bgs.

#### 5.10.5 Potable Site Condition Standards

The Phase Two Property is serviced by the City of Ottawa municipal water distribution system; ground water is not used as a source of potable water.

# 5.10.6 Water Bodies and Areas of Natural Significance

The closest permanent waterbody is the Carp River (located 0.65 km southwest of the Site at its closest point).

When completing a Phase One ESA, considerations are made for the following Areas of Natural Significance as defined by O.Reg. 153/04:

- Provincial Parks and conservation reserves.
- Areas of Natural and Scientific Interest (ANSIs)
- Provincially Significant Wetlands (PSWs)
- Environmentally/ecologically sensitive/significant areas per the City of Ottawa Official Plan
- Areas designated by the Niagara Escarpment Plan
- Areas identified by MNRF as significant habitat of a threatened or endangered species or areas of habitat of a species classified under section 7 of the Endangered Species Act
- Areas designated by the Oak Ridges Moraine Conservation Plan
- Areas set apart under the Wilderness Areas Act

No areas of natural significance were observed within the Study Area.

### 5.10.7 Site Condition Standards - N/A or N/V Values

During this Phase Two ESA, no contaminants were found at the Phase Two Property that do not have corresponding criteria listed within the Table 3 Standards.

### 5.10.8 Approximate Locations of Proposed Buildings and Other Structures

It is understood that the Client is considering constructing a number of residential buildings at the Site, including stacked townhomes along the southern Site boundary and two multi-storey residential buildings in the central portion of the Site.

### 5.10.9 Concentrations of COPCs above the Table 3 Standards

Based on the results of the Phase Two ESA, all soil results were in compliance with applicable Site Condition Standards.

Initial groundwater samples indicated exceedances of Petroleum Hydrocarbons in groundwater at the Site; however, these results were interpreted to be anomalous. In the absence of odours, screening measurements, or analytical results in soil samples indicating PHC contamination, and in the absence of sheen or odour in groundwater samples, the PHC concentrations identified were considered to be false positives due to sediment in the groundwater samples. Subsequent sampling events did not identify any PHC concentrations above laboratory detection limits.

# **6.0** CONCLUSIONS AND RECOMMENDATIONS

### **6.1** Conclusions

From the initial groundwater sampling event, concentrations of PHC F2 and F3 in BH/MW 18-1 and F2 in BH/MW18-2 were above the applicable Site Condition Standard. However due to observed sediment in the groundwater samples and the lack of elevated soil vapour readings and/or soil vapour exceedances at the Site, a second groundwater sampling event was completed to confirm the exceedances. The second ground water sampling event in BH/MW18-1 and BH/MW18-2 indicated that the concentrations of F2-F4 PHC fraction were below laboratory detections. To confirm groundwater quality, a third ground water sampling event took place in BH/MW18-1, BH/MW18-2, and BH/MW18-3. These analytical tests resulted in no exceedances of applicable SCS standards. These results are considered representative of conditions at the Site.

Soil samples selected for analytical tests resulted in no exceedances of applicable SCS standards.

### **6.2** Recommendations

McIntosh Perry does not recommend any further investigative or remedial action for the Site at this time. The environmental condition of the Site is considered suitable for the proposed development.

### **7.0** LIMITATIONS

This report has been prepared, and the work referred to in this report has been undertaken by, McIntosh Perry Consulting Engineers Ltd. for McCluskey Group. It is intended for the sole, and exclusive use of McCluskey Group and any affiliated companies and partners and their respective financial institutions, insurers, agents, employees and advisors (collectively, McCluskey Group). The report may not be relied upon by any other person or entity without the express written consent of McIntosh Perry Any use which a third party makes of this report, or any reliance on decisions made based on it, without a Reliance Letter are the responsibility of such third parties. McIntosh Perry Consulting Engineers Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The investigation undertaken by McIntosh Perry Consulting Engineers Ltd. with respect to this report and any conclusions or recommendations made in this report reflect McIntosh Perry Consulting Engineers Ltd.'s judgment based on the site conditions observed at the time of the site investigations, inspections and sampling on the date(s) set out in this report and on information available at the time of the preparation of this report.

This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report may exist within the site, substances addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different than those reported may exist in areas other than the locations from which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

# **8.0** CLOSURE

We trust that this information is satisfactory for your present requirements. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Respectfully submitted,

McIntosh Perry Consulting Engineers Ltd.

Jenna Gaetano, B.Sc. Environmental Scientist Dan Arnott, P.Eng., QP<sub>ESA</sub> Geo-Environmental Engineer

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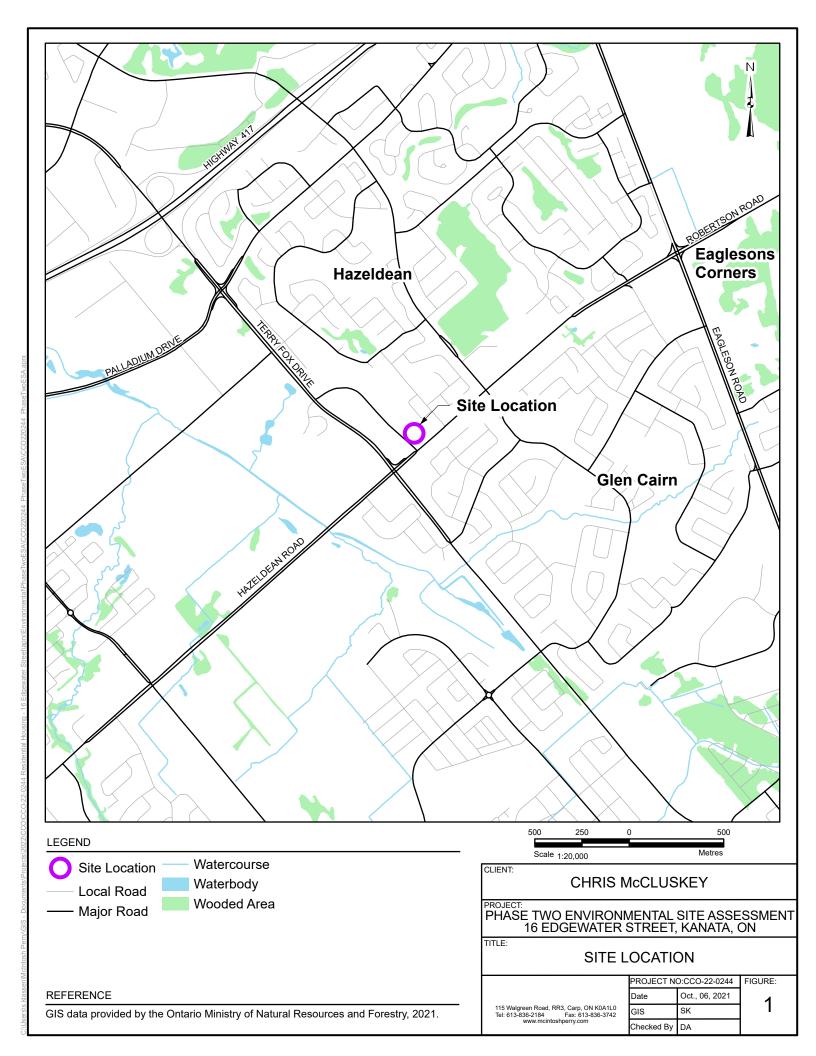
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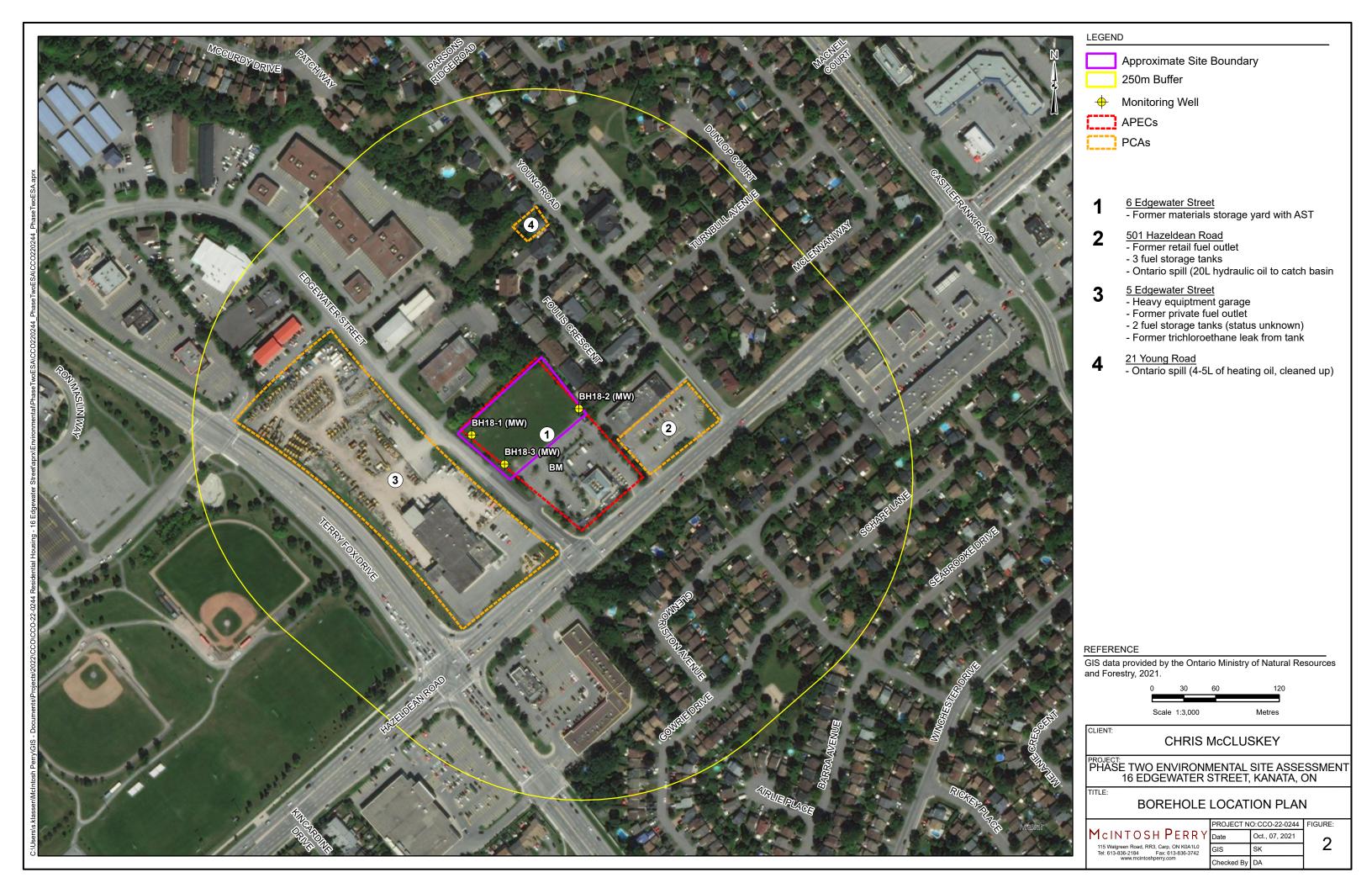
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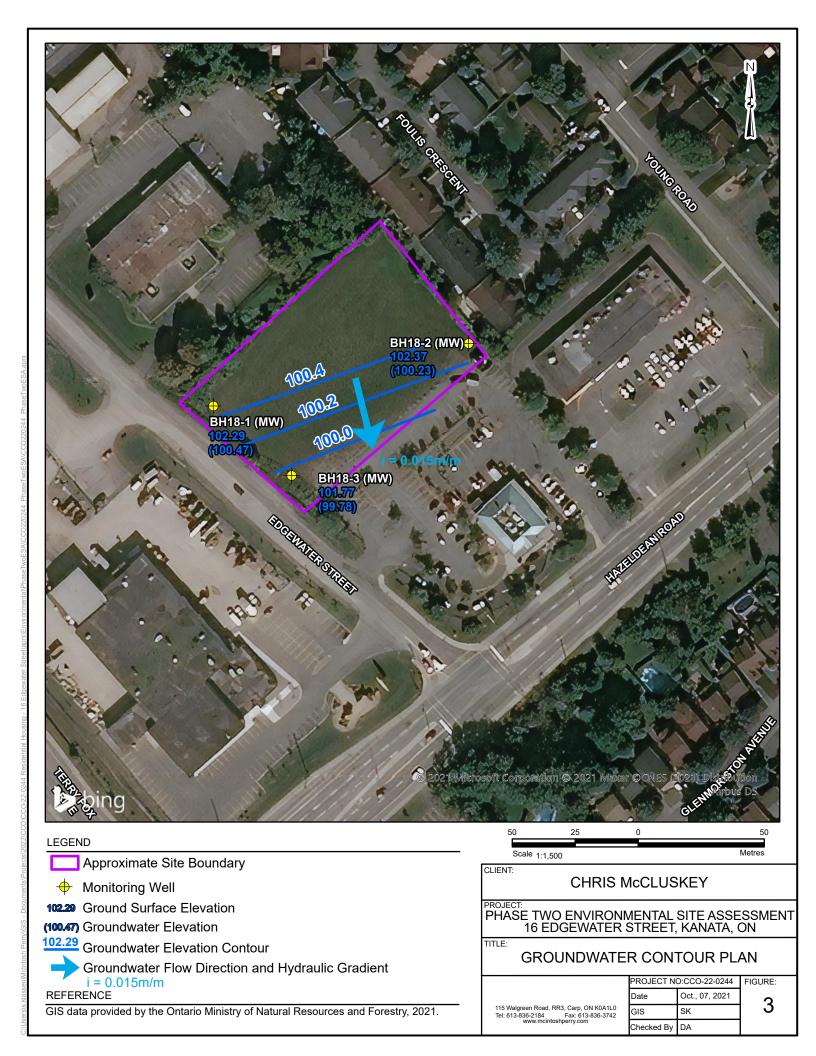
# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 16 EDGEWATER STREET, KANATA, ONTARIO



**FIGURES** 







# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 16 EDGEWATER STREET, KANATA, ONTARIO



**TABLES** 

Table 1: Monitoring Well Construction Detains and Groundwater Elevations

Monitoring Well ID	Total Depth (m)	Screened Interval (m BGS)	Top of Pipe Elevation (m ASL)	Ground Elevation (m ASL)	Stick-up (m)	Water Level Measurement (m BTOP)	Water Level Measurement (m BGS)	Water Elevation (m LD)	Date	Comments
						2.225	1.383	100.907	14-Dec-18	Stick up well
BH/MW 18-1	4.57	1.52-4.57	103.132	102.29	0.842	2.073	1.231	101.059	17-Dec-18	Used to determine GW flow direction
						2.186	1.344	100.946	07-Jan-19	Resample
						2.665	1.823	100.467	20-May-21	Resample
		3.05-6.10			0.945	1.761	0.816	101.554	14-Dec-18	Stick up well
BH/MW 18-2	6.1		103.315	102.37		1.778	0.833	101.537	17-Dec-18	Used to determine GW flow direction
						1.85	0.905	101.465	07-Jan-19	Resample
						3.085	2.14	100.23	20-May-21	Resample
						2.017	1.111	100.659	14-Dec-18	Stick up well
BH/MW 18-3	4.88	1.83-4.88	102.676	101.77	0.906	1.921	1.015	100.755	17-Dec-18	Used to determine GW flow direction
						1.994	1.088	100.682	07-Jan-19	Resample
						2.897	1.991	99.779	20-May-21	Resample

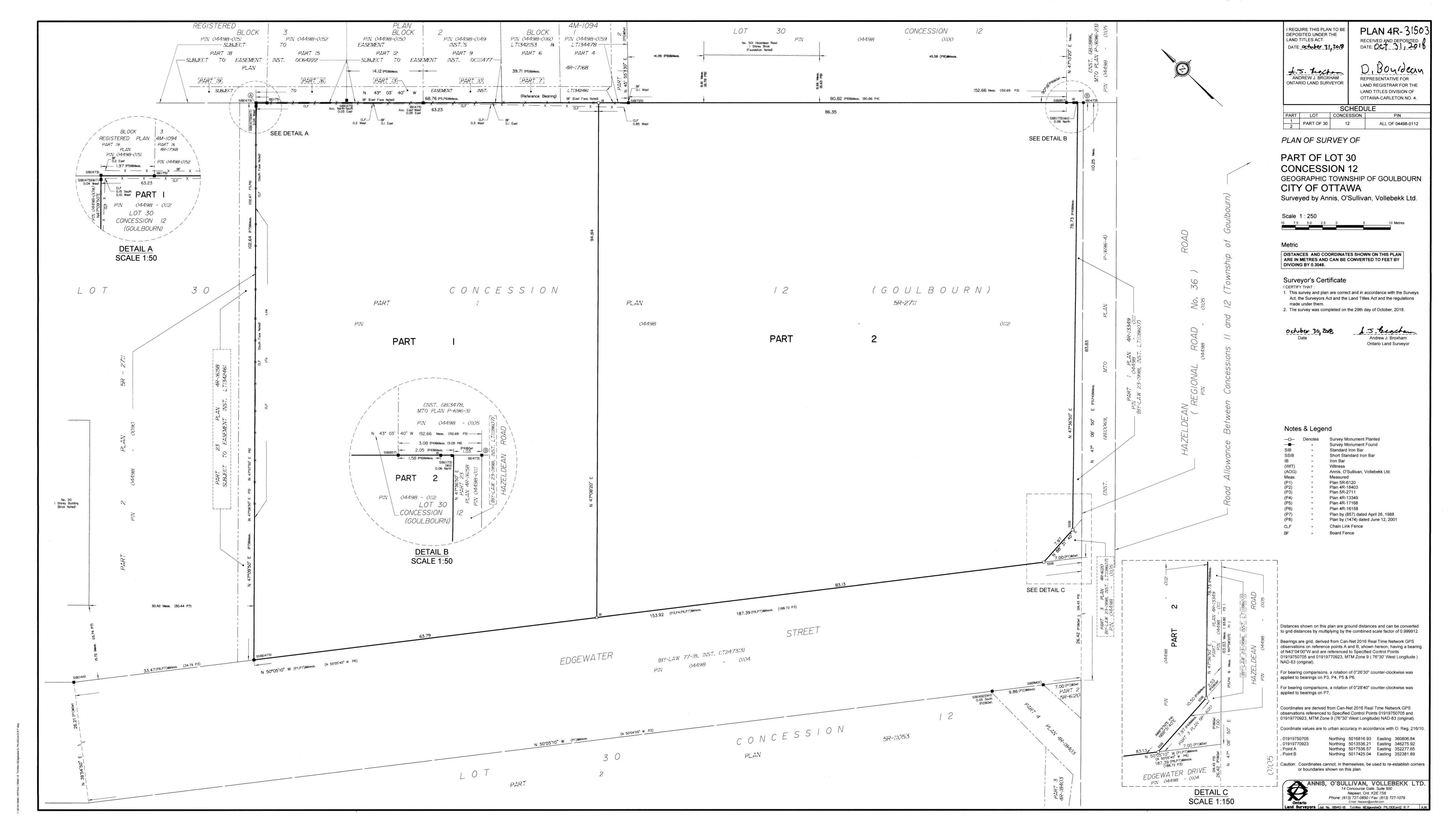
#### Notes:

GS	ground surface
TOP	top of casing (i.e. top of pvc riser)
Btop	below top of casing

## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 16 EDGEWATER STREET, KANATA, ONTARIO



APPENDIX A SURVEY PLAN OF THE PHASE TWO PROPERTY



# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 16 EDGEWATER STREET, KANATA, ONTARIO



APPENDIX B SAMPLING AND ANALYSIS PLAN

## SAMPLING AND ANALYSIS PLAN 6 EDGEWATER STREET, KANATA, ONTARIO



Project No.: 0CP-17-0635

Prepared for:

Chris McCluskey 6 Edgewater Street Kanata, ON K2L 1V8

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#### 1.0 INTRODUCTION

### 1.1 Background

McIntosh Perry ("MP") was retained by Chris McCluskey of McCluskey Group ("the Client") to conduct a Phase Two ESA at 6 Edgewater Street, Kanata, Ontario

The environmental subsurface investigation will be completed concurrently with a geotechnical investigation at the Site. The investigation will be completed in general accordance with Ontario Regulation (O. Reg.) 153/04 (as amended).

### 1.2 Objectives

As per the requirements of O. Reg. 153/04, the objectives of this Sampling and Analysis Plan are as follows:

- Plan an investigation that will achieve the general objectives of a Phase Two Environmental Site Assessment:
  - o Through the use of an appropriate and complete information base concerning the Phase Two Property; and
  - Through the conduct of an investigation based both on information obtained before the Phase
     Two Environmental Site Assessment and on the incorporation of information obtained during the subsurface investigation.
- To develop a Sampling and Analysis Plan that will adequately assess all areas of the subsurface investigation property where contaminants may be present in land or water on, in or under the property.
  - To develop a quality assurance program that is designed to effectively limit errors and bias in sampling and analysis through implementation of assessment and control measures that will ensure data are useful, appropriate and accurate in the determination of whether the Phase Two Property meets applicable Ontario Ministry of the Environment, Conservation and Parks (MECP) Site Condition Standards.

### 2.0 SAMPLING PROGRAM

### 2.1 Areas of Potential Environmental Concern and Contaminants of Potential Concern

Based on a Phase One ESA completed for the Site, McIntosh Perry identified the following Potentially Contaminating Activities which are interpreted to result in Areas of Potential Environmental Concern:

	Table 1: Potentially Contaminating Activities										
No.	Potential Contaminating Activity (PCA)	Location of PCA	Proximity of PCA to Phase One ESA Property	Time Frame Associated with PCA	Information Source	Does the PCA warrant an area of potential environmental concern (APEC)					
1	Item 28, Column A, Table 2, Schedule D, O.Reg. 153/04: Gasoline and Associated Products Storage in Fixed Tanks (on-site ASTs)	On-Site	On-Site	1970s- 1995	Interviews, previous report	YES – on-site PCA					
2	No item under Column A, Table 2, Schedule D, O.Reg. 153/04: Building materials storage yard	On-Site	On-Site	1970s- 1995	Interviews, air photos, previous report	YES – on-site PCA					
3a	Item 27, Column A, Table 2, Schedule D, O.Reg. 153/04: Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles (heavy equipment garage)	5 Edgewater Street	45 m southwest	1980s- present	Aerial photos, site visit, previous report, ERIS report	YES, based on proximity					
3b	Item 28, Column A, Table 2, Schedule D, O.Reg. 153/04: Gasoline and Associated Products Storage in Fixed Tanks (AST records)	5 Edgewater Street	45 m southwest	1980s- present	ERIS report	YES, based on proximity					
3c	No item under Column A, Table 2, Schedule D, O.Reg. 153/04: historical spill record (TCE)	5 Edgewater Street	45 m southwest	Unknown	Report by others	YES, based on proximity					

	Table 1: Potentially Contaminating Activities										
No.	Potential Contaminating Activity (PCA)	Location of PCA	Proximity of PCA to Phase One ESA Property	Time Frame Associated with PCA	Information Source	Does the PCA warrant an area of potential environmental concern (APEC)					
4	Item 28, Column A, Table 2, Schedule D, O.Reg. 153/04: Gasoline and Associated Products Storage in Fixed Tanks (former retail fuel outlet)	501 Hazeldean Road	150 m south	Prior to 1994	ERIS report, air photos	YES, based on proximity					
5	No item under Column A, Table 2, Schedule D, O.Reg. 153/04: Spill of fuel oil from residential fuel storage tank	21 Young Road	80 m north	2008	ERIS report	YES, based on proximity					

The following contaminants of potential concern (COCs) are suspected and should be tested at the Phase One Property:

- Petroleum hydrocarbons Fractions 1 to 4 (PHCs): This parameter group consists of petroleum hydrocarbons of various carbon chain lengths commonly encountered in gasoline (PHC F1), diesel and furnace oil (PHC F2), and heavy oils and asphalts (PHC F3-F4). This parameter group was selected as COPCs for the Site due to the historic presence of ASTs at the Site, the historic presence of a retail fuel outlet at 501 Hazeldean Road, a record of a fuel oil spill at 21 Young Road, and ASTs and garage activities at 5 Edgewater Street.
- Volatile organic compounds (VOCs) including benzene, toluene, ethylbenzene, and xylenes (BTEX): This parameter group consists of soluble components in gasoline, diesel, and fuel oil, as well as various chlorinated solvents used in degreasing, dry cleaning, and industrial applications. VOCs were selected as COPCs for the Site due to the historic presence of ASTs at the Site, the historic presence of a retail fuel outlet at 501 Hazeldean Road, a record of a fuel oil spill at 21 Young Road, and ASTs and garage activities at 5 Edgewater Street, as well as the historic TCE spill record noted in a previous environmental report at 5 Edgewater Street.
- Polycyclic aromatic hydrocarbons (PAHs): This parameter group consists of various complex hydrocarbons associated with heavy oils as well as combustion byproducts, coal, etc. PAHs were selected as COPCs for the Site due to the historic use of the Site as a building materials storage yard and garage activities at 5 Edgewater Street.

Metals and inorganic parameters (As, Sb, Se, B, B-HWS, Na, Hg, CI-, CN, Cr-VI, pH, EC and SAR) were selected as COPCs for the Site based on the historic use of the Site as a building materials storage yard.

#### 2.2 Borehole Locations

The environmental subsurface investigation is to be completed concurrently with a geotechnical investigation, and the boreholes and test pits proposed under this investigation are located to achieve general site coverage from an environmental/soil quality and hydrogeological perspective. A summary of proposed borehole locations are provided below.

Borehole (BH)/ Test Pit (TP) ID	Location and Rationale	Depth and Rationale		
DII 1	General site coverage; at/near site	Defined on hadred, or area internation to be		
BH 1	boundary to intercept potential groundwater impacts from off-site sources	Refusal on bedrock or encounter water table		
	General site coverage; at/near site			
BH 2	boundary to intercept potential	Refusal on bedrock or encounter water table		
	groundwater impacts from off-site sources			
	General site coverage; at/near site			
BH 3	boundary to intercept potential	Refusal on bedrock or encounter water table		
	groundwater impacts from off-site sources			

#### 2.3 Soil Samples

A summary of proposed soil samples to be submitted for laboratory analysis is provided below.

BH ID	Sample ID	Approx. Depth/ Stratigraphy	Chemical Analysis	Rationale
BH 1	TBC	TBC based on field screening	Metals and inorganics,PAHs, PHCs F1-F4, VOCs	General characterization
BH 2	TBC	TBC based on field screening	Metals and inorganics ,PAHs, PHCs F1-F4, VOCs	General characterization
BH 3	TBC	TBC based on field screening	Metals and inorganics, PAHs, PHCs F1-F4, VOCs	General characterization

It is noted that if visual or olfactory evidence of contamination is encountered during the subsurface investigation, different or additional samples may be submitted for laboratory analysis to capture the true "worst-case" scenario with respect to potential contamination.

### 2.4 Groundwater Samples

A summary of proposed groundwater samples to be submitted for laboratory analysis is provided below.

BH ID	Sample ID	Approx. Depth/ Stratigraphy	Chemical Analysis	Rationale
BH 1	BH1-GW	Shallow water table	Metals and inorganics, PAHs, PHCs F1-F4, VOCs	General characterization
BH 2	BH2-GW	Shallow water table	Metals and inorganics, PAHs, PHCs F1-F4, VOCs	General characterization
BH 3	BH3-GW	Shallow water table	Metals and inorganics, PAHs, PHCs F1-F4, VOCs	General characterization

## 2.5 Field Screening

Given the results of the previous investigation, the contaminants of concern, and the limited lateral extent of the project site, field screening will be limited to visual and olfactory observations of evidence of contamination. Field screening measurements will be recorded in our field notes and summarized in the Subsurface Characterization Report.

#### 3.0 OUALITY ASSURANCE AND OUALITY CONTROL

A summary of quality assurance and quality control measures to be employed during the investigation is provided below.

#### 3.1 Decontamination of Equipment

Boreholes will be advanced using direct push methods with single-use macro tubes or using conventional equipment (split spoon samplers and hollow stem augers). Hollow stem augers and split spoon samplers will arrive at the Site in a pre-cleaned condition. Between boreholes, the augers will be cleaned with a brush and washed with a water and Alconox™ solution.

Stainless steel split spoon samplers will be decontaminated between sampling locations in the following sequence: cleaned with a brush to remove adhered soil and/or debris, washed with a dilute solution of Alconox™ and water, rinsed with potable water and distilled water, then rinsed with methanol and allowed to air dry.

No other non-dedicated sampling equipment is expected to be used.

#### 3.2 Field Duplicates

At least one (1) field duplicate sample will be collected and analysed for each ten (10) "worst-case" soil samples. Field duplicates will be analyzed for all parameters for which their corresponding samples are analyzed.

### 3.3 Sampling Protocols

The jars and preservatives (where applicable) used in the collection of soil samples will be supplied by the analytical laboratory. The soil samples intended to be submitted for analysis of VOCs and PHCs in the F1 fraction range will be immediately preserved in laboratory provided vials pre-charged with to sequester the volatile compounds.

Soil samples will be labelled as they are collected. Samples will be stored in ice-packed coolers until the samples are transported to the laboratory for chemical analysis. Samples will be either handed over to or dropped off at the laboratory by MP personnel. Chains of Custody for the samples will be prepared using laboratory-provided Chain of Custody forms.

#### 4.0 DATA OUALITY OBJECTIVES

The purpose of the collection of field duplicate samples is to measure the precision or reproducibility of the field and laboratory methodology used in the collection and analysis of the samples. The precision is evaluated in terms of the relative percent difference (RPD) between the analyses of the field duplicate sample and its corresponding original sample. The RPDs of the original and field duplicate samples will not be calculated in situations where one or both of the original and field duplicate samples exhibit concentrations of analyzed parameters that are below the laboratory Reporting Detection Limits (RDLs).

The RPD between the involved samples will be calculated using the following formula:

$$RPD = \frac{(A-B)}{\frac{(A+B)}{2}} \times 100\%$$

Where:

A = concentration of compound in the primary sample

B = concentration of compound in the duplicate sample

Notes:

- RPD is calculated only for result pairs with concentrations greater than 5 times of the method detection limit in both samples.
- RPDs are not calculated where results are below the laboratory RDLs for sample pair.

The acceptable RPD limits for various analyzed groups are listed in the following table:

Parameter Group	Recommended RPD in Soil	Recommended RPD in Groundwater
PHC	30%	30%
VOCs	50%	30%
PAHs	40%	30%
PCBs	40%	30%
1,4-Dioxane	50%	30%
Dioxins/Furans	40%	30%
Organochlorine (OC) Pesticides	40%	30%
Metals	30%	20%
Hexavalent Chromium, Cr(VI)	35%	20%
Cyanide (CN-)	35%	20%

Parameter Group	Recommended RPD in Soil	Recommended RPD in Groundwater					
Fraction Organic Carbon (FOC), Chloride	35%	20%					
Methyl Mercury	40%	30%					
Electric Conductivity	10%	-					
рН	Within 0.3 pH units	-					
* Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act - Laboratory Services Branch Ministry of the Environment - March 9, 2004, amended as of July 1, 2011							

Laboratory quality control limits for duplicate, method blank, method blank spike, matrix spike and surrogate recoveries will also be reviewed.

#### 5.0 STANDARD OPERATING PROCEDURES

MP has implemented a Standard Operating Procedures (SOPs) program for environmental field activities. The SOPs are regularly updated and are provided to field staff as needed. SOPs applicable to this program may include:

- SOP 1-01: Field Notes and Record Keeping
- SOP 1-02: Field Equipment
- SOP 1-03: Sample Management
- SOP 3-01: Planning a Phase Two ESA Field Program
- SOP 3-02: Naming Conventions: Boreholes, Test Pits, and Monitoring Wells
- SOP 3-03: Naming Conventions: Individual Soil and Groundwater Samples
- SOP 3-04: Duplicate Samples
- SOP 3-05: Underground Service Locates
- SOP 3-06: Soil Sample Management and Disposal
- SOP 3-07: Cuttings and Purge Water Management
- SOP 3-08: Overburden Drilling Geoprobe or Geomachine
- SOP 3-09: Overburden Drilling Conventional Rig
- SOP 3-13: Test Pit Excavation Power Equipment
- SOP 3-15: Sample Selection and Submission for Delineation of Contamination
- SOP 3-22: Description of Soil Samples
- SOP 3-23: Combined Environmental and Geotechnical Investigations
- SOP 3-24: Field Screening of Samples Soil Vapour
- SOP 3-27: Phase Two ESA Reports

# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 16 EDGEWATER STREET, KANATA, ONTARIO



APPENDIX C BOREHOLE LOGS

## **BORING NUMBER 18-1**

MD

McIntosh Perry

				115 W Carp, 0			K0A1L0			PAGE 1 OF 1	
LIEN	CLIENT Chris McCluskey Group							PROJECT NAME 6 Edgewater Street Phase II ESA			
PROJE	ROJECT NUMBER CP-17-0635							PROJECT LOCATION 6 Edgewater Street			
DATE	ST	ARTE	<b>D</b> 13-12-18	8	CC	MC	PLETED <u>13-12-18</u>	_GROUND ELEVATION $\_$	102.29 m ASL HC	DLE SIZE	
RILL	ING	CON	TRACTOR	Canadian E	Envir	on	mental Drilling	GROUND WATER LEVE	LS:		
RILL	ING	MET	HOD Truc	k-Mounted A	Acker	r		AT TIME OF DRIL	LING		
.OGG	ED	BY _	PH		CH	ΗEC	CKED BY DJA	AT END OF DRILL	LING		
NOTE	s _							▼ 96hrs AFTER DRI	<b>LLING</b> 1.23 m		
	Ц	]		ZTAL					VOC Concentration		
DEPTH (m)	YT I	NUMBER	BLOW COUNTS (N VALUE)	ONMEN DATA	GRAPHIC	O.G.	MATERIAL I	DESCRIPTION	<b>№</b> (ppm) 20 40 60 80	WELL DIAGRAM	
0	SAME	N N	mox	ENVIRONMENTAL DATA	GR				◆ LEL (%) 20 40 60 80	Casing Top Elev: 100.954 (m) Casing Type: Monument	
U	$\setminus /$	SS	3-7-9-5	ш	<u> </u>	1 <u>/</u> .	1 1 1 1		15 <b>X</b>	W W	
-	A	1	(16)	PID = 1 Vapor = 15			Clayey Silt, some grave moist, very stiff	el, some sand. Brown,			
-	X	SS 2	3-3-3-3 (6)	PID = 0 Vapor = 10		-	19		10. ▼		
_	$\bigvee$	SS 3	1-2-3-3 (5)	PID = 0 Vapor = 0			clayey silt, some sand,	brown, firm	•		
2 -	M	SS 4	1-2-3-3 (5)	PID = 0 Vapor = 15					15 <b>X</b>		
-	M	SS 5	8-27-38-16 (65)				3.0		20 <b>▼</b>		
-	M	SS 6	4-4-4-8 (8)	PID = 0 Vapor = 0	8.1		Sand with some gravel loose	and trace silt. Brown, wet,	•		
4	$\bigvee$	SS 7	4-4-12-30 (16)	PID = 0 Vapor = 0		•	4.1 Clay with sand and silt		<b>Q</b>		
-	M	8 SS	50	PID = 0 Vapor = 0	V///		hard 4.6				
			·		,		Refusal on inferred bed Bottom of I	drock hole at 4.57 m.			

### **BORING NUMBER 18-2**

M	Р	McInto 115 W	algreer			DUKI	NG NUMBER 18-2 PAGE 1 OF 1
OUTS OF	• Ma Olasal ass				DDO IFOT NAME	O.F. Income to a Observat Physics	11 504
CLIENT Chris						6 Edgewater Street Phase	
						ON 6 Edgewater Street	
							E SIZE
				mental Drilling			
DRILLING ME				CKED BY DJA			
NOTES			CHE	CRED BY DJA	¥ 96hrs AFTER DI		
NOTES					- <u>-</u> 901113 AFTER DI		
DEPTH (m) SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAI (	DESCRIPTION	VOC Concentration ▼ (ppm) 20 40 60 80	WELL DIAGRAM
O DE (I	BL COL	ENVIROR DA	GRA	Witt Ettine	SECONII NON	(A) E1 (9()	Casing Top Elev: 101.099 (m) Casing Type: Monument
√ ss		ш	31/2.7	1 1 1 1			Z
1 ss	_	PID = 1 Vapor = 0		Silt with clay, some sar Brown, moist, stiff to fir	nd and some gravel. rm	<b>*</b>	
2	-	PID = 1 Vapor = 0		Sand with silt and some wet, loose	e clay. Brown, moist to		
SS 3	_	PID = 1 Vapor = 0		·			
X 55 4		PID = 0 Vapor = 0 PID = 1		2.4			
SS 5 5 SS 6	J	Vapor = 0 $PID = 0$		Clay with silt, grey, wet	, very soft	•	
		Vapor = 0					
4							
ss 7		PID = 0 Vapor = 0				*	
		vapor – o					
				5.5			
5S 8	_	PID = 1			some gravel. Grey, wet,	*	
		Vapor = 0	<del>/* /*/ //</del>	Refusal on inferred bed	drock		
				Bottom of t	nole at 6.10 m.		

## **BORING NUMBER 18-3**

PAGE 1 OF 1

MP

McIntosh Perry 115 Walgreen Rd Carp, Ontario, K0A1L0

CLIENT <u>Chris McCluskey</u> PROJECT NUMBER <u>CP-</u>	17-0635		PROJECT NAME <u>6</u> PROJECT LOCATION	N 6 Edgewater Stree	et
	Canadian Environme	ental Drilling GR ED BY DJA	OUND WATER LEVEL AT TIME OF DRILL AT END OF DRILL	LS: LING LING	LE SIZE
SAMPLE TYPE NUMBER COUNTS (N VALUE)	ENVIRONMENTAL DATA GRAPHIC LOG	MATERIAL DESC	CRIPTION	VOC Concentration  20 40 60 80  ♣ LEL (%) 20 40 60 80	WELL DIAGRAM  Casing Top Elev: 100.405 (m) Casing Type: Monument
SS   1	PID = 0	Sand with gravel. Brown  Gravel, low recovery, rock s  Silt with sand and trace clay wet.  Clay with silt with some san Brown, wet, soft to firm	/. Brown, moist to		

## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 16 EDGEWATER STREET, KANATA, ONTARIO



APPENDIX D LABORATORY CERTIFICATES OF ANALYSIS



McIntosh Perry Engineering Consultants

(Ottawa)

ATTN: Bradley Sutherland 115 Walgreen Road RR3

Carp ON KOA 1LO

Date Received: 14-DEC-18

Report Date: 20-DEC-18 07:51 (MT)

Version: FINAL

Client Phone: 613-836-2184

## Certificate of Analysis

Lab Work Order #: L2211036

Project P.O. #: NOT SUBMITTED

Job Reference: CP-17-0635

C of C Numbers: Legal Site Desc:

Melanie Moshi Account Manager

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

ADDRESS: 190 Colonnade Road, Unit 7, Ottawa, ON K2E 7J5 Canada | Phone: +1 613 225 8279 | Fax: +1 613 225 2801

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-1 BH1							
Sampled By: CLIENT on 13-DEC-18 @ 10:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.550		0.0040	mS/cm		17-DEC-18	R4397413
% Moisture	33.0		0.10	%	17-DEC-18	18-DEC-18	R4396792
рН	7.56		0.10	pH units		17-DEC-18	R4397016
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4400394
Saturated Paste Extractables							
SAR	3.54		0.10	SAR		17-DEC-18	R4400088
Calcium (Ca)	27.4		1.0	mg/L		17-DEC-18	R4400088
Magnesium (Mg)	3.3		1.0	mg/L		17-DEC-18	R4400088
Sodium (Na)	73.7		1.0	mg/L		17-DEC-18	R4400088
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Arsenic (As)	3.5		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Barium (Ba)	283		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Beryllium (Be)	0.61		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B)	5.4		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B), Hot Water Ext.	0.23		0.10	ug/g	16-DEC-18	17-DEC-18	R4396954
Cadmium (Cd)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Chromium (Cr)	40.4		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Cobalt (Co)	11.1		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Copper (Cu)	20.5		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Lead (Pb)	7.5		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Mercury (Hg)	0.0181		0.0050	ug/g	16-DEC-18	17-DEC-18	R4397072
Molybdenum (Mo)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Nickel (Ni)	22.7		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Selenium (Se)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Silver (Ag)	<0.20		0.20	ug/g	16-DEC-18	17-DEC-18	R4399967
Thallium (TI)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Uranium (U)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Vanadium (V)	51.8		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Zinc (Zn)	63.8		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Speciated Metals							
Chromium, Hexavalent	0.50		0.20	ug/g	17-DEC-18	18-DEC-18	R4400151
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	
Benzene	<0.0068		0.0068	ug/g	17-DEC-18		R4399356
Bromodichloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromoform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromomethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Carbon tetrachloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Chlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Dibromochloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-1 BH1 Sampled By: CLIENT on 13-DEC-18 @ 10:00 Matrix: SOIL							
Volatile Organic Compounds							
Chloroform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dibromoethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,3-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,4-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Dichlorodifluoromethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,1-Dichloroethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,2-Dichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18		R4399356
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g ug/g	17-DEC-18		R4399356
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Methylene Chloride	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,2-Dichloropropane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18		R4399356
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	220 .0	18-DEC-18	111000000
Ethylbenzene	<0.018		0.018	ug/g	17-DEC-18	18-DEC-18	R4399356
n-Hexane	<0.050		0.050	ug/g	17-DEC-18		R4399356
Methyl Ethyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
MTBE	<0.050		0.050	ug/g	17-DEC-18		R4399356
Styrene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
Tetrachloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Toluene	<0.080		0.080	ug/g	17-DEC-18		R4399356
1,1,1-Trichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	
1,1,2-Trichloroethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
Trichloroethylene	<0.010		0.010	ug/g	17-DEC-18	18-DEC-18	R4399356
Trichlorofluoromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	
Vinyl chloride	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
o-Xylene	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
m+p-Xylenes	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356
Xylenes (Total)	<0.050		0.050	ug/g		18-DEC-18	
Surrogate: 4-Bromofluorobenzene	93.6		50-140	%	17-DEC-18	18-DEC-18	R4399356
Surrogate: 1,4-Difluorobenzene	105.9		50-140	%	17-DEC-18	18-DEC-18	R4399356
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	17-DEC-18	18-DEC-18	R4399356
F1-BTEX	<5.0		5.0	ug/g		18-DEC-18	
F2 (C10-C16)	<10		10	ug/g	15-DEC-18	17-DEC-18	R4398472
F2-Naphth	<10		10	ug/g		18-DEC-18	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sampled By: CLIENT on 13-DEC-18 @ 10:00   Matrix   SOIL	Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Hydrocarbons FS (C16-C34)	Sampled By: CLIENT on 13-DEC-18 @ 10:00							
F3 (C16-C34)								
F3-PAH	_	<sub>4</sub> E0		50	ua/a	15 DEC 19	17 DEC 19	D 4200472
F4 (C34-C50)	,					13-DEC-16		K4396472
Total Hydrocarbons (C6-C50)						15-DEC-18		P/308/72
Chrom. to baseline at nC50	, , , , , , , , , , , , , , , , , , , ,					13-020-10		N4390472
Surrogate: 2-Bromobenzotrifluoride   98.1   60-140   %   15-DEC-18   17-DEC-18   R4398472	, , ,			12	ug/g	15-DEC-18		D4209472
Surrogate: 3,4-Dichlorotoluene   76,4   60-140   %   17-DEC-18   18-DEC-18   R4399356				60-140	0/_			
Polycyclic Aromatic Hydrocarbons								
Aceraphthene		70.4		00-140	70	17-020-10	10-020-10	K4399330
Acenaphthylene		<0.050		0.050	ua/a	15-DEC-18	18-DEC-18	R4399050
Anthracene	·							
Benzo(a)anthracene         0.092         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Benzo(a)pyrene         0.086         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Benzo(b)fluoranthene         0.144         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Benzo(g,h,i)perylene         0.081         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Benzo(k)fluoranthene         <0.050         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Chrysene         0.081         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Dibenzo(ah)anthracene         <0.050         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Fluoranthene         <0.076         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Indentylnaphthalene         <0.050         0.060         ug/g         15-DEC-18         18-DEC-18         R4399050           1-2-Methylnaphthalene         <0.042         0.042         ug/g         15-DEC-18         18-DEC-18         R4399050	' '							
Benzo(a)pyrene								
Benzo(b)fluoranthene								
Benzo(g,h,i)perylene	Benzo(b)fluoranthene	0.144		0.050		15-DEC-18	18-DEC-18	
Benzo(k) fluoranthene								R4399050
Chrysene         0.081         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Dibenzo(ah)anthracene         <0.050	12 11 1					15-DEC-18	18-DEC-18	
Dibenzo(ah)anthracene	Chrysene	0.081		0.050		15-DEC-18		
Fluoranthene	Dibenzo(ah)anthracene	<0.050				15-DEC-18		
Fluorene	Fluoranthene	0.076				15-DEC-18		
Indeno(1,2,3-cd)pyrene	Fluorene	<0.050		0.050		15-DEC-18	18-DEC-18	R4399050
1+2-Methylnaphthalenes	Indeno(1,2,3-cd)pyrene	0.068		0.050		15-DEC-18	18-DEC-18	R4399050
1-Methylnaphthalene       <0.030	1+2-Methylnaphthalenes	<0.042		0.042			18-DEC-18	
2-Methylnaphthalene       <0.030	1-Methylnaphthalene	<0.030		0.030		15-DEC-18	18-DEC-18	R4399050
Naphthalene	2-Methylnaphthalene	<0.030		0.030		15-DEC-18	18-DEC-18	R4399050
Phenanthrene	Naphthalene	<0.013		0.013		15-DEC-18	18-DEC-18	R4399050
Pyrene	Phenanthrene	<0.046		0.046		15-DEC-18	18-DEC-18	
Surrogate: 2-Fluorobiphenyl   105.2   50-140   %   15-DEC-18   18-DEC-18   R4399050	Pyrene	0.083		0.050		15-DEC-18	18-DEC-18	
L2211036-2   BH2   Sampled By: CLIENT on 13-DEC-18 @ 13:00   Matrix: SOIL	Surrogate: 2-Fluorobiphenyl	105.2		50-140		15-DEC-18	18-DEC-18	R4399050
Sampled By: CLIENT on 13-DEC-18 @ 13:00         Matrix:       SOIL         Physical Tests         Conductivity       0.133       0.0040       mS/cm       17-DEC-18       R4397413         % Moisture       26.2       0.10       %       17-DEC-18       R4396792         pH       7.39       0.10       pH units       17-DEC-18       R4397016         Cyanides         Cyanide, Weak Acid Diss       <0.050	Surrogate: p-Terphenyl d14	106.4		50-140	%	15-DEC-18	18-DEC-18	R4399050
Conductivity         0.133         0.0040         mS/cm         17-DEC-18         R4397413           % Moisture         26.2         0.10         %         17-DEC-18         18-DEC-18         R4396792           pH         7.39         0.10         pH units         17-DEC-18         R4397016           Cyanides         Cyanide, Weak Acid Diss         <0.050	Sampled By: CLIENT on 13-DEC-18 @ 13:00							
% Moisture       26.2       0.10       %       17-DEC-18       18-DEC-18       R4396792         pH       7.39       0.10       pH units       17-DEC-18       R4397016         Cyanides       0.050       ug/g       17-DEC-18       18-DEC-18       R4400394         Saturated Paste Extractables       1.08       0.10       SAR       17-DEC-18       R4400088         Calcium (Ca)       8.1       1.0       mg/L       17-DEC-18       R4400088	Physical Tests							
pH     7.39     0.10     pH units     17-DEC-18     R4397016       Cyanides     Cyanide, Weak Acid Diss     <0.050     0.050     ug/g     17-DEC-18     18-DEC-18     R4400394       Saturated Paste Extractables     1.08     0.10     SAR     17-DEC-18     R4400088       Calcium (Ca)     8.1     1.0     mg/L     17-DEC-18     R4400088	Conductivity	0.133		0.0040	mS/cm		17-DEC-18	R4397413
Cyanides         Cyanide, Weak Acid Diss         <0.050         ug/g         17-DEC-18         18-DEC-18         R4400394           Saturated Paste Extractables         1.08         0.10         SAR         17-DEC-18         R4400088           Calcium (Ca)         8.1         1.0         mg/L         17-DEC-18         R4400088	% Moisture	26.2		0.10	%	17-DEC-18	18-DEC-18	R4396792
Cyanide, Weak Acid Diss         <0.050         ug/g         17-DEC-18         18-DEC-18         R4400394           Saturated Paste Extractables         1.08         0.10         SAR         17-DEC-18         R4400088           Calcium (Ca)         8.1         1.0         mg/L         17-DEC-18         R4400088	рН	7.39		0.10	pH units		17-DEC-18	R4397016
Saturated Paste Extractables         1.08         0.10         SAR         17-DEC-18         R4400088           Calcium (Ca)         8.1         1.0         mg/L         17-DEC-18         R4400088	Cyanides							
SAR     1.08     0.10     SAR     17-DEC-18     R4400088       Calcium (Ca)     8.1     1.0     mg/L     17-DEC-18     R4400088		<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4400394
Calcium (Ca) 8.1 1.0 mg/L 17-DEC-18 R4400088								
Magnesium (Mg) 1.7 1.0 mg/L 17-DEC-18 R4400088					_			
	Magnesium (Mg)	1.7		1.0	mg/L		17-DEC-18	R4400088

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-2 BH2							
Sampled By: CLIENT on 13-DEC-18 @ 13:00 Matrix: SOIL							
Saturated Paste Extractables							
Sodium (Na)	13.0		1.0	mg/L		17-DEC-18	R4400088
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Arsenic (As)	2.4		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Barium (Ba)	142		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Beryllium (Be)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B)	<5.0		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B), Hot Water Ext.	0.10		0.10	ug/g	16-DEC-18	17-DEC-18	R4396954
Cadmium (Cd)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Chromium (Cr)	22.4		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Cobalt (Co)	6.5		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Copper (Cu)	13.6		1.0	ug/g	16-DEC-18		R4399967
Lead (Pb)	3.7		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Mercury (Hg)	<0.0050		0.0050	ug/g	16-DEC-18	17-DEC-18	R4397072
Molybdenum (Mo)	<1.0 12.3		1.0 1.0	ug/g	16-DEC-18 16-DEC-18	17-DEC-18	R4399967 R4399967
Nickel (Ni) Selenium (Se)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Silver (Ag)	<0.20		0.20	ug/g ug/g	16-DEC-18		R4399967
Thallium (TI)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Uranium (U)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Vanadium (V)	33.9		1.0	ug/g	16-DEC-18		R4399967
Zinc (Zn)	33.3		5.0	ug/g	16-DEC-18		R4399967
Speciated Metals	00.0		0.0	-9.9			
Chromium, Hexavalent	<0.20		0.20	ug/g	17-DEC-18	18-DEC-18	R4400151
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
Benzene	<0.0068		0.0068	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromodichloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromoform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromomethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
Carbon tetrachloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Chlorobenzene	<0.050		0.050	ug/g	17-DEC-18		R4399356
Dibromochloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Chloroform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dibromoethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,2-Dichlorobenzene 1,3-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,3-Dichlorobenzene  1,4-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18 17-DEC-18	18-DEC-18 18-DEC-18	R4399356
Dichlorodifluoromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1-Dichloroethane	<0.050 <0.050		0.050 0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dichloroethane	<0.050		0.050	ug/g ug/g	17-DEC-18		R4399356 R4399356
1,1-Dichloroethylene					17-DEC-18		R4399356
r, r-Dichiloroctriylerie	<0.050		0.050	ug/g	11-050-18	10-050-18	174399336

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-2 BH2 Sampled By: CLIENT on 13-DEC-18 @ 13:00 Matrix: SOIL							
Volatile Organic Compounds							
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Methylene Chloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dichloropropane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		18-DEC-18	
Ethylbenzene	<0.018		0.018	ug/g	17-DEC-18	18-DEC-18	R4399356
n-Hexane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Methyl Ethyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
MTBE	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Styrene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Tetrachloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Toluene	<0.080		0.080	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,1-Trichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,2-Trichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Trichloroethylene	<0.010		0.010	ug/g	17-DEC-18	18-DEC-18	R4399356
Trichlorofluoromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Vinyl chloride	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
o-Xylene	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
m+p-Xylenes	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356
Xylenes (Total)	<0.050		0.050	ug/g		18-DEC-18	
Surrogate: 4-Bromofluorobenzene	96.5		50-140	%	17-DEC-18	18-DEC-18	R4399356
Surrogate: 1,4-Difluorobenzene	109.8		50-140	%	17-DEC-18	18-DEC-18	R4399356
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	17-DEC-18	18-DEC-18	R4399356
F1-BTEX	<5.0		5.0	ug/g		18-DEC-18	
F2 (C10-C16)	<10		10	ug/g	15-DEC-18	17-DEC-18	R4398472
F2-Naphth	<10		10	ug/g		18-DEC-18	
F3 (C16-C34)	<50		50	ug/g	15-DEC-18	17-DEC-18	R4398472
F3-PAH	<50		50	ug/g		18-DEC-18	
F4 (C34-C50)	<50		50	ug/g	15-DEC-18	17-DEC-18	R4398472
Total Hydrocarbons (C6-C50)	<72		72	ug/g		18-DEC-18	
Chrom. to baseline at nC50	YES				15-DEC-18	17-DEC-18	
Surrogate: 2-Bromobenzotrifluoride	99.6		60-140	%	15-DEC-18	17-DEC-18	
Surrogate: 3,4-Dichlorotoluene	62.6		60-140	%	17-DEC-18	18-DEC-18	R4399356
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-2 BH2 Sampled By: CLIENT on 13-DEC-18 @ 13:00 Matrix: SOIL							
Polycyclic Aromatic Hydrocarbons							
Acenaphthylene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Anthracene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	
Benzo(a)anthracene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(a)pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(b)fluoranthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Chrysene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Fluoranthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Fluorene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		18-DEC-18	
1-Methylnaphthalene	<0.030		0.030	ug/g	15-DEC-18	18-DEC-18	R4399050
2-Methylnaphthalene	<0.030		0.030	ug/g	15-DEC-18	18-DEC-18	R4399050
Naphthalene	<0.013		0.013	ug/g	15-DEC-18	18-DEC-18	R4399050
Phenanthrene	<0.046		0.046	ug/g	15-DEC-18	18-DEC-18	
Pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Surrogate: 2-Fluorobiphenyl	100.1		50-140	%	15-DEC-18	18-DEC-18	R4399050
Surrogate: p-Terphenyl d14	99.7		50-140	%	15-DEC-18	18-DEC-18	R4399050
L2211036-3 BH3 Sampled By: CLIENT on 13-DEC-18 @ 15:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.323		0.0040	mS/cm		17-DEC-18	R4397413
% Moisture	27.0		0.10	%	17-DEC-18	18-DEC-18	R4396792
рН	7.53		0.10	pH units		17-DEC-18	R4397016
Cyanides							
Cyanide, Weak Acid Diss Saturated Paste Extractables	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4400394
SAR	2.04		0.40	CAD		17 DEC 10	D4400000
Calcium (Ca)	2.91		0.10	SAR mg/l			R4400088
, ,	13.2		1.0	mg/L		17-DEC-18 17-DEC-18	R4400088
Magnesium (Mg) Sodium (Na)	2.5		1.0	mg/L		17-DEC-18	
Metals	44.0		1.0	mg/L		17-050-18	K4400088
Antimony (Sb)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Arsenic (As)	2.8		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Barium (Ba)	162		1.0	ug/g	16-DEC-18	17-DEC-18	
Beryllium (Be)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	
Boron (B)	<5.0		5.0	ug/g	16-DEC-18	17-DEC-18	
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	16-DEC-18	17-DEC-18	
Cadmium (Cd)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
- ()	15.00		2.00	ĕ '&			

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
_2211036-3 BH3 Sampled By: CLIENT on 13-DEC-18 @ 15:00 Matrix: SOIL							
Metals							
Chromium (Cr)	28.4		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Cobalt (Co)	7.9		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Copper (Cu)	17.3		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Lead (Pb)	4.6		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Mercury (Hg)	<0.0050		0.0050	ug/g	16-DEC-18	17-DEC-18	R4397072
Molybdenum (Mo)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Nickel (Ni)	16.4		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Selenium (Se)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Silver (Ag)	<0.20		0.20	ug/g	16-DEC-18	17-DEC-18	R4399967
Thallium (TI)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Uranium (U)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Vanadium (V)	44.2		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Zinc (Zn)	43.1		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Speciated Metals							
Chromium, Hexavalent Volatile Organic Compounds	0.29		0.20	ug/g	17-DEC-18	18-DEC-18	R4400151
Acetone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
Benzene	<0.0068		0.0068	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromodichloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromoform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromomethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Carbon tetrachloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Chlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Dibromochloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Chloroform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dibromoethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,3-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,4-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Dichlorodifluoromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1-Dichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Methylene Chloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dichloropropane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		18-DEC-18	
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<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-3 BH3 Sampled By: CLIENT on 13-DEC-18 @ 15:00 Matrix: SOIL							
Volatile Organic Compounds							
n-Hexane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Methyl Ethyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	17-DEC-18		R4399356
MTBE	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	
Styrene	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
Tetrachloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Toluene	<0.080		0.080	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,1-Trichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	
1,1,2-Trichloroethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
Trichloroethylene	<0.010		0.010	ug/g	17-DEC-18	18-DEC-18	R4399356
Trichlorofluoromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Vinyl chloride	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
o-Xylene	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
m+p-Xylenes	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356
Xylenes (Total)	<0.050		0.050	ug/g		18-DEC-18	
Surrogate: 4-Bromofluorobenzene	92.5		50-140	%	17-DEC-18	18-DEC-18	R4399356
Surrogate: 1,4-Difluorobenzene	103.2		50-140	%	17-DEC-18	18-DEC-18	R4399356
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	17-DEC-18	18-DEC-18	R4399356
F1-BTEX	<5.0		5.0	ug/g		18-DEC-18	
F2 (C10-C16)	<10		10	ug/g	15-DEC-18	17-DEC-18	R4398472
F2-Naphth	<10		10	ug/g		18-DEC-18	
F3 (C16-C34)	<50		50	ug/g	15-DEC-18	17-DEC-18	R4398472
F3-PAH	<50		50	ug/g		18-DEC-18	
F4 (C34-C50)	<50		50	ug/g	15-DEC-18	17-DEC-18	R4398472
Total Hydrocarbons (C6-C50)	<72		72	ug/g		18-DEC-18	
Chrom. to baseline at nC50	YES			2.	15-DEC-18		R4398472
Surrogate: 2-Bromobenzotrifluoride	90.0		60-140	%	15-DEC-18	17-DEC-18	R4398472
Surrogate: 3,4-Dichlorotoluene  Polycyclic Aromatic Hydrocarbons	73.6		60-140	%	17-DEC-18	18-DEC-18	R4399356
Acenaphthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Acenaphthylene	<0.050		0.050	ug/g ug/g	15-DEC-18	18-DEC-18	R4399050
Anthracene	<0.050		0.050	ug/g ug/g	15-DEC-18	18-DEC-18	
Benzo(a)anthracene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(a)pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(b)fluoranthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Chrysene	<0.050		0.050	ug/g	15-DEC-18		R4399050
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<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
_2211036-3 BH3 Sampled By: CLIENT on 13-DEC-18 @ 15:00 Matrix: SOIL							
Polycyclic Aromatic Hydrocarbons							
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Fluoranthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	
Fluorene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	10 520 10	18-DEC-18	114000000
1-Methylnaphthalene	<0.030		0.030	ug/g	15-DEC-18	18-DEC-18	R4399050
2-Methylnaphthalene	<0.030		0.030	ug/g	15-DEC-18	18-DEC-18	
Naphthalene	<0.030		0.030	ug/g ug/g	15-DEC-18	18-DEC-18	
Phenanthrene	<0.046		0.013		15-DEC-18	18-DEC-18	
Pyrene				ug/g	15-DEC-18	18-DEC-18	
·	<0.050		0.050	ug/g %	15-DEC-18		
Surrogate: 2-Fluorobiphenyl	101.5		50-140				R4399050
Surrogate: p-Terphenyl d14  2211036-4 BH99 Sampled By: CLIENT on 13-DEC-18 @ 15:30 Matrix: SOIL	99.7		50-140	%	15-DEC-18	18-DEC-18	R4399050
Physical Tests							
Conductivity	0.338		0.0040	mS/cm		17-DEC-18	R4397413
% Moisture	26.8		0.10	%	17-DEC-18	18-DEC-18	R4396792
pН	7.51		0.10	pH units		17-DEC-18	
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4400394
Saturated Paste Extractables							
SAR	2.79		0.10	SAR		17-DEC-18	R4400088
Calcium (Ca)	14.8		1.0	mg/L		17-DEC-18	R4400088
Magnesium (Mg)	2.9		1.0	mg/L		17-DEC-18	R4400088
Sodium (Na)	44.9		1.0	mg/L		17-DEC-18	R4400088
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Arsenic (As)	3.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Barium (Ba)	164		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Beryllium (Be)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B)	<5.0		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	16-DEC-18	17-DEC-18	R4396954
Cadmium (Cd)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Chromium (Cr)	29.9		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Cobalt (Co)	8.0		1.0	ug/g	16-DEC-18	17-DEC-18	
Copper (Cu)	17.8		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Lead (Pb)	4.6		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Mercury (Hg)	<0.0050		0.0050	ug/g	16-DEC-18	17-DEC-18	R4397072
Molybdenum (Mo)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	
Nickel (Ni)	16.7		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Selenium (Se)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
55.5.mairi (55)	\1.0		1.0	ug/g	10 DEC-10	17-020-10	11400000

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-4 BH99 Sampled By: CLIENT on 13-DEC-18 @ 15:30 Matrix: SOIL							
Metals							
Silver (Ag)	<0.20		0.20	ug/g	16-DEC-18	17-DEC-18	R4399967
Thallium (TI)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Uranium (U)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Vanadium (V)	46.3		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Zinc (Zn)	44.3		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Speciated Metals							
Chromium, Hexavalent	0.29		0.20	ug/g	17-DEC-18	18-DEC-18	R4400151
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
Benzene	<0.0068		0.0068	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromodichloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromoform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromomethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Carbon tetrachloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Chlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Dibromochloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Chloroform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dibromoethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,3-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,4-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Dichlorodifluoromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,1-Dichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,2-Dichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,1-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Methylene Chloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dichloropropane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R439935
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R439935
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		18-DEC-18	
Ethylbenzene	<0.018		0.018	ug/g	17-DEC-18	18-DEC-18	R4399356
n-Hexane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Methyl Ethyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
MTBE	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Styrene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Tetrachloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
_2211036-4 BH99 Sampled By: CLIENT on 13-DEC-18 @ 15:30 Matrix: SOIL							
Volatile Organic Compounds							
Toluene	<0.080		0.080	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,1-Trichloroethane	< 0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,2-Trichloroethane	< 0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Trichloroethylene	<0.010		0.010	ug/g	17-DEC-18	18-DEC-18	R4399356
Trichlorofluoromethane	< 0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Vinyl chloride	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
o-Xylene	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
m+p-Xylenes	< 0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356
Xylenes (Total)	< 0.050		0.050	ug/g		18-DEC-18	
Surrogate: 4-Bromofluorobenzene	94.8		50-140	%	17-DEC-18	18-DEC-18	R4399356
Surrogate: 1,4-Difluorobenzene	103.1		50-140	%	17-DEC-18		
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	17-DEC-18	18-DEC-18	R4399356
F1-BTEX	<5.0		5.0	ug/g		18-DEC-18	
F2 (C10-C16)	<10		10	ug/g	16-DEC-18	17-DEC-18	R4399775
F2-Naphth	<10		10	ug/g		18-DEC-18	
F3 (C16-C34)	<50		50	ug/g	16-DEC-18	17-DEC-18	R4399775
F3-PAH	<50		50	ug/g		18-DEC-18	
F4 (C34-C50)	<50		50	ug/g	16-DEC-18	17-DEC-18	R4399775
Total Hydrocarbons (C6-C50)	<72		72	ug/g		18-DEC-18	
Chrom. to baseline at nC50	YES				16-DEC-18	17-DEC-18	R4399775
Surrogate: 2-Bromobenzotrifluoride	90.2		60-140	%	16-DEC-18	17-DEC-18	R4399775
Surrogate: 3,4-Dichlorotoluene	81.2		60-140	%	17-DEC-18	18-DEC-18	R4399356
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Acenaphthylene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Anthracene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(a)anthracene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(a)pyrene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(b)fluoranthene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(g,h,i)perylene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(k)fluoranthene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Chrysene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Dibenzo(ah)anthracene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Fluoranthene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Fluorene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		18-DEC-18	
1-Methylnaphthalene	<0.030		0.030	ug/g	15-DEC-18	18-DEC-18	R4399050
2-Methylnaphthalene	<0.030		0.030	ug/g	15-DEC-18		R4399050
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<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-4 BH99							
Sampled By: CLIENT on 13-DEC-18 @ 15:30 Matrix: SOIL							
Matrix: SOIL Polycyclic Aromatic Hydrocarbons							
Phenanthrene	<0.046		0.046	ug/g	15-DEC-18	18-DEC-18	R4399050
Pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	
Surrogate: 2-Fluorobiphenyl	102.9		50-140	%	15-DEC-18	18-DEC-18	
Surrogate: p-Terphenyl d14	102.3		50-140	%	15-DEC-18	18-DEC-18	R4399050
Refer to Referenced Information for Qualifiers (if any) and	l Mathadalagy						

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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#### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**			
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						

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 MOE 3015/APHA 4500CN I-WAD 2011)

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).

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 CCME CWS-PHC, Pub #1310, Dec 2001-S Parameters

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.

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### **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).

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)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

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 CCME PHC in Soil - Tier 1 (mod)

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 technique sused 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).

PH-WT Soil 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 SAR-O.Reg 153/04 (July 2011) SW846 6010C Soil

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 VOC-O.Reg 153/04 (July 2011) SW846 8260 (511) Soil

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-Soil Sum of Xylene Isomer **CALCULATION** Concentrations

WT

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### **Reference Information**

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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.



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	Soil							
Batch R4396954 WG2955152-4 DUP Boron (B), Hot Water Ex	ĸt.	<b>L2211036-4</b> <0.10	<0.10	RPD-NA	ug/g	N/A	30	17-DEC-18
WG2955152-2 IRM Boron (B), Hot Water Ex	ĸt.	HOTB-SAL_SO	<b>DIL5</b> 109.1		%		70-130	17-DEC-18
WG2955152-3 LCS Boron (B), Hot Water Ex	ĸt.		93.4		%		70-130	17-DEC-18
WG2955152-1 MB Boron (B), Hot Water Ex	ĸt.		<0.10		ug/g		0.1	17-DEC-18
CN-WAD-R511-WT	Soil							
Batch R4400394 WG2955163-3 DUP Cyanide, Weak Acid Dis	ss	<b>L2211036-2</b> <0.050	<0.050	RPD-NA	ug/g	N/A	35	18-DEC-18
WG2955163-2 LCS Cyanide, Weak Acid Dis		10.000	99.1	NI DINA	%	IVA	80-120	18-DEC-18
WG2955163-1 MB Cyanide, Weak Acid Dis	ss		<0.050		ug/g		0.05	18-DEC-18
WG2955163-4 MS Cyanide, Weak Acid Dis	SS	L2211036-2	101.5		%		70-130	18-DEC-18
CR-CR6-IC-WT	Soil							
Batch R4400151 WG2955171-4 CRM Chromium, Hexavalent		WT-SQC012	86.5		%		70-130	18-DEC-18
WG2955171-3 DUP Chromium, Hexavalent		<b>L2210938-1</b> <0.20	<0.20	RPD-NA	ug/g	N/A	35	18-DEC-18
WG2955171-2 LCS Chromium, Hexavalent			82.9		%		80-120	18-DEC-18
WG2955171-1 MB Chromium, Hexavalent			<0.20		ug/g		0.2	18-DEC-18
EC-WT	Soil							
Batch R4397413 WG2955149-4 DUP Conductivity		<b>WG2955149-3</b> 0.408	0.401		mS/cm	1.7	20	17-DEC-18
WG2955149-2 IRM Conductivity		WT SAR2	102.6		%		70-130	17-DEC-18
WG2955223-1 LCS Conductivity			104.1		%		90-110	17-DEC-18
WG2955149-1 MB								



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Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WT		Soil							
	397413 MB			<0.0040		mS/cm		0.004	17-DEC-18
F1-HS-511-WT		Soil							
Batch R4	399356								
<b>WG2955352-4</b> F1 (C6-C10)	DUP		<b>WG2955352-3</b> <5.0	<5.0	RPD-NA	ug/g	N/A	30	18-DEC-18
<b>WG2955352-2</b> F1 (C6-C10)	LCS			98.3		%		80-120	18-DEC-18
WG2955352-1	MB								
F1 (C6-C10)				<5.0		ug/g		5	18-DEC-18
Surrogate: 3,4-D		oluene		84.7		%		60-140	18-DEC-18
<b>WG2955352-6</b> F1 (C6-C10)	MS		L2211036-3	87.5		%		60-140	18-DEC-18
F2-F4-511-WT		Soil							
Batch R4	398472								
WG2954750-3	DUP		WG2954750-5	40					
F2 (C10-C16)			<10	<10	RPD-NA	ug/g	N/A	30	17-DEC-18
F3 (C16-C34)			<50	<50	RPD-NA	ug/g	N/A	30	17-DEC-18
F4 (C34-C50)			<50	<50	RPD-NA	ug/g	N/A	30	17-DEC-18
<b>WG2954750-2</b> F2 (C10-C16)	LCS			115.0		%		80-120	18-DEC-18
F3 (C16-C34)				117.0		%		80-120	18-DEC-18
F4 (C34-C50)				119.2		%		80-120	18-DEC-18
<b>WG2954750-1</b> F2 (C10-C16)	MB			<10		ug/g		10	17-DEC-18
F3 (C16-C34)				<50		ug/g		50	17-DEC-18
F4 (C34-C50)				<50		ug/g		50	17-DEC-18
Surrogate: 2-Bro	omobenz	otrifluoride		102.1		%		60-140	17-DEC-18
WG2954750-4	MS		WG2954750-5						
F2 (C10-C16)				107.8		%		60-140	17-DEC-18
F3 (C16-C34)				112.7		%		60-140	17-DEC-18
F4 (C34-C50)				116.1		%		60-140	17-DEC-18
Batch R4	399775								
<b>WG2955142-3</b> F2 (C10-C16)	DUP		<b>WG2955142-5</b> <10	<10	RPD-NA	ug/g	N/A	30	17-DEC-18



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Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT		Soil							
Batch R	4399775								
<b>WG2955142-3</b> F3 (C16-C34)	DUP		<b>WG2955142-5</b> <50	<50	RPD-NA	ug/g	N/A	30	17-DEC-18
F4 (C34-C50)			<50	<50	RPD-NA	ug/g	N/A	30	17-DEC-18
<b>WG2955142-2</b> F2 (C10-C16)	LCS			105.6		%		80-120	17-DEC-18
F3 (C16-C34)				112.9		%		80-120	17-DEC-18
F4 (C34-C50)				116.7		%		80-120	17-DEC-18
<b>WG2955142-1</b> F2 (C10-C16)	МВ			<10		ug/g		10	17-DEC-18
F3 (C16-C34)				<50		ug/g		50	17-DEC-18
F4 (C34-C50)				<50		ug/g		50	17-DEC-18
Surrogate: 2-B	Bromoben	zotrifluoride		87.3		%		60-140	17-DEC-18
WG2955142-4	MS		WG2955142-5						
F2 (C10-C16)				116.2		%		60-140	17-DEC-18
F3 (C16-C34)				118.0		%		60-140	17-DEC-18
F4 (C34-C50)				118.9		%		60-140	17-DEC-18
HG-200.2-CVAA-V	νT	Soil							
Batch R	4397072								
<b>WG2955145-2</b> Mercury (Hg)	CRM		WT-CANMET-	<b>TILL1</b> 99.4		%		70-130	17-DEC-18
<b>WG2955145-6</b> Mercury (Hg)	DUP		<b>WG2955145-5</b> <0.0050	<0.0050	RPD-NA	ug/g	N/A	40	17-DEC-18
<b>WG2955145-3</b> Mercury (Hg)	LCS			106.0		%		80-120	17-DEC-18
<b>WG2955145-1</b> Mercury (Hg)	MB			<0.0050		mg/kg		0.005	17-DEC-18
MET-200.2-CCMS	-WT	Soil							
Batch R	4399967								
WG2955145-2 Antimony (Sb)	CRM		WT-CANMET-	<b>TILL1</b> 106.7		%		70-130	17-DEC-18
Arsenic (As)				102.6		%		70-130	17-DEC-18
Barium (Ba)				100.8		%		70-130	17-DEC-18
Beryllium (Be)				104.8		%		70-130	17-DEC-18
				3.0		mg/kg		0-8.2	17-DEC-18
Boron (B)						J J			
Cadmium (Cd)	)			95.2		%		70-130	17-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R4399967								
<b>WG2955145-2 CRM</b> Cobalt (Co)		WT-CANMET	<b>-TILL1</b> 97.4		%		70-130	17-DEC-18
Copper (Cu)			100.4		%		70-130	17-DEC-18
Lead (Pb)			101.8		%		70-130	17-DEC-18
Molybdenum (Mo)			98.2		%		70-130	17-DEC-18
Nickel (Ni)			99.7		%		70-130	17-DEC-18
Selenium (Se)			0.29		mg/kg		0.11-0.51	17-DEC-18
Silver (Ag)			0.23		mg/kg		0.13-0.33	17-DEC-18
Thallium (TI)			0.121		mg/kg		0.077-0.18	17-DEC-18
Uranium (U)			101.0		%		70-130	17-DEC-18
Vanadium (V)			99.5		%		70-130	17-DEC-18
Zinc (Zn)			99.4		%		70-130	17-DEC-18
WG2955145-6 DUP Antimony (Sb)		<b>WG2955145</b> -<0.10	<b>5</b> <0.10	RPD-NA	ug/g	N/A	30	17-DEC-18
Arsenic (As)		1.71	1.65		ug/g	3.2	30	17-DEC-18
Barium (Ba)		26.0	25.9		ug/g	0.3	40	17-DEC-18
Beryllium (Be)		0.15	0.13		ug/g	14	30	17-DEC-18
Boron (B)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	17-DEC-18
Cadmium (Cd)		0.038	0.041		ug/g	8.9	30	17-DEC-18
Chromium (Cr)		8.20	8.15		ug/g	0.7	30	17-DEC-18
Cobalt (Co)		2.97	2.87		ug/g	3.3	30	17-DEC-18
Copper (Cu)		6.33	6.18		ug/g	2.4	30	17-DEC-18
Lead (Pb)		2.98	2.86		ug/g	4.1	40	17-DEC-18
Molybdenum (Mo)		0.38	0.37		ug/g	1.8	40	17-DEC-18
Nickel (Ni)		6.71	6.48		ug/g	3.4	30	17-DEC-18
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	17-DEC-18
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	17-DEC-18
Thallium (TI)		0.062	0.059		ug/g	5.0	30	17-DEC-18
Uranium (U)		0.230	0.232		ug/g	0.8	30	17-DEC-18
Vanadium (V)		17.0	18.0		ug/g	6.0	30	17-DEC-18
Zinc (Zn)		15.8	16.1		ug/g	1.5	30	17-DEC-18
WG2955145-4 LCS Antimony (Sb)			106.2		%		80-120	
Arsenic (As)			100.2		%			17-DEC-18
AISCIIIC (AS)			101.4		/0		80-120	17-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R4399967								
WG2955145-4 LCS					0.4			
Barium (Ba)			102.5		%		80-120	17-DEC-18
Beryllium (Be)			103.1		%		80-120	17-DEC-18
Boron (B)			103.2		%		80-120	17-DEC-18
Cadmium (Cd)			98.2		%		80-120	17-DEC-18
Chromium (Cr)			97.8		%		80-120	17-DEC-18
Cobalt (Co)			94.0		%		80-120	17-DEC-18
Copper (Cu)			94.4		%		80-120	17-DEC-18
Lead (Pb)			100.3		%		80-120	17-DEC-18
Molybdenum (Mo)			100.4		%		80-120	17-DEC-18
Nickel (Ni)			95.9		%		80-120	17-DEC-18
Selenium (Se)			94.8		%		80-120	17-DEC-18
Silver (Ag)			99.2		%		80-120	17-DEC-18
Thallium (TI)			98.4		%		80-120	17-DEC-18
Uranium (U)			99.4		%		80-120	17-DEC-18
Vanadium (V)			100.3		%		80-120	17-DEC-18
Zinc (Zn)			95.9		%		80-120	17-DEC-18
WG2955145-1 MB Antimony (Sb)			<0.10		ma/ka		0.1	47 DEC 40
Arsenic (As)			<0.10		mg/kg mg/kg		0.1	17-DEC-18
Barium (Ba)			<0.10				0.1	17-DEC-18
Beryllium (Be)			<0.10		mg/kg		0.3	17-DEC-18
Boron (B)			<5.0		mg/kg		5	17-DEC-18
Cadmium (Cd)			<0.020		mg/kg		0.02	17-DEC-18
Chromium (Cr)					mg/kg		0.02	17-DEC-18
			<0.50		mg/kg			17-DEC-18
Cobalt (Co) Copper (Cu)			<0.10		mg/kg		0.1 0.5	17-DEC-18
			<0.50		mg/kg			17-DEC-18
Lead (Pb)			<0.50		mg/kg		0.5	17-DEC-18
Molybdenum (Mo)			<0.10		mg/kg		0.1	17-DEC-18
Nickel (Ni)			<0.50		mg/kg		0.5	17-DEC-18
Selenium (Se)			<0.20		mg/kg		0.2	17-DEC-18
Silver (Ag)			<0.10		mg/kg		0.1	17-DEC-18
Thallium (TI)			<0.050		mg/kg		0.05	17-DEC-18
Uranium (U)			<0.050		mg/kg		0.05	17-DEC-18
Vanadium (V)			<0.20		mg/kg		0.2	17-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R4399967 WG2955145-1 MB Zinc (Zn)			<2.0		mg/kg		2	17-DEC-18
MOISTURE-WT	Soil							
Batch R4396792 WG2955165-3 DUP % Moisture		<b>L2210949-8</b> 5.55	5.52		%	0.6	20	18-DEC-18
<b>WG2955165-2 LCS</b> % Moisture			99.3		%		90-110	18-DEC-18
<b>WG2955165-1 MB</b> % Moisture			<0.10		%		0.1	18-DEC-18
PAH-511-WT	Soil							
Batch R4399050								
WG2954671-3 DUP 1-Methylnaphthalene		<b>WG2954671-5</b> < 0.030	<0.030	RPD-NA	ug/g	N/A	40	18-DEC-18
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	18-DEC-18
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Naphthalene		<0.013	<0.013	RPD-NA	ug/g	N/A	40	18-DEC-18
Phenanthrene		<0.046	<0.046	RPD-NA	ug/g	N/A	40	18-DEC-18
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
WG2954671-2 LCS 1-Methylnaphthalene			98.2		%		50-140	18-DEC-18
2-Methylnaphthalene			94.7		%		50-140	18-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	Soil							
Batch R4399050								
WG2954671-2 LCS Acenaphthene			104.0		%		50-140	40 DEC 40
Acenaphthylene			104.0		%		50-140	18-DEC-18
Anthracene			108.0		%			18-DEC-18
Benzo(a)anthracene			109.4		%		50-140 50-140	18-DEC-18
Benzo(a)pyrene			97.2		%		50-140	18-DEC-18
Benzo(b)fluoranthene			97.2		%			18-DEC-18
Benzo(g,h,i)perylene			96.7		%		50-140	18-DEC-18
Benzo(k)fluoranthene			94.5		%		50-140	18-DEC-18
Chrysene			104.5		%		50-140	18-DEC-18
Dibenzo(ah)anthracene			90.8		%		50-140 50-140	18-DEC-18
Fluoranthene			99.9		%		50-140	18-DEC-18
Fluorene			99.9		%		50-140	18-DEC-18
Indeno(1,2,3-cd)pyrene			91.8		%		50-140	18-DEC-18
Naphthalene			96.9		%			18-DEC-18
Phenanthrene			103.4		%		50-140 50-140	18-DEC-18 18-DEC-18
Pyrene			99.4		%		50-140	
WG2954671-1 MB			99.4		70		50-140	18-DEC-18
1-Methylnaphthalene			<0.030		ug/g		0.03	18-DEC-18
2-Methylnaphthalene			<0.030		ug/g		0.03	18-DEC-18
Acenaphthene			<0.050		ug/g		0.05	18-DEC-18
Acenaphthylene			< 0.050		ug/g		0.05	18-DEC-18
Anthracene			< 0.050		ug/g		0.05	18-DEC-18
Benzo(a)anthracene			< 0.050		ug/g		0.05	18-DEC-18
Benzo(a)pyrene			< 0.050		ug/g		0.05	18-DEC-18
Benzo(b)fluoranthene			< 0.050		ug/g		0.05	18-DEC-18
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	18-DEC-18
Benzo(k)fluoranthene			<0.050		ug/g		0.05	18-DEC-18
Chrysene			<0.050		ug/g		0.05	18-DEC-18
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	18-DEC-18
Fluoranthene			<0.050		ug/g		0.05	18-DEC-18
Fluorene			<0.050		ug/g		0.05	18-DEC-18
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	18-DEC-18
Naphthalene			<0.013		ug/g		0.013	18-DEC-18
Phenanthrene			<0.046		ug/g		0.046	18-DEC-18
Naphthalene			<0.050 <0.013		ug/g ug/g		0.05 0.013	18 18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	Soil							
Batch R439909 WG2954671-1 MB Pyrene			<0.050		ug/g		0.05	18-DEC-18
Surrogate: 2-Fluorobi	iphenvl		107.2		%		50-140	18-DEC-18
Surrogate: p-Terpher			110.4		%		50-140	18-DEC-18
WG2954671-4 MS	.,	WG2954671-			,,		30	10 020-10
1-Methylnaphthalene			99.4		%		50-140	18-DEC-18
2-Methylnaphthalene			95.9		%		50-140	18-DEC-18
Acenaphthene			105.8		%		50-140	18-DEC-18
Acenaphthylene			102.1		%		50-140	18-DEC-18
Anthracene			105.4		%		50-140	18-DEC-18
Benzo(a)anthracene			108.3		%		50-140	18-DEC-18
Benzo(a)pyrene			101.2		%		50-140	18-DEC-18
Benzo(b)fluoranthene	e		100.8		%		50-140	18-DEC-18
Benzo(g,h,i)perylene			99.9		%		50-140	18-DEC-18
Benzo(k)fluoranthene	)		99.6		%		50-140	18-DEC-18
Chrysene			108.4		%		50-140	18-DEC-18
Dibenzo(ah)anthrace	ne		97.4		%		50-140	18-DEC-18
Fluoranthene			97.5		%		50-140	18-DEC-18
Fluorene			98.3		%		50-140	18-DEC-18
Indeno(1,2,3-cd)pyre	ne		95.7		%		50-140	18-DEC-18
Naphthalene			98.3		%		50-140	18-DEC-18
Phenanthrene			104.6		%		50-140	18-DEC-18
Pyrene			99.0		%		50-140	18-DEC-18
PH-WT	Soil							
Batch R43970	16							
<b>WG2954789-1 DUI</b> pH	P	<b>L2210947-1</b> 9.93	10.02	J	pH units	0.09	0.3	17-DEC-18
<b>WG2955217-1 LCS</b> pH	5		7.00		pH units		6.9-7.1	17-DEC-18
SAR-R511-WT	Soil							
Batch R44000	88							
<b>WG2955149-4 DUI</b> Calcium (Ca)	P	<b>WG2955149-</b> 3	<b>3</b> 15.6		mg/L	9.1	30	17-DEC-18
Sodium (Na)		93.3	92.9		mg/L	0.4	30	17-DEC-18
Magnesium (Mg)		1.3	1.2		mg/L	12	30	17-DEC-18
		1.0			··· <del>··</del>	12	50	17-00-10



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	Soil							
Batch R4400088								
WG2955149-2 IRM		WT SAR2	402 C		%		70.460	47 DEO 45
Calcium (Ca) Sodium (Na)			103.6 94.7		%		70-130	17-DEC-18
Magnesium (Mg)			94.7 101.7		% %		70-130	17-DEC-18
\$ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			101.7		70		70-130	17-DEC-18
<b>WG2955149-1 MB</b> Calcium (Ca)			<1.0		mg/L		1	17-DEC-18
Sodium (Na)			<1.0		mg/L		1	17-DEC-18
Magnesium (Mg)			<1.0		mg/L		1	17-DEC-18
VOC-511-HS-WT	Soil							
Batch R4399356								
WG2955352-4 DUP		WG2955352-3						
1,1,1,2-Tetrachloroetha	ne	<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
1,1,2,2-Tetrachloroetha	ne	<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
1,1-Dichloroethane		< 0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
1,2-Dichloroethane		< 0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
1,2-Dichloropropane		< 0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
1,3-Dichlorobenzene		< 0.050	< 0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
1,4-Dichlorobenzene		< 0.050	< 0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	18-DEC-18
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	18-DEC-18
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
cis-1,2-Dichloroethylene	)	<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	18-DEC-18
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R43993	56							
WG2955352-4 DUI Dichlorodifluorometha		<b>WG2955352</b> < 0.050	<b>-3</b> <0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	18-DEC-18
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
m+p-Xylenes		<0.030	< 0.030	RPD-NA	ug/g	N/A	40	18-DEC-18
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	18-DEC-18
Methyl Isobutyl Keton	ne	<0.50	<0.50	RPD-NA	ug/g	N/A	40	18-DEC-18
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-DEC-18
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	18-DEC-18
trans-1,2-Dichloroeth	ylene	<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
trans-1,3-Dichloropro	pene	<0.030	< 0.030	RPD-NA	ug/g	N/A	40	18-DEC-18
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	18-DEC-18
Trichlorofluorometha	ne	<0.050	< 0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-DEC-18
WG2955352-2 LCS 1,1,1,2-Tetrachloroet			107.3		%		60-130	40 DEC 40
1,1,2,2-Tetrachloroet			119.0		%		60-130	18-DEC-18
1,1,1-Trichloroethane			108.1		%		60-130	18-DEC-18 18-DEC-18
1,1,2-Trichloroethane			113.5		%		60-130	18-DEC-18
1,1-Dichloroethane	,		106.1		%		60-130	18-DEC-18
1,1-Dichloroethylene			105.8		%		60-130	18-DEC-18
1,2-Dibromoethane			113.3		%		70-130	18-DEC-18
1,2-Dichlorobenzene			111.8		%		70-130	18-DEC-18
1,2-Dichloroethane			120.9		%		60-130	18-DEC-18
1,2-Dichloropropane			113.6		%		70-130	18-DEC-18
1,3-Dichlorobenzene			109.7		%		70-130	18-DEC-18
1,4-Dichlorobenzene			109.3		%		70-130	18-DEC-18
Acetone			110.5		%		60-140	18-DEC-18
Benzene			112.4		%		70-130	18-DEC-18
Bromodichlorometha	ne		117.4		%		50-140	18-DEC-18



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Test Ma	atrix Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT So	oil						
Batch R4399356							
WG2955352-2 LCS		444.0		0/			
Bromoform		114.9		%		70-130	18-DEC-18
Bromomethane		113.2		%		50-140	18-DEC-18
Carbon tetrachloride		109.8		%		70-130	18-DEC-18
Chlorobenzene		109.9		%		70-130	18-DEC-18
Chloroform		113.8		%		70-130	18-DEC-18
cis-1,2-Dichloroethylene		113.3		%		70-130	18-DEC-18
cis-1,3-Dichloropropene		116.8		%		70-130	18-DEC-18
Dibromochloromethane		112.4		%		60-130	18-DEC-18
Dichlorodifluoromethane		73.9		%		50-140	18-DEC-18
Ethylbenzene		98.8		%		70-130	18-DEC-18
n-Hexane		93.3		%		70-130	18-DEC-18
Methylene Chloride		120.0		%		70-130	18-DEC-18
MTBE		106.5		%		70-130	18-DEC-18
m+p-Xylenes		103.1		%		70-130	18-DEC-18
Methyl Ethyl Ketone		101.4		%		60-140	18-DEC-18
Methyl Isobutyl Ketone		91.7		%		60-140	18-DEC-18
o-Xylene		100.1		%		70-130	18-DEC-18
Styrene		102.5		%		70-130	18-DEC-18
Tetrachloroethylene		108.1		%		60-130	18-DEC-18
Toluene		103.7		%		70-130	18-DEC-18
trans-1,2-Dichloroethylene		112.2		%		60-130	18-DEC-18
trans-1,3-Dichloropropene		105.9		%		70-130	18-DEC-18
Trichloroethylene		114.2		%		60-130	18-DEC-18
Trichlorofluoromethane		103.3		%		50-140	18-DEC-18
Vinyl chloride		80.6		%		60-140	18-DEC-18
WG2955352-1 MB							
1,1,1,2-Tetrachloroethane		<0.050		ug/g		0.05	18-DEC-18
1,1,2,2-Tetrachloroethane		<0.050		ug/g		0.05	18-DEC-18
1,1,1-Trichloroethane		<0.050		ug/g		0.05	18-DEC-18
1,1,2-Trichloroethane		<0.050		ug/g		0.05	18-DEC-18
1,1-Dichloroethane		<0.050		ug/g		0.05	18-DEC-18
1,1-Dichloroethylene		<0.050		ug/g		0.05	18-DEC-18
1,2-Dibromoethane		<0.050		ug/g		0.05	18-DEC-18
1,2-Dichlorobenzene		< 0.050		ug/g		0.05	18-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R4399356 WG2955352-1 MB			0.050				0.05	
1,2-Dichloroethane			<0.050		ug/g		0.05	18-DEC-18
1,2-Dichloropropane			<0.050		ug/g		0.05	18-DEC-18
1,3-Dichlorobenzene			<0.050		ug/g		0.05	18-DEC-18
1,4-Dichlorobenzene			<0.050		ug/g		0.05	18-DEC-18
Acetone			<0.50		ug/g		0.5	18-DEC-18
Benzene			<0.0068		ug/g		0.0068	18-DEC-18
Bromodichloromethane			<0.050		ug/g		0.05	18-DEC-18
Bromoform			<0.050		ug/g		0.05	18-DEC-18
Bromomethane			<0.050		ug/g		0.05	18-DEC-18
Carbon tetrachloride			<0.050		ug/g		0.05	18-DEC-18
Chlorobenzene			<0.050		ug/g		0.05	18-DEC-18
Chloroform			<0.050		ug/g		0.05	18-DEC-18
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	18-DEC-18
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	18-DEC-18
Dibromochloromethane			<0.050		ug/g		0.05	18-DEC-18
Dichlorodifluoromethane			<0.050		ug/g		0.05	18-DEC-18
Ethylbenzene			<0.018		ug/g		0.018	18-DEC-18
n-Hexane			<0.050		ug/g		0.05	18-DEC-18
Methylene Chloride			<0.050		ug/g		0.05	18-DEC-18
MTBE			<0.050		ug/g		0.05	18-DEC-18
m+p-Xylenes			< 0.030		ug/g		0.03	18-DEC-18
Methyl Ethyl Ketone			<0.50		ug/g		0.5	18-DEC-18
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	18-DEC-18
o-Xylene			<0.020		ug/g		0.02	18-DEC-18
Styrene			<0.050		ug/g		0.05	18-DEC-18
Tetrachloroethylene			< 0.050		ug/g		0.05	18-DEC-18
Toluene			<0.080		ug/g		0.08	18-DEC-18
trans-1,2-Dichloroethylen	ie		< 0.050		ug/g		0.05	18-DEC-18
trans-1,3-Dichloropropen	е		< 0.030		ug/g		0.03	18-DEC-18
Trichloroethylene			<0.010		ug/g		0.01	18-DEC-18
Trichlorofluoromethane			<0.050		ug/g		0.05	18-DEC-18
Vinyl chloride			<0.020		ug/g		0.02	18-DEC-18
Surrogate: 1,4-Difluorobe	enzene		121.8		%		50-140	18-DEC-18



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R439935	66							
WG2955352-1 MB					04		50.440	
Surrogate: 4-Bromoflu	Jorobenzene		107.6		%		50-140	18-DEC-18
WG2955352-5 MS 1,1,1,2-Tetrachloroeth	nane	L2211036-2	115.8		%		50-140	18-DEC-18
1,1,2,2-Tetrachloroeth	nane		128.7		%		50-140	18-DEC-18
1,1,1-Trichloroethane			120.3		%		50-140	18-DEC-18
1,1,2-Trichloroethane			123.4		%		50-140	18-DEC-18
1,1-Dichloroethane			120.5		%		50-140	18-DEC-18
1,1-Dichloroethylene			113.9		%		50-140	18-DEC-18
1,2-Dibromoethane			124.1		%		50-140	18-DEC-18
1,2-Dichlorobenzene			120.2		%		50-140	18-DEC-18
1,2-Dichloroethane			131.7		%		50-140	18-DEC-18
1,2-Dichloropropane			122.8		%		50-140	18-DEC-18
1,3-Dichlorobenzene			117.7		%		50-140	18-DEC-18
1,4-Dichlorobenzene			117.9		%		50-140	18-DEC-18
Acetone			122.3		%		50-140	18-DEC-18
Benzene			121.6		%		50-140	18-DEC-18
Bromodichloromethar	ne		127.6		%		50-140	18-DEC-18
Bromoform			124.7		%		50-140	18-DEC-18
Bromomethane			119.2		%		50-140	18-DEC-18
Carbon tetrachloride			118.0		%		50-140	18-DEC-18
Chlorobenzene			118.1		%		50-140	18-DEC-18
Chloroform			123.1		%		50-140	18-DEC-18
cis-1,2-Dichloroethyle	ne		121.9		%		50-140	18-DEC-18
cis-1,3-Dichloroprope	ne		120.8		%		50-140	18-DEC-18
Dibromochloromethar	ne		121.7		%		50-140	18-DEC-18
Dichlorodifluorometha	nne		70.4		%		50-140	18-DEC-18
Ethylbenzene			105.6		%		50-140	18-DEC-18
n-Hexane			99.7		%		50-140	18-DEC-18
Methylene Chloride			130.3		%		50-140	18-DEC-18
MTBE			114.1		%		50-140	18-DEC-18
m+p-Xylenes			110.2		%		50-140	18-DEC-18
Methyl Ethyl Ketone			104.3		%		50-140	18-DEC-18
Methyl Isobutyl Keton	е		101.3		%		50-140	18-DEC-18
o-Xylene			107.3		%		50-140	18-DEC-18



Workorder: L2211036 Report Date: 20-DEC-18 Page 14 of 15

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R439935	56							
WG2955352-5 MS		L2211036-2						
Styrene			109.8		%		50-140	18-DEC-18
Tetrachloroethylene			115.9		%		50-140	18-DEC-18
Toluene			111.4		%		50-140	18-DEC-18
trans-1,2-Dichloroethy	ylene		120.9		%		50-140	18-DEC-18
trans-1,3-Dichloropro	pene		109.0		%		50-140	18-DEC-18
Trichloroethylene			122.9		%		50-140	18-DEC-18
Trichlorofluoromethar	ne		110.4		%		50-140	18-DEC-18
Vinyl chloride			86.0		%		50-140	18-DEC-18

Workorder: L2211036 Report Date: 20-DEC-18

Client: McIntosh Perry Engineering Consultants (Ottawa) Page 15 of 15

115 Walgreen Road RR3

Carp ON K0A 1L0

Contact: Bradley Sutherland

### 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.

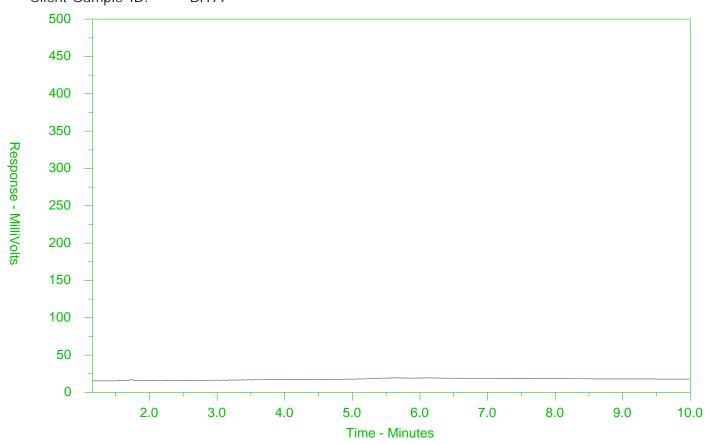
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide 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: L2211036-4 Client Sample ID: BH99



<b>←</b> -F2-	→←	_F3 <b>→</b> F4-	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	ie →	<b>←</b> Mo	tor 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 <a href="https://www.alsglobal.com">www.alsglobal.com</a>.

# ALS Environmental

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

Canada Toll Free: 1 800 668 9878

L2211036-COFC

COC Number: 17 -

Page

of

	www.aisgiopai.com				<u> </u>																
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ALS Sample # (lab use only)	Sample Identification (This description will a			. Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBE	VOC / BTEX	(R511-:NC											SA	USPE
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McIntosh Perry Engineering Consultants

(Ottawa)

ATTN: Bradley Sutherland 115 Walgreen Road RR3

Carp ON K0A 1L0

Date Received: 17-DEC-18

Report Date: 24-DEC-18 09:45 (MT)

Version: FINAL

Client Phone: 613-836-2184

# **Certificate of Analysis**

Lab Work Order #: L2211815

Project P.O. #: NOT SUBMITTED

Job Reference: CP-17-0635

C of C Numbers: Legal Site Desc:

Melanie Moshi Account Manager

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ADDRESS: 190 Colonnade Road, Unit 7, Ottawa, ON K2E 7J5 Canada | Phone: +1 613 225 8279 | Fax: +1 613 225 2801 ALS CANADA LTD Part of the ALS Group An ALS Limited Company



PAGE 2 of 13 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-1 MW-18-2 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:30 Matrix: WATER							
Physical Tests							
Conductivity	0.516		0.0030	mS/cm		19-DEC-18	R4405188
pH	7.95		0.10	pH units		19-DEC-18	R4405188
Anions and Nutrients							
Chloride (CI)	60.7		0.50	mg/L		19-DEC-18	R4406767
Cyanides							
Cyanide, Weak Acid Diss  Dissolved Metals	<2.0		2.0	ug/L		21-DEC-18	R4406810
Dissolved Mercury Filtration Location	FIELD					19-DEC-18	R4402078
Dissolved Metals Filtration Location	FIELD					19-DEC-18	R4401709
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Arsenic (As)-Dissolved	0.49		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Barium (Ba)-Dissolved	129		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Boron (B)-Dissolved	73		10	ug/L	19-DEC-18	19-DEC-18	R4404611
Cadmium (Cd)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Cobalt (Co)-Dissolved	0.21		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Copper (Cu)-Dissolved	<0.20		0.20	ug/L	19-DEC-18	19-DEC-18	R4404611
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4402771
Molybdenum (Mo)-Dissolved	1.80		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Nickel (Ni)-Dissolved	<0.50		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Sodium (Na)-Dissolved	14900		500	ug/L	19-DEC-18	19-DEC-18	R4404611
Thallium (TI)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Uranium (U)-Dissolved	0.369		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Zinc (Zn)-Dissolved	<1.0		1.0	ug/L	19-DEC-18	19-DEC-18	R4404611
Speciated Metals							
Chromium, Hexavalent	<0.50		0.50	ug/L		19-DEC-18	R4403350
Volatile Organic Compounds							
Acetone	<30	OWP	30	ug/L		19-DEC-18	
Benzene	<0.50	OWP	0.50	ug/L		19-DEC-18	
Bromodichloromethane	<2.0	OWP	2.0	ug/L		19-DEC-18	
Bromoform	<5.0	OWP	5.0	ug/L		19-DEC-18	
Bromomethane	<0.50	OWP	0.50	ug/L		19-DEC-18	
Carbon tetrachloride	<0.20	OWP	0.20	ug/L		19-DEC-18	
Chlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Dibromochloromethane	<2.0	OWP	2.0	ug/L		19-DEC-18	
Chloroform	<1.0	OWP	1.0	ug/L		19-DEC-18	1
1,2-Dibromoethane	<0.20	OWP	0.20	ug/L		19-DEC-18	R4402010

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

PAGE 3 of 13 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-1 MW-18-2 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:30 Matrix: WATER							
Volatile Organic Compounds							
1,2-Dichlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,3-Dichlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Dichlorodifluoromethane	<2.0	OWP	2.0	ug/L		19-DEC-18	R4402010
1,1-Dichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,2-Dichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1-Dichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
cis-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
trans-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Methylene Chloride	<5.0	OWP	5.0	ug/L		19-DEC-18	R4402010
1,2-Dichloropropane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
cis-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L		19-DEC-18	R4402010
trans-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L		19-DEC-18	R4402010
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		19-DEC-18	
Ethylbenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
n-Hexane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Methyl Ethyl Ketone	<20	OWP	20	ug/L		19-DEC-18	R4402010
Methyl Isobutyl Ketone	<20	OWP	20	ug/L		19-DEC-18	R4402010
MTBE	<2.0	OWP	2.0	ug/L		19-DEC-18	R4402010
Styrene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,1,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,2,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Tetrachloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Toluene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,1-Trichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,2-Trichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Trichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Trichlorofluoromethane	<5.0	OWP	5.0	ug/L		19-DEC-18	R4402010
Vinyl chloride	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
o-Xylene	<0.30	OWP	0.30	ug/L		19-DEC-18	R4402010
m+p-Xylenes	<0.40	OWP	0.40	ug/L		19-DEC-18	R4402010
Xylenes (Total)	<0.50		0.50	ug/L		19-DEC-18	
Surrogate: 4-Bromofluorobenzene	95.9		70-130	%		19-DEC-18	R4402010
Surrogate: 1,4-Difluorobenzene	98.6		70-130	%		19-DEC-18	R4402010
Hydrocarbons							
F1 (C6-C10)	<25	OWP	25	ug/L		19-DEC-18	R4402010
F1-BTEX	<25		25	ug/L		20-DEC-18	
F2 (C10-C16)	610		100	ug/L	18-DEC-18	19-DEC-18	R4404448
F2-Naphth	610		100	ug/L		20-DEC-18	
F3 (C16-C34)	870		250	ug/L	18-DEC-18	19-DEC-18	R4404448
F3-PAH	870		250	ug/L		20-DEC-18	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2211815 CONTD.... PAGE 4 of 13

Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-1 MW-18-2 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:30 Matrix: WATER							
Hydrocarbons							
F4 (C34-C50)	<250		250	ug/L	18-DEC-18	19-DEC-18	R4404448
Total Hydrocarbons (C6-C50)	1480		370	ug/L		20-DEC-18	
Chrom. to baseline at nC50	YES				18-DEC-18	19-DEC-18	R4404448
Surrogate: 2-Bromobenzotrifluoride	106.8		60-140	%	18-DEC-18	19-DEC-18	R4404448
Surrogate: 3,4-Dichlorotoluene Polycyclic Aromatic Hydrocarbons	75.7		60-140	%		19-DEC-18	R4402010
Acenaphthene	0.182		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Acenaphthylene	0.070		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Anthracene	0.123		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(a)anthracene	0.048		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(a)pyrene	0.039		0.010	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(b)fluoranthene	0.060		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(g,h,i)perylene	0.091		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(k)fluoranthene	<0.020		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Chrysene	0.069		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Fluoranthene	0.251		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Fluorene	0.420		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Indeno(1,2,3-cd)pyrene	0.035		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
1+2-Methylnaphthalenes	2.88		0.028	ug/L		20-DEC-18	
1-Methylnaphthalene	1.65		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
2-Methylnaphthalene	1.22		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Naphthalene	0.187	R	0.050	ug/L	18-DEC-18	20-DEC-18	R4406969
Phenanthrene	1.50		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Pyrene	0.363		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Surrogate: d10-Acenaphthene	112.1		60-140	%	18-DEC-18	20-DEC-18	R4406969
Surrogate: d12-Chrysene	102.5		60-140	%	18-DEC-18	20-DEC-18	R4406969
Surrogate: d8-Naphthalene	101.2		60-140	%	18-DEC-18	20-DEC-18	R4406969
Surrogate: d10-Phenanthrene	121.5		60-140	%	18-DEC-18	20-DEC-18	R4406969
L2211815-2 MW-18-3 Sampled By: JUSTIN C. on 17-DEC-18 @ 13:00 WATER							
Physical Tests							
Conductivity	1.77		0.0030	mS/cm		19-DEC-18	R4405188
рН	7.18		0.10	pH units		19-DEC-18	R4405188
Anions and Nutrients							
Chloride (CI)  Cyanides	376		0.50	mg/L		19-DEC-18	R4406767
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		21-DEC-18	R4406810
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					19-DEC-18	R4402078
Dissolved Metals Filtration Location	FIELD					19-DEC-18	R4401709

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-2 MW-18-3 Sampled By: JUSTIN C. on 17-DEC-18 @ 13:00 Matrix: WATER							
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Arsenic (As)-Dissolved	0.19		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Barium (Ba)-Dissolved	125		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Boron (B)-Dissolved	20		10	ug/L	19-DEC-18	19-DEC-18	R4404611
Cadmium (Cd)-Dissolved	0.026		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Cobalt (Co)-Dissolved	0.75		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Copper (Cu)-Dissolved	0.71		0.20	ug/L	19-DEC-18	19-DEC-18	R4404611
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4402771
Molybdenum (Mo)-Dissolved	0.370		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Nickel (Ni)-Dissolved	1.59		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Selenium (Se)-Dissolved	0.092		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Sodium (Na)-Dissolved	166000	DLHC	500	ug/L	19-DEC-18	19-DEC-18	R4404611
Thallium (TI)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Uranium (U)-Dissolved	1.17		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Vanadium (V)-Dissolved	1.15		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Zinc (Zn)-Dissolved	<1.0		1.0	ug/L	19-DEC-18	19-DEC-18	R4404611
Speciated Metals				,,		40.050.40	
Chromium, Hexavalent Volatile Organic Compounds	<0.50		0.50	ug/L		19-DEC-18	R4403350
Acetone	<30	OWP	30	ug/L		19-DEC-18	R4402010
Benzene	<0.50	OWP	0.50	ug/L		19-DEC-18	
Bromodichloromethane	<2.0	OWP	2.0	ug/L		19-DEC-18	
Bromoform	<5.0	OWP	5.0	ug/L		19-DEC-18	
Bromomethane	<0.50	OWP	0.50	ug/L			R4402010
Carbon tetrachloride	<0.20	OWP	0.20	ug/L		19-DEC-18	
Chlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	
Dibromochloromethane	<2.0	OWP	2.0	ug/L		19-DEC-18	
Chloroform	<1.0	OWP	1.0	ug/L		19-DEC-18	
1,2-Dibromoethane	<0.20	OWP	0.20	ug/L		19-DEC-18	R4402010
1,2-Dichlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	
1,3-Dichlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Dichlorodifluoromethane	<2.0	OWP	2.0	ug/L		19-DEC-18	
1,1-Dichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,2-Dichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1-Dichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
cis-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-2 MW-18-3 Sampled By: JUSTIN C. on 17-DEC-18 @ 13:00 Matrix: WATER							
Volatile Organic Compounds							
trans-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Methylene Chloride	<5.0	OWP	5.0	ug/L		19-DEC-18	R4402010
1,2-Dichloropropane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
cis-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L		19-DEC-18	R4402010
trans-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L		19-DEC-18	R4402010
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		19-DEC-18	
Ethylbenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
n-Hexane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Methyl Ethyl Ketone	<20	OWP	20	ug/L		19-DEC-18	R4402010
Methyl Isobutyl Ketone	<20	OWP	20	ug/L		19-DEC-18	R4402010
MTBE	<2.0	OWP	2.0	ug/L		19-DEC-18	R4402010
Styrene	<0.50	OWP	0.50	ug/L		19-DEC-18	
1,1,1,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	
1,1,2,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Tetrachloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	
Toluene	<0.50	OWP	0.50	ug/L		19-DEC-18	
1,1,1-Trichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,2-Trichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	
Trichloroethylene Trichlorofluoromethane	<0.50	OWP	0.50	ug/L		19-DEC-18	
Vinyl chloride	<5.0 <0.50	OWP	5.0	ug/L		19-DEC-18	R4402010 R4402010
o-Xylene	<0.50	OWP	0.50 0.30	ug/L ug/L		19-DEC-18	
m+p-Xylenes	<0.40	OWP	0.40	ug/L		19-DEC-18	R4402010
Xylenes (Total)	<0.50		0.40	ug/L		19-DEC-18	114402010
Surrogate: 4-Bromofluorobenzene	96.1		70-130	%		19-DEC-18	R4402010
Surrogate: 1,4-Difluorobenzene	98.5		70-130	%		19-DEC-18	R4402010
Hydrocarbons	00.0		70 100	70		10 220 10	114402010
F1 (C6-C10)	<25	OWP	25	ug/L		19-DEC-18	R4402010
F1-BTEX	<25		25	ug/L		21-DEC-18	
F2 (C10-C16)	<100		100	ug/L	18-DEC-18	19-DEC-18	R4404448
F2-Naphth	<100		100	ug/L		21-DEC-18	
F3 (C16-C34)	280		250	ug/L	18-DEC-18	19-DEC-18	R4404448
F3-PAH	280		250	ug/L		21-DEC-18	
F4 (C34-C50)	<250		250	ug/L	18-DEC-18	19-DEC-18	R4404448
Total Hydrocarbons (C6-C50)	<370		370	ug/L		21-DEC-18	
Chrom. to baseline at nC50	YES				18-DEC-18	19-DEC-18	R4404448
Surrogate: 2-Bromobenzotrifluoride	102.3		60-140	%	18-DEC-18	19-DEC-18	R4404448
Surrogate: 3,4-Dichlorotoluene  Polycyclic Aromatic Hydrocarbons	85.7		60-140	%		19-DEC-18	R4402010
Acenaphthene	0.043		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Acenaphthylene	<0.020		0.020	ug/L	18-DEC-18	21-DEC-18	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-2 MW-18-3 Sampled By: JUSTIN C. on 17-DEC-18 @ 13:00 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Anthracene	0.022		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Benzo(a)anthracene	0.023		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Benzo(a)pyrene	0.021		0.010	ug/L	18-DEC-18	21-DEC-18	R4406969
Benzo(b)fluoranthene	0.032		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Benzo(g,h,i)perylene	0.054		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Benzo(k)fluoranthene	<0.020		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Chrysene	0.032		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Fluoranthene	0.089		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Fluorene	0.067		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
1+2-Methylnaphthalenes	0.397		0.028	ug/L		21-DEC-18	
1-Methylnaphthalene	0.215		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
2-Methylnaphthalene	0.183		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Naphthalene	<0.050		0.050	ug/L	18-DEC-18	21-DEC-18	R4406969
Phenanthrene	0.233		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Pyrene	0.137		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Surrogate: d10-Acenaphthene	105.6		60-140	%	18-DEC-18	21-DEC-18	R4406969
Surrogate: d12-Chrysene	109.8		60-140	%	18-DEC-18	21-DEC-18	R4406969
Surrogate: d8-Naphthalene	103.4		60-140	%	18-DEC-18	21-DEC-18	R4406969
Surrogate: d10-Phenanthrene	112.0		60-140	%	18-DEC-18	21-DEC-18	R4406969
L2211815-3 MW-18-1 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:40 Matrix: WATER							
Physical Tests							
Conductivity	2.34		0.0030	mS/cm		19-DEC-18	R4405188
рН	7.22		0.10	pH units		19-DEC-18	R4405188
Anions and Nutrients							
Chloride (CI)	566		0.50	mg/L		19-DEC-18	R4406767
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		21-DEC-18	R4406810
Dissolved Metals  Dissolved Mercury Filtration Location	בובו ה					10 DEC 10	D4400070
Dissolved Metals Filtration Location	FIELD FIELD					19-DEC-18 19-DEC-18	R4402078 R4401709
Antimony (Sb)-Dissolved	0.24		0.10	ua/l	19-DEC-18	19-DEC-18	
Aritimony (Sb)-Dissolved  Arsenic (As)-Dissolved			0.10	ug/L	19-DEC-18	19-DEC-18	
Barium (Ba)-Dissolved	0.14 339		0.10	ug/L ug/L	19-DEC-18	19-DEC-18	R4404611 R4404611
Beryllium (Be)-Dissolved	<0.10				19-DEC-18	19-DEC-18	R4404611
Boron (B)-Dissolved	<0.10 17		0.10 10	ug/L	19-DEC-18	19-DEC-18	
Cadmium (Cd)-Dissolved				ug/L	19-DEC-18	19-DEC-18	R4404611 R4404611
Chromium (Cr)-Dissolved	0.023		0.010	ug/L			
Cobalt (Co)-Dissolved	<0.50		0.50	ug/L	19-DEC-18 19-DEC-18	19-DEC-18 19-DEC-18	R4404611
Cobait (CO) Dissolved	<0.10		0.10	ug/L	19-DEC-10	19-00-10	R4404611

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-3 MW-18-1 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:40 Matrix: WATER							
Dissolved Metals							
Copper (Cu)-Dissolved	1.01		0.20	ug/L	19-DEC-18	19-DEC-18	R4404611
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4402771
Molybdenum (Mo)-Dissolved	0.364		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Nickel (Ni)-Dissolved	0.91		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Selenium (Se)-Dissolved	0.363		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Sodium (Na)-Dissolved	182000	DLHC	500	ug/L	19-DEC-18	19-DEC-18	R4404611
Thallium (TI)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Uranium (U)-Dissolved	1.24		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Zinc (Zn)-Dissolved	4.9		1.0	ug/L	19-DEC-18	19-DEC-18	R4404611
Speciated Metals							
Chromium, Hexavalent	<0.50		0.50	ug/L		19-DEC-18	R4403350
Volatile Organic Compounds							
Acetone	<30		30	ug/L		19-DEC-18	R4402010
Benzene	<0.50		0.50	ug/L		19-DEC-18	R4402010
Bromodichloromethane	<2.0		2.0	ug/L		19-DEC-18	R4402010
Bromoform	<5.0		5.0	ug/L		19-DEC-18	R4402010
Bromomethane	<0.50		0.50	ug/L		19-DEC-18	R4402010
Carbon tetrachloride	<0.20		0.20	ug/L		19-DEC-18	R4402010
Chlorobenzene	<0.50		0.50	ug/L		19-DEC-18	R4402010
Dibromochloromethane	<2.0		2.0	ug/L		19-DEC-18	R4402010
Chloroform	<1.0		1.0	ug/L		19-DEC-18	R4402010
1,2-Dibromoethane	<0.20		0.20	ug/L		19-DEC-18	R4402010
1,2-Dichlorobenzene	<0.50		0.50	ug/L		19-DEC-18	R4402010
1,3-Dichlorobenzene	<0.50		0.50	ug/L		19-DEC-18	R4402010
1,4-Dichlorobenzene	<0.50		0.50	ug/L		19-DEC-18	R4402010
Dichlorodifluoromethane	<2.0		2.0	ug/L		19-DEC-18	R4402010
1,1-Dichloroethane	<0.50		0.50	ug/L		19-DEC-18	R4402010
1,2-Dichloroethane	<0.50		0.50	ug/L		19-DEC-18	R4402010
1,1-Dichloroethylene	<0.50		0.50	ug/L		19-DEC-18	R4402010
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		19-DEC-18	R4402010
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		19-DEC-18	R4402010
Methylene Chloride	<5.0		5.0	ug/L		19-DEC-18	R4402010
1,2-Dichloropropane	<0.50		0.50	ug/L		19-DEC-18	R4402010
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		19-DEC-18	R4402010
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		19-DEC-18	R4402010
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		19-DEC-18	
Ethylbenzene	<0.50		0.50	ug/L		19-DEC-18	R4402010
	<0.50		0.50	ug/L		19-DEC-18	R4402010

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-3 MW-18-1 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:40 Matrix: WATER							
Volatile Organic Compounds							
Methyl Ethyl Ketone	<20		20	ug/L		19-DEC-18	R4402010
Methyl Isobutyl Ketone	<20		20	ug/L		19-DEC-18	R4402010
MTBE	<2.0		2.0	ug/L		19-DEC-18	R4402010
Styrene	<0.50		0.50	ug/L		19-DEC-18	R4402010
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		19-DEC-18	R4402010
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		19-DEC-18	R4402010
Tetrachloroethylene	<0.50		0.50	ug/L		19-DEC-18	R4402010
Toluene	<0.50		0.50	ug/L		19-DEC-18	R4402010
1,1,1-Trichloroethane	<0.50		0.50	ug/L		19-DEC-18	R4402010
1,1,2-Trichloroethane	<0.50		0.50	ug/L		19-DEC-18	R4402010
Trichloroethylene	<0.50		0.50	ug/L		19-DEC-18	R4402010
Trichlorofluoromethane	<5.0		5.0	ug/L		19-DEC-18	R4402010
Vinyl chloride	<0.50		0.50	ug/L		19-DEC-18	R4402010
o-Xylene	<0.30		0.30	ug/L		19-DEC-18	R4402010
m+p-Xylenes	<0.40		0.40	ug/L		19-DEC-18	R4402010
Xylenes (Total)	<0.50		0.50	ug/L		19-DEC-18	
Surrogate: 4-Bromofluorobenzene	96.7		70-130	%		19-DEC-18	R4402010
Surrogate: 1,4-Difluorobenzene	97.8		70-130	%		19-DEC-18	R4402010
Hydrocarbons				,,			
F1 (C6-C10)	<25		25	ug/L		19-DEC-18	R4402010
F1-BTEX	<25		25	ug/L	40 DEO 40	20-DEC-18	D 4407474
F2 (C10-C16)	270		100	ug/L	19-DEC-18	20-DEC-18	R440/1/1
F2-Naphth F3 (C16-C34)	270 460		100	ug/L	19-DEC-18	20-DEC-18 20-DEC-18	D 4407474
F3-PAH			250	ug/L	19-DEC-16	20-DEC-18	K440/1/1
F4 (C34-C50)	450 370		250 250	ug/L ug/L	19-DEC-18	20-DEC-18	D4407171
Total Hydrocarbons (C6-C50)	1090		370	ug/L	19-020-10	20-DEC-18	K4407171
Chrom, to baseline at nC50	YES		370	ug/L	19-DEC-18	20-DEC-18	R4407171
Surrogate: 2-Bromobenzotrifluoride	100.3		60-140	%	19-DEC-18	20-DEC-18	
Surrogate: 3,4-Dichlorotoluene	87.3		60-140	%	10 DEG 10	19-DEC-18	
Polycyclic Aromatic Hydrocarbons	07.0		00 140	70		10 020 10	114402010
Acenaphthene	0.117	R	0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Acenaphthylene	0.054		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Anthracene	0.099		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(a)anthracene	0.216		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(a)pyrene	0.196		0.010	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(b)fluoranthene	0.280		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(g,h,i)perylene	0.186		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(k)fluoranthene	0.089		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Chrysene	0.185		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
	0.039		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-3 MW-18-1 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:40 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Fluoranthene	0.376		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Fluorene	0.164		0.020	ug/L	18-DEC-18	20-DEC-18	
Indeno(1,2,3-cd)pyrene	0.185		0.020	ug/L	18-DEC-18	20-DEC-18	1
1+2-Methylnaphthalenes	3.10		0.028	ug/L		20-DEC-18	
1-Methylnaphthalene	1.68		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
2-Methylnaphthalene	1.42		0.020	ug/L	18-DEC-18	20-DEC-18	
Naphthalene	0.804		0.050	ug/L	18-DEC-18	20-DEC-18	
Phenanthrene	0.483		0.020	ug/L	18-DEC-18	20-DEC-18	
Pyrene	0.435		0.020	ug/L	18-DEC-18	20-DEC-18	
Surrogate: d10-Acenaphthene	111.2		60-140	%	18-DEC-18	20-DEC-18	
Surrogate: d12-Chrysene	103.4		60-140	%	18-DEC-18	20-DEC-18	
Surrogate: d8-Naphthalene	99.8		60-140	%	18-DEC-18	20-DEC-18	
Surrogate: d10-Phenanthrene	117.2		60-140	%	18-DEC-18	20-DEC-18	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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### **Reference Information**

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2211815-1, -2, -3
Matrix Spike	Boron (B)-Dissolved	MS-B	L2211815-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2211815-1, -2, -3

### Sample Parameter Qualifier key listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
OWP	Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment.
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**				
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 EPA 7199

This analysis is carried out using procect@44)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).

EC-R511-WT Water Conductivity-O.Reg 153/04 (July APHA 2510 B Water samples can be measured direct (2011) mmersing 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 CCME CWS-PHC, Pub #1310, Dec 2001-L

Parameters

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).

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Reference Information

F2-F4-511-WT 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 EPA 1631E (mod)

(ug/L)

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 EPA 200.8

(ug/L)

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

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 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

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 SW846 8260

(July 2011)

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).

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

Concentrations

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:** 

CP-17-0635 L2211815 CONTD....

**Reference Information** 

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### **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.



Workorder: L2211815 Report Date: 24-DEC-18 Page 1 of 13

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT	Water							
Batch R4406767								
<b>WG2957443-20 DUP</b> Chloride (Cl)		<b>WG2957443-1</b> 8	<b>8</b> 60.6		mg/L	1.1	20	19-DEC-18
<b>WG2957443-17 LCS</b> Chloride (CI)			101.7		%		90-110	19-DEC-18
<b>WG2957443-16 MB</b> Chloride (Cl)			<0.50		mg/L		0.5	19-DEC-18
<b>WG2957443-19 MS</b> Chloride (Cl)		WG2957443-1	<b>8</b> 96.7		%		75-125	19-DEC-18
CN-WAD-R511-WT	Water							
Batch R4406810								
<b>WG2957270-3 DUP</b> Cyanide, Weak Acid Dis	s	<b>L2211815-1</b> <2.0	<2.0	RPD-NA	ug/L	N/A	20	21-DEC-18
<b>WG2957270-2 LCS</b> Cyanide, Weak Acid Dis	s		106.9		%		80-120	21-DEC-18
<b>WG2957270-1 MB</b> Cyanide, Weak Acid Dis	s		<2.0		ug/L		2	21-DEC-18
<b>WG2957270-4 MS</b> Cyanide, Weak Acid Dis	s	L2211815-1	80.0		%		75-125	21-DEC-18
CR-CR6-IC-R511-WT	Water							
Batch R4403350								
WG2957306-4 DUP Chromium, Hexavalent		<b>WG2957306-3</b> 18.7	18.3		ug/L	1.9	20	19-DEC-18
WG2957306-2 LCS Chromium, Hexavalent			94.4		%		80-120	19-DEC-18
WG2957306-1 MB Chromium, Hexavalent			<0.50		ug/L		0.5	19-DEC-18
WG2957306-5 MS Chromium, Hexavalent		WG2957306-3	91.3		%		70-130	19-DEC-18
EC-R511-WT	Water							
Batch R4405188								
WG2956997-8 DUP Conductivity		<b>WG2956997-7</b> 1.77	1.76		mS/cm	0.6	10	19-DEC-18
WG2956997-6 LCS Conductivity			97.0		%		90-110	19-DEC-18
WG2956997-5 MB Conductivity			<0.0030		mS/cm		0.003	19-DEC-18
F1-HS-511-WT	Water							



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Contact: Bradley Sutherland

HG-D-UG/L-CVAA-WT

Water

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT		Water							
Batch R4 WG2956099-4 F1 (C6-C10)	1402010 DUP		<b>WG2956099-3</b> <25	<25	RPD-NA	ug/L	N/A	30	19-DEC-18
<b>WG2956099-1</b> F1 (C6-C10)	LCS			115.8		%		80-120	19-DEC-18
<b>WG2956099-2</b> F1 (C6-C10)	MB			<25		ug/L		25	19-DEC-18
Surrogate: 3,4-	Dichloroto	oluene		94.0		%		60-140	19-DEC-18
<b>WG2956099-5</b> F1 (C6-C10)	MS		WG2956099-3	91.2		%		60-140	19-DEC-18
F2-F4-511-WT		Water							
Batch R4 WG2956871-2	1404448 LCS								
F2 (C10-C16)				111.5		%		70-130	19-DEC-18
F3 (C16-C34)				118.2		%		70-130	19-DEC-18
F4 (C34-C50)				120.1		%		70-130	19-DEC-18
<b>WG2956871-3</b> F2 (C10-C16)	LCSD		<b>WG2956871-2</b> 111.5	111.8		%	0.2	50	19-DEC-18
F3 (C16-C34)			118.2	114.3		%	3.4	50	19-DEC-18
F4 (C34-C50)			120.1	115.6		%	3.9	50	19-DEC-18
<b>WG2956871-1</b> F2 (C10-C16)	МВ			<100		ug/L		100	19-DEC-18
F3 (C16-C34)				<250		ug/L		250	19-DEC-18
F4 (C34-C50)				<250		ug/L		250	19-DEC-18
Surrogate: 2-Bi	romobenz	otrifluoride		103.6		%		60-140	19-DEC-18
Batch R4	1407171								
<b>WG2957781-2</b> F2 (C10-C16)	LCS			93.3		%		70-130	20-DEC-18
F3 (C16-C34)				95.2		%		70-130	20-DEC-18
F4 (C34-C50)				99.1		%		70-130	20-DEC-18
WG2957781-1	МВ								
F2 (C10-C16)				<100		ug/L		100	20-DEC-18
F3 (C16-C34)				<250		ug/L		250	20-DEC-18
F4 (C34-C50)				<250		ug/L		250	20-DEC-18
Surrogate: 2-Bi	omobenz	zotrifluoride		99.0		%		60-140	20-DEC-18



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-UG/L-CVAA-WT	Water							
Batch R4402771								
WG2957104-3 DUP		L2211936-1	0.040					
Mercury (Hg)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	19-DEC-18
WG2957104-2 LCS Mercury (Hg)-Dissolved			101.0		%		80-120	19-DEC-18
WG2957104-1 MB							00 120	13-020-10
Mercury (Hg)-Dissolved			<0.010		ug/L		0.01	19-DEC-18
WG2957104-4 MS		L2211936-2						
Mercury (Hg)-Dissolved			91.1		%		70-130	19-DEC-18
MET-D-UG/L-MS-WT	Water							
Batch R4404611								
WG2956908-4 DUP Antimony (Sb)-Dissolved	I	<b>WG2956908-3</b> <1.0	<1.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Arsenic (As)-Dissolved	•	<1.0	<1.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Barium (Ba)-Dissolved		147	149	KI D IVA	ug/L	1.8	20	19-DEC-18
Beryllium (Be)-Dissolved	1	<1.0	<1.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Boron (B)-Dissolved		140	140	11. 2 1	ug/L	0.5	20	19-DEC-18
Cadmium (Cd)-Dissolved	d	<0.050	< 0.050	RPD-NA	ug/L	N/A	20	19-DEC-18
Chromium (Cr)-Dissolve		<5.0	<5.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Cobalt (Co)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Copper (Cu)-Dissolved		2.8	2.3	J	ug/L	0.6	4	19-DEC-18
Lead (Pb)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	19-DEC-18
Molybdenum (Mo)-Disso	lved	2.00	2.12		ug/L	6.2	20	19-DEC-18
Nickel (Ni)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Selenium (Se)-Dissolved	i	<0.50	<0.50	RPD-NA	ug/L	N/A	20	19-DEC-18
Silver (Ag)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	19-DEC-18
Sodium (Na)-Dissolved		754000	756000		ug/L	0.2	20	19-DEC-18
Thallium (TI)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	19-DEC-18
Uranium (U)-Dissolved		1.83	1.82		ug/L	0.3	20	19-DEC-18
Vanadium (V)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Zinc (Zn)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	19-DEC-18
WG2956908-2 LCS								
Antimony (Sb)-Dissolved	I		101.6		%		80-120	19-DEC-18
Arsenic (As)-Dissolved			102.1		%		80-120	19-DEC-18
Barium (Ba)-Dissolved			103.1		%		80-120	19-DEC-18
Beryllium (Be)-Dissolved			95.8		%		80-120	19-DEC-18



Workorder: L2211815 Report Date: 24-DEC-18 Page 4 of 13

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-W1	Γ Water							
Batch R44	04611							
<b>WG2956908-2</b> Boron (B)-Dissolv	LCS /ed		98.5		%		80-120	19-DEC-18
Cadmium (Cd)-D			101.3		%		80-120	19-DEC-18
Chromium (Cr)-D			98.5		%		80-120	19-DEC-18
Cobalt (Co)-Disso			97.6		%		80-120	19-DEC-18
Copper (Cu)-Diss			96.9		%		80-120	19-DEC-18
Lead (Pb)-Dissol			99.8		%		80-120	19-DEC-18
Molybdenum (Mo	)-Dissolved		101.9		%		80-120	19-DEC-18
Nickel (Ni)-Dissol	lved		97.8		%		80-120	19-DEC-18
Selenium (Se)-Di	ssolved		101.0		%		80-120	19-DEC-18
Silver (Ag)-Dissol	lved		102.1		%		80-120	19-DEC-18
Sodium (Na)-Diss	solved		100.3		%		80-120	19-DEC-18
Thallium (TI)-Diss	solved		99.1		%		80-120	19-DEC-18
Uranium (U)-Diss	solved		98.2		%		80-120	19-DEC-18
Vanadium (V)-Dis	ssolved		101.0		%		80-120	19-DEC-18
Zinc (Zn)-Dissolv	ed		97.8		%		80-120	19-DEC-18
WG2956908-1	МВ							
Antimony (Sb)-Di			<0.10		ug/L		0.1	19-DEC-18
Arsenic (As)-Diss			<0.10		ug/L		0.1	19-DEC-18
Barium (Ba)-Diss			<0.10		ug/L		0.1	19-DEC-18
Beryllium (Be)-Di			<0.10		ug/L		0.1	19-DEC-18
Boron (B)-Dissolv			<10		ug/L		10	19-DEC-18
Cadmium (Cd)-D			<0.0050		ug/L		0.005	19-DEC-18
Chromium (Cr)-D			<0.50		ug/L		0.5	19-DEC-18
Cobalt (Co)-Disso			<0.10		ug/L		0.1	19-DEC-18
Copper (Cu)-Diss			<0.20		ug/L		0.2	19-DEC-18
Lead (Pb)-Dissol			<0.050		ug/L		0.05	19-DEC-18
Molybdenum (Mo	•		<0.050		ug/L		0.05	19-DEC-18
Nickel (Ni)-Dissol			<0.50		ug/L		0.5	19-DEC-18
Selenium (Se)-Di			<0.050		ug/L		0.05	19-DEC-18
Silver (Ag)-Disso			<0.050		ug/L		0.05	19-DEC-18
Sodium (Na)-Diss			<50		ug/L		50	19-DEC-18
Thallium (TI)-Diss			<0.010		ug/L		0.01	19-DEC-18
Uranium (U)-Diss			<0.010		ug/L		0.01	19-DEC-18
Vanadium (V)-Dis	ssolved		<0.50		ug/L		0.5	19-DEC-18



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	Water							
Batch R440461	1							
WG2956908-1 MB			4.0		//		4	
Zinc (Zn)-Dissolved			<1.0		ug/L		1	19-DEC-18
WG2956908-5 MS Antimony (Sb)-Dissolv	red	WG2956908-6	97.5		%		70-130	19-DEC-18
Arsenic (As)-Dissolved	d		101.3		%		70-130	19-DEC-18
Barium (Ba)-Dissolved	t		N/A	MS-B	%		-	19-DEC-18
Beryllium (Be)-Dissolv	ed		97.9		%		70-130	19-DEC-18
Boron (B)-Dissolved			N/A	MS-B	%		-	19-DEC-18
Cadmium (Cd)-Dissol	ved		95.7		%		70-130	19-DEC-18
Chromium (Cr)-Dissol	ved		97.7		%		70-130	19-DEC-18
Cobalt (Co)-Dissolved			93.9		%		70-130	19-DEC-18
Copper (Cu)-Dissolve	d		89.3		%		70-130	19-DEC-18
Lead (Pb)-Dissolved			93.2		%		70-130	19-DEC-18
Molybdenum (Mo)-Dis	solved		99.3		%		70-130	19-DEC-18
Nickel (Ni)-Dissolved			94.4		%		70-130	19-DEC-18
Selenium (Se)-Dissolv	red .		90.3		%		70-130	19-DEC-18
Silver (Ag)-Dissolved			77.7		%		70-130	19-DEC-18
Sodium (Na)-Dissolve	d		N/A	MS-B	%		-	19-DEC-18
Thallium (TI)-Dissolve	d		93.8		%		70-130	19-DEC-18
Uranium (U)-Dissolved	d		99.9		%		70-130	19-DEC-18
Vanadium (V)-Dissolv	ed		102.5		%		70-130	19-DEC-18
Zinc (Zn)-Dissolved			89.4		%		70-130	19-DEC-18
PAH-511-WT	Water							
Batch R440696								
WG2956871-2 LCS 1-Methylnaphthalene			91.4		%		50-140	20 DEC 40
2-Methylnaphthalene			90.9		%		50-140	20-DEC-18 20-DEC-18
Acenaphthene			95.2		%		50-140	20-DEC-18 20-DEC-18
Acenaphthylene			98.9		%		50-140	20-DEC-18 20-DEC-18
Anthracene			97.7		%		50-140	20-DEC-18
Benzo(a)anthracene			106.3		%		50-140	20-DEC-18
Benzo(a)pyrene			89.4		%		50-140	20-DEC-18 20-DEC-18
Benzo(b)fluoranthene			87.6		%		50-140	20-DEC-18 20-DEC-18
Benzo(g,h,i)perylene			97.9		%		50-140	20-DEC-18 20-DEC-18
Benzo(k)fluoranthene			88.3		%		50-140	
DC1120(R)11001a11111E11E			50.5		70		30-140	20-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	Water							
Batch R4406969								
WG2956871-2 LCS Chrysene			94.6		%		50-140	20-DEC-18
Dibenzo(ah)anthracene			98.8		%		50-140	20-DEC-18
Fluoranthene			103.4		%		50-140	20-DEC-18
Fluorene			99.3		%		50-140	20-DEC-18
Indeno(1,2,3-cd)pyrene			110.2		%		50-140	20-DEC-18
Naphthalene			90.0		%		50-140	20-DEC-18
Phenanthrene			102.2		%		50-140	20-DEC-18
Pyrene			101.3		%		50-140	20-DEC-18
WG2956871-3 LCSD 1-Methylnaphthalene		<b>WG2956871-</b> 91.4	• <b>2</b> 98.5		%	7.4	50	20-DEC-18
2-Methylnaphthalene		90.9	96.4		%	5.9	50	20-DEC-18
Acenaphthene		95.2	100.9		%	5.8	50	20-DEC-18
Acenaphthylene		98.9	103.8		%	4.9	50	20-DEC-18
Anthracene		97.7	98.6		%	0.9	50	20-DEC-18
Benzo(a)anthracene		106.3	112.0		%	5.2	50	20-DEC-18
Benzo(a)pyrene		89.4	99.0		%	10	50	20-DEC-18
Benzo(b)fluoranthene		87.6	93.4		%	6.5	50	20-DEC-18
Benzo(g,h,i)perylene		97.9	104.8		%	6.8	50	20-DEC-18
Benzo(k)fluoranthene		88.3	95.6		%	7.9	50	20-DEC-18
Chrysene		94.6	99.8		%	5.3	50	20-DEC-18
Dibenzo(ah)anthracene		98.8	104.8		%	5.9	50	20-DEC-18
Fluoranthene		103.4	108.8		%	5.9	50	20-DEC-18
Fluorene		99.3	104.4		%	5.0	50	20-DEC-18
Indeno(1,2,3-cd)pyrene		110.2	116.2		%	5.2	50	20-DEC-18
Naphthalene		90.0	95.5		%	6.0	50	20-DEC-18
Phenanthrene		102.2	106.9		%	4.5	50	20-DEC-18
Pyrene		101.3	106.2		%	4.8	50	20-DEC-18
WG2956871-1 MB			.00.2		,,	4.0	00	20 020 10
1-Methylnaphthalene			<0.020		ug/L		0.02	20-DEC-18
2-Methylnaphthalene			<0.020		ug/L		0.02	20-DEC-18
Acenaphthene			<0.020		ug/L		0.02	20-DEC-18
Acenaphthylene			<0.020		ug/L		0.02	20-DEC-18
Anthracene			<0.020		ug/L		0.02	20-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	Water							
Batch R4406969								
WG2956871-1 MB			.0.000		//		0.00	
Benzo(a)anthracene			<0.020		ug/L		0.02	20-DEC-18
Benzo(a)pyrene			<0.010		ug/L		0.01	20-DEC-18
Benzo(b)fluoranthene			<0.020		ug/L		0.02	20-DEC-18
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	20-DEC-18
Benzo(k)fluoranthene			<0.020		ug/L		0.02	20-DEC-18
Chrysene			<0.020		ug/L		0.02	20-DEC-18
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	20-DEC-18
Fluoranthene			<0.020		ug/L		0.02	20-DEC-18
Fluorene			<0.020		ug/L		0.02	20-DEC-18
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	20-DEC-18
Naphthalene			<0.050		ug/L		0.05	20-DEC-18
Phenanthrene			<0.020		ug/L		0.02	20-DEC-18
Pyrene			<0.020		ug/L		0.02	20-DEC-18
Surrogate: d8-Naphthaler			104.8		%		60-140	20-DEC-18
Surrogate: d10-Phenanth			113.6		%		60-140	20-DEC-18
Surrogate: d12-Chrysene			107.8		%		60-140	20-DEC-18
Surrogate: d10-Acenapht	hene		108.4		%		60-140	20-DEC-18
PH-WT	Water							
Batch R4405188								
<b>WG2956997-8 DUP</b> pH		<b>WG2956997</b> 7.18	<b>'-7</b> 7.18	J	pH units	0.00	0.2	19-DEC-18
·		7.10	7.10	J	pri units	0.00	0.2	19-DEC-16
<b>WG2956997-6 LCS</b> pH			7.00		pH units		6.9-7.1	19-DEC-18
VOC-511-HS-WT	Water							
Batch R4402010								
WG2956099-4 DUP		WG2956099			_			
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,1,2,2-Tetrachloroethane	e	<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	19-DEC-18
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R4402010								
WG2956099-4 DUP		WG2956099-			/1			
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	19-DEC-18
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-DEC-18
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	19-DEC-18
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	19-DEC-18
Chlorobenzene		<0.50	< 0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	19-DEC-18
cis-1,2-Dichloroethylene		3.17	3.10		ug/L	2.2	30	19-DEC-18
cis-1,3-Dichloropropene		<0.30	< 0.30	RPD-NA	ug/L	N/A	30	19-DEC-18
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-DEC-18
Dichlorodifluoromethane	;	<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-DEC-18
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	19-DEC-18
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	19-DEC-18
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	19-DEC-18
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	19-DEC-18
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-DEC-18
o-Xylene		<0.30	< 0.30	RPD-NA	ug/L	N/A	30	19-DEC-18
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
trans-1,2-Dichloroethylei	ne	<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
trans-1,3-Dichloroproper	ne	<0.30	<0.30	RPD-NA	ug/L	N/A	30	19-DEC-18
Trichloroethylene		5.85	5.85		ug/L	0.0	30	19-DEC-18
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	19-DEC-18
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
WG2956099-1 LCS								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R44020	010							
WG2956099-1 LC					0.4			
1,1,1,2-Tetrachloroe			105.7		%		70-130	19-DEC-18
1,1,2,2-Tetrachloroe			114.8		%		70-130	19-DEC-18
1,1,1-Trichloroethan			105.3		%		70-130	19-DEC-18
1,1,2-Trichloroethan	e		109.9		%		70-130	19-DEC-18
1,1-Dichloroethane			110.4		%		70-130	19-DEC-18
1,1-Dichloroethylene	9		105.5		%		70-130	19-DEC-18
1,2-Dibromoethane			109.4		%		70-130	19-DEC-18
1,2-Dichlorobenzene	Э		110.6		%		70-130	19-DEC-18
1,2-Dichloroethane			111.0		%		70-130	19-DEC-18
1,2-Dichloropropane	<b>)</b>		109.2		%		70-130	19-DEC-18
1,3-Dichlorobenzene	e		109.0		%		70-130	19-DEC-18
1,4-Dichlorobenzene	e		109.8		%		70-130	19-DEC-18
Acetone			124.1		%		60-140	19-DEC-18
Benzene			113.3		%		70-130	19-DEC-18
Bromodichlorometha	ane		109.6		%		70-130	19-DEC-18
Bromoform			106.1		%		70-130	19-DEC-18
Bromomethane			102.2		%		60-140	19-DEC-18
Carbon tetrachloride	)		105.9		%		70-130	19-DEC-18
Chlorobenzene			107.4		%		70-130	19-DEC-18
Chloroform			108.4		%		70-130	19-DEC-18
cis-1,2-Dichloroethy	lene		109.6		%		70-130	19-DEC-18
cis-1,3-Dichloroprop	ene		109.1		%		70-130	19-DEC-18
Dibromochlorometha	ane		107.2		%		70-130	19-DEC-18
Dichlorodifluorometh	nane		128.2		%		50-140	19-DEC-18
Ethylbenzene			97.6		%		70-130	19-DEC-18
n-Hexane			100.9		%		70-130	19-DEC-18
m+p-Xylenes			100.6		%		70-130	19-DEC-18
Methyl Ethyl Ketone			131.2		%		60-140	19-DEC-18
Methyl Isobutyl Keto	ne		134.5		%		60-140	19-DEC-18
Methylene Chloride			116.2		%		70-130	19-DEC-18
MTBE			110.8		%		70-130	19-DEC-18
o-Xylene			97.5		%		70-130	19-DEC-18
Styrene			100.3		%		70-130	19-DEC-18



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VOC-511-HS-WT         Water           Batch R4402010           WG2956099-1 LCS         Tetrachloroethylene         105.4         %           Toluene         101.0         %           trans-1,2-Dichloroethylene         108.0         %           Trichloroethylene         111.1         %           Trichlorofluoromethane         107.5         %           Vinyl chloride         83.0         %           WG2956099-2         MB           1,1,2-Tetrachloroethane         <0.50         ug/L           1,1,1-Trichloroethane         <0.50         ug/L           1,1,2-Trichloroethane         <0.50         ug/L           1,1-Dichloroethane         <0.50         ug/L           1,1-Dichloroethane         <0.50         ug/L	70-130	
WG2956099-1 LCS         Tetrachloroethylene       105.4       %         Toluene       101.0       %         trans-1,2-Dichloroethylene       108.0       %         trans-1,3-Dichloropropene       103.0       %         Trichloroethylene       111.1       %         Trichlorofluoromethane       107.5       %         Vinyl chloride       83.0       %         WG2956099-2 MB       1,1,2-Tetrachloroethane       <0.50		
Tetrachloroethylene       105.4       %         Toluene       101.0       %         trans-1,2-Dichloroethylene       108.0       %         trans-1,3-Dichloropropene       103.0       %         Trichloroethylene       111.1       %         Trichlorofluoromethane       107.5       %         Vinyl chloride       83.0       %         WG2956099-2       MB       **         1,1,2-Tetrachloroethane       <0.50		
Toluene       101.0       %         trans-1,2-Dichloroethylene       108.0       %         trans-1,3-Dichloropropene       103.0       %         Trichloroethylene       111.1       %         Trichlorofluoromethane       107.5       %         Vinyl chloride       83.0       %         WG2956099-2       MB       Ug/L         1,1,2-Tetrachloroethane       <0.50		10 050 10
trans-1,2-Dichloroethylene       108.0       %         trans-1,3-Dichloropropene       103.0       %         Trichloroethylene       111.1       %         Trichlorofluoromethane       107.5       %         Vinyl chloride       83.0       %         WG2956099-2       MB       40.50       ug/L         1,1,2-Tetrachloroethane       <0.50		19-DEC-18
trans-1,3-Dichloropropene       103.0       %         Trichloroethylene       111.1       %         Trichlorofluoromethane       107.5       %         Vinyl chloride       83.0       %         WG2956099-2 MB       Ug/L       40.50       Ug/L         1,1,2-Tetrachloroethane       <0.50	70-130	19-DEC-18
Trichloroethylene       111.1       %         Trichlorofluoromethane       107.5       %         Vinyl chloride       83.0       %         WG2956099-2       MB       Ug/L         1,1,1,2-Tetrachloroethane       <0.50	70-130	19-DEC-18
Trichlorofluoromethane       107.5       %         Vinyl chloride       83.0       %         WG2956099-2 MB       Ug/L       40.50       Ug/L         1,1,2-Tetrachloroethane       <0.50	70-130	19-DEC-18
Vinyl chloride       83.0       %         WG2956099-2 MB	70-130	19-DEC-18
WG2956099-2       MB         1,1,1,2-Tetrachloroethane       <0.50	60-140	19-DEC-18
1,1,1,2-Tetrachloroethane       <0.50	60-140	19-DEC-18
1,1,2,2-Tetrachloroethane       <0.50	0.5	19-DEC-18
1,1,1-Trichloroethane       <0.50	0.5	19-DEC-18
1,1,2-Trichloroethane<0.50	0.5	19-DEC-18
1,1-Dichloroethane <0.50 ug/L	0.5	19-DEC-18
1.4 Diobleroethylene	0.5	19-DEC-18
1,1-Dichloroethylene <0.50 ug/L	0.5	19-DEC-18
1,2-Dibromoethane <0.20 ug/L	0.2	19-DEC-18
1,2-Dichlorobenzene <0.50 ug/L	0.5	19-DEC-18
1,2-Dichloroethane <0.50 ug/L	0.5	19-DEC-18
1,2-Dichloropropane <0.50 ug/L	0.5	19-DEC-18
1,3-Dichlorobenzene <0.50 ug/L	0.5	19-DEC-18
1,4-Dichlorobenzene <0.50 ug/L	0.5	19-DEC-18
Acetone <30 ug/L	30	19-DEC-18
Benzene <0.50 ug/L	0.5	19-DEC-18
Bromodichloromethane <2.0 ug/L	2	19-DEC-18
Bromoform <5.0 ug/L	5	19-DEC-18
Bromomethane <0.50 ug/L	0.5	19-DEC-18
Carbon tetrachloride <0.20 ug/L	0.2	19-DEC-18
Chlorobenzene <0.50 ug/L	0.5	19-DEC-18
Chloroform <1.0 ug/L	1	19-DEC-18
cis-1,2-Dichloroethylene <0.50 ug/L	0.5	19-DEC-18
cis-1,3-Dichloropropene <0.30 ug/L	0.3	19-DEC-18
Dibromochloromethane <2.0 ug/L	2	19-DEC-18
Dichlorodifluoromethane <2.0 ug/L	2	19-DEC-18
Ethylbenzene <0.50 ug/L	0.5	19-DEC-18
n-Hexane <0.50 ug/L		· · · ·



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R44020	10							
WG2956099-2 MB	•		<0.40		ua/l		0.4	10 DEO 10
m+p-Xylenes Methyl Ethyl Ketone			<0.40		ug/L		20	19-DEC-18
			<20		ug/L			19-DEC-18
Methyl Isobutyl Ketor	ie				ug/L		20	19-DEC-18
Methylene Chloride MTBE			<5.0		ug/L		5	19-DEC-18
			<2.0		ug/L		2	19-DEC-18
o-Xylene			<0.30		ug/L		0.3	19-DEC-18
Styrene			<0.50		ug/L		0.5	19-DEC-18
Tetrachloroethylene			<0.50		ug/L		0.5	19-DEC-18
Toluene			<0.50		ug/L		0.5	19-DEC-18
trans-1,2-Dichloroeth			<0.50		ug/L		0.5	19-DEC-18
trans-1,3-Dichloropro	ppene		<0.30		ug/L		0.3	19-DEC-18
Trichloroethylene			<0.50		ug/L		0.5	19-DEC-18
Trichlorofluorometha	ne		<5.0		ug/L		5	19-DEC-18
Vinyl chloride			<0.50		ug/L		0.5	19-DEC-18
Surrogate: 1,4-Difluo			98.8		%		70-130	19-DEC-18
Surrogate: 4-Bromof			96.9		%		70-130	19-DEC-18
WG2956099-5 MS 1,1,1,2-Tetrachloroe		WG2956099-3	104.6		%		50-140	19-DEC-18
1,1,2,2-Tetrachloroe			109.7		%		50-140	19-DEC-18
1,1,1-Trichloroethan			106.1		%		50-140	19-DEC-18
1,1,2-Trichloroethan			104.9		%		50-140	19-DEC-18
1,1-Dichloroethane			109.2		%		50-140	19-DEC-18
1,1-Dichloroethylene			103.1		%		50-140	19-DEC-18
1,2-Dibromoethane			102.4		%		50-140	19-DEC-18
1,2-Dichlorobenzene			108.6		%		50-140	19-DEC-18
1,2-Dichloroethane			105.9		%		50-140	19-DEC-18
1,2-Dichloropropane			107.1		%		50-140	19-DEC-18
1,3-Dichlorobenzene			109.7		%		50-140	19-DEC-18
1,4-Dichlorobenzene			110.5		%		50-140	19-DEC-18
Acetone			112.6		%		50-140	19-DEC-18
Benzene			112.4		%		50-140	19-DEC-18
Bromodichlorometha	ine		107.6		%		50-140	19-DEC-18
Bromoform			100.2		%		50-140	19-DEC-18
Bromomethane			95.3		%		50-140	19-DEC-18
Diomoniculario			55.5		70		JU-14U	13-DEC-10



Workorder: L2211815 Report Date: 24-DEC-18 Page 12 of 13

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R44020	10							
WG2956099-5 MS		WG2956099-						
Carbon tetrachloride			107.0		%		50-140	19-DEC-18
Chlorobenzene			107.5		%		50-140	19-DEC-18
Chloroform			108.2		%		50-140	19-DEC-18
cis-1,2-Dichloroethyle	ne		108.5		%		50-140	19-DEC-18
cis-1,3-Dichloroprope	ne		108.6		%		50-140	19-DEC-18
Dibromochlorometha	ne		102.9		%		50-140	19-DEC-18
Dichlorodifluorometha	ane		102.6		%		50-140	19-DEC-18
Ethylbenzene			98.6		%		50-140	19-DEC-18
n-Hexane			96.5		%		50-140	19-DEC-18
m+p-Xylenes			102.3		%		50-140	19-DEC-18
Methyl Ethyl Ketone			108.6		%		50-140	19-DEC-18
Methyl Isobutyl Keton	е		121.5		%		50-140	19-DEC-18
Methylene Chloride			112.8		%		50-140	19-DEC-18
MTBE			111.3		%		50-140	19-DEC-18
o-Xylene			97.8		%		50-140	19-DEC-18
Styrene			98.8		%		50-140	19-DEC-18
Tetrachloroethylene			109.2		%		50-140	19-DEC-18
Toluene			100.9		%		50-140	19-DEC-18
trans-1,2-Dichloroeth	ylene		108.7		%		50-140	19-DEC-18
trans-1,3-Dichloropro			101.2		%		50-140	19-DEC-18
Trichloroethylene	-		113.0		%		50-140	19-DEC-18
Trichlorofluorometha	ne		102.2		%		50-140	19-DEC-18
Vinyl chloride			75.1		%		50-140	19-DEC-18

Report Date: 24-DEC-18 Workorder: L2211815

McIntosh Perry Engineering Consultants (Ottawa) Client: Page 13 of 13

115 Walgreen Road RR3

Carp ON K0A 1L0

Contact: **Bradley Sutherland** 

#### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample Standard Reference Material SRM

MS Matrix Spike

**MSD** Matrix Spike Duplicate

Average Desorption Efficiency ADE

Method Blank MB

Internal Reference Material IRM 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.

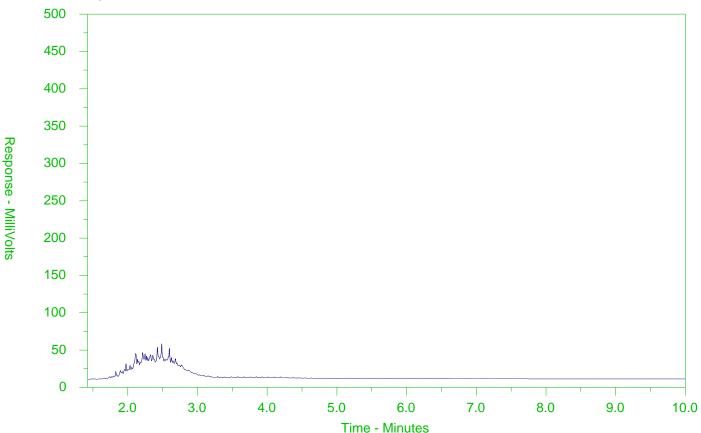
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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



ALS Sample ID: L2211815-1 Client Sample ID: MW-18-2



<b>←</b> -F2-	→←	_F3 <b>→</b> F4-	<b>→</b>					
nC10	nC16	nC34	nC50					
174°C	287°C	481°C	575°C					
346°F	549°F	898°F	1067°F					
Gasolin	Gasoline →							
<b>←</b>	-Diesel/Jet	◆ Diesel/Jet Fuels →						

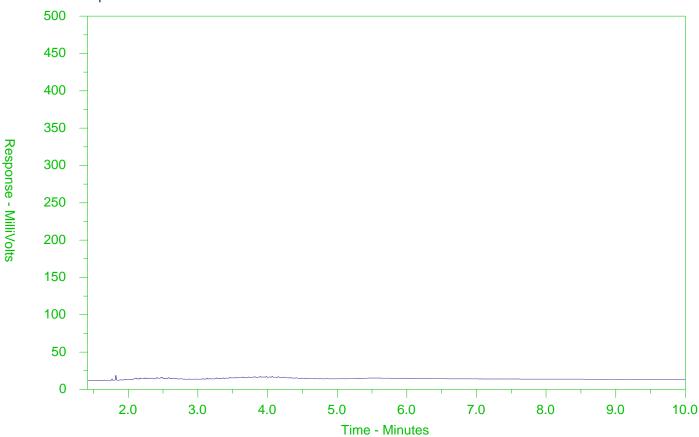
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2211815-2 Client Sample ID: MW-18-3



<b>←</b> -F2-	→←	_F3 <b>→</b> F4-	<b>→</b>					
nC10	nC16	nC34	nC50					
174°C	287°C	481°C	575°C					
346°F	549°F	898°F	1067°F					
Gasolin	Gasoline →							
<b>←</b>	-Diesel/Jet	◆ Diesel/Jet Fuels →						

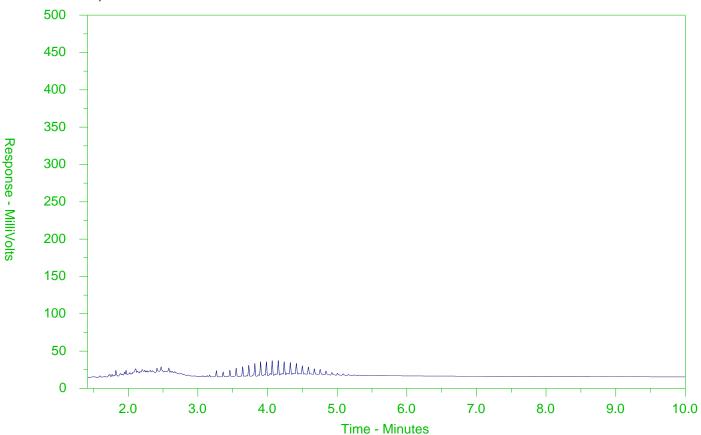
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2211815-3 Client Sample ID: MW-18-1



<b>←</b> -F2-	→←	_F3 <b>→</b> F4-	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	ie →	<b>←</b> Mo	tor Oils/Lube Oils/Grease	-
<b>←</b>	-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.

# ALS Environmental

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

Canada Toll Free: 1 800 668 9878

L2211815-COFC

COC Number: 17 -

Page

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McIntosh Perry Engineering Consultants

(Ottawa)

ATTN: Bradley Sutherland 115 Walgreen Road RR3

Carp ON K0A 1L0

Date Received: 07-JAN-19

Report Date: 10-JAN-19 13:14 (MT)

Version: FINAL

Client Phone: 613-836-2184

# **Certificate of Analysis**

Lab Work Order #: L2217373

Project P.O. #: NOT SUBMITTED

Job Reference: CP-17-0635

C of C Numbers: Legal Site Desc:

Melanie Moshi Account Manager

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

ADDRESS: 190 Colonnade Road, Unit 7, Ottawa, ON K2E 7J5 Canada | Phone: +1 613 225 8279 | Fax: +1 613 225 2801 ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2217373 CONTD....

PAGE 2 of 3 Version: FINAL

### ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2217373-1 MW18-1 Sampled By: CLIENT on 07-JAN-19 @ 14:00 Matrix: WATER							
Anions and Nutrients							
Chloride (CI)	590	DLHC	2.5	mg/L		09-JAN-19	R4438367
Hydrocarbons							
F2 (C10-C16)	<100		100	ug/L	08-JAN-19	08-JAN-19	R4434207
F3 (C16-C34)	<250		250	ug/L	08-JAN-19	08-JAN-19	R4434207
F4 (C34-C50)	<250		250	ug/L	08-JAN-19	08-JAN-19	R4434207
Chrom. to baseline at nC50	YES			_	08-JAN-19	08-JAN-19	R4434207
Surrogate: 2-Bromobenzotrifluoride	78.7		60-140	%	08-JAN-19	08-JAN-19	R4434207
L2217373-2 MW18-2 Sampled By: CLIENT on 07-JAN-19 @ 14:15 Matrix: WATER							
Hydrocarbons							
F2 (C10-C16)	<100		100	ug/L	08-JAN-19	08-JAN-19	R4434207
F3 (C16-C34)	<250		250	ug/L	08-JAN-19	08-JAN-19	R4434207
F4 (C34-C50)	<250		250	ug/L	08-JAN-19	08-JAN-19	R4434207
Chrom. to baseline at nC50	YES				08-JAN-19	08-JAN-19	R4434207
Surrogate: 2-Bromobenzotrifluoride	83.9		60-140	%	08-JAN-19	08-JAN-19	R4434207
L2217373-3 MW18-3 Sampled By: CLIENT on 07-JAN-19 @ 15:00 Matrix: WATER							
Anions and Nutrients							
Chloride (CI)	394	DLHC	2.5	mg/L		09-JAN-19	R4438367
		1		1	I	I	1

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2217373 CONTD....

PAGE 3 of 3
Version: FINAL

#### **Reference Information**

Sample Parameter Qualifier key listed:

Qualifier Description

DLHC Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

#### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**

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).

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

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
- 3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
- 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
- 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-511-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).

\*\* 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 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.



Workorder: L2217373

Report Date: 10-JAN-19

Page 1 of 2

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT		Water							
Batch R4	438367								
WG2966551-10	DUP		L2217352-1						
Chloride (CI)			1.65	1.63		mg/L	1.4	20	09-JAN-19
<b>WG2966551-7</b> Chloride (CI)	LCS			101.7		%		90-110	09-JAN-19
<b>WG2966551-6</b> Chloride (CI)	MB			<0.50		mg/L		0.5	09-JAN-19
WG2966551-9	MS		L2217352-1						
Chloride (CI)	-			106.3		%		75-125	09-JAN-19
F2-F4-511-WT		Water							
Batch R4	434207								
WG2965658-2	LCS			400.0		0/			
F2 (C10-C16)				102.0		%		70-130	08-JAN-19
F3 (C16-C34)				102.5		%		70-130	08-JAN-19
F4 (C34-C50)				105.1		%		70-130	08-JAN-19
<b>WG2965658-3</b> F2 (C10-C16)	LCSD		<b>WG2965658-2</b> 102.0	104.3		%	2.2	50	00 1411 40
F3 (C16-C34)			102.5	104.5		%			08-JAN-19
			102.5	106.9			1.3	50	08-JAN-19
F4 (C34-C50)			105.1	106.9		%	1.7	50	08-JAN-19
<b>WG2965658-1</b> F2 (C10-C16)	MB			<100		ug/L		100	00 100 40
,						-			08-JAN-19
F3 (C16-C34)				<250		ug/L		250	08-JAN-19
F4 (C34-C50)				<250		ug/L		250	08-JAN-19
Surrogate: 2-Br	omobenz	otrifluoride		81.1		%		60-140	08-JAN-19

Page 2 of 2

Workorder: L2217373 Report Date: 10-JAN-19

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Contact: Bradley Sutherland

#### Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

#### **Hold Time Exceedances:**

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

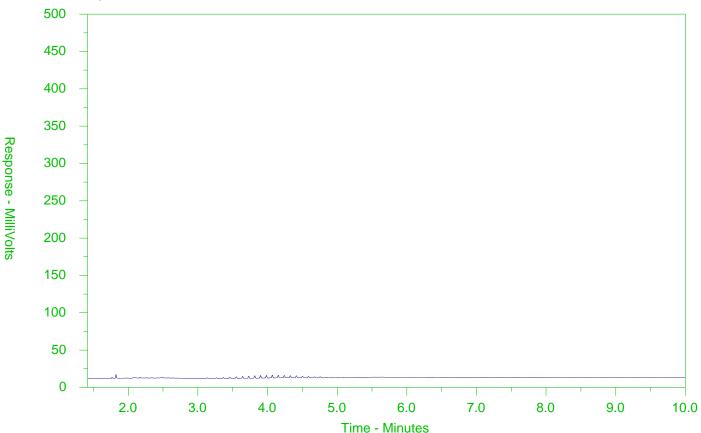
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined 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.



ALS Sample ID: L2217373-1 Client Sample ID: MW18-1



<b>←</b> -F2-	→←	_F3 <b>→</b> F4-	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	ie →	<b>←</b> Mo	tor Oils/Lube Oils/Grease	-
<b>←</b>	-Diesel/Jet	Fuels→		

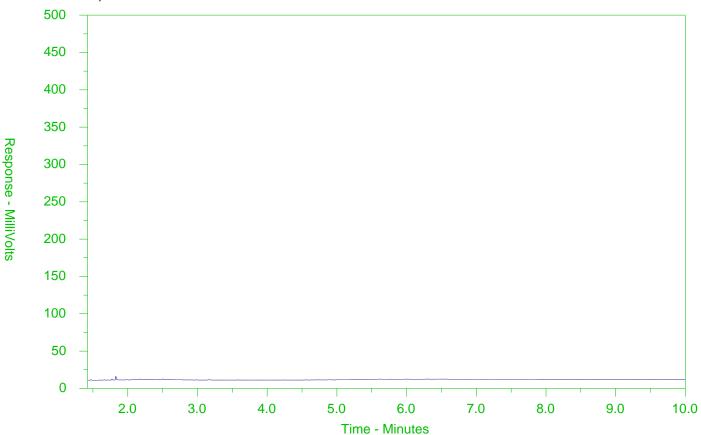
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2217373-2 Client Sample ID: MW18-2



<b>←</b> -F2-	→←	_F3 <b>→</b> F4-	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	ie →	<b>←</b> Mo	tor Oils/Lube Oils/Grease	-
<b>←</b>	-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.

# ALS Environmental

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

Canada Toll Free: 1 800 668 9878

L2217373-COFC

COC Number: 17 -

Page

of

Company:   McIntosh Perry - 23229   Select Report Format:   Por   EXCEL   EDO (DIGITAL)		www.alsglobal.com			1																	
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Project Information	Street:	115 Walgreen Road RR3	Email 1 or Fax	b.sutherland@mci	ntoshperry.com			Date and	i Time	Require	ed for	ali E&l	P TAT	S;				dd-mi	mm-yy	hh:mm		
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Drinking Water (DW) Samples¹ (client use)  Drinking Water (DW) Samples¹ (client use)  Special instructions / Specity 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		Mu 10-2		i	2:15	1-w	+	1				X				i						1
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Drinking Water (DW) Samples (client use)  (electronic COC only)  Are samples taken from a Regulated DW System?    YES   NO																1						
Drinking Water (DW) Samples (client use)  (electronic COC only)  Are samples taken from a Regulated DW System?    YES   NO																					T	1
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Are samples taken from a Regulated DW System?    Cooling Initiated   Cooling Initiated	Drinking	Water (DW) Samples <sup>1</sup> (client use) Special Instructions			king on the drop	-down list below				-	SAM											_
Are samples for human consumption/ use?    YES   NO	Are samples tak	ren from a Requisted DW System?		- 1	Prase	0	Ice P	Packs		ice Cu	ubes		-			-			-			
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McIntosh Perry Engineering Consultants

(Ottawa)

ATTN: Bradley Sutherland 115 Walgreen Road, R.R. 3

Carp ON KOA1LO

Date Received: 20-MAY-21

Report Date: 31-MAY-21 07:51 (MT)

Version: FINAL

Client Phone: 613-903-5785

# Certificate of Analysis

Lab Work Order #: L2590710

Project P.O. #: NOT SUBMITTED

Job Reference: CCO-22-0244

C of C Numbers: Legal Site Desc:

Emily Smith Account Manager

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ADDRESS: 190 Colonnade Road, Unit 7, Ottawa, ON K2E 7J5 Canada | Phone: +1 613 225 8279 | Fax: +1 613 225 2801

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#### ANALYTICAL GUIDELINE REPORT

L2590710 CONTD.... Page 2 of 15

31-MAY-21 07:51 (MT) Sample Details Qualifier Units Grouping Analyte Result D.L. Analyzed **Guideline Limits** L2590710-1 MW1 CLIENT on 20-MAY-21 @ 10:30 Sampled By: #1 #2 Matrix: WATER **Physical Tests** 0.561 0.0030 mS/cm Conductivity 22-MAY-21 рΗ 8.22 0.10 pH units 22-MAY-21 **Anions and Nutrients** 65.2 0.50 Chloride (CI) mg/L 24-MAY-21 2300 2300 **Cyanides** Cyanide, Weak Acid Diss <2.0 2.0 ug/L 25-MAY-21 66 66 **Dissolved Metals** Dissolved Mercury Filtration Location **FIELD** No Unit 25-MAY-21 **Dissolved Metals Filtration Location FIELD** No Unit 21-MAY-21 0.10 < 0.10 ug/L 25-MAY-21 Antimony (Sb)-Dissolved 20000 20000 0.28 0.10 25-MAY-21 Arsenic (As)-Dissolved ug/L 1900 1900 0.10 25-MAY-21 Barium (Ba)-Dissolved 146 ug/L 29000 29000 Beryllium (Be)-Dissolved < 0.10 0.10 ug/L 25-MAY-21 67 67 Boron (B)-Dissolved 67 10 ug/L 25-MAY-21 45000 45000 Cadmium (Cd)-Dissolved < 0.010 0.010 ug/L 25-MAY-21 2.7 2.7 Chromium (Cr)-Dissolved 0.50 ug/L 25-MAY-21 < 0.50 810 810 25-MAY-21 Cobalt (Co)-Dissolved < 0.10 0.10 ug/L 66 66 Copper (Cu)-Dissolved 1.09 0.20 ug/L 25-MAY-21 87 87 Lead (Pb)-Dissolved 0.087 0.050 ug/L 25-MAY-21 25 25 < 0.0050 0.0050 ug/L 26-MAY-21 Mercury (Hg)-Dissolved 0.29 2.8 0.050 Molvbdenum (Mo)-Dissolved 1.31 ug/L 25-MAY-21 9200 9200 25-MAY-21 Nickel (Ni)-Dissolved < 0.50 0.50 ug/L 490 490 Selenium (Se)-Dissolved < 0.050 0.050 ug/L 25-MAY-21 63 63 0.050 25-MAY-21 Silver (Ag)-Dissolved < 0.050 ug/L 1.5 1.5 Sodium (Na)-Dissolved 14900 500 ug/L 25-MAY-21 2300000 2300000 Thallium (TI)-Dissolved < 0.010 0.010 ug/L 25-MAY-21 510 510 Uranium (U)-Dissolved 0.097 0.010 ug/L 25-MAY-21 420 420 0.50 ug/L 25-MAY-21 Vanadium (V)-Dissolved < 0.50 250 250 25-MAY-21 Zinc (Zn)-Dissolved 1.0 ug/L 1.3 1100 1100 **Speciated Metals** 0.50 22-MAY-21 Chromium, Hexavalent < 0.50 ug/L 140 140 **Volatile Organic Compounds** Acetone <30 30 ug/L 31-MAY-21 130000 130000 Benzene < 0.50 0.50 ug/L 31-MAY-21 44 430 Bromodichloromethane 2.0 31-MAY-21 <2.0 ug/L 85000 85000 Bromoform < 5.0 5.0 ug/L 31-MAY-21 380 770 < 0.50 0.50 31-MAY-21 Bromomethane ug/L 5.6 56 <0.20 0.20 31-MAY-21 Carbon tetrachloride ug/L 0.79 8.4 0.50 31-MAY-21 Chlorobenzene < 0.50 ug/L 630 630 Dibromochloromethane <2.0 2.0 ug/L 31-MAY-21 82000 82000 Chloroform <1.0 1.0 ug/L 31-MAY-21 2.4 22 0.20 1,2-Dibromoethane < 0.20 ug/L 31-MAY-21 0.25 0.83 0.50 31-MAY-21 1,2-Dichlorobenzene < 0.50 ug/L 4600 9600 < 0.50 0.50 ug/L 31-MAY-21 9600 1.3-Dichlorobenzene 9600 1,4-Dichlorobenzene < 0.50 0.50 ug/L 31-MAY-21 67 8

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Manalytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



#### **ANALYTICAL GUIDELINE REPORT**

L2590710 CONTD.... Page 3 of 15 31-MAY-21 07:51 (MT)

CCO-22-0244							3	1-MAY-21 (	7:51 (MT)
Sample Details Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelin	ne Limits	
L2590710-1 MW1									
Sampled By: CLIENT on 20-MAY-21 @ 10:30									
Matrix: WATER						#1	#2		
Volatile Organic Compounds									
Dichlorodifluoromethane	<2.0		2.0	ug/L	31-MAY-21	4400	4400		
1.1-Dichloroethane	<0.50		0.50	ug/L	31-MAY-21	320	3100		
1,2-Dichloroethane	<0.50		0.50	ug/L	31-MAY-21	1.6	12		
1,1-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
Methylene Chloride	<5.0		5.0	ug/L	31-MAY-21	610	5500		
1,2-Dichloropropane	<0.50		0.50	ug/L	31-MAY-21	16	140		
cis-1,3-Dichloropropene	<0.30		0.30	ug/L	31-MAY-21	10	140		
trans-1,3-Dichloropropene	<0.30		0.30	ug/L	31-MAY-21				
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L	31-MAY-21	5.2	45		
Ethylbenzene	<0.50		0.50	ug/L	31-MAY-21	2300	2300		
n-Hexane	<0.50		0.50	ug/L	31-MAY-21	51	520		
Methyl Ethyl Ketone	<20		20	ug/L	31-MAY-21	470000	1500000		
Methyl Isobutyl Ketone	<20		20	ug/L	31-MAY-21	140000	580000		
MTBE	<2.0		2.0	ug/L	31-MAY-21	190	1400		
Styrene	< 0.50		0.50	ug/L	31-MAY-21	1300	9100		
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.3	28		
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.2	15		
Tetrachloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
Toluene	<0.50		0.50	ug/L ug/L	31-MAY-21	18000	18000		
1,1,1-Trichloroethane	<0.50		0.50	ug/L ug/L	31-MAY-21	640	6700		
1,1,2-Trichloroethane	<0.50		0.50	ug/L ug/L	31-MAY-21	4.7	30		
Trichloroethylene	<0.50		0.50	ug/L ug/L	31-MAY-21	1.6	17		
Trichlorofluoromethane	<5.0		5.0	ug/L ug/L	31-MAY-21	2500	2500		
Vinyl chloride	<0.50		0.50	ug/L ug/L	31-MAY-21	0.5	1.7		
o-Xylene	<0.30		0.30	ug/L ug/L	31-MAY-21	0.5	1.7		
m+p-Xylenes	<0.40		0.40	ug/L ug/L	31-MAY-21				
Xylenes (Total)	<0.50		0.50	ug/L ug/L	31-MAY-21	4200	4200		
Surrogate: 4-Bromofluorobenzene	98.4		70-130	W	31-MAY-21	4200	7200		
Surrogate: 1,4-Difluorobenzene	99.8		70-130	%	31-MAY-21				
Hydrocarbons	00.0		70 100	/0	01 100 11 21				
F1 (C6-C10)	<25		25	ug/L	31-MAY-21	750	750		
F1-BTEX	<25		25	ug/L	31-MAY-21	750	750		
F2 (C10-C16)	<100		100	ug/L	26-MAY-21	150	150		
F2-Naphth	<100		100	ug/L	31-MAY-21	100	130		
F3 (C16-C34)	<250		250	ug/L	26-MAY-21	500	500		
F3-PAH	<250		250	ug/L	31-MAY-21	000			
F4 (C34-C50)	<250		250	ug/L ug/L	26-MAY-21	500	500		
Total Hydrocarbons (C6-C50)	<370		370	ug/L	31-MAY-21	300			
Chrom. to baseline at nC50	YES		0.0	No Unit	26-MAY-21				
Surrogate: 2-Bromobenzotrifluoride	89.0		60-140	%	26-MAY-21				
Surrogate: 3,4-Dichlorotoluene	76.8		60-140	%	31-MAY-21				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.020		0.020	ug/L	28-MAY-21	600	1700		
Acenaphthylene	<0.020		0.020	ug/L	28-MAY-21	1.8	1.8		
	5.520			_ ~g, <b>_</b>					I

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



#### **ANALYTICAL GUIDELINE REPORT**

L2590710 CONTD....

Page 4 of 15 31-MAY-21 07:51 (MT)

Sample Details							3	1-MAY-21 0	7:51 (MT)
Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelir	ne Limits	
L2590710-1 MW1									
Sampled By: CLIENT on 20-MAY-21 @ 10:30									
Matrix: WATER						#1	#2		
Polycyclic Aromatic Hydrocarbons									
Anthracene	<0.020		0.020	ug/L	28-MAY-21	2.4	2.4		
Benzo(a)anthracene	<0.020		0.020	ug/L	28-MAY-21	4.7	4.7		
Benzo(a)pyrene	<0.010		0.010	ug/L	28-MAY-21	0.81	0.81		
Benzo(b&j)fluoranthene	<0.020		0.020	ug/L	28-MAY-21	0.75	0.75		
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	28-MAY-21	0.2	0.2		
Benzo(k)fluoranthene	<0.020		0.020	ug/L	28-MAY-21	0.4	0.4		
Chrysene	<0.020		0.020	ug/L	28-MAY-21	1	1		
Dibenz(a,h)anthracene	<0.020		0.020	ug/L	28-MAY-21	0.52	0.52		
Fluoranthene	<0.020		0.020	ug/L	28-MAY-21	130	130		
Fluorene	<0.020		0.020	ug/L	28-MAY-21	400	400		
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	28-MAY-21	0.2	0.2		
1+2-Methylnaphthalenes	<0.028		0.028	ug/L	28-MAY-21	1800	1800		
1-Methylnaphthalene	<0.020		0.020	ug/L	28-MAY-21	1800	1800		
2-Methylnaphthalene	<0.020		0.020	ug/L	28-MAY-21	1800	1800		
Naphthalene	<0.050		0.050	ug/L	28-MAY-21	1400	6400		
Phenanthrene	<0.020		0.020	ug/L	28-MAY-21	580	580		
Pyrene	<0.020		0.020	ug/L	28-MAY-21	68	68		
Surrogate: Naphthalene d8	91.8		60-140	%	28-MAY-21				
Surrogate: Phenanthrene d10	102.6		60-140	%	28-MAY-21				
L2590710-2 MW2 Sampled By: CLIENT on 20-MAY-21 @ 11:30 Matrix: WATER						#1	#2		
Physical Tests									
Conductivity	1.48		0.0030	mS/cm	22-MAY-21				
pH	7.75		0.10	pH units	22-MAY-21				
Anions and Nutrients									
Chloride (CI)	245		2.5	mg/L	24-MAY-21	2300	2300		
Cyanides									
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L	25-MAY-21	66	66		
Dissolved Metals									
Dissolved Mercury Filtration Location	FIELD			No Unit	25-MAY-21				
Dissolved Metals Filtration Location	FIELD			No Unit	21-MAY-21				
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	25-MAY-21	20000	20000		
Arsenic (As)-Dissolved	0.10		0.10	ug/L	25-MAY-21	1900	1900		
Barium (Ba)-Dissolved	176		0.10	ug/L	25-MAY-21	29000	29000		
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	25-MAY-21	67	67		
Boron (B)-Dissolved	15		10	ug/L	25-MAY-21	45000	45000		
Cadmium (Cd)-Dissolved	<0.010		0.010	ug/L	25-MAY-21	2.7	2.7		
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	25-MAY-21	810	810		
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	25-MAY-21	66	66		
Copper (Cu)-Dissolved	0.77		0.20	ug/L	25-MAY-21	87	87		
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	25-MAY-21	25	25		
Mercury (Hg)-Dissolved	<0.0050		0.0050	ug/L	26-MAY-21	0.29	2.8		
Molybdenum (Mo)-Dissolved	0.304		0.050	ug/L	25-MAY-21	9200	9200		
				_					

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



L2590710 CONTD.... Page 5 of 15

CCO-22-0244	AINALI	IICAL	GUID	LLINL	KEFOR	\ I	3	Page 5 1-MAY-21 0	
Sample Details									
Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelin	ne Limits	
L2590710-2 MW2									
Sampled By: CLIENT on 20-MAY-21 @ 11:30									
Matrix: WATER						#1	#2		
Dissolved Metals									
	0.50		0.50	/1	05 MANY 04	400	400		
Nickel (Ni)-Dissolved	<0.50		0.50	ug/L	25-MAY-21	490	490		
Selenium (Se)-Dissolved	0.428		0.050	ug/L	25-MAY-21	63	63		
Silver (Ag)-Dissolved	<0.050	5	0.050	ug/L	25-MAY-21	1.5	1.5		
Sodium (Na)-Dissolved	162000	DLHC	500	ug/L	25-MAY-21	2300000	2300000		
Thallium (TI)-Dissolved	<0.010		0.010	ug/L	25-MAY-21	510	510		
Uranium (U)-Dissolved	1.15		0.010	ug/L	25-MAY-21	420	420		
Vanadium (V)-Dissolved	0.69		0.50	ug/L	25-MAY-21	250	250		
Zinc (Zn)-Dissolved	<1.0		1.0	ug/L	25-MAY-21	1100	1100		
Speciated Metals									
Chromium, Hexavalent	<0.50		0.50	ug/L	22-MAY-21	140	140		
Volatile Organic Compounds									
Acetone	<30		30	ug/L	31-MAY-21	130000	130000		
Benzene	<0.50		0.50	ug/L	31-MAY-21	44	430		
Bromodichloromethane	<2.0		2.0	ug/L	31-MAY-21	85000	85000		
Bromoform	<5.0		5.0	ug/L	31-MAY-21	380	770		
Bromomethane	<0.50		0.50	ug/L	31-MAY-21	5.6	56		
Carbon tetrachloride	<0.20		0.20	ug/L	31-MAY-21	0.79	8.4		
Chlorobenzene	<0.50		0.50	ug/L	31-MAY-21	630	630		
Dibromochloromethane	<2.0		2.0	ug/L	31-MAY-21	82000	82000		
Chloroform	<1.0		1.0	ug/L	31-MAY-21	2.4	22		
1,2-Dibromoethane	<0.20		0.20	ug/L	31-MAY-21	0.25	0.83		
1,2-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	4600	9600		
1,3-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	9600	9600		
1,4-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	8	67		
Dichlorodifluoromethane	<2.0		2.0	ug/L	31-MAY-21	4400	4400		
1,1-Dichloroethane	<0.50		0.50	ug/L	31-MAY-21	320	3100		
1,2-Dichloroethane	<0.50		0.50	ug/L	31-MAY-21	1.6	12		
1,1-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
Methylene Chloride	<5.0		5.0	ug/L	31-MAY-21	610	5500		
1,2-Dichloropropane	<0.50		0.50	ug/L	31-MAY-21	16	140		
cis-1,3-Dichloropropene	<0.30		0.30	ug/L	31-MAY-21				
trans-1,3-Dichloropropene	<0.30		0.30	ug/L	31-MAY-21				
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L	31-MAY-21	5.2	45		
Ethylbenzene	<0.50		0.50	ug/L	31-MAY-21	2300	2300		
n-Hexane	<0.50		0.50	ug/L	31-MAY-21	51	520		
Methyl Ethyl Ketone	<20		20	ug/L	31-MAY-21	470000	1500000		
Methyl Isobutyl Ketone	<20		20	ug/L	31-MAY-21	140000	580000		
MTBE	<2.0		2.0	ug/L	31-MAY-21	190	1400		
Styrene	<0.50		0.50	ug/L	31-MAY-21	1300	9100		
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.3	28		
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.2	15		
Tetrachloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
Toluene	<0.50		0.50	ug/L	31-MAY-21	18000	18000		
. 5.50110	10.00		0.00	~g/ L	31 111/11/21	10000	10000		

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



L2590710 CONTD.... Page 6 of 15

O-22-0244	AINALII						3	Page 6 of 1-MAY-21 07:51 (
Sample Details Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed			ne Limits
2590710-2 MW2								
Sampled By: CLIENT on 20-MAY-21 @ 11:30								
Matrix: WATER						#1	#2	
Volatile Organic Compounds	0.50		0.50	,	04.84834.04			
1,1,1-Trichloroethane	<0.50		0.50	ug/L	31-MAY-21	640	6700	
1,1,2-Trichloroethane	<0.50		0.50	ug/L	31-MAY-21	4.7	30	
Trichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17	
Trichlorofluoromethane	<5.0		5.0	ug/L	31-MAY-21	2500	2500	
Vinyl chloride	<0.50		0.50	ug/L	31-MAY-21	0.5	1.7	
o-Xylene	<0.30		0.30	ug/L	31-MAY-21			
m+p-Xylenes	<0.40		0.40	ug/L	31-MAY-21			
Xylenes (Total)	<0.50		0.50	ug/L	31-MAY-21	4200	4200	
Surrogate: 4-Bromofluorobenzene	98.6		70-130	%	31-MAY-21			
Surrogate: 1,4-Difluorobenzene Hydrocarbons	99.3		70-130	%	31-MAY-21			
	2=			.,				
F1 (C6-C10)	<25		25	ug/L	31-MAY-21	750	750	
F1-BTEX	<25		25	ug/L	31-MAY-21	750	750	
F2 (C10-C16)	<100		100	ug/L	26-MAY-21	150	150	
F2-Naphth	<100		100	ug/L	31-MAY-21			
F3 (C16-C34)	<250		250	ug/L	26-MAY-21	500	500	
F3-PAH	<250		250	ug/L	31-MAY-21			
F4 (C34-C50)	<250		250	ug/L	26-MAY-21	500	500	
Total Hydrocarbons (C6-C50)	<370		370	ug/L	31-MAY-21			
Chrom. to baseline at nC50	YES		00.440	No Unit	26-MAY-21			
Surrogate: 2-Bromobenzotrifluoride	86.4		60-140	%	26-MAY-21			
Surrogate: 3,4-Dichlorotoluene  Polycyclic Aromatic Hydrocarbons	78.5		60-140	%	31-MAY-21			
	0.000		0.000		00 144 1/ 04	000	4700	
Acenaphthene	<0.020		0.020	ug/L	28-MAY-21	600	1700	
Acenaphthylene	<0.020		0.020	ug/L	28-MAY-21	1.8	1.8	
Anthracene	<0.020		0.020	ug/L	28-MAY-21	2.4	2.4	
Benzo(a)anthracene	<0.020		0.020	ug/L	28-MAY-21	4.7	4.7	
Benzo(a)pyrene	<0.010		0.010	ug/L	28-MAY-21	0.81	0.81	
Benzo(b&j)fluoranthene	<0.020		0.020	ug/L	28-MAY-21	0.75	0.75	
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	28-MAY-21	0.2	0.2	
Benzo(k)fluoranthene	<0.020		0.020	ug/L	28-MAY-21	0.4	0.4	
Chrysene	<0.020		0.020	ug/L	28-MAY-21	1	1	
Dibenz(a,h)anthracene	<0.020		0.020	ug/L	28-MAY-21	0.52	0.52	
Fluoranthene	<0.020		0.020	ug/L	28-MAY-21	130	130	
Fluorene	<0.020		0.020	ug/L	28-MAY-21	400	400	
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	28-MAY-21	0.2	0.2	
1+2-Methylnaphthalenes	<0.028		0.028	ug/L	28-MAY-21	1800	1800	
1-Methylnaphthalene	<0.020		0.020	ug/L	28-MAY-21	1800	1800	
2-Methylnaphthalene	<0.020		0.020	ug/L	28-MAY-21	1800	1800	
Naphthalene	<0.050		0.050	ug/L	28-MAY-21	1400	6400	
Phenanthrene	<0.020		0.020	ug/L	28-MAY-21	580	580	
Pyrene	<0.020		0.020	ug/L	28-MAY-21	68	68	
•	05.0	1	60-140	%	28-MAY-21			
Surrogate: Naphthalene d8 Surrogate: Phenanthrene d10	85.9 96.1		60-140	%	28-MAY-21			

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



L2590710 CONTD.... Page 7 of 15

CCO-22-0244	AINALI	IICAL	GUID	LLIINL	KEPUK	<b>.</b> I	3	Page 7 of 1 1-MAY-21 07:51 (N
Sample Details								
Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelin	e Limits
L2590710-3 MW2-DUP								
Sampled By: CLIENT on 20-MAY-21 @ 11:30								
Matrix: WATER						#1	#2	
Valatila Organia Compounda								
Volatile Organic Compounds	00		00	/1	04 144 1/ 04	400000	400000	
Acetone	<30		30	ug/L	31-MAY-21	130000	130000	
Benzene	<0.50		0.50	ug/L	31-MAY-21	44	430	
Bromodichloromethane	<2.0		2.0	ug/L	31-MAY-21	85000	85000	
Bromoform	<5.0		5.0	ug/L	31-MAY-21	380	770	
Bromomethane	<0.50		0.50	ug/L	31-MAY-21	5.6	56	
Carbon tetrachloride	<0.20		0.20	ug/L	31-MAY-21	0.79	8.4	
Chlorobenzene	<0.50		0.50	ug/L	31-MAY-21	630	630	
Dibromochloromethane	<2.0		2.0	ug/L	31-MAY-21	82000	82000	
Chloroform	<1.0		1.0	ug/L	31-MAY-21	2.4	22	
1,2-Dibromoethane	<0.20		0.20	ug/L	31-MAY-21	0.25	0.83	
1,2-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	4600	9600	
1,3-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	9600	9600	
1,4-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	8	67	
Dichlorodifluoromethane	<2.0		2.0	ug/L	31-MAY-21	4400	4400	
1,1-Dichloroethane	<0.50		0.50	ug/L	31-MAY-21	320	3100	
1,2-Dichloroethane	<0.50		0.50	ug/L	31-MAY-21	1.6	12	
1,1-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17	
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17	
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17	
Methylene Chloride	<5.0		5.0	ug/L	31-MAY-21	610	5500	
1,2-Dichloropropane	<0.50		0.50	ug/L	31-MAY-21	16	140	
cis-1,3-Dichloropropene	<0.30		0.30	ug/L	31-MAY-21			
trans-1,3-Dichloropropene	<0.30		0.30	ug/L	31-MAY-21			
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L	31-MAY-21	5.2	45	
Ethylbenzene	<0.50		0.50	ug/L	31-MAY-21	2300	2300	
n-Hexane	<0.50		0.50	ug/L	31-MAY-21	51	520	
Methyl Ethyl Ketone	<20		20	ug/L	31-MAY-21	470000	1500000	
Methyl Isobutyl Ketone	<20		20	ug/L	31-MAY-21	140000	580000	
MTBE	<2.0		2.0	ug/L	31-MAY-21	190	1400	
Styrene	<0.50		0.50	ug/L	31-MAY-21	1300	9100	
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.3	28	
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.2	15	
Tetrachloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17	
Toluene	<0.50		0.50	ug/L	31-MAY-21	18000	18000	
1,1,1-Trichloroethane	<0.50		0.50	ug/L	31-MAY-21	640	6700	
1,1,2-Trichloroethane	<0.50		0.50	ug/L	31-MAY-21	4.7	30	
Trichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17	
Trichlorofluoromethane	<5.0		5.0	ug/L	31-MAY-21	2500	2500	
Vinyl chloride	<0.50		0.50	ug/L	31-MAY-21	0.5	1.7	
o-Xylene	<0.30		0.30	ug/L	31-MAY-21	0.0	'.,	
m+p-Xylenes	<0.40		0.40	ug/L	31-MAY-21			
Xylenes (Total)	<0.50		0.50	ug/L	31-MAY-21	4200	4200	
Surrogate: 4-Bromofluorobenzene	96.5		70-130	% %	31-MAY-21	00	.200	
Surrogate: 1,4-Difluorobenzene	99.8		70-130	%	31-MAY-21			
Hydrocarbons	33.0		70 100	/0	31 WAT-21			
F1 (C6-C10)	<25		25	ug/L	31-MAY-21	750	750	
1 1 (00-010)	<20		20	ug/L	31-IVIA 1-21	750	/50	

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



#### **ANALYTICAL GUIDELINE REPORT**

L2590710 CONTD....

Page 8 of 15 31-MAY-21 07:51 (MT)

Sample Details 31-MAY-21 07:51 (MT)									
Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelir	ne Limits	
L2590710-3 MW2-DUP									
Sampled By: CLIENT on 20-MAY-21 @ 11:30									
Matrix: WATER						#1	#2	1	
Hydrocarbons									
F1-BTEX	<25		25	ug/L	31-MAY-21	750	750		
F2 (C10-C16)	<100		100	ug/L	26-MAY-21	150	150		
F2-Naphth	<100		100	ug/L	31-MAY-21	130	130		
F3 (C16-C34)	<250		250	ug/L	26-MAY-21	500	500		
F3-PAH	<250		250	ug/L	31-MAY-21	000	000		
F4 (C34-C50)	<250		250	ug/L	26-MAY-21	500	500		
Total Hydrocarbons (C6-C50)	<370		370	ug/L	31-MAY-21				
Chrom. to baseline at nC50	YES			No Unit	26-MAY-21				
Surrogate: 2-Bromobenzotrifluoride	90.7		60-140	%	26-MAY-21				
Surrogate: 3,4-Dichlorotoluene	77.1		60-140	%	31-MAY-21				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.020		0.020	ug/L	28-MAY-21	600	1700		
Acenaphthylene	<0.020		0.020	ug/L	28-MAY-21	1.8	1.8		
Anthracene	<0.020		0.020	ug/L	28-MAY-21	2.4	2.4		
Benzo(a)anthracene	<0.020		0.020	ug/L	28-MAY-21	4.7	4.7		
Benzo(a)pyrene	<0.010		0.010	ug/L	28-MAY-21	0.81	0.81		
Benzo(b&j)fluoranthene	<0.020		0.020	ug/L	28-MAY-21	0.75	0.75		
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	28-MAY-21	0.2	0.2		
Benzo(k)fluoranthene	<0.020		0.020	ug/L	28-MAY-21	0.4	0.4		
Chrysene	<0.020		0.020	ug/L	28-MAY-21	1	1		
Dibenz(a,h)anthracene	<0.020		0.020	ug/L	28-MAY-21	0.52	0.52		
Fluoranthene	<0.020		0.020	ug/L	28-MAY-21	130	130		
Fluorene	<0.020		0.020	ug/L	28-MAY-21	400	400		
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	28-MAY-21	0.2	0.2		
1+2-Methylnaphthalenes	<0.028		0.028	ug/L	28-MAY-21	1800	1800		
1-Methylnaphthalene	<0.020		0.020	ug/L	28-MAY-21	1800	1800		
2-Methylnaphthalene	<0.020		0.020	ug/L	28-MAY-21	1800	1800		
Naphthalene	<0.050		0.050	ug/L	28-MAY-21	1400	6400		
Phenanthrene	<0.020		0.020	ug/L	28-MAY-21	580	580		
Pyrene	<0.020		0.020	ug/L	28-MAY-21	68	68		
Surrogate: Chrysene d12	116.0		50-150	%	28-MAY-21	30	- 30		
Surrogate: Naphthalene d8	113.3		60-140	%	28-MAY-21				
Surrogate: Phenanthrene d10	110.4		60-140	%	28-MAY-21				
L2590710-4 MW3									
Sampled By: CLIENT on 20-MAY-21 @ 12:30									
Matrix: WATER						#1	#2		
Physical Tests									
Conductivity	1.60		0.0030	mS/cm	22-MAY-21				
pH Anions and Nutrients	7.86		0.10	pH units	22-MAY-21				
Chloride (CI)	290		2.5	ma/l	24-MAY-21	2200	2300		
Cyanides	290		2.5	mg/L	24-IVIA 1 -21	2300	2300		
Cyanide, Weak Acid Diss	<2.0		2.0	LIA/I	25-MAY-21	66	66		
Dissolved Metals	<b>~</b> Z.U		2.0	ug/L	20-IVIA 1 -2 I	66	66		
Dissolved Mercury Filtration Location	FIELD			No Unit	25-MAY-21				

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



#### ANALYTICAL GUIDELINE REPORT

L2590710 CONTD.... Page 9 of 15

31-MAY-21 07:51 (MT) Sample Details Units Grouping Analyte Result Qualifier D.L. Analyzed **Guideline Limits** L2590710-4 MW3 CLIENT on 20-MAY-21 @ 12:30 Sampled By: #1 #2 Matrix: WATER **Dissolved Metals** No Unit Dissolved Metals Filtration Location FIFI D 21-MAY-21 25-MAY-21 Antimony (Sb)-Dissolved < 0.10 0.10 ug/L 20000 20000 Arsenic (As)-Dissolved 0.13 0.10 ug/L 25-MAY-21 1900 1900 Barium (Ba)-Dissolved 101 0.10 25-MAY-21 29000 29000 ug/L Beryllium (Be)-Dissolved < 0.10 0.10 ug/L 25-MAY-21 67 67 Boron (B)-Dissolved 17 10 ug/L 25-MAY-21 45000 45000 0.010 0.018 ug/L 25-MAY-21 Cadmium (Cd)-Dissolved 2.7 2.7 25-MAY-21 Chromium (Cr)-Dissolved < 0.50 0.50 ug/L 810 810 Cobalt (Co)-Dissolved < 0.10 0.10 ug/L 25-MAY-21 66 66 Copper (Cu)-Dissolved 1.07 0.20 ug/L 25-MAY-21 87 87 Lead (Pb)-Dissolved < 0.050 0.050 ug/L 25-MAY-21 25 25 Mercury (Hg)-Dissolved < 0.0050 0.0050 ug/L 26-MAY-21 0.29 2.8 Molybdenum (Mo)-Dissolved 0.266 0.050 ug/L 25-MAY-21 9200 9200 25-MAY-21 490 Nickel (Ni)-Dissolved 0.54 0.50 ug/L 490 Selenium (Se)-Dissolved 0.156 0.050 ug/L 25-MAY-21 63 63 Silver (Ag)-Dissolved < 0.050 0.050 ug/L 25-MAY-21 1.5 1.5 25-MAY-21 Sodium (Na)-Dissolved 156000 **DLHC** 500 ug/L 2300000 2300000 Thallium (TI)-Dissolved < 0.010 0.010 ug/L 25-MAY-21 510 510 0.010 ug/L 25-MAY-21 Uranium (U)-Dissolved 1.11 420 420 Vanadium (V)-Dissolved 1.38 0.50 ug/L 25-MAY-21 250 250 Zinc (Zn)-Dissolved 25-MAY-21 <1.0 1.0 ug/L 1100 1100 **Speciated Metals** Chromium, Hexavalent < 0.50 0.50 ug/L 22-MAY-21 140 140 **Volatile Organic Compounds** Acetone <30 30 ug/L 31-MAY-21 130000 130000 Benzene < 0.50 0.50 ug/L 31-MAY-21 44 430 85000 Bromodichloromethane <2.0 2.0 ug/L 31-MAY-21 85000 Bromoform < 5.0 5.0 ug/L 31-MAY-21 380 770 Bromomethane 0.50 < 0.50 ug/L 31-MAY-21 5.6 56 Carbon tetrachloride < 0.20 0.20 31-MAY-21 ug/L 0.79 84 Chlorobenzene < 0.50 0.50 ug/L 31-MAY-21 630 630 31-MAY-21 Dibromochloromethane <2.0 2.0 ug/L 82000 82000 Chloroform <1.0 1.0 ug/L 31-MAY-21 2.4 22 31-MAY-21 0.20 1,2-Dibromoethane < 0.20 ug/L 0.25 0.83 1,2-Dichlorobenzene < 0.50 0.50 ug/L 31-MAY-21 4600 9600 1,3-Dichlorobenzene < 0.50 0.50 ug/L 31-MAY-21 9600 9600 1,4-Dichlorobenzene < 0.50 0.50 ug/L 31-MAY-21 8 67 Dichlorodifluoromethane < 2.0 2.0 ug/L 31-MAY-21 4400 4400 1.1-Dichloroethane < 0.50 0.50 ug/L 31-MAY-21 320 3100 1,2-Dichloroethane < 0.50 0.50 ug/L 31-MAY-21 1.6 12 0.50 31-MAY-21 1,1-Dichloroethylene < 0.50 ug/L 17 1.6 cis-1,2-Dichloroethylene < 0.50 0.50 ug/L 31-MAY-21 17 1.6 trans-1,2-Dichloroethylene < 0.50 0.50 ug/L 31-MAY-21 17 1.6 Methylene Chloride < 5.0 5.0 ug/L 31-MAY-21 610 5500 1,2-Dichloropropane < 0.50 0.50 ug/L 31-MAY-21 16 140

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Manalytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



L2590710 CONTD....
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ANALT IICAL GUIDELINE REPORT Page 10 of 15 CO-22-0244									
Sample Details									
Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelin	e Limits	
.2590710-4 MW3									
Sampled By: CLIENT on 20-MAY-21 @ 12:30									
Matrix: WATER						#1	#2		
Volatile Organic Compounds									
	.0.00		0.00	/1	24 MAN 24				
cis-1,3-Dichloropropene trans-1,3-Dichloropropene	<0.30 <0.30		0.30 0.30	ug/L	31-MAY-21 31-MAY-21				
1,3-Dichloropropene (cis & trans)	<0.50		0.30	ug/L	31-MAY-21 31-MAY-21	F 0	45		
Ethylbenzene	<0.50		0.50	ug/L	31-MAY-21	5.2			
n-Hexane	<0.50		0.50	ug/L	31-MAY-21	2300 51	2300 520		
Methyl Ethyl Ketone	<20		20	ug/L	31-MAY-21	470000	1500000		
	<20		20	ug/L	31-MAY-21				
Methyl Isobutyl Ketone MTBE	<2.0		2.0	ug/L	31-MAY-21	140000	580000		
				ug/L	1	190	1400		
Styrene	<0.50		0.50	ug/L	31-MAY-21	1300	9100		
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.3	28		
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.2	15		
Tetrachloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
Toluene	<0.50		0.50	ug/L	31-MAY-21	18000	18000		
1,1,1-Trichloroethane	<0.50		0.50	ug/L	31-MAY-21	640	6700		
1,1,2-Trichloroethane	<0.50		0.50	ug/L	31-MAY-21	4.7	30		
Trichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
Trichlorofluoromethane	<5.0		5.0	ug/L	31-MAY-21	2500	2500		
Vinyl chloride	<0.50		0.50	ug/L	31-MAY-21	0.5	1.7		
o-Xylene	<0.30		0.30	ug/L	31-MAY-21				
m+p-Xylenes	<0.40		0.40	ug/L	31-MAY-21				
Xylenes (Total)	<0.50		0.50	ug/L	31-MAY-21	4200	4200		
Surrogate: 4-Bromofluorobenzene	96.7		70-130	%	31-MAY-21				
Surrogate: 1,4-Difluorobenzene  Hydrocarbons	99.3		70-130	%	31-MAY-21				
F1 (C6-C10)	<25		25	ug/L	31-MAY-21	750	750		
F1-BTEX	<25		25	ug/L	31-MAY-21	750	750		
F2 (C10-C16)	<100		100	ug/L	26-MAY-21	150	150		
F2-Naphth	<100		100	ug/L	31-MAY-21				
F3 (C16-C34)	<250		250	ug/L	26-MAY-21	500	500		
F3-PAH	<250		250	ug/L	31-MAY-21				
F4 (C34-C50)	<250		250	ug/L	26-MAY-21	500	500		
Total Hydrocarbons (C6-C50)	<370		370	ug/L	31-MAY-21				
Chrom. to baseline at nC50	YES			No Unit	26-MAY-21				
Surrogate: 2-Bromobenzotrifluoride	85.8		60-140	%	26-MAY-21				
Surrogate: 3,4-Dichlorotoluene	79.8		60-140	%	31-MAY-21				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.020		0.020	ug/L	28-MAY-21	600	1700		
Acenaphthylene	<0.020		0.020	ug/L	28-MAY-21	1.8	1.8		
Anthracene	<0.020		0.020	ug/L	28-MAY-21	2.4	2.4		
Benzo(a)anthracene	<0.020		0.020	ug/L	28-MAY-21	4.7	4.7		
Benzo(a)pyrene	<0.010		0.010	ug/L	28-MAY-21	0.81	0.81		
Benzo(b&j)fluoranthene	<0.020		0.020	ug/L	28-MAY-21	0.75	0.75		
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	28-MAY-21	0.2	0.2		
Benzo(k)fluoranthene	<0.020		0.020	ug/L	28-MAY-21	0.4	0.2		
Chrysene	<0.020		0.020	ug/L	28-MAY-21	1	1		
Dibenz(a,h)anthracene	<0.020		0.020	ug/L	28-MAY-21	0.52	0.52		
Distriz (a, i jantinatorilo	~0.020		0.020	ug/L	-0 W/71-21	0.02	0.02		

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



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						3	1-MAY-21 0	
Result	Qualifier	D.L.	Units	Analyzed		Guidelin	e Limits	
30								
					#1	#2		
<0.020		0.020	ug/l	28-MAY-21	130	130		
			-					
			_					
			_					
			_					
			_					
			_					
			_					
			_					
100.4		60-140	%	28-MAY-21				
					#1	#2		
			,,					
			_					
			•					
			_					
			_					
			_					
			_					
			_					
			_					
			_					
			_					
			_	1 -				
			_	_				
			_					
					320			
					1.6			
			_					
			-					
					16	140		
			_					
<2.0		2.0	ug/L	31-MAY-21	190	1400		
	<ul> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;0.028</li> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;0.050</li> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;88.9</li> </ul>	<ul> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;0.050</li> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;0.50</li> <li>&lt;2.0</li> <li>&lt;5.0</li> <li>&lt;0.50</li> <li>&lt;2.0</li> <li>&lt;1.0</li> <li>&lt;0.20</li> <li>&lt;0.50</li> <li>&lt;2.0</li> <li>&lt;1.0</li> <li>&lt;0.50</li> <li>&lt;2.0</li> <li>&lt;0.50</li> <li>&lt;20</li> <li>&lt;20</li> <li>&lt;20</li> <li>&lt;20</li> <li>&lt;20</li> </ul>	Color   Colo	Continue   Continue	Country   Coun	#1   #1     #1	Result   Qualifier   D.L.   Units   Analyzed   Guidelin	#1 #2   #2   #3   #4   #2     #4   #4   #4   #4   #4

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

< 0.50

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

0.50

ug/L

31-MAY-21

Styrene

9100

1300

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



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CCO-22-0244							3	31-MAY-21 07:51 (MT)
Sample Details Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelir	ne Limits
L2590710-5 TRIP BLANK								
Sampled By: CLIENT on 20-MAY-21								
Matrix: WATER						#1	#2	T
Volatile Organic Compounds								
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.3	28	
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.2	15	
Tetrachloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17	
Toluene	<0.50		0.50	ug/L	31-MAY-21	18000	18000	
1,1,1-Trichloroethane	<0.50		0.50	ug/L	31-MAY-21	640	6700	
1,1,2-Trichloroethane	<0.50		0.50	ug/L	31-MAY-21	4.7	30	
Trichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17	
Trichlorofluoromethane	<5.0		5.0	ug/L	31-MAY-21	2500	2500	
Vinyl chloride	<0.50		0.50	ug/L	31-MAY-21	0.5	1.7	
o-Xylene	<0.30		0.30	ug/L ug/L	31-MAY-21	0.5	1.7	
m+p-Xylenes	<0.40		0.40	ug/L	31-MAY-21			
Xylenes (Total)	<0.40		0.50	ug/L	31-MAY-21	4200	4200	
Surrogate: 4-Bromofluorobenzene	96.6		70-130	% %	31-MAY-21	4200	4200	
Surrogate: 1,4-Difluorobenzene	99.4		70-130	%	31-MAY-21			
Hydrocarbons	33.4		70-130	/0	31-WAT-21			
F1 (C6-C10)	<25		25	ug/L	31-MAY-21	750	750	
F1-BTEX	<25 <25		25		31-MAY-21	750 750	750 750	
	85.8		60-140	ug/L %	31-MAY-21	750	750	
Surrogate: 3,4-Dichlorotoluene	65.6		60-140	70	31-IVIA1-21			

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

#### **Reference Information**

Sample Parameter Qualifier key listed:

Description Qualifier DLHC Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Methods Listed (if applicable):

ALS Test Code Matrix **Test Description** Method Reference\*\*\* 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 EPA 7199

2011)
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).

EC-R511-WT Conductivity-O.Reg 153/04 (July APHA 2510 B Water

2011)
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).

**EC-SCREEN-WT** Water Conductivity Screen (Internal

**APHA 2510** Use Only)

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

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

**Parameters** 

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

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).

#### **Reference Information**

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

Water

Diss. Mercury in Water by

EPA 1631E (mod)

CVAAS (ug/L)

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

Diss. Metals in Water by ICPMS EPA 200.8

(ug/L)

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 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

APHA 4500 H-Flectrode

Water samples are analyzed directly by a calibrated pH meter.

Water

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

VOC-1,3-DCP-CALC-WT

Regulation 153 VOCs

SW8260B/SW8270C

VOC-511-HS-WT

Water

VOC by GCMS HS O.Reg

SW846 8260

153/04 (July 2011)

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-

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.

Chain of Custody numbers:

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	Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

L2590710 CONTD.... Page 15 of 15 31-MAY-21 07:51 (MT)

#### **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-adjusted weight mg/L - unit of concentration based on volume, parts per million. < - Less than.

D.L. - The reporting limit.

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

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

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

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

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.



Workorder: L2590710 Report Date: 31-MAY-21 Page 1 of 14

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT	Water							
Batch R5467616 WG3540264-9 DUP Chloride (CI)		<b>L2590710-1</b> 65.2	65.3		mg/L	0.1	20	24-MAY-21
WG3540264-7 LCS Chloride (CI)			102.3		%		90-110	24-MAY-21
WG3540264-6 MB Chloride (CI)			<0.50		mg/L		0.5	24-MAY-21
<b>WG3540264-10 MS</b> Chloride (CI)		L2590710-1	102.1		%		75-125	24-MAY-21
CN-WAD-R511-WT	Water							
Batch R5466558 WG3540437-9 DUP Cyanide, Weak Acid Diss	8	<b>WG3540437-8</b> <2.0	<2.0	RPD-NA	ug/L	N/A	20	25-MAY-21
WG3540437-7 LCS Cyanide, Weak Acid Diss			96.1		%		80-120	25-MAY-21
WG3540437-6 MB Cyanide, Weak Acid Diss	5		<2.0		ug/L		2	25-MAY-21
WG3540437-10 MS Cyanide, Weak Acid Diss	5	WG3540437-8	101.3		%		75-125	25-MAY-21
CR-CR6-IC-R511-WT	Water							
Batch R5466576 WG3539907-4 DUP Chromium, Hexavalent		<b>WG3539907-3</b> <0.50	<0.50	RPD-NA	ug/L	N/A	20	22-MAY-21
WG3539907-2 LCS Chromium, Hexavalent			101.1		%		80-120	22-MAY-21
WG3539907-1 MB Chromium, Hexavalent			<0.50		ug/L		0.5	22-MAY-21
WG3539907-5 MS Chromium, Hexavalent		WG3539907-3	102.5		%		70-130	22-MAY-21
EC-R511-WT	Water							
Batch R5465465 WG3539939-4 DUP Conductivity		<b>WG3539939-3</b> 0.522	0.521		mS/cm	0.2	10	22-MAY-21
WG3539939-2 LCS Conductivity			102.3		%		90-110	22-MAY-21
WG3539939-1 MB Conductivity			<0.0030		mS/cm		0.003	22-MAY-21



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Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
		Water							<b>,</b> - <del>-</del>
EC-R511-WT	- 405 400	vvater							
Batch R5 WG3539940-4	5465466 DUP		WG3539940-3						
Conductivity	БОР		1.37	1.36		mS/cm	0.3	10	22-MAY-21
WG3539940-2	LCS								
Conductivity				103.1		%		90-110	22-MAY-21
WG3539940-1	МВ								
Conductivity				<0.0030		mS/cm		0.003	22-MAY-21
Batch R	5465476								
WG3539941-4	DUP		WG3539941-3						
Conductivity			1.26	1.27		mS/cm	1.0	10	22-MAY-21
WG3539941-2	LCS			100.5		0.4			
Conductivity				102.8		%		90-110	22-MAY-21
WG3539941-1 Conductivity	MB			<0.0030		mS/cm		0.003	22 MAY 24
				<0.0030		IIIO/CIII		0.003	22-MAY-21
F1-HS-511-WT		Water							
	5475461								
<b>WG3543076-4</b> F1 (C6-C10)	DUP		<b>WG3543076-3</b> <25	<25	RPD-NA	ug/L	N/A	30	31-MAY-21
WG3543076-1	LCS		120	120	IN D INA	~ <i>9</i> / =	IN/A	30	31-WAT-21
F1 (C6-C10)	LUS			93.8		%		80-120	31-MAY-21
WG3543076-2	МВ								
F1 (C6-C10)				<25		ug/L		25	31-MAY-21
Surrogate: 3,4-	Dichlorot	oluene		92.4		%		60-140	31-MAY-21
WG3543076-5	MS		WG3543076-3						
F1 (C6-C10)				91.2		%		60-140	31-MAY-21
F2-F4-511-WT		Water							
Batch R	5468698								
WG3540369-2	LCS								
F2 (C10-C16)				111.3		%		70-130	26-MAY-21
F3 (C16-C34)				106.4		%		70-130	26-MAY-21
F4 (C34-C50)				99.6		%		70-130	26-MAY-21
WG3540369-1	MB			100				400	
F2 (C10-C16)				<100		ug/L		100	26-MAY-21
F3 (C16-C34)				<250		ug/L		250	26-MAY-21
F4 (C34-C50)				<250		ug/L		250	26-MAY-21
Surrogate: 2-Bi	romobenz	zotrifluoride		85.4		%		60-140	26-MAY-21
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Test N	Matrix I	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT V	Water							
Batch R5469476								
<b>WG3540802-2 LCS</b> F2 (C10-C16)			108.6		%		70-130	00 MAY 04
F3 (C16-C34)			108.3		%			26-MAY-21
F4 (C34-C50)			104.9		%		70-130	26-MAY-21 26-MAY-21
WG3540802-1 MB			104.5		70		70-130	20-IVIA 1 -2 I
F2 (C10-C16)			<100		ug/L		100	26-MAY-21
F3 (C16-C34)			<250		ug/L		250	26-MAY-21
F4 (C34-C50)			<250		ug/L		250	26-MAY-21
Surrogate: 2-Bromobenzoti	rifluoride		85.5		%		60-140	26-MAY-21
HG-D-UG/L-CVAA-WT V	Water							
Batch R5468683								
WG3540464-4 DUP		WG3540464-3						
Mercury (Hg)-Dissolved		<0.0050	<0.0050	RPD-NA	ug/L	N/A	20	26-MAY-21
WG3540464-2 LCS			100.0		0/			
Mercury (Hg)-Dissolved			103.0		%		80-120	26-MAY-21
WG3540464-1 MB Mercury (Hg)-Dissolved			<0.0050		ug/L		0.005	26-MAY-21
WG3540464-6 MS		WG3540464-5	<b>10.0000</b>		ug/		0.000	20-IVIA 1-2 I
Mercury (Hg)-Dissolved		WG5540404-5	99.1		%		70-130	26-MAY-21
MET-D-UG/L-MS-WT V	Water							
Batch R5468236								
WG3539642-4 DUP		WG3539642-3						
Antimony (Sb)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	25-MAY-21
Arsenic (As)-Dissolved		0.28	0.26		ug/L	8.9	20	25-MAY-21
Barium (Ba)-Dissolved		146	144		ug/L	1.3	20	25-MAY-21
Beryllium (Be)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	25-MAY-21
Boron (B)-Dissolved		67	65		ug/L	2.9	20	25-MAY-21
Cadmium (Cd)-Dissolved		0.0095	0.0069	J	ug/L	0.0026	0.01	25-MAY-21
Chromium (Cr)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	25-MAY-21
Cobalt (Co)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	25-MAY-21
Copper (Cu)-Dissolved		1.09	1.08		ug/L	1.2	20	25-MAY-21
Lead (Pb)-Dissolved		0.087	0.084		ug/L	3.5	20	25-MAY-21
Molybdenum (Mo)-Dissolve	ed	1.31	1.30		ug/L	1.1	20	25-MAY-21
Nickel (Ni)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	25-MAY-21
Selenium (Se)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	25-MAY-21



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	Water							
Batch R54682	236							
WG3539642-4 DU Silver (Ag)-Dissolved		<b>WG3539642</b> -<0.050	<b>3</b> <0.050	RPD-NA	ug/L	N/A	20	25-MAY-21
Sodium (Na)-Dissolv	ved	14900	14700		ug/L	1.3	20	25-MAY-21
Thallium (TI)-Dissolv	ved	<0.010	<0.010	RPD-NA	ug/L	N/A	20	25-MAY-21
Uranium (U)-Dissolv	ved .	0.097	0.094		ug/L	2.6	20	25-MAY-21
Vanadium (V)-Disso	lved	<0.50	<0.50	RPD-NA	ug/L	N/A	20	25-MAY-21
Zinc (Zn)-Dissolved		1.3	1.2		ug/L	6.5	20	25-MAY-21
WG3539642-2 LC Antimony (Sb)-Disso	_		100.5		%		80-120	05 MAY 04
Arsenic (As)-Dissolv			100.5		%			25-MAY-21
Barium (Ba)-Dissolv			104.2		%		80-120	25-MAY-21
Beryllium (Be)-Disso			99.96		%		80-120 80-120	25-MAY-21 25-MAY-21
Boron (B)-Dissolved			100.7		%		80-120	25-MAY-21
Cadmium (Cd)-Disse			102.2		%		80-120	25-MAY-21
Chromium (Cr)-Diss			102.2		%		80-120	25-MAY-21
Cobalt (Co)-Dissolve			103.0		%		80-120	25-MAY-21
Copper (Cu)-Dissolv			103.8		%		80-120	25-MAY-21
Lead (Pb)-Dissolved			108.3		%		80-120	25-MAY-21
Molybdenum (Mo)-D			100.5		%		80-120	25-MAY-21
Nickel (Ni)-Dissolved			102.6		%		80-120	25-MAY-21
Selenium (Se)-Disso			100.5		%		80-120	25-MAY-21
Silver (Ag)-Dissolved			108.2		%		80-120	25-MAY-21
Sodium (Na)-Dissolv			111.3		%		80-120	25-MAY-21
Thallium (TI)-Dissolv	/ed		108.0		%		80-120	25-MAY-21
Uranium (U)-Dissolv	ved .		109.9		%		80-120	25-MAY-21
Vanadium (V)-Disso	lved		104.9		%		80-120	25-MAY-21
Zinc (Zn)-Dissolved			103.3		%		80-120	25-MAY-21
WG3539642-1 ME			-0.40		ua/I		0.1	05 1417 04
Antimony (Sb)-Disso			<0.10		ug/L			25-MAY-21
Arsenic (As)-Dissolv			<0.10		ug/L		0.1	25-MAY-21
Barium (Ba)-Dissolv			<0.10		ug/L		0.1	25-MAY-21
Beryllium (Be)-Disso			<0.10		ug/L		0.1	25-MAY-21
Boron (B)-Dissolved			<10		ug/L		10	25-MAY-21
Cadmium (Cd)-Diss			<0.0050		ug/L		0.005	25-MAY-21
Chromium (Cr)-Diss	oived		<0.50		ug/L		0.5	25-MAY-21



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Carp ON K0A1L0

Contact: Bradley Sutherland

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	Water							
Batch R546823	36							
WG3539642-1 MB								
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	25-MAY-21
Copper (Cu)-Dissolve	d		<0.20		ug/L		0.2	25-MAY-21
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	25-MAY-21
Molybdenum (Mo)-Dis	ssolved		<0.050		ug/L		0.05	25-MAY-21
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	25-MAY-21
Selenium (Se)-Dissol	ved		<0.050		ug/L		0.05	25-MAY-21
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	25-MAY-21
Sodium (Na)-Dissolve			<50		ug/L		50	25-MAY-21
Thallium (TI)-Dissolve			<0.010		ug/L		0.01	25-MAY-21
Uranium (U)-Dissolve			<0.010		ug/L		0.01	25-MAY-21
Vanadium (V)-Dissolv	red .		<0.50		ug/L		0.5	25-MAY-21
Zinc (Zn)-Dissolved			<1.0		ug/L		1	25-MAY-21
WG3539642-5 MS Antimony (Sb)-Dissolv	ved	WG3539642-6	99.0		%		70-130	25-MAY-21
Arsenic (As)-Dissolve			108.7		%		70-130	25-MAY-21
Barium (Ba)-Dissolve			N/A	MS-B	%		-	25-MAY-21
Beryllium (Be)-Dissolv	/ed		102.0		%		70-130	25-MAY-21
Boron (B)-Dissolved			96.3		%		70-130	25-MAY-21
Cadmium (Cd)-Dissol	ved		96.6		%		70-130	25-MAY-21
Chromium (Cr)-Disso	lved		100.2		%		70-130	25-MAY-21
Cobalt (Co)-Dissolved	d		97.6		%		70-130	25-MAY-21
Copper (Cu)-Dissolve	d		91.6		%		70-130	25-MAY-21
Lead (Pb)-Dissolved			96.4		%		70-130	25-MAY-21
Molybdenum (Mo)-Dis	ssolved		105.0		%		70-130	25-MAY-21
Nickel (Ni)-Dissolved			93.3		%		70-130	25-MAY-21
Selenium (Se)-Dissol	ved		113.0		%		70-130	25-MAY-21
Silver (Ag)-Dissolved			99.0		%		70-130	25-MAY-21
Sodium (Na)-Dissolve	ed		N/A	MS-B	%		-	25-MAY-21
Thallium (TI)-Dissolve	ed		97.6		%		70-130	25-MAY-21
Uranium (U)-Dissolve	d		N/A	MS-B	%		-	25-MAY-21
Vanadium (V)-Dissolv	ved .		106.6		%		70-130	25-MAY-21
Zinc (Zn)-Dissolved			98.9		%		70-130	25-MAY-21

PAH-511-WT Water



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PAH-S11-WT	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MGS460369-2 LCS   1-Methy/maphthalene   105.0   %   50.140   27-MAY-21   2-Methy/maphthalene   100.5   %   50.140   27-MAY-21   2-Methy/maphthalene   108.2   %   50.140   27-MAY-21   27-MAY-21   4.cenaphthylene   108.4   %   50.140   27-MAY-21   4.cenaphthylene   105.4   %   50.140   27-MAY-21   4.cenaphthylene   105.4   %   50.140   27-MAY-21   4.cenaphthylene   108.9   %   50.140   27-MAY-21   4.cenaphthylene   107.8   %   50.140   27-MAY-21   4.cenaphthylene   107.8   %   50.140   27-MAY-21   4.cenaphthylene   125.3   %   50.140   27-MAY-21   4.cenaphthylene   125.3   %   50.140   27-MAY-21   4.cenaphthylene   125.3   %   50.140   27-MAY-21   4.cenaphthylene   118.8   %   50.140   27-MAY-21   4.cenaphthylene   118.8   %   50.140   27-MAY-21   4.cenaphthylene   118.9   %   50.140   27-MAY-21   4.cenaphthylene   113.9   %   50.140   27-MAY-21   4.cenaphthylene   114.6   %   50.140   27-MAY-21   4.cenaphthylene   124.0   %   50.140   27-MAY-21   4.cenaphthylene   18.3   %   50.140   27-MAY-21   4.cenaphthylene   18.3   %   50.140   27-MAY-21   4.cenaphthylene   18.3   %   50.140   27-MAY-21   4.cenaphthylene   40.020   49.L   40.02   27-MAY-21   4.cenaphthylene	PAH-511-WT	Water							
1-Methy/naphthalene   105.0	Batch R5473422								
2-Methylnaphthalene         100.5         %         \$0-140         27-MAY-21           Acenaphthene         108.2         %         \$0-140         27-MAY-21           Acenaphthylene         101.4         %         \$0-140         27-MAY-21           Anthracene         105.4         %         \$0-140         27-MAY-21           Benzo(a)anthracene         108.9         %         \$0-140         27-MAY-21           Benzo(a)Bylloranthene         118.6         %         \$0-140         27-MAY-21           Benzo(b, flyperylene         125.3         %         \$0-140         27-MAY-21           Benzo(k)fluoranthene         118.8         %         \$0-140         27-MAY-21           Chrysene         112.2         %         \$0-140         27-MAY-21           Chrysene         113.9         %         \$0-140         27-MAY-21           Fluorene         107.3         %         \$0-140         27-MAY-21 <t< td=""><td></td><td></td><td></td><td></td><td></td><td>0.4</td><td></td><td></td><td></td></t<>						0.4			
Acenaphthene 108.2 % 50-140 27-MAY-21 Acanaphthylene 101.4 % 50-140 27-MAY-21 Acanaphthylene 105.4 % 50-140 27-MAY-21 Anthracene 105.4 % 50-140 27-MAY-21 Benzo(a)anthracene 108.9 % 50-140 27-MAY-21 Benzo(a)anthracene 107.8 % 50-140 27-MAY-21 Benzo(ba)fluoranthene 107.8 % 50-140 27-MAY-21 Benzo(ba)fluoranthene 118.6 % 50-140 27-MAY-21 Benzo(ba)fluoranthene 118.6 % 50-140 27-MAY-21 Benzo(gh,fluoranthene 118.8 % 50-140 27-MAY-21 Benzo(gh,fluoranthene 118.8 % 50-140 27-MAY-21 Chrysene 112.2 % 50-140 27-MAY-21 Dibenz(a,h)anthracene 113.9 % 50-140 27-MAY-21 Fluoranthene 114.6 % 50-140 27-MAY-21 Fluora									
Acenaphthylene 101.4 % 50-140 27-MAY-21 Anthracene 105.4 % 50-140 27-MAY-21 Berazo(a)anthracene 106.9 % 50-140 27-MAY-21 Berazo(a)aphrhacene 106.9 % 50-140 27-MAY-21 Berazo(a)pyrene 107.8 % 50-140 27-MAY-21 Berazo(a)pyrene 107.8 % 50-140 27-MAY-21 Berazo(b)filluoranthene 118.6 % 50-140 27-MAY-21 Berazo(g,h.i)perylene 125.3 % 50-140 27-MAY-21 Berazo(k)filluoranthene 118.8 % 50-140 27-MAY-21 Berazo(k)filluoranthene 118.8 % 50-140 27-MAY-21 Dibenz(a,h)anthracene 112.2 % 50-140 27-MAY-21 Dibenz(a,h)anthracene 113.9 % 50-140 27-MAY-21 Filluoranthene 114.6 % 50-140 27-MAY-21 Indeno(1,2,3-cd)pyrene 124.0 % 50-140 27-MAY-21 Indeno(1,2,3-cd)pyrene 124.0 % 50-140 27-MAY-21 Prenaphthene 94.0 % 50-140 27-MAY-21 Prenaphthrene 118.3 % 50-140 27-MAY-21 Prenaphthrene 118.3 % 50-140 27-MAY-21 Prenaphthrene 114.6 % 50-140 27-MAY-21 Prenaphthrene 114.6 % 50-140 27-MAY-21 Prenaphthylaphthalene 40.020 ug/L 0.02 27-MAY-21 Acenaphthylene 40.020 ug/L 0.02 27-MAY-21 Acenaphthylene 40.020 ug/L 0.02 27-MAY-21 Berazo(a)anthracene 40.020 ug/L 0.02 27-MAY-21 Berazo(a)hilperylene 40.020 ug/L 0.02 27-MAY-21 Berazo(b)hilperylene 40.020 ug/L 0.02 27-MAY-21 Berazo(a)hilperylene 40.020 ug/L 0.02 27-MAY-21 Berazo(k)filluoranthene 40.020 ug/L 0.02 27-MAY-21 Eluoranthene 40.020 ug/L 0.02									
Anthracene 105.4 % 50.140 27-MAY-21 Benzo(a)anthracene 108.9 % 50.140 27-MAY-21 Benzo(a)pyrene 107.8 % 50.140 27-MAY-21 Benzo(a)pyrene 107.8 % 50.140 27-MAY-21 Benzo(b&)fluoranthene 118.6 % 50.140 27-MAY-21 Benzo(b,fh)perylene 125.3 % 50.140 27-MAY-21 Benzo(k)fluoranthene 118.8 % 50.140 27-MAY-21 Benzo(k)fluoranthene 118.8 % 50.140 27-MAY-21 Benzo(k)fluoranthene 118.8 % 50.140 27-MAY-21 Dibenz(a,h)anthracene 113.9 % 50.140 27-MAY-21 Dibenz(a,h)anthracene 113.9 % 50.140 27-MAY-21 Dibenz(a,h)anthracene 114.6 % 50.140 27-MAY-21 Indeno(1,2,3-cd)pyrene 107.3 % 50.140 27-MAY-21 Indeno(1,2,3-cd)pyrene 124.0 % 50.140 27-MAY-21 Indeno(1,2,3-cd)pyrene 124.0 % 50.140 27-MAY-21 Indeno(1,2,3-cd)pyrene 118.3 % 50.140 27-MAY-21 Phenanthrene 118.3 % 50.140 27-MAY-21 WG3540369-1 MB 1-Methylnaphthalene 40.020 ug/L 0.02 27-MAY-21 WG3540369-1 MB 1-Methylnaphthalene 40.020 ug/L 0.02 27-MAY-21 Acenaphthylene 40.020 ug/L 0.02 27-MAY-21 Acenaphthylene 40.020 ug/L 0.02 27-MAY-21 Benzo(a)anthracene 40.020 ug/L 0.02 27-MAY-21 Benzo(a)pyrene 40.010 ug/L 0.02 27-MAY-21 Benzo(a)pyrene 40.010 ug/L 0.02 27-MAY-21 Benzo(a)pyrene 40.020 u	·								
Benzo(a)anthracene         108.9         %         50-140         27-MAY-21           Benzo(a)pyrene         107.8         %         50-140         27-MAY-21           Benzo(bá)fluoranthene         118.6         %         50-140         27-MAY-21           Benzo(gh,li)perylene         125.3         %         50-140         27-MAY-21           Benzo(gh,li)perylene         118.8         %         50-140         27-MAY-21           Chrysene         112.2         %         50-140         27-MAY-21           Dibenz(a,li)parthracene         113.9         %         50-140         27-MAY-21           Fluoranthene         114.6         %         50-140         27-MAY-21           Fluoranthene         107.3         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Pyrene         118.3         %         50-140         27-MAY-21           WG3540369-1         MB         1-Methylnaphthalene         <0.020									
Benzo(a)pyrene         107.8         %         50-140         27-MAY-21           Benzo(b&)fluoranthene         118.6         %         50-140         27-MAY-21           Benzo(s,h)perylene         125.3         %         50-140         27-MAY-21           Benzo(k)fluoranthene         118.8         %         50-140         27-MAY-21           Chrysene         112.2         %         50-140         27-MAY-21           Dibenz(a,h)anthracene         113.9         %         50-140         27-MAY-21           Fluoranthene         114.6         %         50-140         27-MAY-21           Fluoranthene         107.3         %         50-140         27-MAY-21           Indenot(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540389-1         MB         1-Methylnaphthalene         <0.020									
Benzo(b&j)fluoranthene         118.6         %         50.140         27-MAY-21           Benzo(g,hi)perylene         125.3         %         50.140         27-MAY-21           Benzo(k)fluoranthene         118.8         %         50.140         27-MAY-21           Chrysene         112.2         %         50.140         27-MAY-21           Dibenz(a,h)anthracene         113.9         %         50.140         27-MAY-21           Fluoranthene         114.6         %         50.140         27-MAY-21           Fluorene         107.3         %         50.140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50.140         27-MAY-21           Naphthalene         94.0         %         50.140         27-MAY-21           Naphthalene         94.0         %         50.140         27-MAY-21           Phenanthrene         118.3         %         50.140         27-MAY-21           Pyrene         114.6         %         50.140         27-MAY-21           WG3540369-1         MB         1         1.46         %         50.140         27-MAY-21           WG3540369-1         MB         1         .0.02         27-MAY-21									
Benzo(g,h,i)perylene         125.3         %         50-140         27-MAY-21           Benzo(k)fluoranthene         118.8         %         50-140         27-MAY-21           Chrysene         112.2         %         50-140         27-MAY-21           Dibenz(a,h)anthracene         113.9         %         50-140         27-MAY-21           Fluoranthene         114.6         %         50-140         27-MAY-21           Fluorene         107.3         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1         MB         114.6         %         50-140         27-MAY-21           VWG3540369-1         MB         1         0.02         27-MAY-21         0.02         27-MAY-21           VWG3540369-1         MB         1         0.02         27-MAY-21         0.02         27-MAY-21           VWG3540369-1         MB         0									
Benzo(k)fluoranthene         118.8         %         50.140         27-MAY-21           Chrysene         112.2         %         50.140         27-MAY-21           Dibenz(a,h)anthracene         113.9         %         50.140         27-MAY-21           Fluoranthene         114.6         %         50.140         27-MAY-21           Fluorene         107.3         %         50.140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50.140         27-MAY-21           Naphthalene         94.0         %         50.140         27-MAY-21           Phenanthrene         118.3         %         50.140         27-MAY-21           Pyrene         114.6         %         50.140         27-MAY-21           Pyrene         114.6         %         50.140         27-MAY-21           WG3540369-1         MB         1-Methylnaphthalene         <0.020									
Chrysene         112.2         %         50-140         27-MAY-21           Dibenz(a,h)anthracene         113.9         %         50-140         27-MAY-21           Fluoranthene         114.6         %         50-140         27-MAY-21           Fluorene         107.3         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           Pyrene         10.2         27-MAY-21         27-MAY-21           WG3540369-1         MB         1         4         0.02         27-MAY-21           WG3540369-1         MB         1         0.02         27-MAY-21           Yesene         0.020         ug/L         0.02         27-MAY-21           WG3540369-1         MB         1         0.02         27-MAY-21           WG3540369-1         MB         1         0.02         27-MAY-21           WG3540369-1         MB         0.02									
Dibenz(a,h)anthracene         113.9         %         50.140         27-MAY-21           Fluoranthene         114.6         %         50.140         27-MAY-21           Fluorene         107.3         %         50.140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50.140         27-MAY-21           Naphthalene         94.0         %         50.140         27-MAY-21           Phenanthrene         118.3         %         50.140         27-MAY-21           Pyrene         114.6         %         50.140         27-MAY-21           Pyrene         114.6         %         50.140         27-MAY-21           WG3540369-1         MB         1         141.6         %         0.02         27-MAY-21           WG3540369-1         MB         1         40.02         27-MAY-21         2.002         2.02         27-MA								50-140	
Fluoranthene 114.6 % 50-140 27-MAY-21 Fluorene 107.3 % 50-140 27-MAY-21 Indeno(1,2,3-cd)pyrene 124.0 % 50-140 27-MAY-21 Naphthalene 94.0 % 50-140 27-MAY-21 Phenanthrene 118.3 % 50-140 27-MAY-21 Phenanthrene 118.3 % 50-140 27-MAY-21 Pyrene 114.6 % 50-140 27-MAY-21 Pyrene 14.6 Pyrene 14.6 Pyrene 14.6 Pyrene 15.0 Pyrene	-							50-140	27-MAY-21
Fluorene         107.3         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1 MB           1-Methylnaphthalene         <0.020								50-140	27-MAY-21
Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1 MB           1-Methylnaphthalene         <0.020								50-140	27-MAY-21
Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1         MB         MB         WG3540369-1         WB           1-Methylnaphthalene         <0.020	Fluorene							50-140	27-MAY-21
Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1 MB           1-Methylnaphthalene         <0.020				124.0		%		50-140	27-MAY-21
Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1 MB         MB         Ug/L         0.02         27-MAY-21           2-Methylnaphthalene         <0.020	Naphthalene			94.0		%		50-140	27-MAY-21
WG3540369-1         MB           1-Methylnaphthalene         <0.020	Phenanthrene			118.3		%		50-140	27-MAY-21
1-Methylnaphthalene       <0.020	Pyrene			114.6		%		50-140	27-MAY-21
2-Methylnaphthalene       <0.020									
Acenaphthene       <0.020						•			
Acenaphthylene       <0.020									
Anthracene       <0.020									
Benzo(a)anthracene       <0.020									
Benzo(a)pyrene       <0.010									27-MAY-21
Benzo(b&j)fluoranthene       <0.020	, ,					•			27-MAY-21
Benzo(g,h,i)perylene       <0.020				<0.010		•		0.01	27-MAY-21
Benzo(k)fluoranthene       <0.020						· ·			27-MAY-21
Chrysene       <0.020									27-MAY-21
Dibenz(a,h)anthracene         <0.020         ug/L         0.02         27-MAY-21           Fluoranthene         <0.020	, ,					ug/L			27-MAY-21
Fluoranthene         <0.020         ug/L         0.02         27-MAY-21           Fluorene         <0.020	•			<0.020		ug/L			27-MAY-21
Fluorene <0.020 ug/L 0.02 27-MAY-21	Dibenz(a,h)anthracene			<0.020		ug/L		0.02	27-MAY-21
•	Fluoranthene			<0.020		ug/L		0.02	27-MAY-21
Indeno(1,2,3-cd)pyrene <0.020 ug/L 0.02 27-MAY-21	Fluorene			<0.020		ug/L		0.02	27-MAY-21
	Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	27-MAY-21



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	Water							
Batch R547342	22							
WG3540369-1 MB			.0.050		//		0.05	
Naphthalene			<0.050		ug/L		0.05	27-MAY-21
Phenanthrene			<0.020 <0.020		ug/L		0.02 0.02	27-MAY-21
Pyrene	aa d0				ug/L			27-MAY-21
Surrogate: Naphthalei Surrogate: Phenanthro			98.3		%		60-140 60-140	27-MAY-21
-			111.4		%		00-140	27-MAY-21
Batch R547475								
WG3540802-2 LCS 1-Methylnaphthalene			95.8		%		50-140	28-MAY-21
2-Methylnaphthalene			93.7		%		50-140	28-MAY-21
Acenaphthene			102.6		%		50-140	28-MAY-21
Acenaphthylene			101.7		%		50-140	28-MAY-21
Anthracene			109.6		%		50-140	28-MAY-21
Benzo(a)anthracene			132.5		%		50-140	28-MAY-21
Benzo(a)pyrene			109.2		%		50-140	28-MAY-21
Benzo(b&j)fluoranther	ne		109.6		%		50-140	28-MAY-21
Benzo(g,h,i)perylene			123.6		%		50-140	28-MAY-21
Benzo(k)fluoranthene			111.4		%		50-140	28-MAY-21
Chrysene			131.1		%		50-140	28-MAY-21
Dibenz(a,h)anthracen	е		125.5		%		50-140	28-MAY-21
Fluoranthene			116.7		%		50-140	28-MAY-21
Fluorene			106.7		%		50-140	28-MAY-21
Indeno(1,2,3-cd)pyrer	ne		138.2		%		50-140	28-MAY-21
Naphthalene			91.1		%		50-140	28-MAY-21
Phenanthrene			116.0		%		50-140	28-MAY-21
Pyrene			114.2		%		50-140	28-MAY-21
WG3540802-1 MB					4		0.05	
1-Methylnaphthalene			<0.020		ug/L		0.02	28-MAY-21
2-Methylnaphthalene			<0.020		ug/L		0.02	28-MAY-21
Acenaphthene			<0.020		ug/L		0.02	28-MAY-21
Acenaphthylene			<0.020		ug/L		0.02	28-MAY-21
Anthracene			<0.020		ug/L		0.02	28-MAY-21
Benzo(a)anthracene			<0.020		ug/L		0.02	28-MAY-21
Benzo(a)pyrene			<0.010		ug/L		0.01	28-MAY-21
Benzo(b&j)fluoranther	ne		<0.020		ug/L		0.02	28-MAY-21



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	Water							
Batch R5474752 WG3540802-1 MB								
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	28-MAY-21
Benzo(k)fluoranthene			<0.020		ug/L		0.02	28-MAY-21
Chrysene			<0.020		ug/L		0.02	28-MAY-21
Dibenz(a,h)anthracene			<0.020		ug/L		0.02	28-MAY-21
Fluoranthene			<0.020		ug/L		0.02	28-MAY-21
Fluorene			<0.020		ug/L		0.02	28-MAY-21
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	28-MAY-21
Naphthalene			<0.050		ug/L		0.05	28-MAY-21
Phenanthrene			<0.020		ug/L		0.02	28-MAY-21
Pyrene			<0.020		ug/L		0.02	28-MAY-21
Surrogate: Naphthalene	e d8		95.1		%		60-140	28-MAY-21
Surrogate: Phenanthrer	ne d10		99.9		%		60-140	28-MAY-21
Surrogate: Chrysene d1	2		114.4		%		50-150	28-MAY-21
PH-WT	Water							
Batch R5465465								
<b>WG3539939-4 DUP</b> pH		<b>WG3539939-3</b> 8.34	8.32	J	pH units	0.02	0.2	22-MAY-21
<b>WG3539939-2 LCS</b> pH			7.00		pH units		6.9-7.1	22-MAY-21
Batch R5465466								
<b>WG3539940-4 DUP</b> pH		<b>WG3539940-3</b> 7.67	7.66	J	pH units	0.01	0.2	22-MAY-21
<b>WG3539940-2</b> LCS			7.00		pH units		6.9-7.1	22-MAY-21
·			7.00		pri units		6.9-7.1	22-IVIA Y -2 I
Batch R5465476 WG3539941-4 DUP		WG3539941-3						
рН		8.37	8.43	J	pH units	0.06	0.2	22-MAY-21
<b>WG3539941-2 LCS</b> pH			7.01		pH units		6.9-7.1	22-MAY-21
VOC-511-HS-WT	Water							
Batch R5475461								
WG3543076-4 DUP 1,1,1,2-Tetrachloroetha	ne	<b>WG3543076-3</b> <0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,1,2,2-Tetrachloroetha	ne	<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R5475461								
WG3543076-4 DUP		WG3543076-						
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	31-MAY-21
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	31-MAY-21
Benzene		<0.50	< 0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	31-MAY-21
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	31-MAY-21
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	31-MAY-21
Chlorobenzene		<0.50	< 0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	31-MAY-21
cis-1,2-Dichloroethylene	:	<0.50	< 0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
cis-1,3-Dichloropropene		<0.30	< 0.30	RPD-NA	ug/L	N/A	30	31-MAY-21
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	31-MAY-21
Dichlorodifluoromethane	)	<2.0	<2.0	RPD-NA	ug/L	N/A	30	31-MAY-21
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
m+p-Xylenes		<0.40	< 0.40	RPD-NA	ug/L	N/A	30	31-MAY-21
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	31-MAY-21
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	31-MAY-21
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	31-MAY-21
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	31-MAY-21
o-Xylene		<0.30	< 0.30	RPD-NA	ug/L	N/A	30	31-MAY-21
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
trans-1,2-Dichloroethyle	ne	<0.50	<0.50		ug/L			31-MAY-21
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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test Mati	rix Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT Wat	ter						
Batch R5475461							
WG3543076-4 DUP	WG3543076						
trans-1,2-Dichloroethylene	<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
trans-1,3-Dichloropropene	<0.30	<0.30	RPD-NA	ug/L	N/A	30	31-MAY-21
Trichloroethylene	<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Trichlorofluoromethane	<5.0	<5.0	RPD-NA	ug/L	N/A	30	31-MAY-21
Vinyl chloride	<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
WG3543076-1 LCS 1,1,1,2-Tetrachloroethane		102.1		%		70-130	31-MAY-21
1,1,2,2-Tetrachloroethane		108.3		%		70-130	31-MAY-21
1,1,1-Trichloroethane		96.7		%		70-130	31-MAY-21
1,1,2-Trichloroethane		103.5		%		70-130	31-MAY-21
1,1-Dichloroethane		100.7		%		70-130	31-MAY-21
1,1-Dichloroethylene		98.7		%		70-130	31-MAY-21
1,2-Dibromoethane		108.2		%		70-130	31-MAY-21
1,2-Dichlorobenzene		102.2		%		70-130	31-MAY-21
1,2-Dichloroethane		106.5		%		70-130	31-MAY-21
1,2-Dichloropropane		106.1		%		70-130	31-MAY-21
1,3-Dichlorobenzene		97.6		%		70-130	31-MAY-21
1,4-Dichlorobenzene		97.7		%		70-130	31-MAY-21
Acetone		119.6		%		60-140	31-MAY-21
Benzene		98.3		%		70-130	31-MAY-21
Bromodichloromethane		104.4		%		70-130	31-MAY-21
Bromoform		112.2		%		70-130	31-MAY-21
Bromomethane		95.8		%		60-140	31-MAY-21
Carbon tetrachloride		98.0		%		70-130	31-MAY-21
Chlorobenzene		100.5		%		70-130	31-MAY-21
Chloroform		103.6		%		70-130	31-MAY-21
cis-1,2-Dichloroethylene		103.5		%		70-130	31-MAY-21
cis-1,3-Dichloropropene		96.0		%		70-130	31-MAY-21
Dibromochloromethane		102.9		%		70-130	31-MAY-21
Dichlorodifluoromethane		89.1		%		50-140	31-MAY-21
Ethylbenzene		97.2		%		70-130	31-MAY-21
n-Hexane		95.3		%		70-130	31-MAY-21
m+p-Xylenes		99.1		%		70-130	31-MAY-21



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Client: McIntosh Perry Engineering Consultants (Ottawa)

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No.   Sta75461   Water   Sta75461   Wa5345075-1 LCS   Wa5345075-1 LCS   Wa5345075-1 LCS   Waterly Ethyl Ketone   105.6   %   60-140   31-MAY-21   Methyl sobubly Ketone   107.9   %   60-140   31-MAY-21   Methylene Chloride   106.0   %   70-130   31-MAY-21   MTDE   96.0   %   70-130   31-MAY-21   MTDE   96.0   %   70-130   31-MAY-21   MTDE   96.0   %   70-130   31-MAY-21   MTDE   98.0   %   70-130   31-MAY-21   MTDE   98.0   %   70-130   31-MAY-21   MTDE   98.0   %   70-130   31-MAY-21   MTDE   98.2   %   70-130   31-MAY-21   MTDE   98.2   %   70-130   31-MAY-21   MTDE   98.2   %   70-130   31-MAY-21   MTDE   MTDE   98.2   %   70-130   31-MAY-21   MTDE	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
WassAsore-I LCS         Methyl Ethyl Ketone         105.6         %         60-140         31-MAY-21           Methyl Isobutyl Ketone         107.9         %         60-140         31-MAY-21           Methyl Isobutyl Ketone         106.0         %         70-130         31-MAY-21           MTBE         96.0         %         70-130         31-MAY-21           o-Xylene         109.5         %         70-130         31-MAY-21           Styrene         108.2         %         70-130         31-MAY-21           Tetrachloroethylene         94.0         %         70-130         31-MAY-21           Totaene         96.2         %         70-130         31-MAY-21           trans-1,2-Dichloroethylene         100.2         %         70-130         31-MAY-21           trans-1,2-Dichloroethylene         97.6         %         70-130         31-MAY-21           trans-1,2-Dichloroethylene         97.6         %         70-130         31-MAY-21           Trichloroethylene         97.6         %         70-130         31-MAY-21           Trichloroethylene         97.6         %         70-130         31-MAY-21           Trichloroethylene         103.1         %         60-140 <td>VOC-511-HS-WT</td> <td>Water</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	VOC-511-HS-WT	Water							
Methyl Ethyl Ketone         105.6         %         60-140         31-MAY-21           Methyl Isobutyl Ketone         107.9         %         60-140         31-MAY-21           Methylene Chloride         106.0         %         60-140         31-MAY-21           MTBE         96.0         %         70-130         31-MAY-21           o-Xylene         109.5         %         70-130         31-MAY-21           Styrene         108.2         %         70-130         31-MAY-21           Tetrachlorositylene         94.0         %         70-130         31-MAY-21           Toluene         96.2         %         70-130         31-MAY-21           trans-1,2-Dichlorosthylene         100.2         %         70-130         31-MAY-21           trans-1,3-Dichlorospropene         99.4         %         70-130         31-MAY-21           Trichlorosthylene         97.6         %         70-130         31-MAY-21           Trichlorosthylene         99.9         %         60-140         31-MAY-21           Trichlorosthylene         96.9         %         60-140         31-MAY-21           Trichlorosthane         90.9         Wpl.         0.5         31-MAY-21	Batch R5475461								
Methylene Chloride         106.0         %         70-130         31-MAY-21           MTBE         96.0         %         70-130         31-MAY-21           o-Xylene         109.5         %         70-130         31-MAY-21           Styrene         108.2         %         70-130         31-MAY-21           Tetrachloroethylene         94.0         %         70-130         31-MAY-21           Toluene         96.2         %         70-130         31-MAY-21           trans-1,2-Dichloroethylene         100.2         %         70-130         31-MAY-21           trans-1,3-Dichloropropene         99.4         %         70-130         31-MAY-21           Trichloroethylene         97.6         %         70-130         31-MAY-21           Trichloroethylene         97.6         %         70-130         31-MAY-21           Trichloroethylene         96.9         %         60-140         31-MAY-21           Trichloroethane         90.5         %         60-140         31-MAY-21           Trichloroethane         <0.50				105.6		%		60-140	31-MAY-21
MTBE         96.0         %         70-130         31-MAY-21           o-Xylene         109.5         %         70-130         31-MAY-21           Styrene         108.2         %         70-130         31-MAY-21           Tetrachforcethylene         94.0         %         70-130         31-MAY-21           Toluene         96.2         %         70-130         31-MAY-21           trans-1,2-Dichloroptylene         100.2         %         70-130         31-MAY-21           trans-1,3-Dichloroptypene         99.4         %         70-130         31-MAY-21           Trichlorothylene         97.6         %         70-130         31-MAY-21           Trichlorothylene         98.9         %         60-140         31-MAY-21           Trichlorothylene         103.1         %         60-140         31-MAY-21           Vinyl chloride         103.1         %         60-140         31-MAY-21           WGSS43076-2         MB         1         0.5         31-MAY-21           1,1,1,2 Fitzachloroethane         <0.50	Methyl Isobutyl Ketone			107.9		%		60-140	31-MAY-21
o-Xylene         109.5         %         70-130         31-MAY-21           Styrene         108.2         %         70-130         31-MAY-21           Tetrachloroethylene         94.0         %         70-130         31-MAY-21           Toluene         96.2         %         70-130         31-MAY-21           trans-1,2-Dichloroethylene         100.2         %         70-130         31-MAY-21           trans-1,3-Dichloropropene         99.4         %         70-130         31-MAY-21           Trichloroethylene         97.6         %         70-130         31-MAY-21           Trichloroethylene         96.9         %         60-140         31-MAY-21           Trichloroethylene         96.9         %         60-140         31-MAY-21           Trichloroethylene         96.9         %         60-140         31-MAY-21           WG3543076-2         MB         11,1,2-Tetrachloroethane         <0.50	Methylene Chloride			106.0		%		70-130	31-MAY-21
Styrene         108.2         %         70-130         31-MAY-21           Tetrachloroethylene         94.0         %         70-130         31-MAY-21           Toluene         96.2         %         70-130         31-MAY-21           trans-1,2-Dichloroethylene         100.2         %         70-130         31-MAY-21           trans-1,3-Dichloropropene         99.4         %         70-130         31-MAY-21           Trichloroethylene         97.6         %         70-130         31-MAY-21           Trichloroethylene         99.9         %         60-140         31-MAY-21           Viryl chloride         103.1         %         60-140         31-MAY-21           Trichloroethane         <0.50	MTBE			96.0		%		70-130	31-MAY-21
Tetrachloroethylene         94.0         %         70-130         31-MAY-21           Toluene         96.2         %         70-130         31-MAY-21           trans-1,2-Dichloroethylene         100.2         %         70-130         31-MAY-21           trans-1,3-Dichloropropene         99.4         %         70-130         31-MAY-21           Trichlorothylene         97.6         %         70-130         31-MAY-21           Trichlorothylene         96.9         %         60-140         31-MAY-21           Vinyl chloride         103.1         %         60-140         31-MAY-21           Vinyl chloride         0.50         Ug/L         0.5         31-MAY-21           1,1,1-2 Trichloroethane         <0.50	o-Xylene			109.5		%		70-130	31-MAY-21
Toluene         96.2         %         70-130         31-MAY-21           trans-1,2-Dichloroethylene         100.2         %         70-130         31-MAY-21           trans-1,3-Dichloropropene         99.4         %         70-130         31-MAY-21           Trichloroethylene         97.6         %         70-130         31-MAY-21           Trichlorofluoromethane         96.9         %         60-140         31-MAY-21           Vinyl chloride         103.1         %         60-140         31-MAY-21           WG3543076-2         MB              1,1,1-2-Tetrachloroethane         <0.50	Styrene			108.2		%		70-130	31-MAY-21
trans-1,2-Dichloroethylene 100.2 % 70-130 31-MAY-21 trans-1,3-Dichloropropene 99.4 % 70-130 31-MAY-21 Trichloroethylene 97.6 % 70-130 31-MAY-21 Trichloroethylene 97.6 % 70-130 31-MAY-21 Trichlorofluoromethane 96.9 % 60-140 31-MAY-21 Trichlorofluoromethane 96.9 % 60-140 31-MAY-21 Winyl chloride 103.1 % 60-140 31-MAY-21 WG3543076-2 MB 1.1,1,2-Tetrachloroethane <0.50 ug/L 0.5 31-MAY-21 1.1,2-Tetrachloroethane <0.50 ug/L 0.5 31-MAY-21 1.1,1-Trichloroethane <0.50 ug/L 0.5 31-MAY-21 1.1,1-Trichloroethane <0.50 ug/L 0.5 31-MAY-21 1.1,1-Trichloroethane <0.50 ug/L 0.5 31-MAY-21 1.1,1-Dichloroethane <0.50 ug/L 0.5 31-MAY-21 1.1,2-Dibromoethane <0.50 ug/L 0.5 31-MAY-21 1.2-Dibromoethane <0.50 ug/L 0.5 31-MAY-21 1.2-Dibromoethane <0.50 ug/L 0.5 31-MAY-21 1.2-Dichloroethane <0.50 ug/L 0.5 31-MAY-21 1.2-Dichlor	Tetrachloroethylene			94.0		%		70-130	31-MAY-21
trans-1,3-Dichloropropene         99.4         %         70-130         31-MAY-21           Trichloroethylene         97.6         %         70-130         31-MAY-21           Trichlorofluoromethane         96.9         %         60-140         31-MAY-21           Viryl chloride         103.1         %         60-140         31-MAY-21           WG3543076-2         MB           1.1,1,2-Tetrachloroethane         <0.50	Toluene			96.2		%		70-130	31-MAY-21
Trichloroethylene         97.6         %         70-130         31-MAY-21           Trichloroffluoromethane         96.9         %         60-140         31-MAY-21           Vinyl chloride         103.1         %         60-140         31-MAY-21           WG3543076-2         MB              1,1,2-Tetrachloroethane         <0.50	trans-1,2-Dichloroethylen	ie		100.2		%		70-130	31-MAY-21
Trichlorofluoromethane         96.9         %         60-140         31-MAY-21           Vinyl chloride         103.1         %         60-140         31-MAY-21           WG3543076-2         MB	trans-1,3-Dichloropropen	е		99.4		%		70-130	31-MAY-21
Vinyl chloride         103.1         %         60-140         31-MAY-21           WG3543076-2 MB         1,1,1,2-Tetrachloroethane         <0.50	Trichloroethylene			97.6		%		70-130	31-MAY-21
WG3543076-2 MB         1,1,1,2-Tetrachloroethane         <0.50         ug/L         0.5         31-MAY-21           1,1,2,2-Tetrachloroethane         <0.50	Trichlorofluoromethane			96.9		%		60-140	31-MAY-21
1,1,1,2-Tetrachloroethane       <0.50	Vinyl chloride			103.1		%		60-140	31-MAY-21
1,1,2,2-Tetrachloroethane       <0.50		e		<0.50		ua/L		0.5	31-MAY-21
1,1,1-Trichloroethane       <0.50									
1,1,2-Trichloroethane       <0.50									
1,1-Dichloroethane       <0.50						•			
1,1-Dichloroethylene       <0.50								0.5	
1,2-Dibromoethane       <0.20	1,1-Dichloroethylene							0.5	
1,2-Dichloroethane       <0.50	1,2-Dibromoethane			<0.20				0.2	
1,2-Dichloropropane       <0.50	1,2-Dichlorobenzene			<0.50		ug/L		0.5	31-MAY-21
1,3-Dichlorobenzene       <0.50	1,2-Dichloroethane			< 0.50		ug/L		0.5	31-MAY-21
1,4-Dichlorobenzene       <0.50	1,2-Dichloropropane			<0.50		ug/L		0.5	31-MAY-21
Acetone       <30       ug/L       30       31-MAY-21         Benzene       <0.50	1,3-Dichlorobenzene			<0.50		ug/L		0.5	31-MAY-21
Benzene       <0.50	1,4-Dichlorobenzene			< 0.50		ug/L		0.5	31-MAY-21
Benzene       <0.50	Acetone			<30		ug/L		30	31-MAY-21
Bromoform         <5.0	Benzene			<0.50				0.5	
Bromomethane         <0.50         ug/L         0.5         31-MAY-21           Carbon tetrachloride         <0.20	Bromodichloromethane			<2.0		ug/L		2	31-MAY-21
Carbon tetrachloride         <0.20         ug/L         0.2         31-MAY-21           Chlorobenzene         <0.50	Bromoform			<5.0		ug/L		5	31-MAY-21
Chlorobenzene <0.50 ug/L 0.5 31-MAY-21	Bromomethane			<0.50		ug/L		0.5	31-MAY-21
3	Carbon tetrachloride			<0.20		ug/L		0.2	31-MAY-21
Chloroform <1.0 ug/L 1 31-MAY-21	Chlorobenzene			<0.50		ug/L		0.5	31-MAY-21
	Chloroform			<1.0		ug/L		1	31-MAY-21



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Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R5475461								
WG3543076-2 MB cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	31-MAY-21
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	31-MAY-21
Dibromochloromethane			<2.0		ug/L		2	31-MAY-21
Dichlorodifluoromethane			<2.0		ug/L		2	31-MAY-21
Ethylbenzene			<0.50		ug/L		0.5	31-MAY-21
n-Hexane			<0.50		ug/L		0.5	31-MAY-21
m+p-Xylenes			<0.40		ug/L		0.4	31-MAY-21
Methyl Ethyl Ketone			<20		ug/L		20	31-MAY-21
Methyl Isobutyl Ketone			<20		ug/L		20	31-MAY-21
Methylene Chloride			<5.0		ug/L		5	31-MAY-21
MTBE			<2.0		ug/L		2	31-MAY-21
o-Xylene			<0.30		ug/L		0.3	31-MAY-21
Styrene			<0.50		ug/L		0.5	31-MAY-21
Tetrachloroethylene			<0.50		ug/L		0.5	31-MAY-21
Toluene			<0.50		ug/L		0.5	31-MAY-21
trans-1,2-Dichloroethylen	е		<0.50		ug/L		0.5	31-MAY-21
trans-1,3-Dichloropropen	е		< 0.30		ug/L		0.3	31-MAY-21
Trichloroethylene			<0.50		ug/L		0.5	31-MAY-21
Trichlorofluoromethane			<5.0		ug/L		5	31-MAY-21
Vinyl chloride			<0.50		ug/L		0.5	31-MAY-21
Surrogate: 1,4-Difluorobe	enzene		99.6		%		70-130	31-MAY-21
Surrogate: 4-Bromofluoro	benzene		96.9		%		70-130	31-MAY-21
WG3543076-5 MS		WG3543076-	3					
1,1,1,2-Tetrachloroethane			103.8		%		50-140	31-MAY-21
1,1,2,2-Tetrachloroethane	е		99.5		%		50-140	31-MAY-21
1,1,1-Trichloroethane			100.9		%		50-140	31-MAY-21
1,1,2-Trichloroethane			99.97		%		50-140	31-MAY-21
1,1-Dichloroethane			104.2		%		50-140	31-MAY-21
1,1-Dichloroethylene			104.9		%		50-140	31-MAY-21
1,2-Dibromoethane			100.5		%		50-140	31-MAY-21
1,2-Dichlorobenzene			104.3		%		50-140	31-MAY-21
1,2-Dichloroethane			101.4		%		50-140	31-MAY-21
1,2-Dichloropropane			108.0		%		50-140	31-MAY-21
1,3-Dichlorobenzene			102.3		%		50-140	31-MAY-21



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R5475461								
WG3543076-5 MS		WG3543076-						
1,4-Dichlorobenzene			102.0		%		50-140	31-MAY-21
Acetone			104.8		%		50-140	31-MAY-21
Benzene			100.6		%		50-140	31-MAY-21
Bromodichloromethane			102.6		%		50-140	31-MAY-21
Bromoform			99.5		%		50-140	31-MAY-21
Bromomethane			92.9		%		50-140	31-MAY-21
Carbon tetrachloride			102.1		%		50-140	31-MAY-21
Chlorobenzene			102.5		%		50-140	31-MAY-21
Chloroform			104.7		%		50-140	31-MAY-21
cis-1,2-Dichloroethylene			103.6		%		50-140	31-MAY-21
cis-1,3-Dichloropropene			95.0		%		50-140	31-MAY-21
Dibromochloromethane			98.3		%		50-140	31-MAY-21
Dichlorodifluoromethane	:		89.7		%		50-140	31-MAY-21
Ethylbenzene			104.3		%		50-140	31-MAY-21
n-Hexane			104.8		%		50-140	31-MAY-21
m+p-Xylenes			105.6		%		50-140	31-MAY-21
Methyl Ethyl Ketone			90.8		%		50-140	31-MAY-21
Methyl Isobutyl Ketone			100.6		%		50-140	31-MAY-21
Methylene Chloride			101.3		%		50-140	31-MAY-21
MTBE			97.8		%		50-140	31-MAY-21
o-Xylene			116.1		%		50-140	31-MAY-21
Styrene			110.7		%		50-140	31-MAY-21
Tetrachloroethylene			96.4		%		50-140	31-MAY-21
Toluene			102.3		%		50-140	31-MAY-21
trans-1,2-Dichloroethyler	ne		104.3		%		50-140	31-MAY-21
trans-1,3-Dichloroproper	ne		99.3		%		50-140	31-MAY-21
Trichloroethylene			98.6		%		50-140	31-MAY-21
Trichlorofluoromethane			101.2		%		50-140	31-MAY-21
Vinyl chloride			107.1		%		50-140	31-MAY-21
,							00 140	V. W/(1 Z1

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Carp ON K0A1L0
Bradley Sutherland

Legend:

Contact:

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.

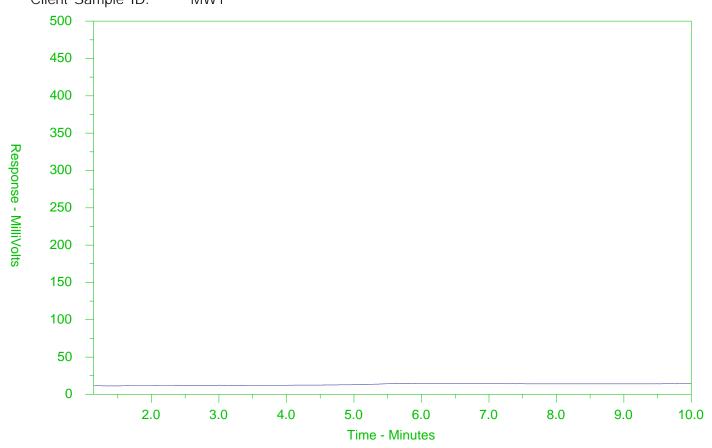
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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



ALS Sample ID: L2590710-1 Client Sample ID: MW1



<b>←</b> -F2-	→-	_F3 <b>→</b> F4-	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	ie →	<b>←</b> Mo	tor Oils/Lube Oils/Grease	-
<b>←</b>	-Diesel/Jet	Fuels→		

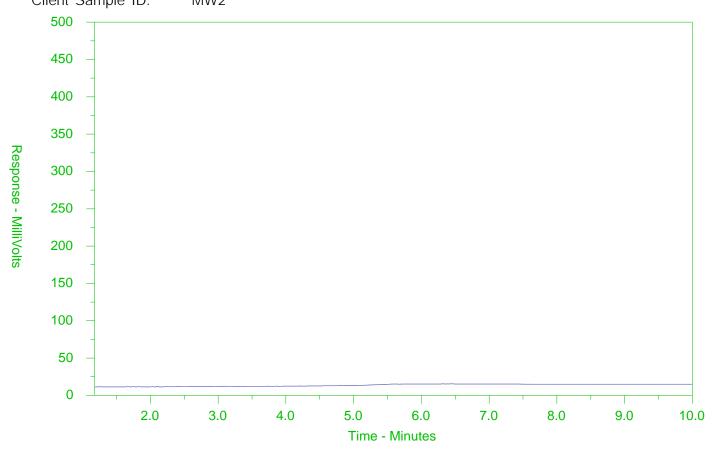
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2590710-2 Client Sample ID: MW2



<b>←</b> -F2-	→←	_F3 <b>→</b> F4-	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	ie →	<b>←</b> Mo	tor Oils/Lube Oils/Grease	-
<b>←</b>	-Diesel/Jet	Fuels→		

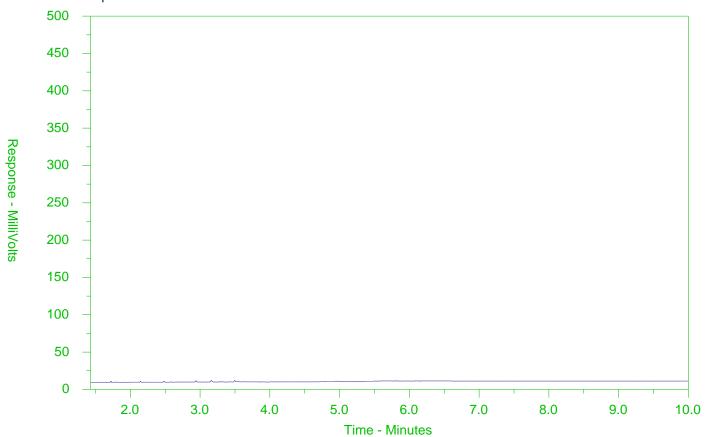
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2590710-3 Client Sample ID: MW2-DUP



<b>←</b> -F2-	→ ←	—F3——◆4—F4-	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	e <b>→</b>	<b>←</b> M	otor Oils/Lube Oils/Grease—	-
<b>←</b>	-Diesel/Jet	Fuels→		

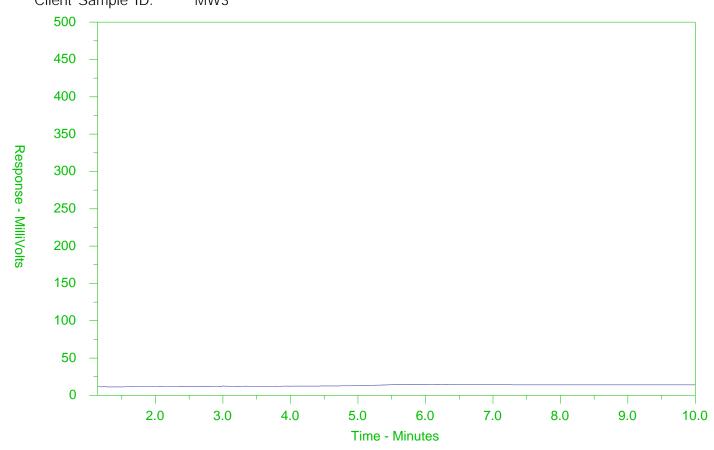
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2590710-4 Client Sample ID: MW3



<b>←</b> -F2-	→ ←	—F3 <b>→</b> ◆—F4—	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067⁰F	
Gasolin	ıe →	← Mot	or Oils/Lube Oils/Grease	
←	– Diesel/Je	t 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.



COC Number: 20 -

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Contact:	Bradley Sutherland		Merge QC/QC	I Reports with COA	YES NO	□ N/A						- 20% ru										
Phone:	613-903-5785		Compare Resul	lts to Criteria on Report	- provide details below	w if box checked						- 25% ru					AFFI	_	BARCO			EKE
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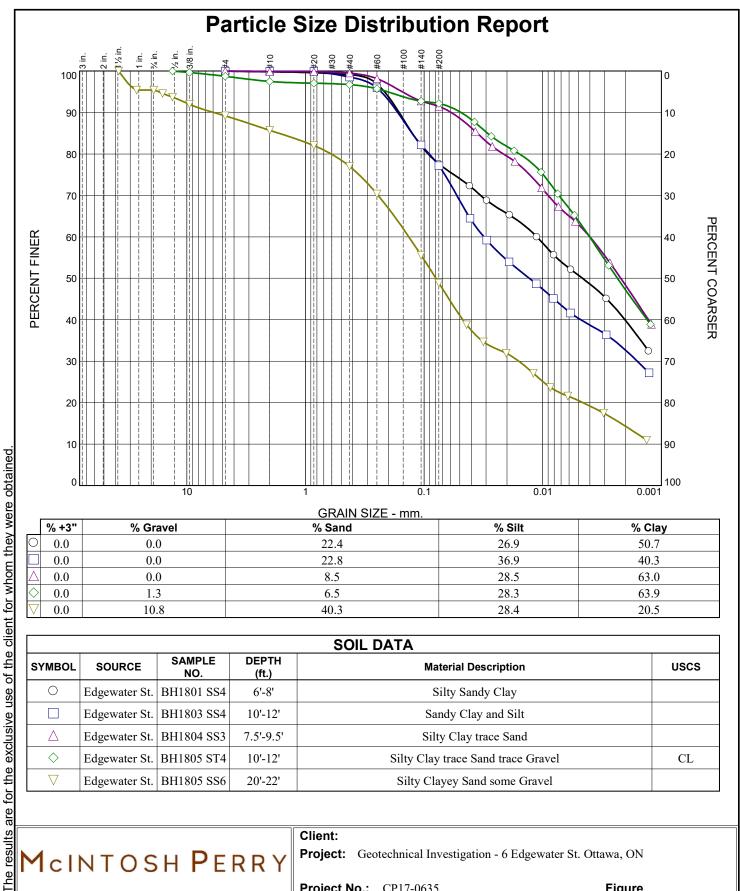
## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 16 EDGEWATER STREET, KANATA, ONTARIO



APPENDIX E GRAIN SIZE ANALYSIS

#### WATER CONTENT DETERMINATION

Test Method Utilized	~	MTO LS-701		ASTM D 2216	A	ASHTO T-265	
Project No.: CP17-0635					Date Rece	ived: 01/07/1	9
Project Name/Location: 6	Edgewater St. O	ttawa			Date Teste	ed: 01/09/19	
Material Type: Soils					Lab Sampl	e No.: OL-190	01
Borehole No.	Depth Sample Taken (ft')	Sample Container I.D.	Wet Sample + Tare (A)	Dry Sample + Tare (B)	Tare (C)	Mass of Sample (D) (B-C)	% Moisture (A-B)/Dx100
BH18-01 SS4	6-8	Tr.152	829.69	644.65	127.91	516.74	35.8
BH18-03 SS4	10-12	Tr.199	788.50	590.56	128.64	461.92	42.9
BH18-03 SS5	15-17	Tr.114	787.02	570.55	152.69	417.86	51.8
BH18-04 SS3	7.5-9.5	Tr.2.18s	777.56	536.10	139.60	396.50	60.9
BH18-05 ST4	10-12	Tr.169	1143.86	758.21	133.26	624.95	61.7
BH18-05 SS5	15-17	Tr.163	885.08	652.54	136.53	516.01	45.1
BH18-05 SS6	20-22	Tr.118	982.72	879.30	133.02	746.28	13.9
Non-Comformance's from	Test Procedure	: N/A					
Comments:							
Checked by: H.S.				Signature: 14	E. Sm	not	



			GRAIN SIZE - mm.		
	% +3"	% Gravel	% Sand	% Silt	% Clay
0	0.0	0.0	22.4	26.9	50.7
	0.0	0.0	22.8	36.9	40.3
Δ	0.0	0.0	8.5	28.5	63.0
$\Diamond$	0.0	1.3	6.5	28.3	63.9
$\nabla$	0.0	10.8	40.3	28.4	20.5

				SOIL DATA	
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	uscs
0	Edgewater St.	BH1801 SS4	6'-8'	Silty Sandy Clay	
	Edgewater St.	BH1803 SS4	10'-12'	Sandy Clay and Silt	
Δ	Edgewater St.	BH1804 SS3	7.5'-9.5'	Silty Clay trace Sand	
$\Diamond$	Edgewater St.	BH1805 ST4	10'-12'	Silty Clay trace Sand trace Gravel	CL
$\nabla$	Edgewater St.	BH1805 SS6	20'-22'	Silty Clayey Sand some Gravel	

## McINTOSH PERRY

Client:

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

Project No.: CP17-0635 **Figure** 

Checked By: H.Smith

#### **GRAIN SIZE DISTRIBUTION TEST DATA**

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

**Project Number:** CP17-0635 **Location:** Edgewater St.

Depth: 6'-8' Sample Number: BH1801 SS4

Material Description: Silty Sandy Clay

Checked by: H.Smith

	Sieve Test Data									
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained				
516.74	0.00	0.00	4.75mm	0.00	100.0	0.0				
			2.00mm	1.02	99.8	0.2				
55.66	0.00	0.00	0.850mm	0.11	99.6	0.4				
			0.425mm	0.38	99.1	0.9				
			0.250mm	1.60	96.9	3.1				
			0.106mm	9.94	82.0	18.0				
			0.075mm	12.39	77.6	22.4				
			l lyral na na	otor Took Doto						

#### **Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 99.8

Weight of hydrometer sample =55.66

**Automatic temperature correction** 

Composite correction (fluid density and meniscus height) at 20 deg. C = -4.5

Meniscus correction only = -1.0Specific gravity of solids = 2.750

Hydrometer type = 152H

Hydrometer effective depth equation: L = 16.7270 - 0.154 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
1.00	21.0	45.5	41.2	0.0131	44.5	9.9	0.0411	72.2	27.8
2.00	21.0	43.5	39.2	0.0131	42.5	10.2	0.0295	68.7	31.3
5.00	21.0	41.5	37.2	0.0131	40.5	10.5	0.0190	65.2	34.8
15.00	21.0	38.5	34.2	0.0131	37.5	11.0	0.0112	60.0	40.0
30.00	21.0	36.0	31.7	0.0131	35.0	11.3	0.0080	55.6	44.4
60.00	21.0	34.0	29.7	0.0131	33.0	11.6	0.0058	52.1	47.9
250.00	21.0	30.0	25.7	0.0131	29.0	12.3	0.0029	45.0	55.0
1440.00	20.0	23.0	18.5	0.0133	22.0	13.3	0.0013	32.4	67.6

\_\_\_\_ McIntosh Perry \_

#### Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	0.0	22.4	26.9	50.7

D <sub>5</sub>	D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>40</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
					0.0020	0.0046	0.0112	0.0925	0.1258	0.1624	0.2152

Fineness Modulus 0.14

\_\_\_\_\_ McIntosh Perry \_\_\_\_\_

#### **GRAIN SIZE DISTRIBUTION TEST DATA**

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

**Project Number:** CP17-0635 **Location:** Edgewater St.

Depth: 10'-12' Sample Number: BH1803 SS4

Material Description: Sandy Clay and Silt

Checked by: H.Smith

			Sieve	e Test Data			
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained	
461.92	0.00	0.00	4.75mm	0.00	100.0	0.0	
			2.00mm	0.22	100.0	0.0	
55.81	0.00	0.00	0.850mm	0.00	100.0	0.0	
			0.425mm	0.78	98.6	1.4	
			0.250mm	2.23	96.0	4.0	
			0.106mm	9.93	82.2	17.8	
			0.075mm	12.72	77.2	22.8	
_	_	_		otor Toot Date		22.0	

#### **Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 55.81

**Automatic temperature correction** 

Composite correction (fluid density and meniscus height) at 20 deg. C = -4.5

Meniscus correction only = -1.0Specific gravity of solids = 2.734

Hydrometer type = 152H

Hydrometer effective depth equation: L = 16.1047 - 0.160 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
1.00	21.0	41.0	36.7	0.0131	40.0	9.7	0.0410	64.5	35.5
2.00	21.0	38.0	33.7	0.0131	37.0	10.2	0.0297	59.2	40.8
5.00	21.0	35.0	30.7	0.0131	34.0	10.7	0.0192	53.9	46.1
15.00	21.0	32.0	27.7	0.0131	31.0	11.1	0.0113	48.7	51.3
30.00	21.0	30.0	25.7	0.0131	29.0	11.5	0.0081	45.1	54.9
60.00	21.0	28.0	23.7	0.0131	27.0	11.8	0.0058	41.6	58.4
250.00	21.0	25.0	20.7	0.0131	24.0	12.3	0.0029	36.4	63.6
1440.00	20.0	20.0	15.5	0.0133	19.0	13.1	0.0013	27.2	72.8

\_\_\_\_ McIntosh Perry \_

#### Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	0.0	22.8	36.9	40.3

D <sub>5</sub>	D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>40</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
				0.0016	0.0048	0.0130	0.0314	0.0907	0.1262	0.1668	0.2298

Fineness Modulus 0.15

\_\_\_\_\_ McIntosh Perry \_\_\_\_\_

#### **GRAIN SIZE DISTRIBUTION TEST DATA**

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

**Project Number:** CP17-0635 **Location:** Edgewater St.

**Depth**: 7.5'-9.5' **Sample Number**: BH1804 SS3

Material Description: Silty Clay trace Sand

Checked by: H.Smith

			Sieve	e Test Data			
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained	
396.50	0.00	0.00	4.75mm	0.00	100.0	0.0	
			2.00mm	0.50	99.9	0.1	
53.84	0.00	0.00	0.850mm	0.01	99.9	0.1	
			0.425mm	0.20	99.5	0.5	
			0.250mm	0.91	98.2	1.8	
			0.106mm	3.83	92.8	7.2	
			0.075mm	4.53	91.5	8.5	

#### Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 99.9

Weight of hydrometer sample =53.84

**Automatic temperature correction** 

Composite correction (fluid density and meniscus height) at 20 deg. C = -4.5

Meniscus correction only = -1.0Specific gravity of solids = 2.761

Hydrometer type = 152H

Hydrometer effective depth equation: L = 16.1047 - 0.160 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
1.00	21.0	51.5	47.2	0.0130	50.5	8.0	0.0370	85.4	14.6
2.00	21.0	49.5	45.2	0.0130	48.5	8.3	0.0266	81.8	18.2
5.00	21.0	47.5	43.2	0.0130	46.5	8.7	0.0172	78.2	21.8
15.00	21.0	44.0	39.7	0.0130	43.0	9.2	0.0102	71.8	28.2
30.00	21.0	41.5	37.2	0.0130	40.5	9.6	0.0074	67.3	32.7
60.00	21.0	39.5	35.2	0.0130	38.5	9.9	0.0053	63.7	36.3
250.00	21.0	34.0	29.7	0.0130	33.0	10.8	0.0027	53.7	46.3
1440.00	20.0	26.0	21.5	0.0132	25.0	12.1	0.0012	38.9	61.1

\_\_\_\_ McIntosh Perry \_

#### Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	0.0	8.5	28.5	63.0

D <sub>5</sub>	D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>40</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
					0.0013	0.0022	0.0040	0.0214	0.0356	0.0591	0.1531

Fineness Modulus 0.07

\_\_\_\_ McIntosh Perry \_\_\_\_\_

#### **GRAIN SIZE DISTRIBUTION TEST DATA**

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

**Project Number:** CP17-0635 Location: Edgewater St.

**Depth:** 10'-12' Sample Number: BH1805 ST4

Material Description: Silty Clay trace Sand trace Gravel

USCS: CL

Checked by: H.Smith

			Sieve	e Test Data		
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained
624.95	0.00	0.00	13.2mm	0.00	100.0	0.0
			9.5mm	2.12	99.7	0.3
			4.75mm	7.92	98.7	1.3
			2.00mm	15.66	97.5	2.5
54.78	0.00	0.00	0.850mm	0.24	97.1	2.9
			0.425mm	0.43	96.7	3.3
			0.250mm	0.99	95.7	4.3
			0.106mm	2.67	92.7	7.3
			0.075mm	2.99	92.2	7.8

#### **Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 97.5

Weight of hydrometer sample =54.78

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -4.5

Meniscus correction only = -1.0Specific gravity of solids = 2.779 Hydrometer type = 152H

Hydrometer effective depth equation: L = 16.7270 - 0.154 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
1.00	21.0	55.0	50.7	0.0130	54.0	8.4	0.0376	87.7	12.3
2.00	21.0	53.0	48.7	0.0130	52.0	8.7	0.0271	84.3	15.7
5.00	21.0	51.0	46.7	0.0130	50.0	9.0	0.0174	80.8	19.2
15.00	21.0	48.0	43.7	0.0130	47.0	9.5	0.0103	75.6	24.4
30.00	21.0	45.0	40.7	0.0130	44.0	10.0	0.0075	70.4	29.6
60.00	21.0	42.0	37.7	0.0130	41.0	10.4	0.0054	65.2	34.8
250.00	21.0	35.0	30.7	0.0130	34.0	11.5	0.0028	53.1	46.9
1440.00	20.0	27.0	22.5	0.0131	26.0	12.7	0.0012	38.9	61.1

\_ McIntosh Perry \_

#### Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	1.3	6.5	28.3	63.9

D <sub>5</sub>	D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>40</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
					0.0013	0.0023	0.0040	0.0157	0.0292	0.0487	0.2028

Fineness Modulus 0.20

\_\_\_\_\_ McIntosh Perry \_\_\_\_

#### **GRAIN SIZE DISTRIBUTION TEST DATA**

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

Project Number: CP17-0635 Location: Edgewater St.

Depth: 20'-22' Sample Number: BH1805 SS6

Material Description: Silty Clayey Sand some Gravel

Checked by: H.Smith

	Sieve Test Data								
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained			
746.28	0.00	0.00	37.5mm	0.00	100.0	0.0			
			26.5mm	34.22	95.4	4.6			
			19.0mm	34.22	95.4	4.6			
			16.0mm	40.36	94.6	5.4			
			13.2mm	46.79	93.7	6.3			
			9.5mm	59.88	92.0	8.0			
			4.75mm	80.60	89.2	10.8			
			2.00mm	106.79	85.7	14.3			
61.20	0.00	0.00	0.850mm	2.62	82.0	18.0			
			0.425mm	6.20	77.0	23.0			
			0.250mm	10.95	70.4	29.6			
			0.106mm	21.52	55.6	44.4			
			0.075mm	26.30	48.9	51.1			

#### **Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 85.7

Weight of hydrometer sample =61.20 Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -4.5

 $\begin{array}{l} \text{Meniscus correction only = -1.0} \\ \text{Specific gravity of solids = } 2.725 \\ \text{Hydrometer type = } 152H \\ \end{array}$ 

Hydrometer effective depth equation: L = 16.1047 - 0.160 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
1.00	21.0	32.5	28.2	0.0132	31.5	11.1	0.0438	38.8	61.2
2.00	21.0	29.5	25.2	0.0132	28.5	11.5	0.0317	34.7	65.3
5.00	21.0	27.5	23.2	0.0132	26.5	11.9	0.0203	31.9	68.1
15.00	21.0	24.0	19.7	0.0132	23.0	12.4	0.0120	27.1	72.9
30.00	21.0	21.5	17.2	0.0132	20.5	12.8	0.0086	23.7	76.3
60.00	21.0	20.0	15.7	0.0132	19.0	13.1	0.0062	21.6	78.4
250.00	21.0	17.0	12.7	0.0132	16.0	13.5	0.0031	17.5	82.5
1440.00	20.0	12.5	8.0	0.0133	11.5	14.3	0.0013	11.0	89.0

\_\_\_\_ McIntosh Perry \_\_\_\_\_

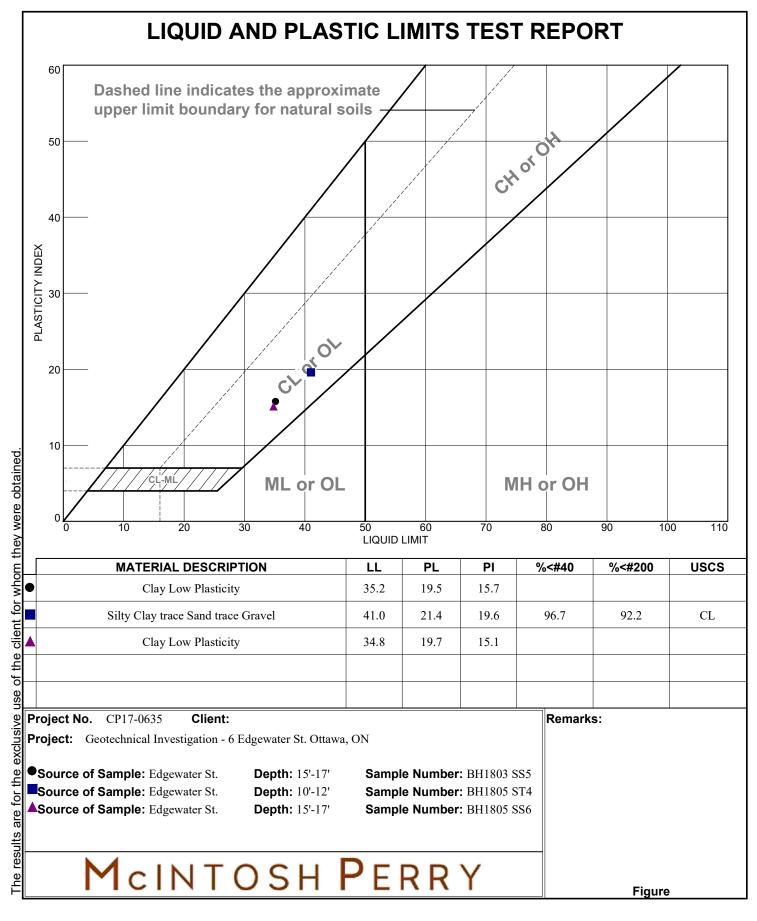
#### Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	10.8	40.3	28.4	20.5

D <sub>5</sub>	D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>40</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
		0.0022	0.0046	0.0159	0.0471	0.0794	0.1345	0.6066	1.6815	5.9332	17.2074

Fineness Modulus

\_\_\_\_\_ McIntosh Perry \_\_\_\_\_



#### LIQUID AND PLASTIC LIMIT TEST DATA

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

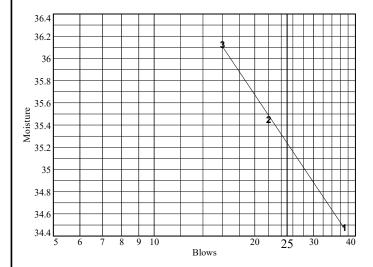
Project Number: CP17-0635 Location: Edgewater St.

Depth: 15'-17' Sample Number: BH1803 SS5

Material Description: Clay Low Plasticity

Checked by: H.Smith

	Liquid Limit Data										
Run No.	1	2	3	4	5	6					
Wet+Tare	27.73	30.32	31.01								
Dry+Tare	25.93	27.70	28.34								
Tare	20.71	20.31	20.95								
# Blows	37	22	16								
Moisture	34.5	35.5	36.1								



Liquid Limit= _	35.2
Plastic Limit=	19.5
Plasticity Index=	15.7
Natural Moisture=	51.8
Liquidity Index=	2.1

	Plastic Limit Data											
Run No.	1	2	3	4								
Wet+Tare	23.90	22.82										
Dry+Tare	23.30	22.43										
Tare	20.25	20.42										
Moisture	19.7	19.4										

# Wet+Tare Dry+Tare Tare Moisture 787.02 570.55 152.69 51.8

	MC	Intos	sn P	erry
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#### LIQUID AND PLASTIC LIMIT TEST DATA

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

Project Number: CP17-0635 Location: Edgewater St.

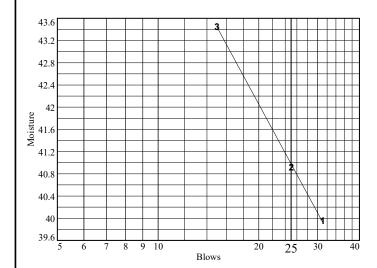
Depth: 10'-12' Sample Number: BH1805 ST4

**Material Description:** Silty Clay trace Sand trace Gravel

%<#40: 96.7 %<#200: 92.2 USCS: CL AASHTO: A-7-6(19)

Checked by: H.Smith

	Liquid Limit Data											
Run No.	1	2	3	4	5	6						
Wet+Tare	28.20	29.42	28.67									
Dry+Tare	25.95	26.78	26.18									
Tare	20.32	20.33	20.45									
# Blows	31	25	15									
Moisture	40.0	40.9	43.5									



Liquid Limit=	41.0
Plastic Limit=	21.4
Plasticity Index=	19.6
Natural Moisture=	61.7
Liquidity Index=	2.1

Plastic Limit Data						
Run No.	1	2	3	4		
Wet+Tare	22.68	23.06				
Dry+Tare	22.26	22.58				
Tare	20.28	20.35				
Moisture	21.2	21.5				

		Natural N	Moisture Data
Wet+Tare	Dry+Tare	Tare	Moisture
1143.86	758 21	133.26	61.7

MC	Into	sn P	erry

#### LIQUID AND PLASTIC LIMIT TEST DATA

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

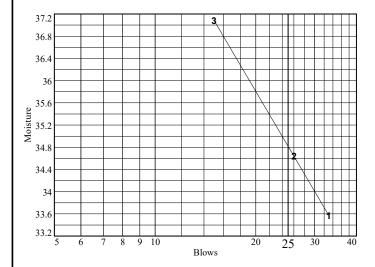
Project Number: CP17-0635 Location: Edgewater St.

Depth: 15'-17' Sample Number: BH1805 SS6

Material Description: Clay Low Plasticity

Checked by: H.Smith

Liquid Limit Data						
Run No.	1	2	3	4	5	6
Wet+Tare	37.86	28.08	37.60			
Dry+Tare	35.58	26.15	35.26			
Tare	28.79	20.58	28.95			
# Blows	33	26	15			
Moisture	33.6	34.6	37.1			



Liquid Limit= _	34.8
Plastic Limit=	19.7
Plasticity Index=	15.1
Natural Moisture= _	45.1
Liquidity Index=	1.7

Plastic Limit Data						
Run No.	1	2	3	4		
Wet+Tare	23.60	23.87				
Dry+Tare	23.02	23.30				
Tare		20.35				
Moisture	20.1	19.3				

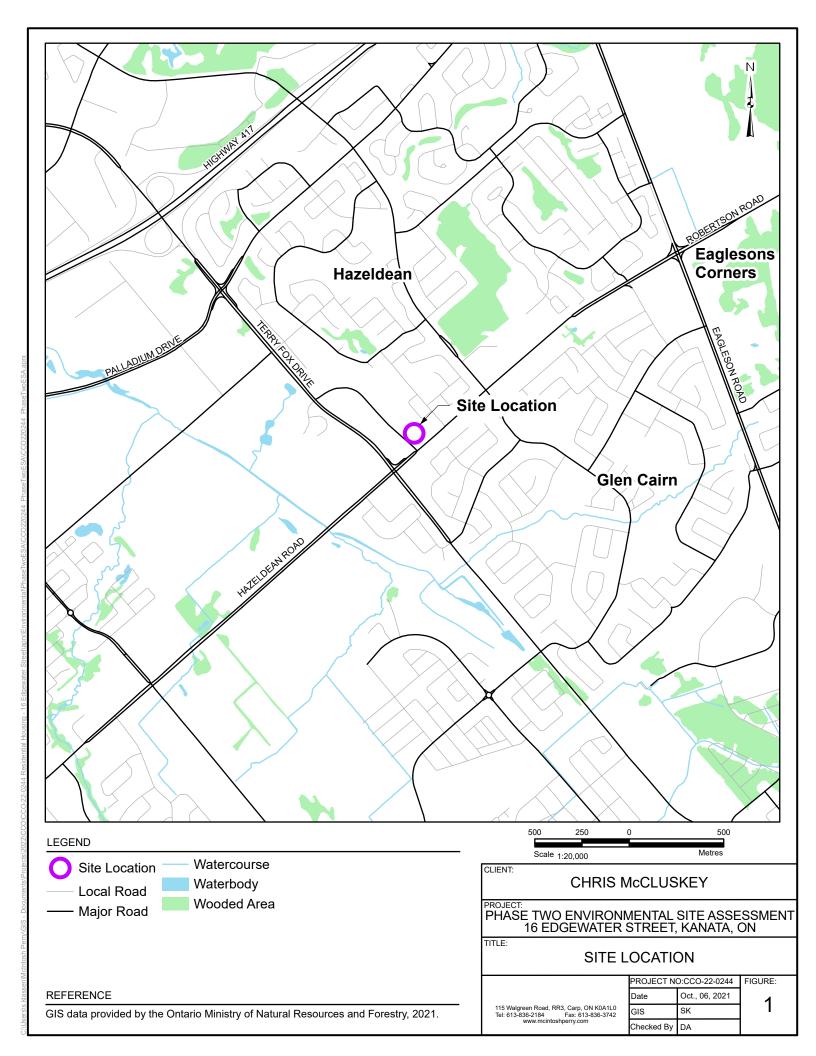
#### **Natural Moisture Data**

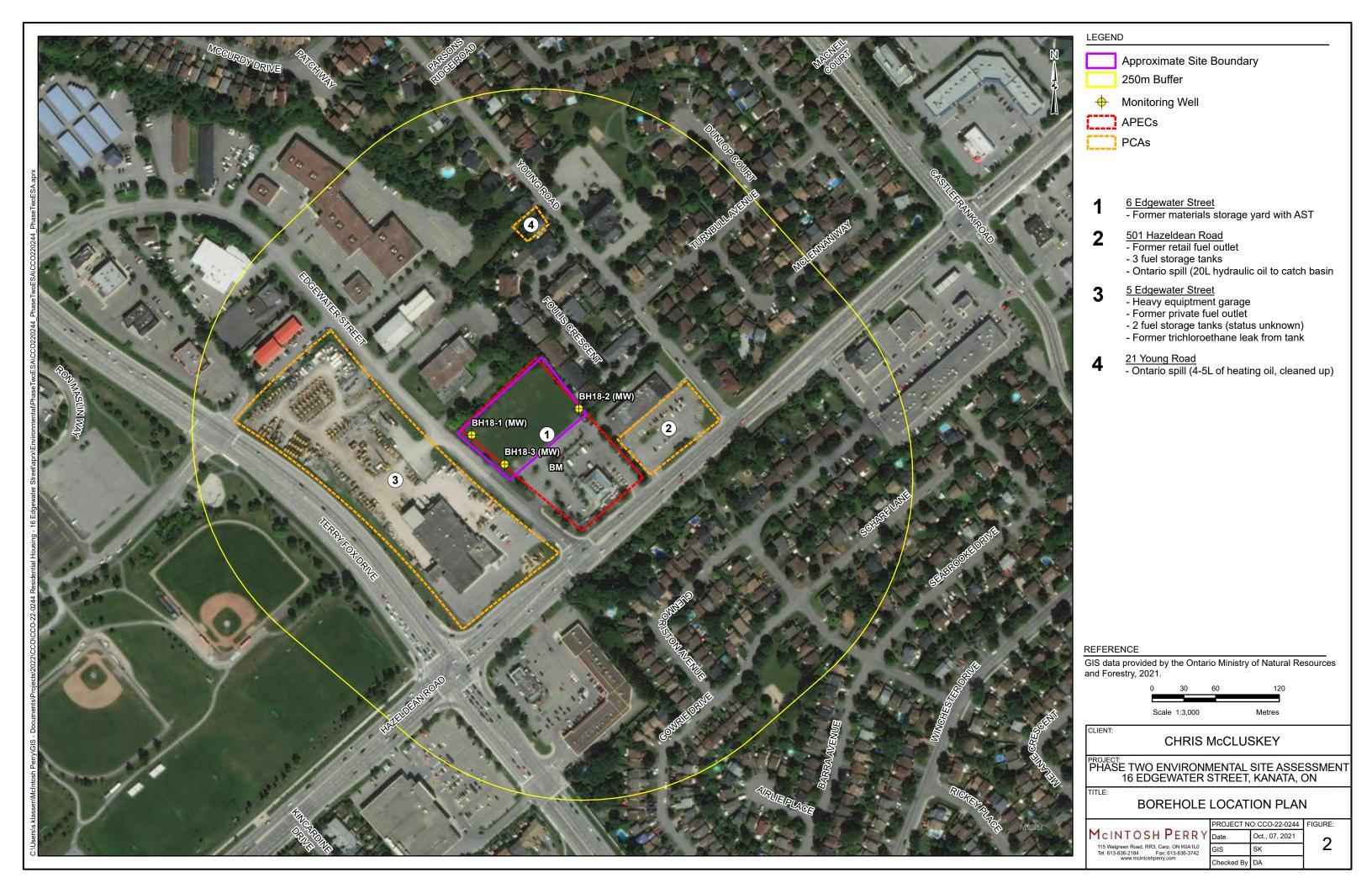
Wet+Tare	Dry+Tare	Tare	Moisture
885.08	652.54	136.53	45.1

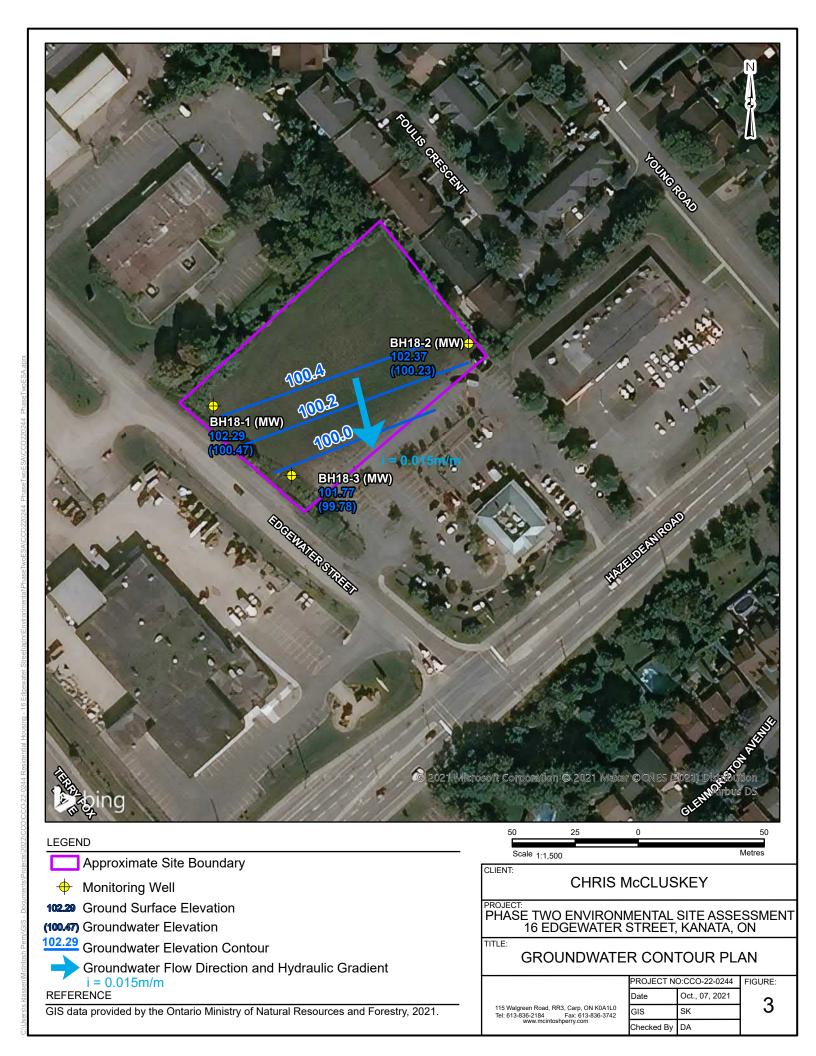
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**FIGURES** 









**TABLES** 

Table 1: Monitoring Well Construction Detains and Groundwater Elevations

Monitoring Well ID	Total Depth (m)	Screened Interval (m BGS)	Top of Pipe Elevation (m ASL)	Ground Elevation (m ASL)	Stick-up (m)	Water Level Measurement (m BTOP)	Water Level Measurement (m BGS)	Water Elevation (m LD)	Date	Comments
						2.225	1.383	100.907	14-Dec-18	Stick up well
BH/MW 18-1	4.57	1.52-4.57	103.132	102.29	0.842	2.073	1.231	101.059	17-Dec-18	Used to determine GW flow direction
						2.186	1.344	100.946	07-Jan-19	Resample
						2.665	1.823	100.467	20-May-21	Resample
						1.761	0.816	101.554	14-Dec-18	Stick up well
BH/MW 18-2	6.1	3.05-6.10	103.315	102.37	0.945	1.778	0.833	101.537	17-Dec-18	Used to determine GW flow direction
						1.85	0.905	101.465	07-Jan-19	Resample
						3.085	2.14	100.23	20-May-21	Resample
						2.017	1.111	100.659	14-Dec-18	Stick up well
BH/MW 18-3	4.88	1.83-4.88	102.676	101.77	0.906	1.921	1.015	100.755	17-Dec-18	Used to determine GW flow direction
		1.03 4.00				1.994	1.088	100.682	07-Jan-19	Resample
						2.897	1.991	99.779	20-May-21	Resample

#### Notes:

GS	ground surface
TOP	top of casing (i.e. top of pvc riser)
Btop	below top of casing

Table 2: Analytical Results - Soil

		Sample Date:	13-Dec-18	13-Dec-18	13-Dec-18	13-Dec-18	Relative	
		Sample ID:	BH/MW18-1 SS5	BH/MW18-2 SS3	BH/MW18-3 SS3	BH/MW18-3 SS	Percent Difference (%)	MECP Site Condition
	Sample	e Depth (m bgs)	2.44 - 3.05	333 1.27 - 1.83	333 1.83 - 2.44	Duplicate of	Difference (70)	Standards **
PARAMETER	UNITS	MRL	2.44 3.00	1.27 1.03	1.03 2.44	BH/MW3-SS3		
TANAMETER	OTTITO	IVIILE	Phys	sical Test		D11/101000 000		
Conductivity	mS/cm	0.004	0.55	0.133	0.323	0.338	4.5%	0.7
% Moisture	%	0.1	33	26.2	27	26.8	0.7%	-
рН	pH Units	0.1	7.56	7.39	7.53	7.51	0.3%	-
			Inc	rganics				
Cyanide, Weak Acid Diss	0.05	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.051
SAR	0.1	SAR	3.54	1.08	2.91	2.79	4.2%	5
Calcium (Ca)	1	mg/L	27.4	8.1	13.2	14.8	11.4%	-
Magnesium (Mg)	1	mg/L	3.3	1.7	2.5	2.9	14.8%	-
Sodium (Na)	1	mg/L	73.7	13	44	44.9	2.0%	-
			N	⁄letals				
Antimony (Sb)	1	ug/g	<1.0	<1.0	<1.0	<1.0		7.5
Arsenic (As)	1	ug/g	3.5	2.4	2.8	3	6.9%	18
Barium (Ba)	1	ug/g	283	142	162	164	1.2%	390
Beryllium (Be)	0.5	ug/g	0.61	<0.50	<0.50	<0.50		5
Boron (B), Hot Water Ext.	0.1	ug/g	0.23	0.1	<0.10	<0.10		1.5
Boron (B)	5	ug/g	5.4	< 5.0	<5.0	<5.0		120
Cadmium (Cd)	0.5	ug/g	< 0.50	<0.50	<0.50	<0.50		1.2
Chromium (Cr)	1	ug/g	40.4	22.4	28.4	29.9	5.1%	160
Cobalt (Co)	1	ug/g	11.1	6.5	7.9	8	1.3%	22
Copper (Cu)	1	ug/g	20.5	13.6	17.3	17.8	2.8%	180
Lead (Pb)	1	ug/g	7.5	3.7	4.6	4.6	0.0%	120
Mercury (Hg)	0.005	ug/g	0.0181	<0.0050	<0.0050	<0.0050		1.8
Molybdenum (Mo)	1	ug/g	<1.0	<1.0	<1.0	<1.0		6.9
Nickel (Ni)	1	ug/g	22.7	12.3	16.4	16.7	1.8%	130
Selenium (Se)	1	ug/g	<1.0	<1.0	<1.0	<1.0		2.4
Silver (Ag)	0.2	ug/g	<0.20	<0.20	<0.20	<0.20		25
Thallium (TI)	0.5	ug/g	< 0.50	< 0.50	<0.50	< 0.50		1
Uranium (U)	1	ug/g	<1.0	<1.0	<1.0	<1.0		23
Vanadium (V)	1	ug/g	51.8	33.9	44.2	46.3	4.6%	86
Zinc (Zn)	5	ug/g	63.8	33.3	43.1	44.3	2.7%	340
Chromium, Hexavalent	0.2	ug/g	0.5	<0.20	0.29	0.29	0.0%	10

Table 2: Analytical Results - Soil

	Sample Date:	13-Dec-18	13-Dec-18	13-Dec-18	13-Dec-18	Relative	
	Sample ID:	BH/MW18-1	BH/MW18-2	BH/MW18-3	BH/MW18-3	Percent	MECP Site Condition
	Sample ID.	SS5	SS3	SS3	SS	Difference (%)	Standards **
	Sample Depth (m bgs)	2.44 - 3.05	1.27 - 1.83	1.83 - 2.44	Duplicate of		Stariuarus
PARAMETER	UNITS MRL				BH/MW3-SS3		
		VOCs (in	cluding BTEX)				
Acetone	ug/g	< 0.50	< 0.50	< 0.50	< 0.50		28
Benzene	ug/g	<0.0068	<0.0068	<0.0068	<0.0068		0.17
Bromodichloromethane	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		13
Bromoform	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.26
Bromomethane	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.05
Carbon tetrachloride	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.12
Chlorobenzene	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		2.7
Dibromochloromethane	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		9.4
Chloroform	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.18
1,2-Dibromoethane	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.05
1,2-Dichlorobenzene	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		4.3
1,3-Dichlorobenzene	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		6
1,4-Dichlorobenzene	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.097
Dichlorodifluoromethane	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		25
1,1-Dichloroethane	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		11
1,2-Dichloroethane	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.05
1,1-Dichloroethylene	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.05
cis-1,2-Dichloroethylene	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		30
trans-1,2-Dichloroethylene	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.75
Methylene Chloride	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.96
1,2-Dichloropropane	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.085
cis-1,3-Dichloropropene	ug/g	< 0.030	< 0.030	< 0.030	< 0.030		-
trans-1,3-Dichloropropene	ug/g	< 0.030	< 0.030	< 0.030	< 0.030		-
1,3-Dichloropropene (cis & trans)	ug/g	< 0.042	< 0.042	< 0.042	< 0.042		0.083
Ethylbenzene	ug/g	<0.018	<0.018	<0.018	<0.018		15
n-Hexane	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		34
Methyl Ethyl Ketone	ug/g	< 0.50	< 0.50	< 0.50	< 0.50		44
Methyl Isobutyl Ketone	ug/g	< 0.50	< 0.50	< 0.50	< 0.50		4.3
MTBE	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		1.4
Styrene	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		2.2
1,1,1,2-Tetrachloroethane	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.05
1,1,2,2-Tetrachloroethane	ug/g	< 0.050	< 0.050	<0.050	<0.050		0.05
Tetrachloroethylene	ug/g	< 0.050	< 0.050	<0.050	<0.050		2.3
Toluene	ug/g	<0.080	<0.080	<0.080	<0.080		6
1,1,1-Trichloroethane	ug/g	< 0.050	< 0.050	<0.050	<0.050		3.4
1,1,2-Trichloroethane	ug/g	< 0.050	< 0.050	<0.050	<0.050		0.05
Trichloroethylene	ug/g	< 0.010	<0.010	<0.010	<0.010		0.52
Trichlorofluoromethane	ug/g	< 0.050	< 0.050	<0.050	<0.050		5.8
Vinyl chloride	ug/g	< 0.020	<0.020	<0.020	<0.020		0.022

Table 2: Analytical Results - Soil

		Sample Date:	13-Dec-18 BH/MW18-1	13-Dec-18 BH/MW18-2	13-Dec-18 BH/MW18-3	13-Dec-18 BH/MW18-3	Relative Percent	MECD Site Condition
		Sample ID:	SS5	SS3	SS3	SS	Difference (%)	MECP Site Condition Standards **
	Samp	le Depth (m bgs)	2.44 - 3.05	1.27 - 1.83	1.83 - 2.44	Duplicate of		Stariuarus
PARAMETER	UNITS	MRL				BH/MW3-SS3		
o-Xylene		ug/g	< 0.020	< 0.020	< 0.020	< 0.020		-
m+p-Xylenes		ug/g	< 0.030	< 0.030	< 0.030	< 0.030		-
Xylenes (Total)		ug/g	< 0.050	< 0.050	< 0.050	< 0.050		25
				PHCs				
F1 (C6-C10)	5	ug/g	<5.0	< 5.0	< 5.0	< 5.0		65
F1-BTEX	5	ug/g	< 5.0	< 5.0	< 5.0	< 5.0		65
F2 (C10-C16)	10	ug/g	<10	<10	<10	<10		150
F2-Naphth	10	ug/g	<10	<10	<10	<10		-
F3 (C16-C34)	50	ug/g	<50	<50	<50	<50		1300
F3-PAH	50	ug/g	<50	<50	<50	<50		-
F4 (C34-C50)	50	ug/g	<50	<50	<50	<50		5600
			I	PAHs				
Acenaphthene	0.05	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		58
Acenaphthylene	0.05	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.17
Anthracene	0.05	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.74
Benzo(a)anthracene	0.05	ug/g	0.082	< 0.050	< 0.050	< 0.050		0.63
Benzo(a)pyrene	0.05	ug/g	0.086	< 0.050	< 0.050	< 0.050		0.3
Benzo(b)fluoranthene	0.05	ug/g	0.144	< 0.050	< 0.050	< 0.050		0.78
Benzo(g,h,i)perylene	0.05	ug/g	0.081	< 0.050	< 0.050	< 0.050		7.8
Benzo(k)fluoranthene	0.05	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.78
Chrysene	0.05	ug/g	0.081	< 0.050	< 0.050	< 0.050		7.8
Dibenzo(ah)anthracene	0.05	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		0.1
Fluoranthene	0.05	ug/g	0.076	< 0.050	< 0.050	< 0.050		0.69
Fluorene	0.05	ug/g	< 0.050	< 0.050	< 0.050	< 0.050		69
Indeno(1,2,3-cd)pyrene	0.05	ug/g	0.068	< 0.050	< 0.050	< 0.050		0.48
1+2-Methylnaphthalenes	0.0424	ug/g	< 0.042	< 0.042	< 0.042	< 0.042		3.4
1-Methylnaphthalene	0.03	ug/g	< 0.030	< 0.030	< 0.030	< 0.030		3.4
2-Methylnaphthalene	0.03	ug/g	< 0.030	< 0.030	< 0.030	< 0.030		3.4
Naphthalene	0.013	ug/g	< 0.013	< 0.013	< 0.013	< 0.013		0.75
Phenanthrene	0.046	ug/g	< 0.046	< 0.046	< 0.046	< 0.046		7.8
Pyrene	0.05	ug/g	0.083	< 0.050	< 0.050	< 0.050		78

### Notes:

	O.Reg. 153/04 (as amended) - Full Depth Generic Site Condition Standards (Table 3) / Residential property use / Fine textured soil
-	No Site Condition Standard
<0.013	Non Detectable (i.e. the analytical result was below the method reporting limit for the test)
<u>124</u>	Sample result exceeds the corresponding Site Condition Standard (SCS) - Table 3

Table 3: Analytical Results - Groundwater

		Sample Date:	13-Dec-18	13-Dec-18	13-Dec-18	07-Jan-19	07-Jan-19	07-Jan-19	20-May-21	20-May-21	20-May-21	20-May-21	20-May-21	
		Sample ID:	BH/MW18-1	BH/MW18-2	BH/MW18-3	BH/MW18-1	BH/MW18-2	BH/MW18-3	MW1	MW2	MW3	MW2-DUP	TRIP BLANK	MOECC Site Condition
			1											Standards **
PARAMETER	UNITS	MRL												
				_		Phy	ysical Test							
Conductivity	mS/cm	0.003	2.34	0.516	1.77				0.561	1.48	1.6			-
рН	pH Units	0.1	7.22	7.95	7.18				8.22	7.75	7.86			-
						In	organics							
Cyanide, Weak Acid Diss									<2.0	<2.0	<2.0			66
Chloride (CI)	mg/L	0.5	566	60.7	376				65.2	245	290			2300
						Disso	Ived Metals							
Antimony (Sb)	ug/L	0.1	0.24	<0.1	<0.1				<0.10	<0.10	<0.10			20000
Arsenic (As)	ug/L	0.1	0.14	0.49	0.19				0.28	0.1	0.13			1900
Barium (Ba)	ug/L	0.1	339	129	125				146	176	101			29000
Beryllium (Be)	ug/L	0.1	<0.1	<0.10	< 0.10				< 0.10	<0.10	<0.10			67
Boron (B)	ug/L	10	17	73	20				67	15	17			45000
Cadmium (Cd)	ug/L	0.01	0.23	< 0.01	0.026				< 0.010	<0.010	0.018			2.7
Chromium (Cr)	ug/L	0.5	< 0.5	< 0.5	< 0.5				< 0.50	< 0.50	< 0.50			810
Cobalt (Co)	ug/L	0.1	<0.1	0.21	0.75				< 0.10	<0.10	< 0.10			66
Copper (Cu)	ug/L	0.2	1.01	<0.20	0.71				1.09	0.77	1.07			87
Lead (Pb)	ug/L	0.05	< 0.05	< 0.50	< 0.05				0.087	<0.050	< 0.050			25
Mercury (Hg)	ug/L	0.01	< 0.01	<0.01	<0.010				< 0.0050	< 0.0050	< 0.0050			2.8
Molybdenum (Mo)	ug/L	0.05	0.364	1.8	0.37				1.31	0.304	0.266			9200
Nickel (Ni)	ug/L	0.5	0.91	<0.5	1.59				< 0.50	< 0.50	0.54			490
Selenium (Se)	ug/L	0.05	0.363	< 0.05	0.092				< 0.050	0.428	0.156			63
Silver (Ag)	ug/L	0.05	< 0.05	< 0.05	< 0.050				< 0.050	< 0.050	< 0.050			1.5
Sodium (Na)	ug/L	500	182000	14900	166000				14900	162000	156000			2300000
Thallium (TI)	ug/L	0.01	< 0.01	< 0.01	<0.01				< 0.010	< 0.010	<0.010			510
Uranium (U)	ug/L	0.01	1.24	0.369	1.17				0.097	1.15	1.11			420
Vanadium (V)	ug/L	0.5	<0.5	< 0.50	1.15				< 0.50	0.69	1.38			250
Zinc (Zn)	ug/L	1	4.9	<1.0	<1.0				1.3	<1.0	<1.0			1100
Chromium, Hexavalent	ug/L	0.5	< 0.50	<0.5	<0.5			_	<0.50	< 0.50	< 0.50		_	140

Table 3: Analytical Results - Groundwater

•		Sample Date:	13-Dec-18	13-Dec-18	13-Dec-18	07-Jan-19	07-Jan-19	07-Jan-19	20-May-21	20-May-21	20-May-21	20-May-21	20-May-21	
		Sample ID:	BH/MW18-1	BH/MW18-2	BH/MW18-3	BH/MW18-1	BH/MW18-2	BH/MW18-3	MW1	MW2	MW3	MW2-DUP	TRIP BLANK	MOECC Site Condition
PARAMETER	UNITS	MRL												Standards **
PARAIVIETER	UNITS	IVIKL				VOCs (ii	ncluding BTEX)							
Acetone	ug/L	30	<30	<30	<30	V 0 0 3 (II	loldaling BTEA		<30	<30	<30	<30	<30	130000
Benzene	ug/L	0.5	<0.50	< 0.50	< 0.50				< 0.50	< 0.50	<0.50	< 0.50	<0.50	430
Bromodichloromethane	ug/L	2	<2.0	<2.0	<2.0				<2.0	<2.0	<2.0	<2.0	<2.0	85000
Bromoform	ug/L	5	<5.0	<5.0	<5.0				<5.0	<5.0	<5.0	<5.0	<5.0	770
Bromomethane	ug/L	0.5	< 0.50	<0.50	<0.50				<0.50	<0.50	<0.50	< 0.50	<0.50	56
Carbon tetrachloride	ug/L	0.2	<0.20	<0.20	<0.20				<0.20	<0.20	<0.20	<0.20	<0.20	8.4
Chlorobenzene	ug/L	0.5	< 0.50	< 0.50	<0.50				<0.50	< 0.50	<0.50	< 0.50	<0.50	630
Dibromochloromethane	ug/L	2	<2.0	<2.0	<2.0				<2.0	<2.0	<2.0	<2.0	<2.0	82000
Chloroform	ug/L	1	<1.0	<1.0	<1.0				<1.0	<1.0	<1.0	<1.0	<1.0	22
1,2-Dibromoethane	ug/L	0.2	<0.20	<0.20	<0.20				<0.20	<0.20	<0.20	<0.20	<0.20	0.83
1,2-Dichlorobenzene	ug/L	0.5	< 0.50	<0.50	<0.50				<0.50	<0.50	<0.50	< 0.50	<0.50	9600
1,3-Dichlorobenzene	ug/L	0.5	< 0.50	< 0.50	<0.50				<0.50	<0.50	<0.50	<0.50	<0.50	9600
1,4-Dichlorobenzene	ug/L	0.5	< 0.50	< 0.50	<0.50				< 0.50	< 0.50	<0.50	< 0.50	<0.50	67
Dichlorodifluoromethane	ug/L	2	<2.0	<2.0	<2.0				<2.0	<2.0	<2.0	<2.0	<2.0	4400
1,1-Dichloroethane	ug/L	0.5	< 0.50	< 0.50	<0.50				< 0.50	< 0.50	<0.50	< 0.50	<0.50	3100
1,2-Dichloroethane	ug/L	0.5	< 0.50	< 0.50	<0.50				< 0.50	< 0.50	<0.50	< 0.50	<0.50	12
1,1-Dichloroethylene	ug/L	0.5	< 0.50	< 0.50	<0.50				< 0.50	< 0.50	<0.50	< 0.50	<0.50	17
cis-1,2-Dichloroethylene	ug/L	0.5	< 0.50	< 0.50	<0.50				< 0.50	< 0.50	<0.50	< 0.50	<0.50	17
trans-1,2-Dichloroethylene	ug/L	0.5	< 0.50	< 0.50	<0.50				<0.50	< 0.50	<0.50	< 0.50	<0.50	17
Methylene Chloride	ug/L	5	<5.0	<5.0	<5.0				<5.0	<5.0	<5.0	<5.0	<5.0	5500
1,2-Dichloropropane	ug/L	0.5	< 0.50	< 0.50	<0.50				< 0.50	< 0.50	<0.50	< 0.50	<0.50	140
cis-1,3-Dichloropropene	ug/L	0.3	< 0.30	< 0.30	< 0.30				< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	=
trans-1,3-Dichloropropene	ug/L	0.3	< 0.30	< 0.30	< 0.30				< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	=
1,3-Dichloropropene (cis & trans)	ug/L	0.5	< 0.50	< 0.50	<0.50				< 0.50	< 0.50	<0.50	< 0.50	<0.50	45
Ethylbenzene	ug/L	0.5	< 0.50	< 0.50	<0.50				< 0.50	<0.50	<0.50	< 0.50	<0.50	2300
n-Hexane	ug/L	0.5	< 0.50	< 0.50	<0.50				< 0.50	<0.50	<0.50	< 0.50	<0.50	520
Methyl Ethyl Ketone	ug/L	20	<20	<20	<20				<20	<20	<20	<20	<20	1500000
Methyl Isobutyl Ketone	ug/L	20	<20	<20	<20				<20	<20	<20	<20	<20	580000
MTBE	ug/L	2	<2.0	<2.0	<2.0				<2.0	<2.0	<2.0	<2.0	<2.0	1400
Styrene	ug/L	0.5	< 0.50	< 0.50	<0.50				<0.50	<0.50	<0.50	< 0.50	<0.50	9100
1,1,1,2-Tetrachloroethane	ug/L	0.5	< 0.50	<0.50	<0.50				<0.50	<0.50	<0.50	< 0.50	<0.50	28
1,1,2,2-Tetrachloroethane	ug/L	0.5	< 0.50	<0.50	<0.50				<0.50	<0.50	<0.50	< 0.50	<0.50	15
Tetrachloroethylene	ug/L	0.5	< 0.50	< 0.50	<0.50				<0.50	<0.50	<0.50	< 0.50	<0.50	17
Toluene	ug/L	0.5	< 0.50	<0.50	<0.50				<0.50	<0.50	<0.50	< 0.50	<0.50	18000
1,1,1-Trichloroethane	ug/L	0.5	< 0.50	< 0.50	<0.50				<0.50	<0.50	<0.50	< 0.50	<0.50	6700
1,1,2-Trichloroethane	ug/L	0.5	< 0.50	< 0.50	<0.50				<0.50	<0.50	<0.50	< 0.50	<0.50	30
Trichloroethylene	ug/L	0.5	< 0.50	< 0.50	<0.50				<0.50	<0.50	<0.50	< 0.50	<0.50	17
Trichlorofluoromethane	ug/L	5	<5.0	<5.0	<5.0				<5.0	<5.0	<5.0	<5.0	<5.0	2500
Vinyl chloride	ug/L	0.5	< 0.50	< 0.50	<0.50				<0.50	<0.50	<0.50	< 0.50	<0.50	1.7
o-Xylene	ug/L	0.3	< 0.30	< 0.30	< 0.30				< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	-
m+p-Xylenes	ug/L	0.4	< 0.40	< 0.40	<0.40				<0.40	<0.40	<0.40	< 0.40	<0.40	-
Xylenes (Total)	ug/L	0.5	< 0.50	< 0.50	<0.50				<0.50	<0.50	<0.50	< 0.50	<0.50	4200

Table 3: Analytical Results - Groundwater

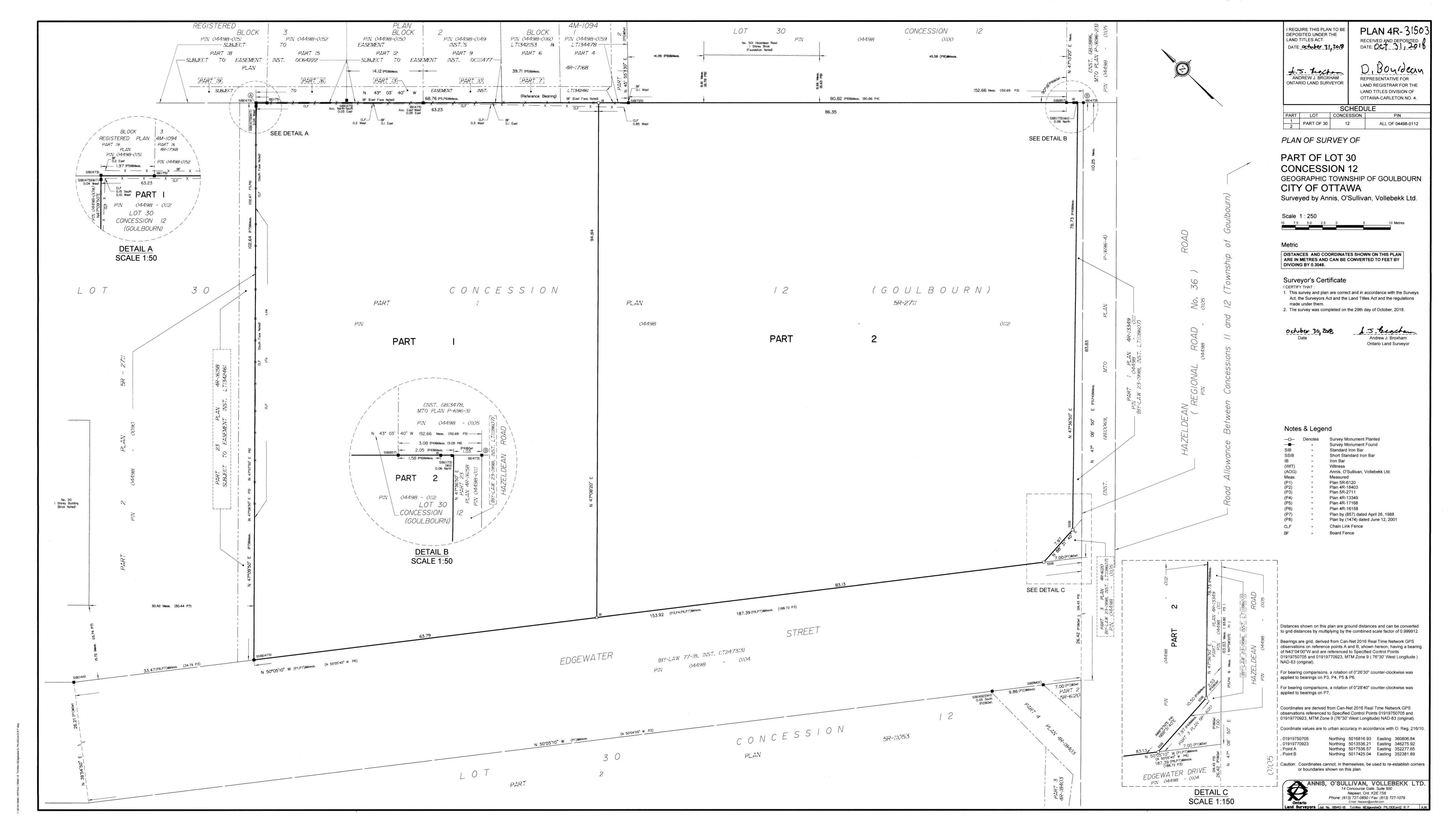
Tuble 6.7 marytical resource of our inwater		Sample Date:	13-Dec-18	13-Dec-18	13-Dec-18	07-Jan-19	07-Jan-19	07-Jan-19	20-May-21	20-May-21	20-May-21	20-May-21	20-May-21	
		Sample ID:	BH/MW18-1	BH/MW18-2	BH/MW18-3	BH/MW18-1	BH/MW18-2	BH/MW18-3	MW1	MW2	MW3	MW2-DUP	TRIP BLANK	MOECC Site Condition
DADAMETED	LINUTC	MDI	4											Standards **
PARAMETER	UNITS	MRL					DI IO-							
F1 (0 ( 010)	/1	0.5	0.5	0.05	٥٦	1	PHCs		0.5	0.5	٥٢	٥٢	0.5	750
F1 (C6-C10)	ug/L	25	<25	<0.25	<25				<25	<25	<25	<25	<25	750
F1-BTEX	ug/L	25	<25	<0.25	<25	100	100		<25	<25	<25	<25	<25	750
F2 (C10-C16)	ug/L	100	270	610	<100	<100	<100		<100	<100	<100	<100		150
F2-Naphth	ug/L	100	270	610	<100	050	050		<100	<100	<100	<100		-
F3 (C16-C34)	ug/L	250	460	870	280	<250	<250		<250	<250	<250	<250		500
F3-PAH	ug/L	250	450	870	280				<250	<250	<250	<250		-
F4 (C34-C50)	ug/L	250	370	<250	<250	<250	<250		<250	<250	<250	<250		500
Total Hydrocarbons (C6-C50)	ug/L	370	1090	1480	<370				<370	<370	<370	<370		-
			_	_			PAHs							
Acenaphthene	ug/L	0.02	0.117	0.182	0.043				<0.020	< 0.020	<0.020	<0.020		1700
Acenaphthylene	ug/L	0.02	0.054	0.07	<0.020				<0.020	<0.020	<0.020	<0.020		1.8
Anthracene	ug/L	0.02	0.099	0.123	0.022				<0.020	<0.020	<0.020	<0.020		2.4
Benzo(a)anthracene	ug/L	0.02	0.216	0.048	0.023				< 0.020	< 0.020	<0.020	<0.020		4.7
Benzo(a)pyrene	ug/L	0.01	0.196	0.039	0.021				< 0.010	< 0.010	< 0.010	< 0.010		0.81
Benzo(b)fluoranthene	ug/L	0.02	0.28	0.06	0.032				< 0.020	< 0.020	<0.020	<0.020		0.75
Benzo(g,h,i)perylene	ug/L	0.02	0.186	0.091	0.054				< 0.020	< 0.020	<0.020	< 0.020		0.2
Benzo(k)fluoranthene	ug/L	0.02	0.089	< 0.020	< 0.020				< 0.020	< 0.020	< 0.020	< 0.020		0.4
Chrysene	ug/L	0.02	0.185	0.069	0.032				< 0.020	< 0.020	< 0.020	< 0.020		1
Dibenzo(ah)anthracene	ug/L	0.02	0.039	< 0.020	<0.020				<0.020	< 0.020	<0.020	< 0.020		0.52
Fluoranthene	ug/L	0.02	0.379	0.251	0.089				<0.020	< 0.020	<0.020	< 0.020		130
Fluorene	ug/L	0.02	0.164	0.42	0.067				<0.020	<0.020	<0.020	< 0.020		400
Indeno(1,2,3-cd)pyrene	ug/L	0.02	0.185	0.035	<0.020				<0.020	<0.020	<0.020	<0.020		0.2
1+2-Methylnaphthalenes	ug/L	0.028	3.1	2.88	0.397				<0.028	<0.028	<0.028	<0.028		1800
1-Methylnaphthalene	ug/L	0.02	1.68	1.65	0.215				<0.020	<0.020	<0.020	<0.020		1800
2-Methylnaphthalene	ug/L	0.02	1.42	1.22	0.183				<0.020	<0.020	<0.020	<0.020		1800
Naphthalene	ug/L	0.05	0.804	0.187	< 0.050				< 0.050	<0.050	<0.050	< 0.050		6400
Phenanthrene	ug/L	0.02	0.483	1.5	0.233				<0.020	<0.020	<0.020	<0.020		580
Pyrene	ug/L	0.02	0.435	0.363	0.137				<0.020	<0.020	<0.020	<0.020		68

Notes:

	O.Reg. 153/04 (as amended) - Full Depth Generic Site Condition Standards (Table 3) / Residential property use / Fine textured soil				
-	No Site Condition Standard				
<0.013 or ND	Non Detectable (i.e. the analytical result was below the method reporting limit for the test)				
<u>124</u>	Sample result exceeds the corresponding Site Condition Standard (SCS) - Table 3				



APPENDIX A SURVEY PLAN OF THE PHASE TWO PROPERTY





APPENDIX B SAMPLING AND ANALYSIS PLAN

# SAMPLING AND ANALYSIS PLAN 6 EDGEWATER STREET, KANATA, ONTARIO



Project No.: 0CP-17-0635

Prepared for:

Chris McCluskey 6 Edgewater Street Kanata, ON K2L 1V8

Prepared by:

McIntosh Perry Consulting Engineers Ltd 115 Walgreen Road Carp, ON K0A 1L0

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#### 1.0 INTRODUCTION

### 1.1 Background

McIntosh Perry ("MP") was retained by Chris McCluskey of McCluskey Group ("the Client") to conduct a Phase Two ESA at 6 Edgewater Street, Kanata, Ontario

The environmental subsurface investigation will be completed concurrently with a geotechnical investigation at the Site. The investigation will be completed in general accordance with Ontario Regulation (O. Reg.) 153/04 (as amended).

### 1.2 Objectives

As per the requirements of O. Reg. 153/04, the objectives of this Sampling and Analysis Plan are as follows:

- Plan an investigation that will achieve the general objectives of a Phase Two Environmental Site Assessment:
  - o Through the use of an appropriate and complete information base concerning the Phase Two Property; and
  - Through the conduct of an investigation based both on information obtained before the Phase
     Two Environmental Site Assessment and on the incorporation of information obtained during the subsurface investigation.
- To develop a Sampling and Analysis Plan that will adequately assess all areas of the subsurface investigation property where contaminants may be present in land or water on, in or under the property.
  - To develop a quality assurance program that is designed to effectively limit errors and bias in sampling and analysis through implementation of assessment and control measures that will ensure data are useful, appropriate and accurate in the determination of whether the Phase Two Property meets applicable Ontario Ministry of the Environment, Conservation and Parks (MECP) Site Condition Standards.

### 2.0 SAMPLING PROGRAM

### 2.1 Areas of Potential Environmental Concern and Contaminants of Potential Concern

Based on a Phase One ESA completed for the Site, McIntosh Perry identified the following Potentially Contaminating Activities which are interpreted to result in Areas of Potential Environmental Concern:

	Table 1: Potentially Contan	ninating Activit	ies	Table 1: Potentially Contaminating Activities												
No.	Potential Contaminating Activity (PCA)	Location of PCA	Proximity of PCA to Phase One ESA Property	Time Frame Associated with PCA	Information Source	Does the PCA warrant an area of potential environmental concern (APEC)										
1	Item 28, Column A, Table 2, Schedule D, O.Reg. 153/04: Gasoline and Associated Products Storage in Fixed Tanks (on-site ASTs)	On-Site	On-Site	1970s- 1995	Interviews, previous report	YES – on-site PCA										
2	No item under Column A, Table 2, Schedule D, O.Reg. 153/04: Building materials storage yard	On-Site	On-Site	1970s- 1995	Interviews, air photos, previous report	YES – on-site PCA										
3a	Item 27, Column A, Table 2, Schedule D, O.Reg. 153/04: Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles (heavy equipment garage)	5 Edgewater Street	45 m southwest	1980s- present	Aerial photos, site visit, previous report, ERIS report	YES, based on proximity										
3b	Item 28, Column A, Table 2, Schedule D, O.Reg. 153/04: Gasoline and Associated Products Storage in Fixed Tanks (AST records)	5 Edgewater Street	45 m southwest	1980s- present	ERIS report	YES, based on proximity										
3c	No item under Column A, Table 2, Schedule D, O.Reg. 153/04: historical spill record (TCE)	5 Edgewater Street	45 m southwest	Unknown	Report by others	YES, based on proximity										

	Table 1: Potentially Contan	ninating Activit	ties			
No.	Potential Contaminating Activity (PCA)	Location of PCA	Proximity of PCA to Phase One ESA Property	Time Frame Associated with PCA	Information Source	Does the PCA warrant an area of potential environmental concern (APEC)
4	Item 28, Column A, Table 2, Schedule D, O.Reg. 153/04: Gasoline and Associated Products Storage in Fixed Tanks (former retail fuel outlet)	501 Hazeldean Road	150 m south	Prior to 1994	ERIS report, air photos	YES, based on proximity
5	No item under Column A, Table 2, Schedule D, O.Reg. 153/04: Spill of fuel oil from residential fuel storage tank	21 Young Road	80 m north	2008	ERIS report	YES, based on proximity

The following contaminants of potential concern (COCs) are suspected and should be tested at the Phase One Property:

- Petroleum hydrocarbons Fractions 1 to 4 (PHCs): This parameter group consists of petroleum hydrocarbons of various carbon chain lengths commonly encountered in gasoline (PHC F1), diesel and furnace oil (PHC F2), and heavy oils and asphalts (PHC F3-F4). This parameter group was selected as COPCs for the Site due to the historic presence of ASTs at the Site, the historic presence of a retail fuel outlet at 501 Hazeldean Road, a record of a fuel oil spill at 21 Young Road, and ASTs and garage activities at 5 Edgewater Street.
- Volatile organic compounds (VOCs) including benzene, toluene, ethylbenzene, and xylenes (BTEX): This parameter group consists of soluble components in gasoline, diesel, and fuel oil, as well as various chlorinated solvents used in degreasing, dry cleaning, and industrial applications. VOCs were selected as COPCs for the Site due to the historic presence of ASTs at the Site, the historic presence of a retail fuel outlet at 501 Hazeldean Road, a record of a fuel oil spill at 21 Young Road, and ASTs and garage activities at 5 Edgewater Street, as well as the historic TCE spill record noted in a previous environmental report at 5 Edgewater Street.
- Polycyclic aromatic hydrocarbons (PAHs): This parameter group consists of various complex hydrocarbons associated with heavy oils as well as combustion byproducts, coal, etc. PAHs were selected as COPCs for the Site due to the historic use of the Site as a building materials storage yard and garage activities at 5 Edgewater Street.

Metals and inorganic parameters (As, Sb, Se, B, B-HWS, Na, Hg, CI-, CN, Cr-VI, pH, EC and SAR) were selected as COPCs for the Site based on the historic use of the Site as a building materials storage yard.

#### 2.2 Borehole Locations

The environmental subsurface investigation is to be completed concurrently with a geotechnical investigation, and the boreholes and test pits proposed under this investigation are located to achieve general site coverage from an environmental/soil quality and hydrogeological perspective. A summary of proposed borehole locations are provided below.

Borehole (BH)/ Test Pit (TP) ID	Location and Rationale	Depth and Rationale
5	General site coverage; at/near site	
BH 1	boundary to intercept potential	Refusal on bedrock or encounter water table
	groundwater impacts from off-site sources	
	General site coverage; at/near site	
BH 2	boundary to intercept potential	Refusal on bedrock or encounter water table
	groundwater impacts from off-site sources	
	General site coverage; at/near site	
BH 3	boundary to intercept potential	Refusal on bedrock or encounter water table
	groundwater impacts from off-site sources	

#### 2.3 Soil Samples

A summary of proposed soil samples to be submitted for laboratory analysis is provided below.

BH ID	Sample ID	Approx. Depth/ Stratigraphy	Chemical Analysis	Rationale
BH 1	TBC	TBC based on field screening	Metals and inorganics,PAHs, PHCs F1-F4, VOCs	General characterization
BH 2	TBC	TBC based on field screening	Metals and inorganics ,PAHs, PHCs F1-F4, VOCs	General characterization
BH 3	TBC	TBC based on field screening	Metals and inorganics, PAHs, PHCs F1-F4, VOCs	General characterization

It is noted that if visual or olfactory evidence of contamination is encountered during the subsurface investigation, different or additional samples may be submitted for laboratory analysis to capture the true "worst-case" scenario with respect to potential contamination.

### 2.4 Groundwater Samples

A summary of proposed groundwater samples to be submitted for laboratory analysis is provided below.

BH ID	Sample ID	Approx. Depth/ Stratigraphy	Chemical Analysis	Rationale
BH 1	BH1-GW	Shallow water table	Metals and inorganics, PAHs, PHCs F1-F4, VOCs	General characterization
BH 2	BH2-GW	Shallow water table	Metals and inorganics, PAHs, PHCs F1-F4, VOCs	General characterization
BH 3	BH3-GW	Shallow water table	Metals and inorganics, PAHs, PHCs F1-F4, VOCs	General characterization

## 2.5 Field Screening

Given the results of the previous investigation, the contaminants of concern, and the limited lateral extent of the project site, field screening will be limited to visual and olfactory observations of evidence of contamination. Field screening measurements will be recorded in our field notes and summarized in the Subsurface Characterization Report.

#### 3.0 OUALITY ASSURANCE AND OUALITY CONTROL

A summary of quality assurance and quality control measures to be employed during the investigation is provided below.

#### 3.1 Decontamination of Equipment

Boreholes will be advanced using direct push methods with single-use macro tubes or using conventional equipment (split spoon samplers and hollow stem augers). Hollow stem augers and split spoon samplers will arrive at the Site in a pre-cleaned condition. Between boreholes, the augers will be cleaned with a brush and washed with a water and Alconox™ solution.

Stainless steel split spoon samplers will be decontaminated between sampling locations in the following sequence: cleaned with a brush to remove adhered soil and/or debris, washed with a dilute solution of Alconox™ and water, rinsed with potable water and distilled water, then rinsed with methanol and allowed to air dry.

No other non-dedicated sampling equipment is expected to be used.

#### 3.2 Field Duplicates

At least one (1) field duplicate sample will be collected and analysed for each ten (10) "worst-case" soil samples. Field duplicates will be analyzed for all parameters for which their corresponding samples are analyzed.

### 3.3 Sampling Protocols

The jars and preservatives (where applicable) used in the collection of soil samples will be supplied by the analytical laboratory. The soil samples intended to be submitted for analysis of VOCs and PHCs in the F1 fraction range will be immediately preserved in laboratory provided vials pre-charged with to sequester the volatile compounds.

Soil samples will be labelled as they are collected. Samples will be stored in ice-packed coolers until the samples are transported to the laboratory for chemical analysis. Samples will be either handed over to or dropped off at the laboratory by MP personnel. Chains of Custody for the samples will be prepared using laboratory-provided Chain of Custody forms.

#### 4.0 DATA OUALITY OBJECTIVES

The purpose of the collection of field duplicate samples is to measure the precision or reproducibility of the field and laboratory methodology used in the collection and analysis of the samples. The precision is evaluated in terms of the relative percent difference (RPD) between the analyses of the field duplicate sample and its corresponding original sample. The RPDs of the original and field duplicate samples will not be calculated in situations where one or both of the original and field duplicate samples exhibit concentrations of analyzed parameters that are below the laboratory Reporting Detection Limits (RDLs).

The RPD between the involved samples will be calculated using the following formula:

$$RPD = \frac{(A-B)}{\frac{(A+B)}{2}} \times 100\%$$

Where:

A = concentration of compound in the primary sample

B = concentration of compound in the duplicate sample

Notes:

- RPD is calculated only for result pairs with concentrations greater than 5 times of the method detection limit in both samples.
- RPDs are not calculated where results are below the laboratory RDLs for sample pair.

The acceptable RPD limits for various analyzed groups are listed in the following table:

Parameter Group	Recommended RPD in Soil	Recommended RPD in Groundwater
PHC	30%	30%
VOCs	50%	30%
PAHs	40%	30%
PCBs	40%	30%
1,4-Dioxane	50%	30%
Dioxins/Furans	40%	30%
Organochlorine (OC) Pesticides	40%	30%
Metals	30%	20%
Hexavalent Chromium, Cr(VI)	35%	20%
Cyanide (CN-)	35%	20%

Parameter Group	Recommended RPD in Soil	Recommended RPD in Groundwater		
Fraction Organic Carbon (FOC), Chloride	35%	20%		
Methyl Mercury	40%	30%		
Electric Conductivity	10%	-		
рН	Within 0.3 pH units	-		
,	n the Assessment of Properties under Part Ministry of the Environment - March 9, 200			

Laboratory quality control limits for duplicate, method blank, method blank spike, matrix spike and surrogate recoveries will also be reviewed.

#### 5.0 STANDARD OPERATING PROCEDURES

MP has implemented a Standard Operating Procedures (SOPs) program for environmental field activities. The SOPs are regularly updated and are provided to field staff as needed. SOPs applicable to this program may include:

- SOP 1-01: Field Notes and Record Keeping
- SOP 1-02: Field Equipment
- SOP 1-03: Sample Management
- SOP 3-01: Planning a Phase Two ESA Field Program
- SOP 3-02: Naming Conventions: Boreholes, Test Pits, and Monitoring Wells
- SOP 3-03: Naming Conventions: Individual Soil and Groundwater Samples
- SOP 3-04: Duplicate Samples
- SOP 3-05: Underground Service Locates
- SOP 3-06: Soil Sample Management and Disposal
- SOP 3-07: Cuttings and Purge Water Management
- SOP 3-08: Overburden Drilling Geoprobe or Geomachine
- SOP 3-09: Overburden Drilling Conventional Rig
- SOP 3-13: Test Pit Excavation Power Equipment
- SOP 3-15: Sample Selection and Submission for Delineation of Contamination
- SOP 3-22: Description of Soil Samples
- SOP 3-23: Combined Environmental and Geotechnical Investigations
- SOP 3-24: Field Screening of Samples Soil Vapour
- SOP 3-27: Phase Two ESA Reports



APPENDIX C BOREHOLE LOGS

#### **BORING NUMBER 18-1**

McIntosh Perry

PAGE 1 OF 1 115 Walgreen Rd Carp, Ontario, K0A1L0 PROJECT NAME 6 Edgewater Street Phase II ESA CLIENT Chris McCluskey Group PROJECT NUMBER CP-17-0635 PROJECT LOCATION 6 Edgewater Street GROUND ELEVATION 102.29 m ASL HOLE SIZE DATE STARTED 13-12-18 COMPLETED <u>13-12-18</u> **GROUND WATER LEVELS:** DRILLING CONTRACTOR Canadian Environmental Drilling DRILLING METHOD Truck-Mounted Acker AT TIME OF DRILLING \_---LOGGED BY PH CHECKED BY DJA AT END OF DRILLING ---**▼ 96hrs AFTER DRILLING** 1.23 m NOTES VOC ENVIRONMENTAL DATA SAMPLE TYPE NUMBER Concentration BLOW COUNTS (N VALUE) GRAPHIC LOG DEPTH (m) **№** (ppm) 20 40 60 80 MATERIAL DESCRIPTION WELL DIAGRAM ♣ LEL (%) Casing Top Elev: 100.954 (m) Casing Type: Monument 20 40 60 80 <u>47. 元</u> 0.2 Topsoil 3-7-9-5 SS Clayey Silt, some gravel, some sand. Brown, (16)PID = 1moist, very stiff Vapor = 15 .10. **X** SS 3-3-3-3 2 (6) PID = 0Vapor = 10 clayey silt, some sand, brown, firm SS 1-2-3-3 (5) PID = 0Vapor = 01-2-3-3 SS X (5) PID = 0Vapor = 15 8-27-38-16 SS 5 (65)PID = 13.0 Vapor = 20 Sand with some gravel and trace silt. Brown, wet, SS 4-4-4-8 (8) 6 PID = 0Vapor = 0SS 4-4-12-30 7 (16)PID = 0Clay with sand and silt and some gravel, wet, Vapor = 0SS PID = 050 8 Vapor = 0Refusal on inferred bedrock Bottom of hole at 4.57 m.

# **BORING NUMBER 18-2**

MP	McIntosh Perry 115 Walgreen Rd Carp, Ontario, KOA	A11.0		БОР	PAGE 1 OF 1				
CLIENT Chris McCluskey Group PROJECT NUMBER CP-17-0	up								
	PROJECT NUMBER CP-17-0635			PROJECT LOCATION 6 Edgewater Street  GROUND ELEVATION 102.37 m ASL HOLE SIZE					
					DLE 312E				
DRILLING CONTRACTOR Ca									
DRILLING METHODTruck-Mo		2 DV - D IA							
LOGGED BY PH									
NOTES			_ ¥ 96hrs AFTER D	DRILLING 0.83 m					
H TYPE ST (S)	ENVIRONMENTAL DATA GRAPHIC LOG			VOC Concentration					
SAMPLE TYPE NUMBER BLOW COUNTS (N VALUE)	IRONMEN DATA GRAPHIC LOG	MATERIAL	DESCRIPTION	<b>▼</b> (ppm) 20 40 60 80 <b>●</b> LEL (%)	WELL DIAGRAM				
0 8   1	<u> </u>			20 40 60 80	Casing Top Elev: 101.099 (m) Casing Type: Monument				
Value   Valu	ID = 1 por = 0  ID = 1 por = 0  ID = 1 por = 0  ID = 1 por = 0  ID = 1 por = 0  ID = 1 por = 0  ID = 1 por = 0  ID = 1 por = 0  ID = 1 por = 0  ID = 0 por = 0  ID = 0 por = 0	Topsoil Silt with clay, some sa Brown, moist, stiff to Sand with silt and sor wet, loose  Clay with silt, grey, we	firm ne clay. Brown, moist to						
	ID = 1 por = 0	compact to dense	d, some gravel. Grey, wet,	*					
v v i Va	por = 0	Refusal on inferred be Bottom of	edrock i hole at 6.10 m.						

## **BORING NUMBER 18-3**

McIntosh Perry 115 Walgreen Rd Carp, Ontario, K04

PAGE 1 OF 1

			Carp, (	Ontario	, K0A1L0			
CLIEN	Chris	McCluskey	Group			PROJECT NAME	6 Edgewater Street Pr	nase II ESA
PROJE	CT NUM	BER CP-	17-0635			PROJECT LOCAT	ION 6 Edgewater Stre	et
DATE	STARTE	D 13-12-1	8	COM	PLETED 13-12-18	GROUND ELEVATION	101.77 m ASL <b>HC</b>	OLE SIZE
DRILLI	NG CON	TRACTOR	Canadian E	nviron	mental Drilling	GROUND WATER LEV	/ELS:	
			k-Mounted A					
LOGGI	ED BY _	BS		CHE	CKED BY DJA		LLING	
NOTES	S					¥ 96hrs AFTER D	RILLING 1.02 m	
	PE		IТАL				VOC Concentration	
DEPTH (m)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL D	DESCRIPTION	<b>▼</b> (ppm) 20 40 60 80	WELL DIAGRAM
0	SAM	_0 <u>S</u>	=N 	G			◆ LEL (%) 20 40 60 80	Casing Top Elev: 100.405 (m) Casing Type: Monument
2 (	SS 1  SS 2  SS 3  SS 4  SS 5  SS 6  SS 7				Sand with gravel. Brown  O.6  Gravel, low recovery, ro  1.2  Silt with sand and trace wet.	ck stuck in split spoon clay. Brown, moist to		
					EOH traget depth Bottom of h	nole at 4.88 m.		



APPENDIX D LABORATORY CERTIFICATES OF ANALYSIS



McIntosh Perry Engineering Consultants

(Ottawa)

ATTN: Bradley Sutherland 115 Walgreen Road RR3

Carp ON KOA 1LO

Date Received: 14-DEC-18

Report Date: 20-DEC-18 07:51 (MT)

Version: FINAL

Client Phone: 613-836-2184

# Certificate of Analysis

Lab Work Order #: L2211036

Project P.O. #: NOT SUBMITTED

Job Reference: CP-17-0635

C of C Numbers: Legal Site Desc:

Melanie Moshi Account Manager

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

ADDRESS: 190 Colonnade Road, Unit 7, Ottawa, ON K2E 7J5 Canada | Phone: +1 613 225 8279 | Fax: +1 613 225 2801

ALS CANADA LTD Part of the ALS Group An ALS Limited Company



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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-1 BH1							
Sampled By: CLIENT on 13-DEC-18 @ 10:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.550		0.0040	mS/cm		17-DEC-18	R4397413
% Moisture	33.0		0.10	%	17-DEC-18	18-DEC-18	R4396792
рН	7.56		0.10	pH units		17-DEC-18	R4397016
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4400394
Saturated Paste Extractables							
SAR	3.54		0.10	SAR		17-DEC-18	R4400088
Calcium (Ca)	27.4		1.0	mg/L		17-DEC-18	R4400088
Magnesium (Mg)	3.3		1.0	mg/L		17-DEC-18	R4400088
Sodium (Na)	73.7		1.0	mg/L		17-DEC-18	R4400088
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Arsenic (As)	3.5		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Barium (Ba)	283		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Beryllium (Be)	0.61		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B)	5.4		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B), Hot Water Ext.	0.23		0.10	ug/g	16-DEC-18	17-DEC-18	R4396954
Cadmium (Cd)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Chromium (Cr)	40.4		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Cobalt (Co)	11.1		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Copper (Cu)	20.5		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Lead (Pb)	7.5		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Mercury (Hg)	0.0181		0.0050	ug/g	16-DEC-18	17-DEC-18	R4397072
Molybdenum (Mo)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Nickel (Ni)	22.7		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Selenium (Se)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Silver (Ag)	<0.20		0.20	ug/g	16-DEC-18	17-DEC-18	R4399967
Thallium (TI)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Uranium (U)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Vanadium (V)	51.8		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Zinc (Zn)	63.8		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Speciated Metals							
Chromium, Hexavalent	0.50		0.20	ug/g	17-DEC-18	18-DEC-18	R4400151
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	
Benzene	<0.0068		0.0068	ug/g	17-DEC-18		R4399356
Bromodichloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromoform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromomethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Carbon tetrachloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Chlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Dibromochloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-1 BH1 Sampled By: CLIENT on 13-DEC-18 @ 10:00 Matrix: SOIL							
Volatile Organic Compounds							
Chloroform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dibromoethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,3-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,4-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Dichlorodifluoromethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,1-Dichloroethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,2-Dichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18		R4399356
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g ug/g	17-DEC-18		R4399356
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Methylene Chloride	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,2-Dichloropropane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18		R4399356
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	220 .0	18-DEC-18	111000000
Ethylbenzene	<0.018		0.018	ug/g	17-DEC-18	18-DEC-18	R4399356
n-Hexane	<0.050		0.050	ug/g	17-DEC-18		R4399356
Methyl Ethyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
MTBE	<0.050		0.050	ug/g	17-DEC-18		R4399356
Styrene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
Tetrachloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Toluene	<0.080		0.080	ug/g	17-DEC-18		R4399356
1,1,1-Trichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	
1,1,2-Trichloroethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
Trichloroethylene	<0.010		0.010	ug/g	17-DEC-18	18-DEC-18	R4399356
Trichlorofluoromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	
Vinyl chloride	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
o-Xylene	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
m+p-Xylenes	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356
Xylenes (Total)	<0.050		0.050	ug/g		18-DEC-18	
Surrogate: 4-Bromofluorobenzene	93.6		50-140	%	17-DEC-18	18-DEC-18	R4399356
Surrogate: 1,4-Difluorobenzene	105.9		50-140	%	17-DEC-18	18-DEC-18	R4399356
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	17-DEC-18	18-DEC-18	R4399356
F1-BTEX	<5.0		5.0	ug/g		18-DEC-18	
F2 (C10-C16)	<10		10	ug/g	15-DEC-18	17-DEC-18	R4398472
F2-Naphth	<10		10	ug/g		18-DEC-18	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Version: FINAL

Sampled By: CLIENT on 13-DEC-18 @ 10:00   Matrix   SOIL	Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Hydrocarbons FS (C16-C34)	Sampled By: CLIENT on 13-DEC-18 @ 10:00							
F3 (C16-C34)								
F3-PAH	_	<sub>4</sub> E0		50	ua/a	15 DEC 19	17 DEC 19	D 4200472
F4 (C34-C50)	,					13-DEC-16		K4396472
Total Hydrocarbons (C6-C50)						15-DEC-18		P/308/72
Chrom. to baseline at nC50	, , , , , , , , , , , , , , , , , , , ,					13-020-10		N4390472
Surrogate: 2-Bromobenzotrifluoride   98.1   60-140   %   15-DEC-18   17-DEC-18   R4398472	, , ,			12	ug/g	15-DEC-18		D4209472
Surrogate: 3,4-Dichlorotoluene   76,4   60-140   %   17-DEC-18   18-DEC-18   R4399356				60-140	0/_			
Polycyclic Aromatic Hydrocarbons								
Aceraphthene		70.4		00-140	/6	17-020-10	10-020-10	K4399330
Acenaphthylene		<0.050		0.050	ua/a	15-DEC-18	18-DEC-18	R4399050
Anthracene	·							
Benzo(a)anthracene         0.092         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Benzo(a)pyrene         0.086         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Benzo(b)fluoranthene         0.144         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Benzo(g,h,i)perylene         0.081         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Benzo(k)fluoranthene         <0.050         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Chrysene         0.081         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Dibenzo(ah)anthracene         <0.050         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Fluoranthene         <0.076         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Indentylnaphthalene         <0.050         0.060         ug/g         15-DEC-18         18-DEC-18         R4399050           1-2-Methylnaphthalene         <0.042         0.042         ug/g         15-DEC-18         18-DEC-18         R4399050	' '							
Benzo(a)pyrene								
Benzo(b)fluoranthene								
Benzo(g,h,i)perylene	Benzo(b)fluoranthene	0.144		0.050		15-DEC-18	18-DEC-18	
Benzo(k) fluoranthene								R4399050
Chrysene         0.081         0.050         ug/g         15-DEC-18         18-DEC-18         R4399050           Dibenzo(ah)anthracene         <0.050	12 11 1					15-DEC-18	18-DEC-18	
Dibenzo(ah)anthracene	Chrysene	0.081		0.050		15-DEC-18		
Fluoranthene	Dibenzo(ah)anthracene	<0.050				15-DEC-18		
Fluorene	Fluoranthene	0.076				15-DEC-18		
Indeno(1,2,3-cd)pyrene	Fluorene	<0.050		0.050		15-DEC-18	18-DEC-18	R4399050
1+2-Methylnaphthalenes	Indeno(1,2,3-cd)pyrene	0.068		0.050		15-DEC-18	18-DEC-18	R4399050
1-Methylnaphthalene       <0.030	1+2-Methylnaphthalenes	<0.042		0.042			18-DEC-18	
2-Methylnaphthalene       <0.030	1-Methylnaphthalene	<0.030		0.030		15-DEC-18	18-DEC-18	R4399050
Naphthalene	2-Methylnaphthalene	<0.030		0.030		15-DEC-18	18-DEC-18	R4399050
Phenanthrene	Naphthalene	<0.013		0.013		15-DEC-18	18-DEC-18	R4399050
Pyrene	Phenanthrene	<0.046		0.046		15-DEC-18	18-DEC-18	
Surrogate: 2-Fluorobiphenyl   105.2   50-140   %   15-DEC-18   18-DEC-18   R4399050	Pyrene	0.083		0.050		15-DEC-18	18-DEC-18	
L2211036-2   BH2   Sampled By: CLIENT on 13-DEC-18 @ 13:00   Matrix: SOIL	Surrogate: 2-Fluorobiphenyl	105.2		50-140		15-DEC-18	18-DEC-18	R4399050
Sampled By: CLIENT on 13-DEC-18 @ 13:00         Matrix:       SOIL         Physical Tests         Conductivity       0.133       0.0040       mS/cm       17-DEC-18       R4397413         % Moisture       26.2       0.10       %       17-DEC-18       R4396792         pH       7.39       0.10       pH units       17-DEC-18       R4397016         Cyanides         Cyanide, Weak Acid Diss       <0.050	Surrogate: p-Terphenyl d14	106.4		50-140	%	15-DEC-18	18-DEC-18	R4399050
Conductivity         0.133         0.0040         mS/cm         17-DEC-18         R4397413           % Moisture         26.2         0.10         %         17-DEC-18         18-DEC-18         R4396792           pH         7.39         0.10         pH units         17-DEC-18         R4397016           Cyanides         Cyanide, Weak Acid Diss         <0.050	Sampled By: CLIENT on 13-DEC-18 @ 13:00							
% Moisture       26.2       0.10       %       17-DEC-18       18-DEC-18       R4396792         pH       7.39       0.10       pH units       17-DEC-18       R4397016         Cyanides       0.050       ug/g       17-DEC-18       18-DEC-18       R4400394         Saturated Paste Extractables       1.08       0.10       SAR       17-DEC-18       R4400088         Calcium (Ca)       8.1       1.0       mg/L       17-DEC-18       R4400088	Physical Tests							
pH     7.39     0.10     pH units     17-DEC-18     R4397016       Cyanides     Cyanide, Weak Acid Diss     <0.050     0.050     ug/g     17-DEC-18     18-DEC-18     R4400394       Saturated Paste Extractables     1.08     0.10     SAR     17-DEC-18     R4400088       Calcium (Ca)     8.1     1.0     mg/L     17-DEC-18     R4400088	Conductivity	0.133		0.0040	mS/cm		17-DEC-18	R4397413
Cyanides         Cyanide, Weak Acid Diss         <0.050         ug/g         17-DEC-18         18-DEC-18         R4400394           Saturated Paste Extractables         1.08         0.10         SAR         17-DEC-18         R4400088           Calcium (Ca)         8.1         1.0         mg/L         17-DEC-18         R4400088	% Moisture	26.2		0.10	%	17-DEC-18	18-DEC-18	R4396792
Cyanide, Weak Acid Diss         <0.050         ug/g         17-DEC-18         18-DEC-18         R4400394           Saturated Paste Extractables         1.08         0.10         SAR         17-DEC-18         R4400088           Calcium (Ca)         8.1         1.0         mg/L         17-DEC-18         R4400088	рН	7.39		0.10	pH units		17-DEC-18	R4397016
Saturated Paste Extractables         1.08         0.10         SAR         17-DEC-18         R4400088           Calcium (Ca)         8.1         1.0         mg/L         17-DEC-18         R4400088	Cyanides							
SAR     1.08     0.10     SAR     17-DEC-18     R4400088       Calcium (Ca)     8.1     1.0     mg/L     17-DEC-18     R4400088		<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4400394
Calcium (Ca) 8.1 1.0 mg/L 17-DEC-18 R4400088								
Magnesium (Mg) 1.7 1.0 mg/L 17-DEC-18 R4400088					_			
	Magnesium (Mg)	1.7		1.0	mg/L		17-DEC-18	R4400088

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-2 BH2							
Sampled By: CLIENT on 13-DEC-18 @ 13:00 Matrix: SOIL							
Saturated Paste Extractables							
Sodium (Na)	13.0		1.0	mg/L		17-DEC-18	R4400088
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Arsenic (As)	2.4		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Barium (Ba)	142		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Beryllium (Be)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B)	<5.0		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B), Hot Water Ext.	0.10		0.10	ug/g	16-DEC-18	17-DEC-18	R4396954
Cadmium (Cd)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Chromium (Cr)	22.4		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Cobalt (Co)	6.5		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Copper (Cu)	13.6		1.0	ug/g	16-DEC-18		R4399967
Lead (Pb)	3.7		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Mercury (Hg)	<0.0050		0.0050	ug/g	16-DEC-18	17-DEC-18	R4397072
Molybdenum (Mo)	<1.0 12.3		1.0 1.0	ug/g	16-DEC-18 16-DEC-18	17-DEC-18	R4399967 R4399967
Nickel (Ni) Selenium (Se)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Silver (Ag)	<0.20		0.20	ug/g ug/g	16-DEC-18		R4399967
Thallium (TI)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Uranium (U)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Vanadium (V)	33.9		1.0	ug/g	16-DEC-18		R4399967
Zinc (Zn)	33.3		5.0	ug/g	16-DEC-18		R4399967
Speciated Metals	00.0		0.0	-9.9			
Chromium, Hexavalent	<0.20		0.20	ug/g	17-DEC-18	18-DEC-18	R4400151
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
Benzene	<0.0068		0.0068	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromodichloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromoform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromomethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
Carbon tetrachloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Chlorobenzene	<0.050		0.050	ug/g	17-DEC-18		R4399356
Dibromochloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Chloroform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dibromoethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,2-Dichlorobenzene 1,3-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,3-Dichlorobenzene  1.4-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18 17-DEC-18	18-DEC-18 18-DEC-18	R4399356
Dichlorodifluoromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1-Dichloroethane	<0.050 <0.050		0.050 0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dichloroethane	<0.050		0.050	ug/g ug/g	17-DEC-18		R4399356 R4399356
1,1-Dichloroethylene					17-DEC-18		R4399356
r, r-Dichiloroctriylerie	<0.050		0.050	ug/g	11-050-18	10-050-18	174399336

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch	
L2211036-2 BH2 Sampled By: CLIENT on 13-DEC-18 @ 13:00 Matrix: SOIL								
Volatile Organic Compounds								
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
Methylene Chloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
1,2-Dichloropropane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356	
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356	
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		18-DEC-18		
Ethylbenzene	<0.018		0.018	ug/g	17-DEC-18	18-DEC-18	R4399356	
n-Hexane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
Methyl Ethyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356	
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356	
MTBE	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
Styrene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
Tetrachloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
Toluene	<0.080		0.080	ug/g	17-DEC-18	18-DEC-18	R4399356	
1,1,1-Trichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
1,1,2-Trichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
Trichloroethylene	<0.010		0.010	ug/g	17-DEC-18	18-DEC-18	R4399356	
Trichlorofluoromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356	
Vinyl chloride	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356	
o-Xylene	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356	
m+p-Xylenes	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356	
Xylenes (Total)	<0.050		0.050	ug/g		18-DEC-18		
Surrogate: 4-Bromofluorobenzene	96.5		50-140	%	17-DEC-18	18-DEC-18	R4399356	
Surrogate: 1,4-Difluorobenzene	109.8		50-140	%	17-DEC-18	18-DEC-18	R4399356	
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	17-DEC-18	18-DEC-18	R4399356	
F1-BTEX	<5.0		5.0	ug/g		18-DEC-18		
F2 (C10-C16)	<10		10	ug/g	15-DEC-18	17-DEC-18	R4398472	
F2-Naphth	<10		10	ug/g		18-DEC-18		
F3 (C16-C34)	<50		50	ug/g	15-DEC-18	17-DEC-18	R4398472	
F3-PAH	<50		50	ug/g		18-DEC-18		
F4 (C34-C50)	<50		50	ug/g	15-DEC-18	17-DEC-18	R4398472	
Total Hydrocarbons (C6-C50)	<72		72	ug/g		18-DEC-18		
Chrom. to baseline at nC50	YES				15-DEC-18	17-DEC-18		
Surrogate: 2-Bromobenzotrifluoride	99.6		60-140	%	15-DEC-18	17-DEC-18		
Surrogate: 3,4-Dichlorotoluene	62.6		60-140	%	17-DEC-18	18-DEC-18	R4399356	
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-2 BH2 Sampled By: CLIENT on 13-DEC-18 @ 13:00 Matrix: SOIL							
Polycyclic Aromatic Hydrocarbons							
Acenaphthylene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Anthracene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(a)anthracene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(a)pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(b)fluoranthene	<0.050		0.050	ug/g	15-DEC-18		R4399050
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Chrysene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Fluoranthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Fluorene	<0.050		0.050	ug/g	15-DEC-18		R4399050
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		18-DEC-18	
1-Methylnaphthalene	<0.030		0.030	ug/g	15-DEC-18	18-DEC-18	R4399050
2-Methylnaphthalene	<0.030		0.030	ug/g	15-DEC-18	18-DEC-18	R4399050
Naphthalene	<0.013		0.013	ug/g	15-DEC-18	18-DEC-18	R4399050
Phenanthrene	<0.046		0.046	ug/g	15-DEC-18	18-DEC-18	R4399050
Pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Surrogate: 2-Fluorobiphenyl	100.1		50-140	%	15-DEC-18	18-DEC-18	R4399050
Surrogate: p-Terphenyl d14	99.7		50-140	%	15-DEC-18	18-DEC-18	R4399050
L2211036-3 BH3 Sampled By: CLIENT on 13-DEC-18 @ 15:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.323		0.0040	mS/cm		17-DEC-18	R4397413
% Moisture	27.0		0.10	%	17-DEC-18	18-DEC-18	R4396792
рН	7.53		0.10	pH units		17-DEC-18	R4397016
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4400394
Saturated Paste Extractables							
SAR	2.91		0.10	SAR			R4400088
Calcium (Ca)	13.2		1.0	mg/L		17-DEC-18	R4400088
Magnesium (Mg)	2.5		1.0	mg/L		17-DEC-18	R4400088
Sodium (Na)	44.0		1.0	mg/L		17-DEC-18	R4400088
Metals			4.0		40 DEO 40	47.050.40	D 400000=
Antimony (Sb)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Arsenic (As)	2.8		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Barium (Ba)	162		1.0	ug/g	16-DEC-18		R4399967
Beryllium (Be)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B)	<5.0		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	16-DEC-18	17-DEC-18	R4396954
Cadmium (Cd)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-3 BH3 Sampled By: CLIENT on 13-DEC-18 @ 15:00 Matrix: SOIL							
Metals							
Chromium (Cr)	28.4		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Cobalt (Co)	7.9		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Copper (Cu)	17.3		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Lead (Pb)	4.6		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Mercury (Hg)	<0.0050		0.0050	ug/g	16-DEC-18	17-DEC-18	R4397072
Molybdenum (Mo)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Nickel (Ni)	16.4		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Selenium (Se)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Silver (Ag)	<0.20		0.20	ug/g	16-DEC-18	17-DEC-18	R4399967
Thallium (TI)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Uranium (U)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Vanadium (V)	44.2		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Zinc (Zn)	43.1		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Speciated Metals							
Chromium, Hexavalent Volatile Organic Compounds	0.29		0.20	ug/g	17-DEC-18	18-DEC-18	R440015
Acetone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R439935
Benzene	<0.0068		0.0068	ug/g	17-DEC-18	18-DEC-18	R439935
Bromodichloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Bromoform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Bromomethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Carbon tetrachloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Chlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Dibromochloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Chloroform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,2-Dibromoethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,2-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,3-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,4-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Dichlorodifluoromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,1-Dichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,2-Dichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,1-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Methylene Chloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,2-Dichloropropane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R439935
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R439935
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		18-DEC-18	
Ethylbenzene	<0.018		0.018	ug/g	17-DEC-18	18-DEC-18	R4399356

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-3 BH3 Sampled By: CLIENT on 13-DEC-18 @ 15:00 Matrix: SOIL							
Volatile Organic Compounds							
n-Hexane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Methyl Ethyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	17-DEC-18		R4399356
MTBE	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	
Styrene	<0.050		0.050	ug/g	17-DEC-18		R4399356
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
Tetrachloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Toluene	<0.080		0.080	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,1-Trichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	
1,1,2-Trichloroethane	<0.050		0.050	ug/g	17-DEC-18		R4399356
Trichloroethylene	<0.010		0.010	ug/g	17-DEC-18	18-DEC-18	R4399356
Trichlorofluoromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Vinyl chloride	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
o-Xylene	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
m+p-Xylenes	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356
Xylenes (Total)	<0.050		0.050	ug/g		18-DEC-18	
Surrogate: 4-Bromofluorobenzene	92.5		50-140	%	17-DEC-18	18-DEC-18	R4399356
Surrogate: 1,4-Difluorobenzene	103.2		50-140	%	17-DEC-18	18-DEC-18	R4399356
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	17-DEC-18	18-DEC-18	R4399356
F1-BTEX	<5.0		5.0	ug/g		18-DEC-18	
F2 (C10-C16)	<10		10	ug/g	15-DEC-18	17-DEC-18	R4398472
F2-Naphth	<10		10	ug/g		18-DEC-18	
F3 (C16-C34)	<50		50	ug/g	15-DEC-18	17-DEC-18	R4398472
F3-PAH	<50		50	ug/g		18-DEC-18	
F4 (C34-C50)	<50		50	ug/g	15-DEC-18	17-DEC-18	R4398472
Total Hydrocarbons (C6-C50)	<72		72	ug/g		18-DEC-18	
Chrom. to baseline at nC50	YES			2.	15-DEC-18		R4398472
Surrogate: 2-Bromobenzotrifluoride	90.0		60-140	%	15-DEC-18	17-DEC-18	R4398472
Surrogate: 3,4-Dichlorotoluene  Polycyclic Aromatic Hydrocarbons	73.6		60-140	%	17-DEC-18	18-DEC-18	R4399356
Acenaphthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Acenaphthylene	<0.050		0.050	ug/g ug/g	15-DEC-18	18-DEC-18	R4399050
Anthracene	<0.050		0.050	ug/g ug/g	15-DEC-18	18-DEC-18	
Benzo(a)anthracene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(a)pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(b)fluoranthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Chrysene	<0.050		0.050	ug/g	15-DEC-18		R4399050
•			2.230	- 3- 3			

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-3 BH3 Sampled By: CLIENT on 13-DEC-18 @ 15:00 Matrix: SOIL							
Polycyclic Aromatic Hydrocarbons							
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Fluoranthene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Fluorene	<0.050		0.050	ug/g	15-DEC-18		R4399050
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		18-DEC-18	
1-Methylnaphthalene	<0.030		0.030	ug/g	15-DEC-18	18-DEC-18	R4399050
2-Methylnaphthalene	<0.030		0.030	ug/g	15-DEC-18	18-DEC-18	R4399050
Naphthalene	<0.013		0.013	ug/g	15-DEC-18	18-DEC-18	R4399050
Phenanthrene	<0.046		0.046	ug/g	15-DEC-18	18-DEC-18	R4399050
Pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Surrogate: 2-Fluorobiphenyl	101.5		50-140	%	15-DEC-18	18-DEC-18	R4399050
Surrogate: p-Terphenyl d14	99.7		50-140	%	15-DEC-18	18-DEC-18	R4399050
L2211036-4 BH99 Sampled By: CLIENT on 13-DEC-18 @ 15:30 Matrix: SOIL							
Physical Tests							
Conductivity	0.338		0.0040	mS/cm		17-DEC-18	R4397413
% Moisture	26.8		0.10	%	17-DEC-18	18-DEC-18	R4396792
рН	7.51		0.10	pH units		17-DEC-18	R4397016
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4400394
Saturated Paste Extractables				0.15			
SAR	2.79		0.10	SAR			R4400088
Calcium (Ca)	14.8		1.0	mg/L			R4400088
Magnesium (Mg)	2.9		1.0	mg/L		17-DEC-18	R4400088
Sodium (Na)  Metals	44.9		1.0	mg/L		17-DEC-18	R4400088
Antimony (Sb)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	P4200067
Arsenic (As)	3.0		1.0	ug/g ug/g	16-DEC-18	17-DEC-18	R4399967
Barium (Ba)	164		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Beryllium (Be)	<0.50		0.50	ug/g	16-DEC-18		R4399967
Boron (B)	<5.0		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g ug/g	16-DEC-18	17-DEC-18	R4396954
Cadmium (Cd)	<0.50		0.10	ug/g	16-DEC-18		R4399967
Chromium (Cr)	29.9		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Cobalt (Co)	8.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Copper (Cu)	17.8		1.0	ug/g	16-DEC-18		R4399967
Lead (Pb)	4.6		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Mercury (Hg)	<0.0050		0.0050	ug/g	16-DEC-18	17-DEC-18	R4397072
Molybdenum (Mo)	<1.0		1.0	ug/g	16-DEC-18		R4399967
Nickel (Ni)	16.7		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Selenium (Se)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
	11.0		1.0	~±'5'	.5220 10	220 10	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-4 BH99 Sampled By: CLIENT on 13-DEC-18 @ 15:30 Matrix: SOIL							
Metals							
Silver (Ag)	<0.20		0.20	ug/g	16-DEC-18	17-DEC-18	R4399967
Thallium (TI)	<0.50		0.50	ug/g	16-DEC-18	17-DEC-18	R4399967
Uranium (U)	<1.0		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Vanadium (V)	46.3		1.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Zinc (Zn)	44.3		5.0	ug/g	16-DEC-18	17-DEC-18	R4399967
Speciated Metals							
Chromium, Hexavalent	0.29		0.20	ug/g	17-DEC-18	18-DEC-18	R4400151
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
Benzene	<0.0068		0.0068	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromodichloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromoform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Bromomethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Carbon tetrachloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Chlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Dibromochloromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Chloroform	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dibromoethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,3-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,4-Dichlorobenzene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Dichlorodifluoromethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,1-Dichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,2-Dichloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
1,1-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Methylene Chloride	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,2-Dichloropropane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R439935
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R439935
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g		18-DEC-18	
Ethylbenzene	<0.018		0.018	ug/g	17-DEC-18	18-DEC-18	R4399356
n-Hexane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R439935
Methyl Ethyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	17-DEC-18	18-DEC-18	R4399356
MTBE	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Styrene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Tetrachloroethylene	<0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
_2211036-4 BH99 Sampled By: CLIENT on 13-DEC-18 @ 15:30 Matrix: SOIL							
Volatile Organic Compounds							
Toluene	<0.080		0.080	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,1-Trichloroethane	< 0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
1,1,2-Trichloroethane	< 0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Trichloroethylene	<0.010		0.010	ug/g	17-DEC-18	18-DEC-18	R4399356
Trichlorofluoromethane	< 0.050		0.050	ug/g	17-DEC-18	18-DEC-18	R4399356
Vinyl chloride	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
o-Xylene	<0.020		0.020	ug/g	17-DEC-18	18-DEC-18	R4399356
m+p-Xylenes	< 0.030		0.030	ug/g	17-DEC-18	18-DEC-18	R4399356
Xylenes (Total)	< 0.050		0.050	ug/g		18-DEC-18	
Surrogate: 4-Bromofluorobenzene	94.8		50-140	%	17-DEC-18	18-DEC-18	R4399356
Surrogate: 1,4-Difluorobenzene	103.1		50-140	%	17-DEC-18		
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	17-DEC-18	18-DEC-18	R4399356
F1-BTEX	<5.0		5.0	ug/g		18-DEC-18	
F2 (C10-C16)	<10		10	ug/g	16-DEC-18	17-DEC-18	R4399775
F2-Naphth	<10		10	ug/g		18-DEC-18	
F3 (C16-C34)	<50		50	ug/g	16-DEC-18	17-DEC-18	R4399775
F3-PAH	<50		50	ug/g		18-DEC-18	
F4 (C34-C50)	<50		50	ug/g	16-DEC-18	17-DEC-18	R4399775
Total Hydrocarbons (C6-C50)	<72		72	ug/g		18-DEC-18	
Chrom. to baseline at nC50	YES				16-DEC-18	17-DEC-18	R4399775
Surrogate: 2-Bromobenzotrifluoride	90.2		60-140	%	16-DEC-18	17-DEC-18	R4399775
Surrogate: 3,4-Dichlorotoluene	81.2		60-140	%	17-DEC-18	18-DEC-18	R4399356
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Acenaphthylene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Anthracene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(a)anthracene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(a)pyrene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(b)fluoranthene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(g,h,i)perylene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Benzo(k)fluoranthene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Chrysene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Dibenzo(ah)anthracene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Fluoranthene	< 0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Fluorene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	R4399050
1+2-Methylnaphthalenes	<0.042		0.042	ug/g		18-DEC-18	
1-Methylnaphthalene	<0.030		0.030	ug/g	15-DEC-18	18-DEC-18	R4399050
2-Methylnaphthalene	<0.030		0.030	ug/g	15-DEC-18		R4399050
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<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211036-4 BH99							
Sampled By: CLIENT on 13-DEC-18 @ 15:30 Matrix: SOIL							
Matrix: SOIL Polycyclic Aromatic Hydrocarbons							
Phenanthrene	<0.046		0.046	ug/g	15-DEC-18	18-DEC-18	R4399050
Pyrene	<0.050		0.050	ug/g	15-DEC-18	18-DEC-18	
Surrogate: 2-Fluorobiphenyl	102.9		50-140	%	15-DEC-18	18-DEC-18	
Surrogate: p-Terphenyl d14	102.3		50-140	%	15-DEC-18	18-DEC-18	R4399050
* Refer to Referenced Information for Qualifiers (if any) and	A Marks and all a second						

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Reference Information

#### **Test Method References:**

ALS Test Code Matrix Test Description Method Reference\*\*

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

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

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 MOE 3015/APHA 4500CN I-WAD 2011)

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).

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 CCME CWS-PHC, Pub #1310, Dec 2001-S Parameters

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.

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#### **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).

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)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

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 CCME PHC in Soil - Tier 1 (mod)

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 technique sused 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).

PH-WT Soil 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 SAR-O.Reg 153/04 (July 2011) SW846 6010C Soil

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 VOC-O.Reg 153/04 (July 2011) SW846 8260 (511) Soil

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-Soil Sum of Xylene Isomer **CALCULATION** Concentrations

WT

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#### **Reference Information**

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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.



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Client: McIntosh Perry Engineering Consultants (Ottawa)

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	Soil							
<b>Batch R4396954 WG2955152-4 DUP</b> Boron (B), Hot Water Ex	ĸt.	<b>L2211036-4</b> <0.10	<0.10	RPD-NA	ug/g	N/A	30	17-DEC-18
WG2955152-2 IRM Boron (B), Hot Water Ex	ĸt.	HOTB-SAL_SO	<b>DIL5</b> 109.1		%		70-130	17-DEC-18
WG2955152-3 LCS Boron (B), Hot Water Ex	ĸt.		93.4		%		70-130	17-DEC-18
WG2955152-1 MB Boron (B), Hot Water Ex	ĸt.		<0.10		ug/g		0.1	17-DEC-18
CN-WAD-R511-WT	Soil							
Batch R4400394 WG2955163-3 DUP Cyanide, Weak Acid Dis	ss	<b>L2211036-2</b> <0.050	<0.050	RPD-NA	ug/g	N/A	35	18-DEC-18
WG2955163-2 LCS Cyanide, Weak Acid Dis	ss		99.1		%		80-120	18-DEC-18
WG2955163-1 MB Cyanide, Weak Acid Dis	SS .		<0.050		ug/g		0.05	18-DEC-18
WG2955163-4 MS Cyanide, Weak Acid Dis	ss	L2211036-2	101.5		%		70-130	18-DEC-18
CR-CR6-IC-WT	Soil							
Batch R4400151 WG2955171-4 CRM Chromium, Hexavalent		WT-SQC012	86.5		%		70-130	18-DEC-18
WG2955171-3 DUP Chromium, Hexavalent		<b>L2210938-1</b> <0.20	<0.20	RPD-NA	ug/g	N/A	35	18-DEC-18
WG2955171-2 LCS Chromium, Hexavalent			82.9		%		80-120	18-DEC-18
WG2955171-1 MB Chromium, Hexavalent			<0.20		ug/g		0.2	18-DEC-18
EC-WT	Soil							
Batch R4397413 WG2955149-4 DUP Conductivity		<b>WG2955149-3</b> 0.408	0.401		mS/cm	1.7	20	17-DEC-18
WG2955149-2 IRM Conductivity		WT SAR2	102.6		%		70-130	17-DEC-18
WG2955223-1 LCS Conductivity			104.1		%		90-110	17-DEC-18
WG2955149-1 MB								



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Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WT		Soil							
	397413 MB			<0.0040		mS/cm		0.004	17-DEC-18
F1-HS-511-WT		Soil							
Batch R4	399356								
<b>WG2955352-4</b> F1 (C6-C10)	DUP		<b>WG2955352-3</b> <5.0	<5.0	RPD-NA	ug/g	N/A	30	18-DEC-18
<b>WG2955352-2</b> F1 (C6-C10)	LCS			98.3		%		80-120	18-DEC-18
WG2955352-1	MB								
F1 (C6-C10)				<5.0		ug/g		5	18-DEC-18
Surrogate: 3,4-D		oluene		84.7		%		60-140	18-DEC-18
<b>WG2955352-6</b> F1 (C6-C10)	MS		L2211036-3	87.5		%		60-140	18-DEC-18
F2-F4-511-WT		Soil							
Batch R4	398472								
WG2954750-3	DUP		WG2954750-5	40					
F2 (C10-C16)			<10	<10	RPD-NA	ug/g	N/A	30	17-DEC-18
F3 (C16-C34)			<50	<50	RPD-NA	ug/g	N/A	30	17-DEC-18
F4 (C34-C50)			<50	<50	RPD-NA	ug/g	N/A	30	17-DEC-18
<b>WG2954750-2</b> F2 (C10-C16)	LCS			115.0		%		80-120	18-DEC-18
F3 (C16-C34)				117.0		%		80-120	18-DEC-18
F4 (C34-C50)				119.2		%		80-120	18-DEC-18
<b>WG2954750-1</b> F2 (C10-C16)	MB			<10		ug/g		10	17-DEC-18
F3 (C16-C34)				<50		ug/g		50	17-DEC-18
F4 (C34-C50)				<50		ug/g		50	17-DEC-18
Surrogate: 2-Bro	omobenz	otrifluoride		102.1		%		60-140	17-DEC-18
WG2954750-4	MS		WG2954750-5						
F2 (C10-C16)				107.8		%		60-140	17-DEC-18
F3 (C16-C34)				112.7		%		60-140	17-DEC-18
F4 (C34-C50)				116.1		%		60-140	17-DEC-18
Batch R4	399775								
<b>WG2955142-3</b> F2 (C10-C16)	DUP		<b>WG2955142-5</b> <10	<10	RPD-NA	ug/g	N/A	30	17-DEC-18



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Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT		Soil							_
Batch R4	399775								
<b>WG2955142-3</b> F3 (C16-C34)	DUP		<b>WG2955142-5</b> <50	<50	RPD-NA	ug/g	N/A	30	17-DEC-18
F4 (C34-C50)			<50	<50	RPD-NA	ug/g	N/A	30	17-DEC-18
<b>WG2955142-2</b> F2 (C10-C16)	LCS			105.6		%		80-120	17-DEC-18
F3 (C16-C34)				112.9		%		80-120	17-DEC-18
F4 (C34-C50)				116.7		%		80-120	17-DEC-18
<b>WG2955142-1</b> F2 (C10-C16)	MB			<10		ug/g		10	17-DEC-18
F3 (C16-C34)				<50		ug/g ug/g		50	17-DEC-18 17-DEC-18
F4 (C34-C50)				<50		ug/g		50	17-DEC-18
Surrogate: 2-Bro	omobenz	zotrifluoride		87.3		%		60-140	17-DEC-18
WG2955142-4	MS		WG2955142-5	00					17-520-10
F2 (C10-C16)	0			116.2		%		60-140	17-DEC-18
F3 (C16-C34)				118.0		%		60-140	17-DEC-18
F4 (C34-C50)				118.9		%		60-140	17-DEC-18
HG-200.2-CVAA-W	Т	Soil							
Batch R4	397072								
<b>WG2955145-2</b> Mercury (Hg)	CRM		WT-CANMET-	<b>ΓΙLL1</b> 99.4		%		70-130	17-DEC-18
<b>WG2955145-6</b> Mercury (Hg)	DUP		<b>WG2955145-5</b> <0.0050	<0.0050	RPD-NA	ug/g	N/A	40	17-DEC-18
<b>WG2955145-3</b> Mercury (Hg)	LCS			106.0		%		80-120	17-DEC-18
WG2955145-1	МВ					mg/kg		0.005	
Mercury (Hg)				<0.0050		ilig/kg		0.003	17-DEC-18
MET-200.2-CCMS-		Soil							
Batch R4 WG2955145-2	399967 CPM		WT-CANMET-	TII 1 1					
Antimony (Sb)	CKIVI		AA 1-CAMINE I-	106.7		%		70-130	17-DEC-18
Arsenic (As)				102.6		%		70-130	17-DEC-18
Barium (Ba)				100.8		%		70-130	17-DEC-18
Beryllium (Be)				104.8		%		70-130	17-DEC-18
Boron (B)				3.0		mg/kg		0-8.2	17-DEC-18
Cadmium (Cd)				95.2		%		70-130	17-DEC-18
Chromium (Cr)				99.8		%		70-130	17-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R4399967								
<b>WG2955145-2 CRM</b> Cobalt (Co)		WT-CANMET	<b>-TILL1</b> 97.4		%		70-130	17-DEC-18
Copper (Cu)			100.4		%		70-130	17-DEC-18
Lead (Pb)			101.8		%		70-130	17-DEC-18
Molybdenum (Mo)			98.2		%		70-130	17-DEC-18
Nickel (Ni)			99.7		%		70-130	17-DEC-18
Selenium (Se)			0.29		mg/kg		0.11-0.51	17-DEC-18
Silver (Ag)			0.23		mg/kg		0.13-0.33	17-DEC-18
Thallium (TI)			0.121		mg/kg		0.077-0.18	17-DEC-18
Uranium (U)			101.0		%		70-130	17-DEC-18
Vanadium (V)			99.5		%		70-130	17-DEC-18
Zinc (Zn)			99.4		%		70-130	17-DEC-18
WG2955145-6 DUP Antimony (Sb)		<b>WG2955145-</b> 5	<b>5</b> <0.10	RPD-NA	ug/g	N/A	30	17-DEC-18
Arsenic (As)		1.71	1.65		ug/g	3.2	30	17-DEC-18
Barium (Ba)		26.0	25.9		ug/g	0.3	40	17-DEC-18
Beryllium (Be)		0.15	0.13		ug/g	14	30	17-DEC-18
Boron (B)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	17-DEC-18
Cadmium (Cd)		0.038	0.041		ug/g	8.9	30	17-DEC-18
Chromium (Cr)		8.20	8.15		ug/g	0.7	30	17-DEC-18
Cobalt (Co)		2.97	2.87		ug/g	3.3	30	17-DEC-18
Copper (Cu)		6.33	6.18		ug/g	2.4	30	17-DEC-18
Lead (Pb)		2.98	2.86		ug/g	4.1	40	17-DEC-18
Molybdenum (Mo)		0.38	0.37		ug/g	1.8	40	17-DEC-18
Nickel (Ni)		6.71	6.48		ug/g	3.4	30	17-DEC-18
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	17-DEC-18
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	17-DEC-18
Thallium (TI)		0.062	0.059		ug/g	5.0	30	17-DEC-18
Uranium (U)		0.230	0.232		ug/g	0.8	30	17-DEC-18
Vanadium (V)		17.0	18.0		ug/g	6.0	30	17-DEC-18
Zinc (Zn)		15.8	16.1		ug/g	1.5	30	17-DEC-18
WG2955145-4 LCS Antimony (Sb)			106.2		%		80-120	17-DEC-18
Arsenic (As)			101.4		%		80-120	17-DEC-18 17-DEC-18
, 11001110 (110)			101.7		,,		00-120	17-020-10



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R4399967								
WG2955145-4 LCS					0.4			
Barium (Ba)			102.5		%		80-120	17-DEC-18
Beryllium (Be)			103.1		%		80-120	17-DEC-18
Boron (B)			103.2		%		80-120	17-DEC-18
Cadmium (Cd)			98.2		%		80-120	17-DEC-18
Chromium (Cr)			97.8		%		80-120	17-DEC-18
Cobalt (Co)			94.0		%		80-120	17-DEC-18
Copper (Cu)			94.4		%		80-120	17-DEC-18
Lead (Pb)			100.3		%		80-120	17-DEC-18
Molybdenum (Mo)			100.4		%		80-120	17-DEC-18
Nickel (Ni)			95.9		%		80-120	17-DEC-18
Selenium (Se)			94.8		%		80-120	17-DEC-18
Silver (Ag)			99.2		%		80-120	17-DEC-18
Thallium (TI)			98.4		%		80-120	17-DEC-18
Uranium (U)			99.4		%		80-120	17-DEC-18
Vanadium (V)			100.3		%		80-120	17-DEC-18
Zinc (Zn)			95.9		%		80-120	17-DEC-18
WG2955145-1 MB Antimony (Sb)			<0.10		ma/ka		0.1	47 DEC 40
Arsenic (As)			<0.10		mg/kg mg/kg		0.1	17-DEC-18
Barium (Ba)			<0.10				0.1	17-DEC-18
Beryllium (Be)			<0.10		mg/kg		0.3	17-DEC-18
Boron (B)			<5.0		mg/kg		5	17-DEC-18
Cadmium (Cd)			<0.020		mg/kg		0.02	17-DEC-18
Chromium (Cr)					mg/kg		0.02	17-DEC-18
			<0.50		mg/kg			17-DEC-18
Cobalt (Co) Copper (Cu)			<0.10		mg/kg		0.1 0.5	17-DEC-18
			<0.50		mg/kg			17-DEC-18
Lead (Pb)			<0.50		mg/kg		0.5	17-DEC-18
Molybdenum (Mo)			<0.10		mg/kg		0.1	17-DEC-18
Nickel (Ni)			<0.50		mg/kg		0.5	17-DEC-18
Selenium (Se)			<0.20		mg/kg		0.2	17-DEC-18
Silver (Ag)			<0.10		mg/kg		0.1	17-DEC-18
Thallium (TI)			<0.050		mg/kg		0.05	17-DEC-18
Uranium (U)			<0.050		mg/kg		0.05	17-DEC-18
Vanadium (V)			<0.20		mg/kg		0.2	17-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R4399967 WG2955145-1 MB Zinc (Zn)			<2.0		mg/kg		2	17-DEC-18
MOISTURE-WT	Soil							
Batch R4396792 WG2955165-3 DUP % Moisture		<b>L2210949-8</b> 5.55	5.52		%	0.6	20	18-DEC-18
<b>WG2955165-2 LCS</b> % Moisture			99.3		%		90-110	18-DEC-18
<b>WG2955165-1 MB</b> % Moisture			<0.10		%		0.1	18-DEC-18
PAH-511-WT	Soil							
Batch R4399050		W0007:07:						
WG2954671-3 DUP 1-Methylnaphthalene		<b>WG2954671-5</b> < 0.030	<0.030	RPD-NA	ug/g	N/A	40	18-DEC-18
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	18-DEC-18
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Naphthalene		<0.013	<0.013	RPD-NA	ug/g	N/A	40	18-DEC-18
Phenanthrene		<0.046	<0.046	RPD-NA	ug/g	N/A	40	18-DEC-18
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
WG2954671-2 LCS 1-Methylnaphthalene			98.2		%		50-140	18-DEC-18
2-Methylnaphthalene			94.7		%		50-140	18-DEC-18
,			·		: <del>-</del>		JU-140	10-020-10



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	Soil							
Batch R4399050								
WG2954671-2 LCS			404.0		0/			
Acenaphthene			104.0		%		50-140	18-DEC-18
Acenaphthylene			103.6		%		50-140	18-DEC-18
Anthracene			108.0		%		50-140	18-DEC-18
Benzo(a)anthracene			109.4		%		50-140	18-DEC-18
Benzo(a)pyrene			97.2		%		50-140	18-DEC-18
Benzo(b)fluoranthene			99.1		%		50-140	18-DEC-18
Benzo(g,h,i)perylene			96.7		%		50-140	18-DEC-18
Benzo(k)fluoranthene			94.5		%		50-140	18-DEC-18
Chrysene			104.5		%		50-140	18-DEC-18
Dibenzo(ah)anthracene			90.8		%		50-140	18-DEC-18
Fluoranthene			99.9		%		50-140	18-DEC-18
Fluorene			97.2		%		50-140	18-DEC-18
Indeno(1,2,3-cd)pyrene			91.8		%		50-140	18-DEC-18
Naphthalene			96.9		%		50-140	18-DEC-18
Phenanthrene			103.4		%		50-140	18-DEC-18
Pyrene			99.4		%		50-140	18-DEC-18
WG2954671-1 MB			<0.030		ua/a		0.03	40 DEC 40
1-Methylnaphthalene 2-Methylnaphthalene			<0.030		ug/g		0.03	18-DEC-18
Acenaphthene			<0.050		ug/g		0.05	18-DEC-18
Acenaphthylene			<0.050		ug/g		0.05	18-DEC-18
Anthracene			<0.050		ug/g		0.05	18-DEC-18
			<0.050		ug/g		0.05	18-DEC-18
Benzo(a)anthracene			<0.050		ug/g		0.05	18-DEC-18
Benzo(a)pyrene Benzo(b)fluoranthene			<0.050		ug/g		0.05	18-DEC-18
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	18-DEC-18
Benzo(k)fluoranthene			<0.050		ug/g		0.05	18-DEC-18
, ,			<0.050		ug/g		0.05	18-DEC-18
Chrysene					ug/g			18-DEC-18
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	18-DEC-18
Fluoranthene			<0.050		ug/g		0.05	18-DEC-18
Fluorene			<0.050		ug/g		0.05	18-DEC-18
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	18-DEC-18
Naphthalene			<0.013		ug/g		0.013	18-DEC-18
Phenanthrene			<0.046		ug/g		0.046	18-DEC-18



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	Soil							
Batch R4399050								
WG2954671-1 MB			<0.050		110/0		0.05	10 050 10
Pyrene Surrogate: 2-Fluorobiphe	anyl.		<0.050 107.2		ug/g %		50-140	18-DEC-18
Surrogate: p-Terphenyl (	-		107.2		%		50-140	18-DEC-18
	J14	W00054074 5	110.4		%		50-140	18-DEC-18
WG2954671-4 MS 1-Methylnaphthalene		WG2954671-5	99.4		%		50-140	18-DEC-18
2-Methylnaphthalene			95.9		%		50-140	18-DEC-18
Acenaphthene			105.8		%		50-140	18-DEC-18
Acenaphthylene			102.1		%		50-140	18-DEC-18
Anthracene			105.4		%		50-140	18-DEC-18
Benzo(a)anthracene			108.3		%		50-140	18-DEC-18
Benzo(a)pyrene			101.2		%		50-140	18-DEC-18
Benzo(b)fluoranthene			100.8		%		50-140	18-DEC-18
Benzo(g,h,i)perylene			99.9		%		50-140	18-DEC-18
Benzo(k)fluoranthene			99.6		%		50-140	18-DEC-18
Chrysene			108.4		%		50-140	18-DEC-18
Dibenzo(ah)anthracene			97.4		%		50-140	18-DEC-18
Fluoranthene			97.5		%		50-140	18-DEC-18
Fluorene			98.3		%		50-140	18-DEC-18
Indeno(1,2,3-cd)pyrene			95.7		%		50-140	18-DEC-18
Naphthalene			98.3		%		50-140	18-DEC-18
Phenanthrene			104.6		%		50-140	18-DEC-18
Pyrene			99.0		%		50-140	18-DEC-18
PH-WT	Soil							
Batch R4397016								
WG2954789-1 DUP		L2210947-1						
рН		9.93	10.02	J	pH units	0.09	0.3	17-DEC-18
WG2955217-1 LCS			7.00		allunite		00-:	
рН			7.00		pH units		6.9-7.1	17-DEC-18
SAR-R511-WT	Soil							
Batch R4400088		W000FF440 5						
WG2955149-4 DUP Calcium (Ca)		<b>WG2955149-3</b> 17.0	15.6		mg/L	9.1	30	17-DEC-18
Sodium (Na)		93.3	92.9		mg/L	0.4	30	17-DEC-18
Magnesium (Mg)		1.3	1.2		mg/L	12	30	17-DEC-18
					··· <del>··································</del>	14	50	17-DEO-10



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	Soil							
Batch R4400088								
WG2955149-2 IRM Calcium (Ca)		WT SAR2	103.6		%		70-130	17-DEC-18
Sodium (Na)			94.7		%		70-130	17-DEC-18
Magnesium (Mg)			101.7		%		70-130	17-DEC-18
WG2955149-1 MB								
Calcium (Ca)			<1.0		mg/L		1	17-DEC-18
Sodium (Na)			<1.0		mg/L		1	17-DEC-18
Magnesium (Mg)			<1.0		mg/L		1	17-DEC-18
VOC-511-HS-WT	Soil							
Batch R4399356								
WG2955352-4 DUP 1,1,1,2-Tetrachloroethar	20	<b>WG2955352-3</b> < 0.050	<0.050	RPD-NA	ug/g	N/A	40	40 DEC 40
1,1,2,2-Tetrachloroetha		<0.050	<0.050		ug/g		40	18-DEC-18
1,1,2,2-1 etracriloroethane	ie	<0.050	<0.050	RPD-NA RPD-NA	ug/g ug/g	N/A N/A	40 40	18-DEC-18 18-DEC-18
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA RPD-NA	ug/g ug/g	N/A N/A	40	
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g ug/g	N/A N/A	40	18-DEC-18 18-DEC-18
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g ug/g	N/A N/A	40	18-DEC-18
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g ug/g	N/A N/A	40	18-DEC-18
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g ug/g	N/A	40	18-DEC-18
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g ug/g	N/A	40	18-DEC-18
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g ug/g	N/A N/A	40	18-DEC-18
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	18-DEC-18
Benzene		<0.0068	<0.0068	RPD-NA	ug/g ug/g	N/A	40	18-DEC-18
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
cis-1,2-Dichloroethylene	<b>:</b>	<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	18-DEC-18
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
				10.0101	3-3			.5 520 10



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Soil							
	<b>WG2955352-</b> <0.050	<b>3</b> <0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.018	<0.018	RPD-NA			40	18-DEC-18
	<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.030	< 0.030	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.50	<0.50	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.50	<0.50	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.050	< 0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.050	< 0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.080	<0.080	RPD-NA	ug/g	N/A	40	18-DEC-18
ne	<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
ne	<0.030	<0.030	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.010	<0.010	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-DEC-18
	<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-DEC-18
							18-DEC-18
е						60-130	18-DEC-18
						60-130	18-DEC-18
							18-DEC-18
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	ne ne	<0.050 <0.050 <0.050 <0.030 <0.50 <0.020 <0.050 <0.050 <0.050 <0.050 <0.080 <0.030 <0.010 <0.050 <0.020	<ul> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.050</li> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>&lt;0.080</li> <li>&lt;0.080</li> <li>&lt;0.080</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.010</li> <li>&lt;0.010</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>&lt;0.020</li> <li>&lt;0.050</li> <li>&lt;0.020</li> </ul>	<ul> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>RPD-NA</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>RPD-NA</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>RPD-NA</li> <li>&lt;0.050</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.050</li> <li>RPD-NA</li> <li>&lt;0.020</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>RPD-NA</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>RPD-NA</li> <li>&lt;0.080</li> <li>&lt;0.080</li> <li>RPD-NA</li> <li>&lt;0.080</li> <li>&lt;0.050</li> <li>RPD-NA</li> <li>&lt;0.010</li> <li>&lt;0.010</li> <li>RPD-NA</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>RPD-NA</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>RPD-NA</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>RPD-NA</li> <li>&lt;0.050</li> <li>&lt;0.050</li> <li>RPD-NA</li> <li>&lt;0.020</li> <li>&lt;0.020</li> <li>RPD-NA</li> <li>&lt;0.020</li> <li>RPD-NA<td><ul> <li>&lt;0.050</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.050</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.050</li> <li>&lt;0.010</li> <li>&lt;0.010</li> <li>&lt;0.010</li> <li>&lt;0.010</li> <li>&lt;0.050</li> /ul></td><td><ul> <li>&lt;0.050</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.050</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.050</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.050</li> /ul></td><td> </td></li></ul>	<ul> <li>&lt;0.050</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.050</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.050</li> <li>&lt;0.010</li> <li>&lt;0.010</li> <li>&lt;0.010</li> <li>&lt;0.010</li> <li>&lt;0.050</li> /ul>	<ul> <li>&lt;0.050</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.050</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.50</li> <li>&lt;0.050</li> <li>&lt;0.030</li> <li>&lt;0.030</li> <li>&lt;0.050</li> /ul>	



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R4399356								
WG2955352-2 LCS			4440		0/		70.400	
Bromoform  Bromomethane			114.9 113.2		%		70-130	18-DEC-18
Carbon tetrachloride			109.8		%		50-140	18-DEC-18
Chlorobenzene			109.8		%		70-130	18-DEC-18
Chloroform			113.8		%		70-130	18-DEC-18
							70-130	18-DEC-18
cis-1,2-Dichloroethylene			113.3		%		70-130	18-DEC-18
cis-1,3-Dichloropropene			116.8		%		70-130	18-DEC-18
Dibromochloromethane			112.4		%		60-130	18-DEC-18
Dichlorodifluoromethan	9		73.9		%		50-140	18-DEC-18
Ethylbenzene			98.8		%		70-130	18-DEC-18
n-Hexane			93.3		%		70-130	18-DEC-18
Methylene Chloride			120.0		%		70-130	18-DEC-18
MTBE			106.5		%		70-130	18-DEC-18
m+p-Xylenes			103.1		%		70-130	18-DEC-18
Methyl Ethyl Ketone			101.4		%		60-140	18-DEC-18
Methyl Isobutyl Ketone			91.7		%		60-140	18-DEC-18
o-Xylene			100.1		%		70-130	18-DEC-18
Styrene			102.5		%		70-130	18-DEC-18
Tetrachloroethylene			108.1		%		60-130	18-DEC-18
Toluene			103.7		%		70-130	18-DEC-18
trans-1,2-Dichloroethyle	ene		112.2		%		60-130	18-DEC-18
trans-1,3-Dichloroprope	ne		105.9		%		70-130	18-DEC-18
Trichloroethylene			114.2		%		60-130	18-DEC-18
Trichlorofluoromethane			103.3		%		50-140	18-DEC-18
Vinyl chloride			80.6		%		60-140	18-DEC-18
WG2955352-1 MB								
1,1,1,2-Tetrachloroetha			<0.050		ug/g		0.05	18-DEC-18
1,1,2,2-Tetrachloroetha	ne		<0.050		ug/g		0.05	18-DEC-18
1,1,1-Trichloroethane			<0.050		ug/g		0.05	18-DEC-18
1,1,2-Trichloroethane			<0.050		ug/g		0.05	18-DEC-18
1,1-Dichloroethane			<0.050		ug/g		0.05	18-DEC-18
1,1-Dichloroethylene			<0.050		ug/g		0.05	18-DEC-18
1,2-Dibromoethane			<0.050		ug/g		0.05	18-DEC-18
1,2-Dichlorobenzene			< 0.050		ug/g		0.05	18-DEC-18



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R4399356								
WG2955352-1 MB			-0.050		110/0		0.05	40 PEO ::
1,2-Dichloroethane 1,2-Dichloropropane			<0.050		ug/g		0.05 0.05	18-DEC-18
			<0.050		ug/g			18-DEC-18
1,3-Dichlorobenzene			<0.050		ug/g		0.05	18-DEC-18
1,4-Dichlorobenzene			<0.050		ug/g		0.05	18-DEC-18
Acetone			<0.50		ug/g		0.5	18-DEC-18
Benzene			<0.0068		ug/g		0.0068	18-DEC-18
Bromodichloromethane			<0.050		ug/g		0.05	18-DEC-18
Bromoform			<0.050		ug/g		0.05	18-DEC-18
Bromomethane			<0.050		ug/g		0.05	18-DEC-18
Carbon tetrachloride			<0.050		ug/g		0.05	18-DEC-18
Chlorobenzene			<0.050		ug/g		0.05	18-DEC-18
Chloroform			<0.050		ug/g		0.05	18-DEC-18
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	18-DEC-18
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	18-DEC-18
Dibromochloromethane			<0.050		ug/g		0.05	18-DEC-18
Dichlorodifluoromethane	9		<0.050		ug/g		0.05	18-DEC-18
Ethylbenzene			<0.018		ug/g		0.018	18-DEC-18
n-Hexane			<0.050		ug/g		0.05	18-DEC-18
Methylene Chloride			<0.050		ug/g		0.05	18-DEC-18
MTBE			<0.050		ug/g		0.05	18-DEC-18
m+p-Xylenes			<0.030		ug/g		0.03	18-DEC-18
Methyl Ethyl Ketone			<0.50		ug/g		0.5	18-DEC-18
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	18-DEC-18
o-Xylene			<0.020		ug/g		0.02	18-DEC-18
Styrene			<0.050		ug/g		0.05	18-DEC-18
Tetrachloroethylene			<0.050		ug/g		0.05	18-DEC-18
Toluene			<0.080		ug/g		0.08	18-DEC-18
trans-1,2-Dichloroethyle			<0.050		ug/g		0.05	18-DEC-18
trans-1,3-Dichloroprope	ne		<0.030		ug/g		0.03	18-DEC-18
Trichloroethylene			<0.010		ug/g		0.01	18-DEC-18
Trichlorofluoromethane			<0.050		ug/g		0.05	18-DEC-18
Vinyl chloride			<0.020		ug/g		0.02	18-DEC-18
Surrogate: 1,4-Difluorob	enzene		121.8		%		50-140	18-DEC-18



Workorder: L2211036 Report Date: 20-DEC-18 Page 13 of 15

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R439935	56							
WG2955352-1 MB			407.0		0/		50.440	
Surrogate: 4-Bromoflu	Jorobenzene		107.6		%		50-140	18-DEC-18
WG2955352-5 MS 1,1,1,2-Tetrachloroeth	nane	L2211036-2	115.8		%		50-140	18-DEC-18
1,1,2,2-Tetrachloroeth	nane		128.7		%		50-140	18-DEC-18
1,1,1-Trichloroethane			120.3		%		50-140	18-DEC-18
1,1,2-Trichloroethane			123.4		%		50-140	18-DEC-18
1,1-Dichloroethane			120.5		%		50-140	18-DEC-18
1,1-Dichloroethylene			113.9		%		50-140	18-DEC-18
1,2-Dibromoethane			124.1		%		50-140	18-DEC-18
1,2-Dichlorobenzene			120.2		%		50-140	18-DEC-18
1,2-Dichloroethane			131.7		%		50-140	18-DEC-18
1,2-Dichloropropane			122.8		%		50-140	18-DEC-18
1,3-Dichlorobenzene			117.7		%		50-140	18-DEC-18
1,4-Dichlorobenzene			117.9		%		50-140	18-DEC-18
Acetone			122.3		%		50-140	18-DEC-18
Benzene			121.6		%		50-140	18-DEC-18
Bromodichloromethar	ne		127.6		%		50-140	18-DEC-18
Bromoform			124.7		%		50-140	18-DEC-18
Bromomethane			119.2		%		50-140	18-DEC-18
Carbon tetrachloride			118.0		%		50-140	18-DEC-18
Chlorobenzene			118.1		%		50-140	18-DEC-18
Chloroform			123.1		%		50-140	18-DEC-18
cis-1,2-Dichloroethyle	ne		121.9		%		50-140	18-DEC-18
cis-1,3-Dichloroprope	ne		120.8		%		50-140	18-DEC-18
Dibromochloromethar	ne		121.7		%		50-140	18-DEC-18
Dichlorodifluorometha	ane		70.4		%		50-140	18-DEC-18
Ethylbenzene			105.6		%		50-140	18-DEC-18
n-Hexane			99.7		%		50-140	18-DEC-18
Methylene Chloride			130.3		%		50-140	18-DEC-18
MTBE			114.1		%		50-140	18-DEC-18
m+p-Xylenes			110.2		%		50-140	18-DEC-18
Methyl Ethyl Ketone			104.3		%		50-140	18-DEC-18
Methyl Isobutyl Keton	е		101.3		%		50-140	18-DEC-18
o-Xylene			107.3		%		50-140	18-DEC-18



Workorder: L2211036 Report Date: 20-DEC-18 Page 14 of 15

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R43993	56							
WG2955352-5 MS		L2211036-2						
Styrene			109.8		%		50-140	18-DEC-18
Tetrachloroethylene			115.9		%		50-140	18-DEC-18
Toluene			111.4		%		50-140	18-DEC-18
trans-1,2-Dichloroeth	ylene		120.9		%		50-140	18-DEC-18
trans-1,3-Dichloropro	pene		109.0		%		50-140	18-DEC-18
Trichloroethylene			122.9		%		50-140	18-DEC-18
Trichlorofluorometha	ne		110.4		%		50-140	18-DEC-18
Vinyl chloride			86.0		%		50-140	18-DEC-18

Workorder: L2211036 Report Date: 20-DEC-18

Client: McIntosh Perry Engineering Consultants (Ottawa) Page 15 of 15

115 Walgreen Road RR3

Carp ON K0A 1L0

Contact: Bradley Sutherland

#### 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.

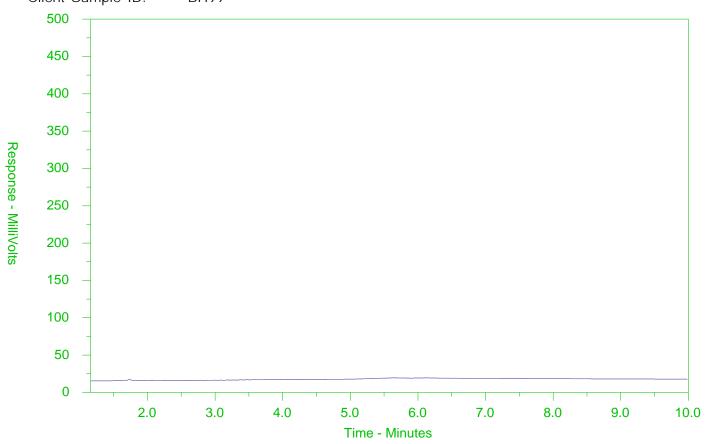
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide 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: L2211036-4 Client Sample ID: BH99



<b>←</b> -F2-	→←	_F3 <b>→</b> F4-	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	ie →	<b>←</b> Mo	tor 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 <a href="https://www.alsglobal.com">www.alsglobal.com</a>.

# ALS Environmental

#### Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

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.

L2211036-COFC

COC Number: 17 -

Page

of

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hone:	613-836-2184				Compare Result	s to Criteria on Report	provide details below	w if box checked	RIOR	3 da	y [P3·	25%]										[E2 -200%	
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City/Province:	Carp, ON				Email 2			-	For te	sts that	can not	be perfe	omed ac	ording t	to the s	ervice le	vel selecte	id, you w	ifl be con	tacted.			
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McIntosh Perry Engineering Consultants

(Ottawa)

ATTN: Bradley Sutherland 115 Walgreen Road RR3

Carp ON K0A 1L0

Date Received: 17-DEC-18

Report Date: 24-DEC-18 09:45 (MT)

Version: FINAL

Client Phone: 613-836-2184

# **Certificate of Analysis**

Lab Work Order #: L2211815

Project P.O. #: NOT SUBMITTED

Job Reference: CP-17-0635

C of C Numbers: Legal Site Desc:

Melanie Moshi Account Manager

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PAGE 2 of 13 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-1 MW-18-2 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:30 Matrix: WATER							
Physical Tests							
Conductivity	0.516		0.0030	mS/cm		19-DEC-18	R4405188
pH	7.95		0.10	pH units		19-DEC-18	R4405188
Anions and Nutrients				,			
Chloride (CI)	60.7		0.50	mg/L		19-DEC-18	R4406767
Cyanides							
Cyanide, Weak Acid Diss  Dissolved Metals	<2.0		2.0	ug/L		21-DEC-18	R4406810
Dissolved Mercury Filtration Location	FIELD					19-DEC-18	R4402078
Dissolved Metals Filtration Location	FIELD					19-DEC-18	R4401709
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Arsenic (As)-Dissolved	0.49		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Barium (Ba)-Dissolved	129		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Boron (B)-Dissolved	73		10	ug/L	19-DEC-18	19-DEC-18	R4404611
Cadmium (Cd)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Cobalt (Co)-Dissolved	0.21		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Copper (Cu)-Dissolved	<0.20		0.20	ug/L	19-DEC-18	19-DEC-18	R4404611
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4402771
Molybdenum (Mo)-Dissolved	1.80		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Nickel (Ni)-Dissolved	<0.50		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Sodium (Na)-Dissolved	14900		500	ug/L	19-DEC-18	19-DEC-18	R4404611
Thallium (TI)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Uranium (U)-Dissolved	0.369		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Zinc (Zn)-Dissolved	<1.0		1.0	ug/L	19-DEC-18	19-DEC-18	R4404611
Speciated Metals							
Chromium, Hexavalent	<0.50		0.50	ug/L		19-DEC-18	R4403350
Volatile Organic Compounds							
Acetone	<30	OWP	30	ug/L		19-DEC-18	R4402010
Benzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Bromodichloromethane	<2.0	OWP	2.0	ug/L		19-DEC-18	
Bromoform	<5.0	OWP	5.0	ug/L		19-DEC-18	R4402010
Bromomethane	<0.50	OWP	0.50	ug/L		19-DEC-18	
Carbon tetrachloride	<0.20	OWP	0.20	ug/L		19-DEC-18	R4402010
Chlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Dibromochloromethane	<2.0	OWP	2.0	ug/L		19-DEC-18	R4402010
Chloroform	<1.0	OWP	1.0	ug/L		19-DEC-18	1
1,2-Dibromoethane	<0.20	OWP	0.20	ug/L		19-DEC-18	R4402010

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

PAGE 3 of 13 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-1 MW-18-2 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:30 Matrix: WATER							
Volatile Organic Compounds							
1,2-Dichlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,3-Dichlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Dichlorodifluoromethane	<2.0	OWP	2.0	ug/L		19-DEC-18	R4402010
1,1-Dichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,2-Dichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1-Dichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
cis-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
trans-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Methylene Chloride	<5.0	OWP	5.0	ug/L		19-DEC-18	
1,2-Dichloropropane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
cis-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L		19-DEC-18	R4402010
trans-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L		19-DEC-18	R4402010
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		19-DEC-18	
Ethylbenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
n-Hexane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Methyl Ethyl Ketone	<20	OWP	20	ug/L		19-DEC-18	R4402010
Methyl Isobutyl Ketone	<20	OWP	20	ug/L		19-DEC-18	R4402010
MTBE	<2.0	OWP	2.0	ug/L		19-DEC-18	R4402010
Styrene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,1,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,2,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Tetrachloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Toluene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,1-Trichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,2-Trichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Trichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Trichlorofluoromethane	<5.0	OWP	5.0	ug/L		19-DEC-18	R4402010
Vinyl chloride	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
o-Xylene	<0.30	OWP	0.30	ug/L		19-DEC-18	R4402010
m+p-Xylenes	<0.40	OWP	0.40	ug/L		19-DEC-18	R4402010
Xylenes (Total)	<0.50		0.50	ug/L		19-DEC-18	
Surrogate: 4-Bromofluorobenzene	95.9		70-130	%		19-DEC-18	R4402010
Surrogate: 1,4-Difluorobenzene	98.6		70-130	%		19-DEC-18	R4402010
Hydrocarbons							
F1 (C6-C10)	<25	OWP	25	ug/L		19-DEC-18	R4402010
F1-BTEX	<25		25	ug/L		20-DEC-18	
F2 (C10-C16)	610		100	ug/L	18-DEC-18	19-DEC-18	R4404448
F2-Naphth	610		100	ug/L		20-DEC-18	
F3 (C16-C34)	870		250	ug/L	18-DEC-18	19-DEC-18	R4404448
F3-PAH	870		250	ug/L		20-DEC-18	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-1 MW-18-2 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:30 Matrix: WATER							
Hydrocarbons							
F4 (C34-C50)	<250		250	ug/L	18-DEC-18	19-DEC-18	R4404448
Total Hydrocarbons (C6-C50)	1480		370	ug/L		20-DEC-18	
Chrom. to baseline at nC50	YES				18-DEC-18	19-DEC-18	R4404448
Surrogate: 2-Bromobenzotrifluoride	106.8		60-140	%	18-DEC-18	19-DEC-18	R4404448
Surrogate: 3,4-Dichlorotoluene Polycyclic Aromatic Hydrocarbons	75.7		60-140	%		19-DEC-18	R4402010
Acenaphthene	0.182		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Acenaphthylene	0.070		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Anthracene	0.123		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(a)anthracene	0.048		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(a)pyrene	0.039		0.010	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(b)fluoranthene	0.060		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(g,h,i)perylene	0.091		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Benzo(k)fluoranthene	<0.020		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Chrysene	0.069		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Fluoranthene	0.251		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Fluorene	0.420		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Indeno(1,2,3-cd)pyrene	0.035		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
1+2-Methylnaphthalenes	2.88		0.028	ug/L		20-DEC-18	
1-Methylnaphthalene	1.65		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
2-Methylnaphthalene	1.22		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Naphthalene	0.187	R	0.050	ug/L	18-DEC-18	20-DEC-18	R4406969
Phenanthrene	1.50		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Pyrene	0.363		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Surrogate: d10-Acenaphthene	112.1		60-140	%	18-DEC-18	20-DEC-18	R4406969
Surrogate: d12-Chrysene	102.5		60-140	%	18-DEC-18	20-DEC-18	R4406969
Surrogate: d8-Naphthalene	101.2		60-140	%	18-DEC-18	20-DEC-18	R4406969
Surrogate: d10-Phenanthrene	121.5		60-140	%	18-DEC-18	20-DEC-18	R4406969
L2211815-2 MW-18-3 Sampled By: JUSTIN C. on 17-DEC-18 @ 13:00 WATER							
Physical Tests							
Conductivity	1.77		0.0030	mS/cm		19-DEC-18	R4405188
рН	7.18		0.10	pH units		19-DEC-18	R4405188
Anions and Nutrients							
Chloride (CI)  Cyanides	376		0.50	mg/L		19-DEC-18	R4406767
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		21-DEC-18	R4406810
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					19-DEC-18	R4402078
Dissolved Metals Filtration Location	FIELD					19-DEC-18	R4401700

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-2 MW-18-3 Sampled By: JUSTIN C. on 17-DEC-18 @ 13:00 Matrix: WATER							
Dissolved Metals							
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Arsenic (As)-Dissolved	0.19		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Barium (Ba)-Dissolved	125		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Boron (B)-Dissolved	20		10	ug/L	19-DEC-18	19-DEC-18	R4404611
Cadmium (Cd)-Dissolved	0.026		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Cobalt (Co)-Dissolved	0.75		0.10	ug/L	19-DEC-18	19-DEC-18	R4404611
Copper (Cu)-Dissolved	0.71		0.20	ug/L	19-DEC-18	19-DEC-18	R4404611
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4402771
Molybdenum (Mo)-Dissolved	0.370		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Nickel (Ni)-Dissolved	1.59		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Selenium (Se)-Dissolved	0.092		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Sodium (Na)-Dissolved	166000	DLHC	500	ug/L	19-DEC-18	19-DEC-18	R4404611
Thallium (TI)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Uranium (U)-Dissolved	1.17		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Vanadium (V)-Dissolved	1.15		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Zinc (Zn)-Dissolved	<1.0		1.0	ug/L	19-DEC-18	19-DEC-18	R4404611
Speciated Metals				,,		40.050.40	
Chromium, Hexavalent Volatile Organic Compounds	<0.50		0.50	ug/L		19-DEC-18	R4403350
Acetone	<30	OWP	30	ug/L		19-DEC-18	R4402010
Benzene	<0.50	OWP	0.50	ug/L ug/L		19-DEC-18	
Bromodichloromethane	<2.0	OWP	2.0	ug/L		19-DEC-18	
Bromoform	<5.0	OWP	5.0	ug/L		19-DEC-18	
Bromomethane	<0.50	OWP	0.50	ug/L			R4402010
Carbon tetrachloride	<0.20	OWP	0.20	ug/L		19-DEC-18	
Chlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	
Dibromochloromethane	<2.0	OWP	2.0	ug/L		19-DEC-18	
Chloroform	<1.0	OWP	1.0	ug/L		19-DEC-18	
1,2-Dibromoethane	<0.20	OWP	0.20	ug/L		19-DEC-18	R4402010
1,2-Dichlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	
1,3-Dichlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Dichlorodifluoromethane	<2.0	OWP	2.0	ug/L		19-DEC-18	
1,1-Dichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,2-Dichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1-Dichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
cis-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-2 MW-18-3 Sampled By: JUSTIN C. on 17-DEC-18 @ 13:00 Matrix: WATER							
Volatile Organic Compounds							
trans-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Methylene Chloride	<5.0	OWP	5.0	ug/L		19-DEC-18	R4402010
1,2-Dichloropropane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
cis-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L		19-DEC-18	R4402010
trans-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L		19-DEC-18	R4402010
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		19-DEC-18	
Ethylbenzene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
n-Hexane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Methyl Ethyl Ketone	<20	OWP	20	ug/L		19-DEC-18	R4402010
Methyl Isobutyl Ketone	<20	OWP	20	ug/L		19-DEC-18	R4402010
MTBE	<2.0	OWP	2.0	ug/L		19-DEC-18	R4402010
Styrene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,1,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,2,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Tetrachloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
Toluene	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,1-Trichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	R4402010
1,1,2-Trichloroethane	<0.50	OWP	0.50	ug/L		19-DEC-18	
Trichloroethylene	<0.50	OWP	0.50	ug/L		19-DEC-18	
Trichlorofluoromethane	<5.0	OWP	5.0	ug/L		19-DEC-18	R4402010
Vinyl chloride	<0.50	OWP	0.50	ug/L		19-DEC-18	
o-Xylene	<0.30	OWP	0.30	ug/L		19-DEC-18	
m+p-Xylenes	<0.40	OWP	0.40	ug/L		19-DEC-18	R4402010
Xylenes (Total)	<0.50		0.50	ug/L		19-DEC-18	D 4400040
Surrogate: 4-Bromofluorobenzene	96.1		70-130	%		19-DEC-18	
Surrogate: 1,4-Difluorobenzene <b>Hydrocarbons</b>	98.5		70-130	%		19-DEC-18	R4402010
F1 (C6-C10)	<25	OWP	25	ug/L		19-DEC-18	R4402010
F1-BTEX	<25		25	ug/L		21-DEC-18	114402010
F2 (C10-C16)	<100		100	ug/L	18-DEC-18	19-DEC-18	R4404448
F2-Naphth	<100		100	ug/L	.0220.0	21-DEC-18	
F3 (C16-C34)	280		250	ug/L	18-DEC-18	19-DEC-18	R4404448
F3-PAH	280		250	ug/L		21-DEC-18	
F4 (C34-C50)	<250		250	ug/L	18-DEC-18	19-DEC-18	R4404448
Total Hydrocarbons (C6-C50)	<370		370	ug/L		21-DEC-18	
Chrom. to baseline at nC50	YES				18-DEC-18	19-DEC-18	R4404448
Surrogate: 2-Bromobenzotrifluoride	102.3		60-140	%	18-DEC-18	19-DEC-18	R4404448
Surrogate: 3,4-Dichlorotoluene Polycyclic Aromatic Hydrocarbons	85.7		60-140	%		19-DEC-18	
Acenaphthene	0.043		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Acenaphthylene	<0.020		0.020	ug/L	18-DEC-18		R4406969

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-2 MW-18-3 Sampled By: JUSTIN C. on 17-DEC-18 @ 13:00 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Anthracene	0.022		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Benzo(a)anthracene	0.023		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Benzo(a)pyrene	0.021		0.010	ug/L	18-DEC-18	21-DEC-18	R4406969
Benzo(b)fluoranthene	0.032		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Benzo(g,h,i)perylene	0.054		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Benzo(k)fluoranthene	<0.020		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Chrysene	0.032		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Fluoranthene	0.089		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Fluorene	0.067		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
1+2-Methylnaphthalenes	0.397		0.028	ug/L		21-DEC-18	
1-Methylnaphthalene	0.215		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
2-Methylnaphthalene	0.183		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Naphthalene	<0.050		0.050	ug/L	18-DEC-18	21-DEC-18	R4406969
Phenanthrene	0.233		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Pyrene	0.137		0.020	ug/L	18-DEC-18	21-DEC-18	R4406969
Surrogate: d10-Acenaphthene	105.6		60-140	%	18-DEC-18	21-DEC-18	R4406969
Surrogate: d12-Chrysene	109.8		60-140	%	18-DEC-18	21-DEC-18	R4406969
Surrogate: d8-Naphthalene	103.4		60-140	%	18-DEC-18	21-DEC-18	R4406969
Surrogate: d10-Phenanthrene	112.0		60-140	%	18-DEC-18	21-DEC-18	R4406969
L2211815-3 MW-18-1 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:40 Matrix: WATER							
Physical Tests							
Conductivity	2.34		0.0030	mS/cm		19-DEC-18	R4405188
рН	7.22		0.10	pH units		19-DEC-18	R4405188
Anions and Nutrients							
Chloride (CI)	566		0.50	mg/L		19-DEC-18	R4406767
Cyanides							
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L		21-DEC-18	R4406810
Dissolved Metals	EIEL D					10 DEC 10	D 4400070
Dissolved Mercury Filtration Location  Dissolved Metals Filtration Location	FIELD					19-DEC-18	R4402078
Antimony (Sb)-Dissolved	FIELD		0.40	ua/I	10 DEC 10	19-DEC-18	R4401709
	0.24		0.10	ug/L	19-DEC-18	19-DEC-18	
Arsenic (As)-Dissolved Barium (Ba)-Dissolved	0.14 339		0.10 0.10	ug/L	19-DEC-18 19-DEC-18	19-DEC-18 19-DEC-18	R4404611 R4404611
Beryllium (Be)-Dissolved	<0.10			ug/L	19-DEC-18	19-DEC-18	R4404611
Boron (B)-Dissolved	<0.10 17		0.10 10	ug/L	19-DEC-18	19-DEC-18	
Cadmium (Cd)-Dissolved				ug/L	19-DEC-18	19-DEC-18	R4404611 R4404611
Chromium (Cr)-Dissolved	0.023		0.010	ug/L			
Cobalt (Co)-Dissolved	<0.50		0.50	ug/L	19-DEC-18 19-DEC-18	19-DEC-18 19-DEC-18	R4404611
Coball (CO)-Dissolved	<0.10		0.10	ug/L	19-050-10	19-00-10	R4404611

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-3 MW-18-1 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:40 Matrix: WATER							
Dissolved Metals							
Copper (Cu)-Dissolved	1.01		0.20	ug/L	19-DEC-18	19-DEC-18	R4404611
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4402771
Molybdenum (Mo)-Dissolved	0.364		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Nickel (Ni)-Dissolved	0.91		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Selenium (Se)-Dissolved	0.363		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	19-DEC-18	19-DEC-18	R4404611
Sodium (Na)-Dissolved	182000	DLHC	500	ug/L	19-DEC-18	19-DEC-18	R4404611
Thallium (TI)-Dissolved	<0.010		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Uranium (U)-Dissolved	1.24		0.010	ug/L	19-DEC-18	19-DEC-18	R4404611
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	19-DEC-18	19-DEC-18	R4404611
Zinc (Zn)-Dissolved	4.9		1.0	ug/L	19-DEC-18	19-DEC-18	R4404611
Speciated Metals							
Chromium, Hexavalent	<0.50		0.50	ug/L		19-DEC-18	R4403350
Volatile Organic Compounds							
Acetone	<30		30	ug/L		19-DEC-18	R4402010
Benzene	<0.50		0.50	ug/L		19-DEC-18	R4402010
Bromodichloromethane	<2.0		2.0	ug/L		19-DEC-18	R4402010
Bromoform	<5.0		5.0	ug/L		19-DEC-18	R4402010
Bromomethane	<0.50		0.50	ug/L		19-DEC-18	R4402010
Carbon tetrachloride	<0.20		0.20	ug/L		19-DEC-18	R4402010
Chlorobenzene	<0.50		0.50	ug/L		19-DEC-18	R4402010
Dibromochloromethane	<2.0		2.0	ug/L		19-DEC-18	R4402010
Chloroform	<1.0		1.0	ug/L		19-DEC-18	R4402010
1,2-Dibromoethane	<0.20		0.20	ug/L		19-DEC-18	R4402010
1,2-Dichlorobenzene	<0.50		0.50	ug/L		19-DEC-18	R4402010
1,3-Dichlorobenzene	<0.50		0.50	ug/L		19-DEC-18	R4402010
1,4-Dichlorobenzene	<0.50		0.50	ug/L		19-DEC-18	R4402010
Dichlorodifluoromethane	<2.0		2.0	ug/L		19-DEC-18	R4402010
1,1-Dichloroethane	<0.50		0.50	ug/L		19-DEC-18	R4402010
1,2-Dichloroethane	<0.50		0.50	ug/L		19-DEC-18	R4402010
1,1-Dichloroethylene	<0.50		0.50	ug/L		19-DEC-18	R4402010
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		19-DEC-18	R4402010
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		19-DEC-18	R4402010
Methylene Chloride	<5.0		5.0	ug/L		19-DEC-18	R4402010
1,2-Dichloropropane	<0.50		0.50	ug/L		19-DEC-18	
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		19-DEC-18	R4402010
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		19-DEC-18	R4402010
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		19-DEC-18	
Ethylbenzene	<0.50		0.50	ug/L		19-DEC-18	R4402010
- · · · · · · · · · · · · · · · · · · ·			0.50			19-DEC-18	R4402010

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

L2211815-3   MW-18-1   Sampled By: JUSTIN C. on 17-DEC-18 @ 12:40   Matrix: WATER		20 20 2.0 0.50 0.50 0.50 0.50 0.50 0.50	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
Methyl Ethyl Ketone       <20		20 2.0 0.50 0.50 0.50 0.50 0.50 0.50 0.5	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
MTBE       <2.0		20 2.0 0.50 0.50 0.50 0.50 0.50 0.50 0.5	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
MTBE       <2.0		2.0 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.40 0.50 70-130 70-130	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
Styrene       <0.50		0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.40 0.50 70-130	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
1,1,1,2-Tetrachloroethane       <0.50		0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.30 0.40 0.50 70-130 70-130	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
1,1,2,2-Tetrachloroethane       <0.50		0.50 0.50 0.50 0.50 0.50 0.50 5.0 0.50 0.30 0.40 0.50 70-130 70-130	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
Tetrachloroethylene         <0.50		0.50 0.50 0.50 0.50 0.50 0.50 0.30 0.40 0.50 70-130 25	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
Toluene       <0.50		0.50 0.50 0.50 0.50 5.0 0.50 0.30 0.40 0.50 70-130 70-130	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
1,1,1-Trichloroethane       <0.50		0.50 0.50 0.50 5.0 0.50 0.30 0.40 0.50 70-130 25	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
1,1,2-Trichloroethane       <0.50		0.50 0.50 5.0 0.50 0.30 0.40 0.50 70-130 25	ug/L ug/L ug/L ug/L ug/L ug/L % %		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
Trichloroethylene       <0.50		0.50 5.0 0.50 0.30 0.40 0.50 70-130 70-130	ug/L ug/L ug/L ug/L ug/L % %		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
Trichlorofluoromethane       <5.0		5.0 0.50 0.30 0.40 0.50 70-130 25	ug/L ug/L ug/L ug/L wg/L %		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010 R4402010
Vinyl chloride       <0.50		0.50 0.30 0.40 0.50 70-130 70-130	ug/L ug/L ug/L ug/L % w		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010 R4402010
o-Xylene <		0.30 0.40 0.50 70-130 70-130	ug/L ug/L ug/L % % ug/L		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010 R4402010
m+p-Xylenes       <0.40		0.40 0.50 70-130 70-130	ug/L ug/L % % ug/L		19-DEC-18 19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010 R4402010
Xylenes (Total)       <0.50		0.50 70-130 70-130 25	ug/L % % ug/L		19-DEC-18 19-DEC-18 19-DEC-18	R4402010 R4402010
Surrogate: 4-Bromofluorobenzene       96.7         Surrogate: 1,4-Difluorobenzene       97.8         Hydrocarbons       -25         F1 (C6-C10)       <25		70-130 70-130 25	% % ug/L		19-DEC-18 19-DEC-18	R4402010
Surrogate: 1,4-Difluorobenzene       97.8         Hydrocarbons       <25		70-130 25	% ug/L		19-DEC-18	R4402010
Hydrocarbons         F1 (C6-C10)       <25		25	ug/L			
F1 (C6-C10)       <25					19-DEC-18	R4402010
F1-BTEX       <25					19-DEC-18	R4402010
F2 (C10-C16)       270         F2-Naphth       270         F3 (C16-C34)       460         F3-PAH       450         F4 (C34-C50)       370         Total Hydrocarbons (C6-C50)       1090         Chrom. to baseline at nC50       YES         Surrogate: 2-Bromobenzotrifluoride       100.3		25			1	
F2-Naphth       270         F3 (C16-C34)       460         F3-PAH       450         F4 (C34-C50)       370         Total Hydrocarbons (C6-C50)       1090         Chrom. to baseline at nC50       YES         Surrogate: 2-Bromobenzotrifluoride       100.3			ug/L		20-DEC-18	
F3 (C16-C34) 460 F3-PAH 450 F4 (C34-C50) 370 Total Hydrocarbons (C6-C50) 1090 Chrom. to baseline at nC50 YES Surrogate: 2-Bromobenzotrifluoride 100.3		100	ug/L	19-DEC-18	20-DEC-18	R4407171
F3-PAH       450         F4 (C34-C50)       370         Total Hydrocarbons (C6-C50)       1090         Chrom. to baseline at nC50       YES         Surrogate: 2-Bromobenzotrifluoride       100.3		100	ug/L		20-DEC-18	
F4 (C34-C50) 370  Total Hydrocarbons (C6-C50) 1090  Chrom. to baseline at nC50 YES  Surrogate: 2-Bromobenzotrifluoride 100.3		250	ug/L	19-DEC-18	20-DEC-18	R4407171
Total Hydrocarbons (C6-C50) 1090 Chrom. to baseline at nC50 YES Surrogate: 2-Bromobenzotrifluoride 100.3		250	ug/L		20-DEC-18	
Chrom. to baseline at nC50 YES Surrogate: 2-Bromobenzotrifluoride 100.3		250	ug/L	19-DEC-18	20-DEC-18	R4407171
Surrogate: 2-Bromobenzotrifluoride 100.3		370	ug/L		20-DEC-18	
				19-DEC-18	20-DEC-18	R4407171
Surrogato: 2.4 Diablaratalyana		60-140	%	19-DEC-18	20-DEC-18	R4407171
Surrogate: 3,4-Dichlorotoluene 87.3		60-140	%		19-DEC-18	R4402010
Polycyclic Aromatic Hydrocarbons						
Acenaphthene 0.117	R	0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Acenaphthylene 0.054		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Anthracene 0.099		0.020	ug/L	18-DEC-18	20-DEC-18	
Benzo(a)anthracene 0.216		0.020	ug/L	18-DEC-18	20-DEC-18	
Benzo(a)pyrene 0.196		0.010	ug/L	18-DEC-18	20-DEC-18	
Benzo(b)fluoranthene 0.280		0.020	ug/L	18-DEC-18	20-DEC-18	
Benzo(g,h,i)perylene 0.186	1	0.020	ug/L	18-DEC-18		R4406969
Benzo(k)fluoranthene 0.089		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Chrysene 0.185		0.000	ug/L	18-DEC-18	20-DEC-18	1
Dibenzo(ah)anthracene 0.039		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2211815-3 MW-18-1 Sampled By: JUSTIN C. on 17-DEC-18 @ 12:40 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Fluoranthene	0.376		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
Fluorene	0.164		0.020	ug/L	18-DEC-18	20-DEC-18	
Indeno(1,2,3-cd)pyrene	0.185		0.020	ug/L	18-DEC-18	20-DEC-18	
1+2-Methylnaphthalenes	3.10		0.028	ug/L	.0220.0	20-DEC-18	11100000
1-Methylnaphthalene	1.68		0.020	ug/L	18-DEC-18	20-DEC-18	R4406969
2-Methylnaphthalene	1.42		0.020	ug/L	18-DEC-18	20-DEC-18	
Naphthalene	0.804		0.050	ug/L	18-DEC-18	20-DEC-18	
Phenanthrene	0.483		0.020	ug/L	18-DEC-18	20-DEC-18	
Pyrene	0.435		0.020	ug/L	18-DEC-18	20-DEC-18	
Surrogate: d10-Acenaphthene	111.2		60-140	%	18-DEC-18	20-DEC-18	
Surrogate: d12-Chrysene	103.4		60-140	%	18-DEC-18	20-DEC-18	
Surrogate: d8-Naphthalene	99.8		60-140	%	18-DEC-18	20-DEC-18	
Surrogate: d10-Phenanthrene	117.2		60-140	%	18-DEC-18	20-DEC-18	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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### **Reference Information**

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2211815-1, -2, -3
Matrix Spike	Boron (B)-Dissolved	MS-B	L2211815-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2211815-1, -2, -3

### Sample Parameter Qualifier key listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
OWP	Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment.
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**							
CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)							
Inorganic anions are an	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 EPA 7199

This analysis is carried out using procect@44)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).

EC-R511-WT Water Conductivity-O.Reg 153/04 (July APHA 2510 B Water samples can be measured direct (2011) mmersing 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 CCME CWS-PHC, Pub #1310, Dec 2001-L

Parameters

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).

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Reference Information

F2-F4-511-WT 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 EPA 1631E (mod)

(ug/L)

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 EPA 200.8

(ug/L)

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

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 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

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 SW846 8260

(July 2011)

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).

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

Concentrations

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:** 

CP-17-0635 L2211815 CONTD....

**Reference Information** 

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### **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.



Workorder: L2211815 Report Date: 24-DEC-18 Page 1 of 13

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT	Water							
Batch R4406767 WG2957443-20 DUP Chloride (CI)		<b>WG2957443-1</b> 8	<b>3</b> 60.6		mg/L	1.1	20	19-DEC-18
<b>WG2957443-17 LCS</b> Chloride (CI)			101.7		%		90-110	19-DEC-18
<b>WG2957443-16 MB</b> Chloride (CI)			<0.50		mg/L		0.5	19-DEC-18
<b>WG2957443-19 MS</b> Chloride (Cl)		WG2957443-18	<b>3</b> 96.7		%		75-125	19-DEC-18
CN-WAD-R511-WT	Water							
Batch R4406810								
WG2957270-3 DUP Cyanide, Weak Acid Dis	s	<b>L2211815-1</b> <2.0	<2.0	RPD-NA	ug/L	N/A	20	21-DEC-18
WG2957270-2 LCS Cyanide, Weak Acid Dis	s		106.9		%		80-120	21-DEC-18
WG2957270-1 MB Cyanide, Weak Acid Dis	s		<2.0		ug/L		2	21-DEC-18
WG2957270-4 MS Cyanide, Weak Acid Dis	s	L2211815-1	80.0		%		75-125	21-DEC-18
CR-CR6-IC-R511-WT	Water							
Batch R4403350								
WG2957306-4 DUP Chromium, Hexavalent		<b>WG2957306-3</b> 18.7	18.3		ug/L	1.9	20	19-DEC-18
WG2957306-2 LCS Chromium, Hexavalent			94.4		%		80-120	19-DEC-18
WG2957306-1 MB Chromium, Hexavalent			<0.50		ug/L		0.5	19-DEC-18
WG2957306-5 MS Chromium, Hexavalent		WG2957306-3	91.3		%		70-130	19-DEC-18
EC-R511-WT	Water							
Batch R4405188 WG2956997-8 DUP Conductivity		<b>WG2956997-7</b> 1.77	1.76		mS/cm	0.6	10	19-DEC-18
WG2956997-6 LCS Conductivity			97.0		%		90-110	19-DEC-18
WG2956997-5 MB Conductivity			<0.0030		mS/cm		0.003	19-DEC-18
F1-HS-511-WT	Water							



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Toot		Matrix	Defenses	Descrit	Ouglifie:	Unito	DDD	l imit	Analyzad
Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT		Water							
	1402010								
<b>WG2956099-4</b> F1 (C6-C10)	DUP		<b>WG2956099-3</b> <25	<25	RPD-NA	ug/L	NI/A	30	10 DEC 10
	1.00		<b>\</b> 20	~20	KPD-NA	ug/L	N/A	30	19-DEC-18
<b>WG2956099-1</b> F1 (C6-C10)	LCS			115.8		%		80-120	19-DEC-18
<b>WG2956099-2</b> F1 (C6-C10)	MB			<25		ug/L		25	19-DEC-18
Surrogate: 3,4-	Dichlorote	oluene		94.0		%		60-140	19-DEC-18
WG2956099-5	MS		WG2956099-3						
F1 (C6-C10)				91.2		%		60-140	19-DEC-18
F2-F4-511-WT		Water							
Batch R4	1404448								
WG2956871-2	LCS			444 -		0.4			
F2 (C10-C16)				111.5		%		70-130	19-DEC-18
F3 (C16-C34)				118.2		%		70-130	19-DEC-18
F4 (C34-C50)				120.1		%		70-130	19-DEC-18
<b>WG2956871-3</b> F2 (C10-C16)	LCSD		<b>WG2956871-2</b> 111.5	111.8		%	0.2	50	19-DEC-18
F3 (C16-C16)			111.5	114.3		%			
F4 (C34-C50)						%	3.4	50	19-DEC-18
, , ,	ME		120.1	115.6		/0	3.9	50	19-DEC-18
<b>WG2956871-1</b> F2 (C10-C16)	MB			<100		ug/L		100	19-DEC-18
F3 (C16-C34)				<250		ug/L		250	19-DEC-18
F4 (C34-C50)				<250		ug/L		250	19-DEC-18
Surrogate: 2-Br	romobenz	zotrifluoride		103.6		%		60-140	19-DEC-18
Batch R4	1407171								
WG2957781-2	LCS								
F2 (C10-C16)				93.3		%		70-130	20-DEC-18
F3 (C16-C34)				95.2		%		70-130	20-DEC-18
F4 (C34-C50)				99.1		%		70-130	20-DEC-18
<b>WG2957781-1</b> F2 (C10-C16)	MB			<100		ug/L		100	20-DEC-18
				<250				250	
	romobenz	zotrifluoride							
HG-D-UG/L-CVAA		Water		- · <del>-</del>					
F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) Surrogate: 2-Br	romobenz			<100 <250 <250 99.0		ug/L ug/L ug/L %		100 250 250 60-140	20-DEC-18 20-DEC-18 20-DEC-18 20-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-UG/L-CVAA-WT	Water							
Batch R4402771								
WG2957104-3 DUP Mercury (Hg)-Dissolved		<b>L2211936-1</b> <0.010	<0.010	RPD-NA	ug/L	N/A	20	19-DEC-18
WG2957104-2 LCS Mercury (Hg)-Dissolved			101.0		%		80-120	19-DEC-18
WG2957104-1 MB Mercury (Hg)-Dissolved			<0.010		ug/L		0.01	19-DEC-18
WG2957104-4 MS Mercury (Hg)-Dissolved		L2211936-2	91.1		%		70-130	19-DEC-18
MET-D-UG/L-MS-WT	Water							
Batch R4404611								
WG2956908-4 DUP		WG2956908-3				,		
Antimony (Sb)-Dissolved	d	<1.0	<1.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Arsenic (As)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Barium (Ba)-Dissolved		147	149		ug/L	1.8	20	19-DEC-18
Beryllium (Be)-Dissolved	d	<1.0	<1.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Boron (B)-Dissolved		140	140		ug/L	0.5	20	19-DEC-18
Cadmium (Cd)-Dissolve		<0.050	<0.050	RPD-NA	ug/L	N/A	20	19-DEC-18
Chromium (Cr)-Dissolve	ed	<5.0	<5.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Cobalt (Co)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Copper (Cu)-Dissolved		2.8	2.3	J	ug/L	0.6	4	19-DEC-18
Lead (Pb)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	19-DEC-18
Molybdenum (Mo)-Disso	olved	2.00	2.12		ug/L	6.2	20	19-DEC-18
Nickel (Ni)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Selenium (Se)-Dissolved	d	<0.50	<0.50	RPD-NA	ug/L	N/A	20	19-DEC-18
Silver (Ag)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	19-DEC-18
Sodium (Na)-Dissolved		754000	756000		ug/L	0.2	20	19-DEC-18
Thallium (TI)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	19-DEC-18
Uranium (U)-Dissolved		1.83	1.82		ug/L	0.3	20	19-DEC-18
Vanadium (V)-Dissolved	I	<5.0	<5.0	RPD-NA	ug/L	N/A	20	19-DEC-18
Zinc (Zn)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	19-DEC-18
WG2956908-2 LCS Antimony (Sb)-Dissolved	d		101.6		%		80-120	19-DEC-18
Arsenic (As)-Dissolved			102.1		%		80-120	19-DEC-18
Barium (Ba)-Dissolved			103.1		%		80-120	19-DEC-18
Beryllium (Be)-Dissolved	d		95.8		%		80-120	19-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	Water							
Batch R440461	11							
WG2956908-2 LCS	<b>;</b>		00.5		0/			
Boron (B)-Dissolved	had		98.5 101.3		%		80-120	19-DEC-18
Cadmium (Cd)-Dissol Chromium (Cr)-Disso			98.5		%		80-120	19-DEC-18
` ,			96.5		%		80-120	19-DEC-18
Cobalt (Co)-Dissolved Copper (Cu)-Dissolve			96.9		%		80-120	19-DEC-18
Lead (Pb)-Dissolved	:u		99.8		%		80-120 80-120	19-DEC-18
Molybdenum (Mo)-Dis	ecolved		101.9		%			19-DEC-18
Nickel (Ni)-Dissolved	SSOIVEU		97.8		%		80-120	19-DEC-18
Selenium (Se)-Dissol	ved		101.0		%		80-120 80-120	19-DEC-18
Silver (Ag)-Dissolved	veu		101.0		%			19-DEC-18
Sodium (Na)-Dissolved	2d		100.3		%		80-120 80-120	19-DEC-18
Thallium (TI)-Dissolve			99.1		%		80-120	19-DEC-18 19-DEC-18
Uranium (U)-Dissolve			98.2		%		80-120	19-DEC-18
Vanadium (V)-Dissolv			101.0		%		80-120	19-DEC-18
Zinc (Zn)-Dissolved			97.8		%		80-120	19-DEC-18
WG2956908-1 MB					, -		00 120	10 020 10
Antimony (Sb)-Dissol	ved		<0.10		ug/L		0.1	19-DEC-18
Arsenic (As)-Dissolve	ed		<0.10		ug/L		0.1	19-DEC-18
Barium (Ba)-Dissolve	d		<0.10		ug/L		0.1	19-DEC-18
Beryllium (Be)-Dissolv	ved		<0.10		ug/L		0.1	19-DEC-18
Boron (B)-Dissolved			<10		ug/L		10	19-DEC-18
Cadmium (Cd)-Dissol	lved		<0.0050		ug/L		0.005	19-DEC-18
Chromium (Cr)-Disso	lved		<0.50		ug/L		0.5	19-DEC-18
Cobalt (Co)-Dissolved	t		<0.10		ug/L		0.1	19-DEC-18
Copper (Cu)-Dissolve	ed		<0.20		ug/L		0.2	19-DEC-18
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	19-DEC-18
Molybdenum (Mo)-Dis	ssolved		<0.050		ug/L		0.05	19-DEC-18
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	19-DEC-18
Selenium (Se)-Dissol	ved		<0.050		ug/L		0.05	19-DEC-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	19-DEC-18
Sodium (Na)-Dissolve	ed		<50		ug/L		50	19-DEC-18
Thallium (TI)-Dissolve	ed		<0.010		ug/L		0.01	19-DEC-18
Uranium (U)-Dissolve	ed		<0.010		ug/L		0.01	19-DEC-18
Vanadium (V)-Dissolv	ved .		<0.50		ug/L		0.5	19-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	Water							
Batch R44046	11							
WG2956908-1 MB					4			
Zinc (Zn)-Dissolved			<1.0		ug/L		1	19-DEC-18
WG2956908-5 MS Antimony (Sb)-Dissol	ved	WG2956908-	<b>6</b> 97.5		%		70-130	19-DEC-18
Arsenic (As)-Dissolve			101.3		%		70-130	19-DEC-18
Barium (Ba)-Dissolve	d		N/A	MS-B	%		-	19-DEC-18
Beryllium (Be)-Dissol	ved		97.9		%		70-130	19-DEC-18
Boron (B)-Dissolved			N/A	MS-B	%		-	19-DEC-18
Cadmium (Cd)-Disso	lved		95.7		%		70-130	19-DEC-18
Chromium (Cr)-Disso	lved		97.7		%		70-130	19-DEC-18
Cobalt (Co)-Dissolved	t		93.9		%		70-130	19-DEC-18
Copper (Cu)-Dissolve	ed		89.3		%		70-130	19-DEC-18
Lead (Pb)-Dissolved			93.2		%		70-130	19-DEC-18
Molybdenum (Mo)-Di	ssolved		99.3		%		70-130	19-DEC-18
Nickel (Ni)-Dissolved			94.4		%		70-130	19-DEC-18
Selenium (Se)-Dissol	ved		90.3		%		70-130	19-DEC-18
Silver (Ag)-Dissolved			77.7		%		70-130	19-DEC-18
Sodium (Na)-Dissolve	ed		N/A	MS-B	%		-	19-DEC-18
Thallium (TI)-Dissolve	ed		93.8		%		70-130	19-DEC-18
Uranium (U)-Dissolve	ed		99.9		%		70-130	19-DEC-18
Vanadium (V)-Dissolv	/ed		102.5		%		70-130	19-DEC-18
Zinc (Zn)-Dissolved			89.4		%		70-130	19-DEC-18
PAH-511-WT	Water							
Batch R440696	69							
WG2956871-2 LCS	3		04.4		0/		50.440	
1-Methylnaphthalene			91.4		%		50-140	20-DEC-18
2-Methylnaphthalene			90.9 95.2		%		50-140	20-DEC-18
Acenaphthylone							50-140	20-DEC-18
Acenaphthylene Anthracene			98.9 97.7		%		50-140	20-DEC-18
					%		50-140	20-DEC-18
Benzo(a)anthracene			106.3		%		50-140	20-DEC-18
Benzo(a)pyrene			89.4		%		50-140	20-DEC-18
Benzo(b)fluoranthene	)		87.6		%		50-140	20-DEC-18
Benzo(g,h,i)perylene			97.9		%		50-140	20-DEC-18
Benzo(k)fluoranthene	•		88.3		%		50-140	20-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	Water							
Batch R4406969								
WG2956871-2 LCS Chrysene			94.6		%		50-140	20-DEC-18
Dibenzo(ah)anthracene			98.8		%		50-140	20-DEC-18
Fluoranthene			103.4		%		50-140	20-DEC-18
Fluorene			99.3		%		50-140	20-DEC-18
Indeno(1,2,3-cd)pyrene			110.2		%		50-140	20-DEC-18
Naphthalene			90.0		%		50-140	20-DEC-18
Phenanthrene			102.2		%		50-140	20-DEC-18
Pyrene			101.3		%		50-140	20-DEC-18
WG2956871-3 LCSD 1-Methylnaphthalene		<b>WG2956871-</b> 91.4	• <b>2</b> 98.5		%	7.4	50	20-DEC-18
2-Methylnaphthalene		90.9	96.4		%	5.9	50	20-DEC-18
Acenaphthene		95.2	100.9		%	5.8	50	20-DEC-18
Acenaphthylene		98.9	103.8		%	4.9	50	20-DEC-18
Anthracene		97.7	98.6		%	0.9	50	20-DEC-18
Benzo(a)anthracene		106.3	112.0		%	5.2	50	20-DEC-18
Benzo(a)pyrene		89.4	99.0		%	10	50	20-DEC-18
Benzo(b)fluoranthene		87.6	93.4		%	6.5	50	20-DEC-18
Benzo(g,h,i)perylene		97.9	104.8		%	6.8	50	20-DEC-18
Benzo(k)fluoranthene		88.3	95.6		%	7.9	50	20-DEC-18
Chrysene		94.6	99.8		%	5.3	50	20-DEC-18
Dibenzo(ah)anthracene		98.8	104.8		%	5.9	50	20-DEC-18
Fluoranthene		103.4	108.8		%	5.9	50	20-DEC-18
Fluorene		99.3	104.4		%	5.0	50	20-DEC-18
Indeno(1,2,3-cd)pyrene		110.2	116.2		%	5.2	50	20-DEC-18
Naphthalene		90.0	95.5		%	6.0	50	20-DEC-18
Phenanthrene		102.2	106.9		%	4.5	50	20-DEC-18
Pyrene		101.3	106.2		%	4.8	50	20-DEC-18
WG2956871-1 MB			.00.2		,,	4.0	00	20 020 10
1-Methylnaphthalene			<0.020		ug/L		0.02	20-DEC-18
2-Methylnaphthalene			<0.020		ug/L		0.02	20-DEC-18
Acenaphthene			<0.020		ug/L		0.02	20-DEC-18
Acenaphthylene			<0.020		ug/L		0.02	20-DEC-18
Anthracene			<0.020		ug/L		0.02	20-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	Water							
Batch R4406969								
WG2956871-1 MB			.0.000		//		0.00	
Benzo(a)anthracene			<0.020		ug/L		0.02	20-DEC-18
Benzo(a)pyrene			<0.010		ug/L		0.01	20-DEC-18
Benzo(b)fluoranthene			<0.020		ug/L		0.02	20-DEC-18
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	20-DEC-18
Benzo(k)fluoranthene			<0.020		ug/L		0.02	20-DEC-18
Chrysene			<0.020		ug/L		0.02	20-DEC-18
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	20-DEC-18
Fluoranthene			<0.020		ug/L		0.02	20-DEC-18
Fluorene			<0.020		ug/L		0.02	20-DEC-18
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	20-DEC-18
Naphthalene			<0.050		ug/L		0.05	20-DEC-18
Phenanthrene			<0.020		ug/L		0.02	20-DEC-18
Pyrene			<0.020		ug/L		0.02	20-DEC-18
Surrogate: d8-Naphthaler			104.8		%		60-140	20-DEC-18
Surrogate: d10-Phenanth			113.6		%		60-140	20-DEC-18
Surrogate: d12-Chrysene			107.8		%		60-140	20-DEC-18
Surrogate: d10-Acenapht	hene		108.4		%		60-140	20-DEC-18
PH-WT	Water							
Batch R4405188								
<b>WG2956997-8 DUP</b> pH		<b>WG2956997</b> 7.18	<b>'-7</b> 7.18	J	pH units	0.00	0.2	19-DEC-18
·		7.10	7.10	J	pri units	0.00	0.2	19-DEC-16
<b>WG2956997-6 LCS</b> pH			7.00		pH units		6.9-7.1	19-DEC-18
VOC-511-HS-WT	Water							
Batch R4402010								
WG2956099-4 DUP		WG2956099			_			
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,1,2,2-Tetrachloroethane	e	<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	19-DEC-18
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R4402010								
WG2956099-4 DUP		WG2956099-						
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	19-DEC-18
Benzene		<0.50	< 0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-DEC-18
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	19-DEC-18
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	19-DEC-18
Chlorobenzene		<0.50	< 0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	19-DEC-18
cis-1,2-Dichloroethylene		3.17	3.10		ug/L	2.2	30	19-DEC-18
cis-1,3-Dichloropropene		<0.30	< 0.30	RPD-NA	ug/L	N/A	30	19-DEC-18
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-DEC-18
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-DEC-18
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
m+p-Xylenes		<0.40	< 0.40	RPD-NA	ug/L	N/A	30	19-DEC-18
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	19-DEC-18
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	19-DEC-18
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	19-DEC-18
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-DEC-18
o-Xylene		<0.30	< 0.30	RPD-NA	ug/L	N/A	30	19-DEC-18
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
trans-1,2-Dichloroethylen	е	<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
trans-1,3-Dichloropropend	e	<0.30	<0.30	RPD-NA	ug/L	N/A	30	19-DEC-18
Trichloroethylene		5.85	5.85	=	ug/L	0.0	30	19-DEC-18
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	19-DEC-18
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-DEC-18
WG2956099-1 LCS				5	J	, .		10 220 10



Workorder: L2211815 Report Date: 24-DEC-18 Page 9 of 13

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units RPD Lir		Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R44020	10							
WG2956099-1 LCS					0.4			
1,1,1,2-Tetrachloroet			105.7		%		70-130	19-DEC-18
1,1,2,2-Tetrachloroet			114.8		%		70-130	19-DEC-18
1,1,1-Trichloroethane			105.3		%		70-130	19-DEC-18
1,1,2-Trichloroethane	9		109.9		%		70-130	19-DEC-18
1,1-Dichloroethane			110.4		%		70-130	19-DEC-18
1,1-Dichloroethylene			105.5		%		70-130	19-DEC-18
1,2-Dibromoethane			109.4		%		70-130	19-DEC-18
1,2-Dichlorobenzene			110.6		%		70-130	19-DEC-18
1,2-Dichloroethane			111.0		%		70-130	19-DEC-18
1,2-Dichloropropane			109.2		%		70-130	19-DEC-18
1,3-Dichlorobenzene			109.0		%		70-130	19-DEC-18
1,4-Dichlorobenzene			109.8		%		70-130	19-DEC-18
Acetone			124.1		%		60-140	19-DEC-18
Benzene			113.3		%		70-130	19-DEC-18
Bromodichlorometha	ne		109.6		%		70-130	19-DEC-18
Bromoform			106.1		%		70-130	19-DEC-18
Bromomethane			102.2		%		60-140	19-DEC-18
Carbon tetrachloride			105.9		%		70-130	19-DEC-18
Chlorobenzene			107.4		%		70-130	19-DEC-18
Chloroform			108.4		%		70-130	19-DEC-18
cis-1,2-Dichloroethyle	ene		109.6		%		70-130	19-DEC-18
cis-1,3-Dichloroprope	ene		109.1		%		70-130	19-DEC-18
Dibromochlorometha	ne		107.2		%		70-130	19-DEC-18
Dichlorodifluorometh	ane		128.2		%		50-140	19-DEC-18
Ethylbenzene			97.6		%		70-130	19-DEC-18
n-Hexane			100.9		%		70-130	19-DEC-18
m+p-Xylenes			100.6		%		70-130	19-DEC-18
Methyl Ethyl Ketone			131.2		%		60-140	19-DEC-18
Methyl Isobutyl Ketor	ne		134.5		%		60-140	19-DEC-18
Methylene Chloride			116.2		%		70-130	19-DEC-18
MTBE			110.8		%		70-130	19-DEC-18
o-Xylene			97.5		%		70-130	19-DEC-18
Styrene			100.3		%		70-130	19-DEC-18



Workorder: L2211815 Report Date: 24-DEC-18 Page 10 of 13

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R440201	10							
WG2956099-1 LCS	3		105.4		%		70.400	10 050 10
Tetrachloroethylene Toluene			105.4		% %		70-130	19-DEC-18
trans-1,2-Dichloroethy	dono		101.0				70-130	19-DEC-18
•					%		70-130	19-DEC-18
trans-1,3-Dichloropro	pene		103.0		%		70-130	19-DEC-18
Trichloroethylene Trichlorofluoromethar			111.1		%		70-130	19-DEC-18
	ie		107.5		%		60-140	19-DEC-18
Vinyl chloride			83.0		%		60-140	19-DEC-18
WG2956099-2 MB 1,1,1,2-Tetrachloroeth	hane		<0.50		ug/L		0.5	19-DEC-18
1,1,2,2-Tetrachloroeth	hane		<0.50		ug/L		0.5	19-DEC-18
1,1,1-Trichloroethane			<0.50		ug/L		0.5	19-DEC-18
1,1,2-Trichloroethane			<0.50		ug/L		0.5	19-DEC-18
1,1-Dichloroethane			<0.50		ug/L		0.5	19-DEC-18
1,1-Dichloroethylene			<0.50		ug/L		0.5	19-DEC-18
1,2-Dibromoethane			<0.20		ug/L		0.2	19-DEC-18
1,2-Dichlorobenzene			<0.50		ug/L		0.5	19-DEC-18
1,2-Dichloroethane			<0.50		ug/L		0.5	19-DEC-18
1,2-Dichloropropane			< 0.50		ug/L		0.5	19-DEC-18
1,3-Dichlorobenzene			< 0.50		ug/L		0.5	19-DEC-18
1,4-Dichlorobenzene			<0.50		ug/L		0.5	19-DEC-18
Acetone			<30		ug/L		30	19-DEC-18
Benzene			<0.50		ug/L		0.5	19-DEC-18
Bromodichloromethar	ne		<2.0		ug/L		2	19-DEC-18
Bromoform			<5.0		ug/L		5	19-DEC-18
Bromomethane			<0.50		ug/L		0.5	19-DEC-18
Carbon tetrachloride			<0.20		ug/L		0.2	19-DEC-18
Chlorobenzene			< 0.50		ug/L		0.5	19-DEC-18
Chloroform			<1.0		ug/L		1	19-DEC-18
cis-1,2-Dichloroethyle	ene		<0.50		ug/L		0.5	19-DEC-18
cis-1,3-Dichloroprope	ne		< 0.30		ug/L		0.3	19-DEC-18
Dibromochloromethar	ne		<2.0		ug/L		2	19-DEC-18
Dichlorodifluorometha	ane		<2.0		ug/L		2	19-DEC-18
Ethylbenzene			<0.50		ug/L		0.5	19-DEC-18
n-Hexane			< 0.50		ug/L		0.5	19-DEC-18



Workorder: L2211815 Report Date: 24-DEC-18 Page 11 of 13

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R440201	0							
WG2956099-2 MB			0.40		//		0.4	
m+p-Xylenes			<0.40		ug/L		0.4	19-DEC-18
Methyl Isabutul Ketone			<20		ug/L		20	19-DEC-18
Methyl Isobutyl Ketone	<del>)</del>		<20		ug/L		20	19-DEC-18
Methylene Chloride MTBE			<5.0		ug/L		5	19-DEC-18
			<2.0		ug/L		2	19-DEC-18
o-Xylene			<0.30		ug/L		0.3	19-DEC-18
Styrene			<0.50		ug/L		0.5	19-DEC-18
Tetrachloroethylene			<0.50		ug/L		0.5	19-DEC-18
Toluene	1		<0.50		ug/L		0.5	19-DEC-18
trans-1,2-Dichloroethy			<0.50		ug/L		0.5	19-DEC-18
trans-1,3-Dichloroprop	ene		<0.30		ug/L		0.3	19-DEC-18
Trichloroethylene			<0.50		ug/L		0.5	19-DEC-18
Trichlorofluoromethan	е		<5.0		ug/L		5	19-DEC-18
Vinyl chloride			<0.50		ug/L		0.5	19-DEC-18
Surrogate: 1,4-Difluoro			98.8		%		70-130	19-DEC-18
Surrogate: 4-Bromoflu	orobenzene		96.9		%		70-130	19-DEC-18
WG2956099-5 MS 1,1,1,2-Tetrachloroeth	ane	WG2956099-3	104.6		%		50-140	19-DEC-18
1,1,2,2-Tetrachloroeth			109.7		%		50-140	19-DEC-18
1,1,1-Trichloroethane			106.1		%		50-140	19-DEC-18
1,1,2-Trichloroethane			104.9		%		50-140	19-DEC-18
1,1-Dichloroethane			109.2		%		50-140	19-DEC-18
1,1-Dichloroethylene			103.1		%		50-140	19-DEC-18
1,2-Dibromoethane			102.4		%		50-140	19-DEC-18
1,2-Dichlorobenzene			108.6		%		50-140	19-DEC-18
1,2-Dichloroethane			105.9		%		50-140	19-DEC-18
1,2-Dichloropropane			107.1		%		50-140	19-DEC-18
1,3-Dichlorobenzene			109.7		%		50-140	19-DEC-18
1,4-Dichlorobenzene			110.5		%		50-140	19-DEC-18
Acetone			112.6		%		50-140	19-DEC-18
Benzene			112.4		%		50-140	19-DEC-18
Bromodichloromethan	е		107.6		%		50-140	19-DEC-18
Bromoform			100.2		%		50-140	19-DEC-18
Bromomethane			95.3		%		50-140	19-DEC-18
							-	-



Workorder: L2211815 Report Date: 24-DEC-18 Page 12 of 13

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Гest	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R440201	0							
WG2956099-5 MS		WG2956099-						
Carbon tetrachloride			107.0		%		50-140	19-DEC-18
Chlorobenzene			107.5		%		50-140	19-DEC-18
Chloroform			108.2		%		50-140	19-DEC-18
cis-1,2-Dichloroethyler	ne		108.5		%		50-140	19-DEC-18
cis-1,3-Dichloroproper	ne		108.6		%		50-140	19-DEC-18
Dibromochloromethan	е		102.9		%		50-140	19-DEC-18
Dichlorodifluorometha	ne		102.6		%		50-140	19-DEC-18
Ethylbenzene			98.6		%		50-140	19-DEC-18
n-Hexane			96.5		%		50-140	19-DEC-18
m+p-Xylenes			102.3		%		50-140	19-DEC-18
Methyl Ethyl Ketone			108.6		%		50-140	19-DEC-18
Methyl Isobutyl Ketone	)		121.5		%		50-140	19-DEC-18
Methylene Chloride			112.8		%		50-140	19-DEC-18
MTBE			111.3		%		50-140	19-DEC-18
o-Xylene			97.8		%		50-140	19-DEC-18
Styrene			98.8		%		50-140	19-DEC-18
Tetrachloroethylene			109.2		%		50-140	19-DEC-18
Toluene			100.9		%		50-140	19-DEC-18
trans-1,2-Dichloroethy	lene		108.7		%		50-140	19-DEC-18
trans-1,3-Dichloroprop	ene		101.2		%		50-140	19-DEC-18
Trichloroethylene			113.0		%		50-140	19-DEC-18
Trichlorofluoromethan	e		102.2		%		50-140	19-DEC-18
Vinyl chloride			75.1		%		50-140	19-DEC-18

Report Date: 24-DEC-18 Workorder: L2211815

McIntosh Perry Engineering Consultants (Ottawa) Client: Page 13 of 13

115 Walgreen Road RR3

Carp ON K0A 1L0

Contact: **Bradley Sutherland** 

### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample Standard Reference Material SRM

MS Matrix Spike

**MSD** Matrix Spike Duplicate

Average Desorption Efficiency ADE

Method Blank MB

Internal Reference Material IRM 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.

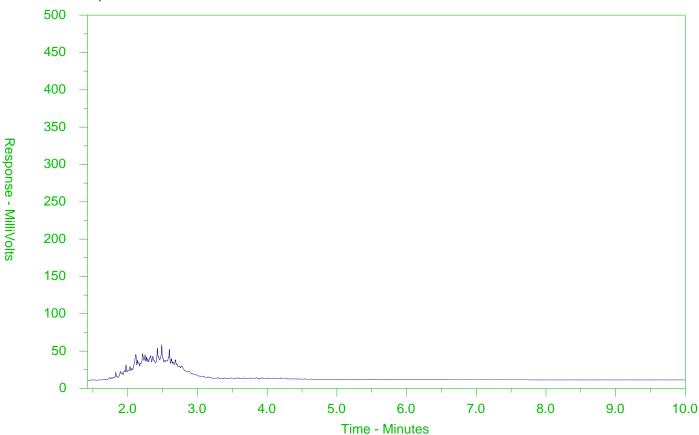
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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



ALS Sample ID: L2211815-1 Client Sample ID: MW-18-2



<b>←</b> -F2-	→←	—F3——►4—F4—	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	ie →	<b>←</b> Mo	otor Oils/Lube Oils/Grease——	-
<b>←</b>	-Diesel/Jet	Fuels→		

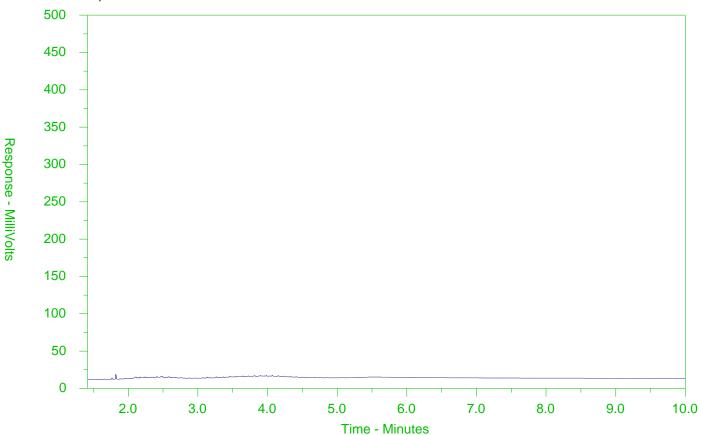
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2211815-2 Client Sample ID: MW-18-3



<b>←</b> -F2-	→←	_F3 <b>→</b> F4-	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	ie →	<b>←</b> Mo	tor Oils/Lube Oils/Grease	-
<b>←</b>	-Diesel/Jet	Fuels→		

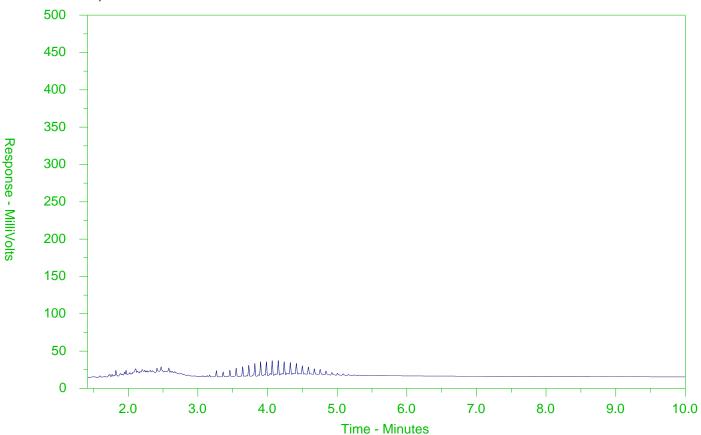
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2211815-3 Client Sample ID: MW-18-1



<b>←</b> -F2-	→ ←	—F3——◆4—F4-	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	e <b>→</b>	<b>←</b> M	otor Oils/Lube Oils/Grease—	-
<b>←</b>	-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.

# ALS Environmental

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

Canada Toll Free: 1 800 668 9878

L2211815-COFC

COC Number: 17 -

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McIntosh Perry Engineering Consultants

(Ottawa)

ATTN: Bradley Sutherland 115 Walgreen Road RR3

Carp ON K0A 1L0

Date Received: 07-JAN-19

Report Date: 10-JAN-19 13:14 (MT)

Version: FINAL

Client Phone: 613-836-2184

## **Certificate of Analysis**

Lab Work Order #: L2217373

Project P.O. #: NOT SUBMITTED

Job Reference: CP-17-0635

C of C Numbers: Legal Site Desc:

Melanie Moshi Account Manager

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L2217373 CONTD....

PAGE 2 of 3 Version: FINAL

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2217373-1 MW18-1 Sampled By: CLIENT on 07-JAN-19 @ 14:00 Matrix: WATER							
Anions and Nutrients							
Chloride (CI)	590	DLHC	2.5	mg/L		09-JAN-19	R4438367
Hydrocarbons							
F2 (C10-C16)	<100		100	ug/L	08-JAN-19	08-JAN-19	R4434207
F3 (C16-C34)	<250		250	ug/L	08-JAN-19	08-JAN-19	R4434207
F4 (C34-C50)	<250		250	ug/L	08-JAN-19	08-JAN-19	R4434207
Chrom. to baseline at nC50	YES			_	08-JAN-19	08-JAN-19	R4434207
Surrogate: 2-Bromobenzotrifluoride	78.7		60-140	%	08-JAN-19	08-JAN-19	R4434207
L2217373-2 MW18-2 Sampled By: CLIENT on 07-JAN-19 @ 14:15 Matrix: WATER							
Hydrocarbons							
F2 (C10-C16)	<100		100	ug/L	08-JAN-19	08-JAN-19	R4434207
F3 (C16-C34)	<250		250	ug/L	08-JAN-19	08-JAN-19	R4434207
F4 (C34-C50)	<250		250	ug/L	08-JAN-19	08-JAN-19	R4434207
Chrom. to baseline at nC50	YES				08-JAN-19	08-JAN-19	R4434207
Surrogate: 2-Bromobenzotrifluoride	83.9		60-140	%	08-JAN-19	08-JAN-19	R4434207
L2217373-3 MW18-3 Sampled By: CLIENT on 07-JAN-19 @ 15:00 Matrix: WATER							
Anions and Nutrients							
Chloride (CI)	394	DLHC	2.5	mg/L		09-JAN-19	R4438367
		1		1	I	I	1

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2217373 CONTD....

PAGE 3 of 3
Version: FINAL

### **Reference Information**

Sample Parameter Qualifier key listed:

Qualifier Description

DLHC Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**

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).

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

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
- 3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
- 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
- 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-511-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).

\*\* 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 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.



Workorder: L2217373

Report Date: 10-JAN-19

Page 1 of 2

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT		Water							
<b>Batch</b> R4 <b>WG2966551-10</b> Chloride (CI)	438367 DUP		<b>L2217352-1</b> 1.65	1.63		mg/L	1.4	20	09-JAN-19
<b>WG2966551-7</b> Chloride (CI)	LCS			101.7		%		90-110	09-JAN-19
<b>WG2966551-6</b> Chloride (CI)	МВ			<0.50		mg/L		0.5	09-JAN-19
<b>WG2966551-9</b> Chloride (CI)	MS		L2217352-1	106.3		%		75-125	09-JAN-19
F2-F4-511-WT		Water							
Batch R4	434207								
<b>WG2965658-2</b> F2 (C10-C16)	LCS			102.0		%		70.400	00 1411 40
F3 (C16-C34)				102.0		%		70-130	08-JAN-19
F4 (C34-C50)				102.5		%		70-130	08-JAN-19
,						70		70-130	08-JAN-19
<b>WG2965658-3</b> F2 (C10-C16)	LCSD		<b>WG2965658-2</b> 102.0	2 104.3		%	2.2	50	08-JAN-19
F3 (C16-C34)			102.5	103.9		%	1.3	50	08-JAN-19
F4 (C34-C50)			105.1	106.9		%	1.7	50	08-JAN-19
WG2965658-1	MB								
F2 (C10-C16)				<100		ug/L		100	08-JAN-19
F3 (C16-C34)				<250		ug/L		250	08-JAN-19
F4 (C34-C50)				<250		ug/L		250	08-JAN-19
Surrogate: 2-Br	omobenz	otrifluoride		81.1		%		60-140	08-JAN-19

Page 2 of 2

Workorder: L2217373 Report Date: 10-JAN-19

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road RR3

Carp ON K0A 1L0

Contact: Bradley Sutherland

### Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

#### **Hold Time Exceedances:**

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

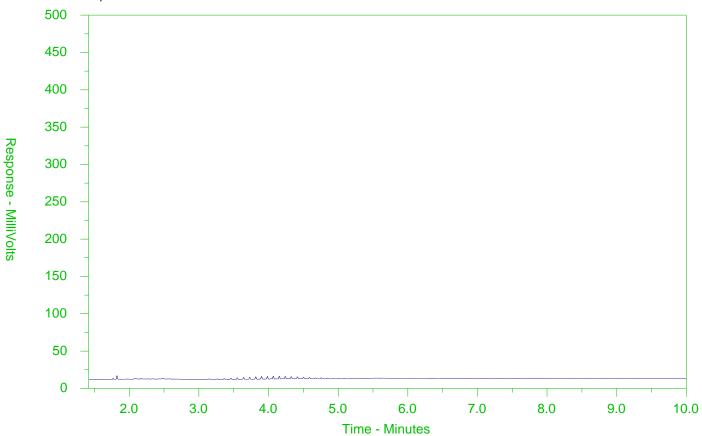
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined 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.



ALS Sample ID: L2217373-1 Client Sample ID: MW18-1



<b>←</b> -F2-	→←	_F3F4-	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	ie →	<b>←</b> Mo	tor Oils/Lube Oils/Grease———	-
<b>←</b>	-Diesel/Jet	Fuels→		

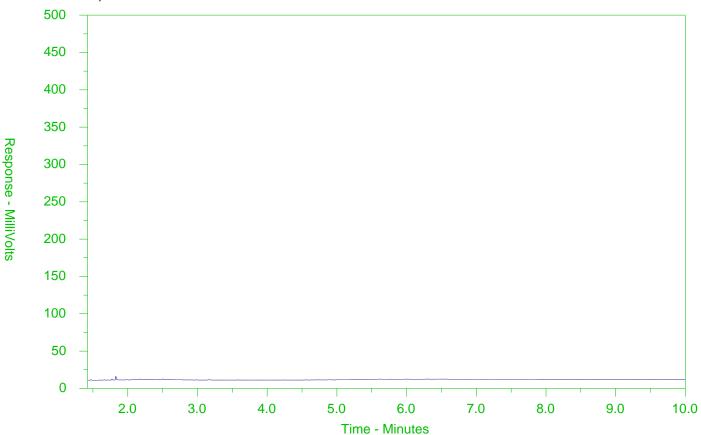
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2217373-2 Client Sample ID: MW18-2



<b>←</b> -F2-	→ ←	—F3——◆4—F4-	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	e <b>→</b>	<b>←</b> M	otor Oils/Lube Oils/Grease—	-
<b>←</b>	-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.

# ALS Environmental

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

Canada Toll Free: 1 800 668 9878

L2217373-COFC

COC Number: 17 -

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Contact:	Bradley Sutherland	J	(QC) Report with R	• *		2 1	1 -		20%]			ENCY	1 Bus	sines	s day	[E - 1	00%]				
Phone:	613-836-2184		ts to Criteria on Report -			8 8	3 day	/ [P3-	25%]			8	Same	Day,	Week	end o	or Staf	utory	holiday	[E2 -200%	<b>6</b>
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Street:	115 Walgreen Road RR3	Email 1 or Fax	b.sutherland@mci	ntoshperry.com			Date an	d Time	Requir	ed for	ali E&l	P TATS	<b>3</b> ;				dd-mr	nm-yy	hh:mm		
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McIntosh Perry Engineering Consultants

(Ottawa)

ATTN: Bradley Sutherland 115 Walgreen Road, R.R. 3

Carp ON KOA1LO

Date Received: 20-MAY-21

Report Date: 31-MAY-21 07:51 (MT)

Version: FINAL

Client Phone: 613-903-5785

# Certificate of Analysis

Lab Work Order #: L2590710

Project P.O. #: NOT SUBMITTED

Job Reference: CCO-22-0244

C of C Numbers: Legal Site Desc:

Emily Smith Account Manager

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### **ANALYTICAL GUIDELINE REPORT**

L2590710 CONTD.... Page 2 of 15

CCO-22-0244		IICAL	GOID		KLI OI	<b>\ I</b>	3	Page 2 1-MAY-21 0	
Sample Details Grouping Analyte	Popult	Qualifier	D.L.	Units	Analyzad				
7	Result	Qualifier		Units	Analyzed		Guidelir	ne Limits	
L2590710-1 MW1									
Sampled By: CLIENT on 20-MAY-21 @ 10:30	0					щ4	<b>40</b>		
Matrix: WATER						#1	#2		
Physical Tests									
Conductivity	0.561		0.0030	mS/cm	22-MAY-21				
pH	8.22		0.10	pH units	22-MAY-21				
Anions and Nutrients									
Chloride (CI)	65.2		0.50	mg/L	24-MAY-21	2300	2300		
Cyanides									
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L	25-MAY-21	66	66		
Dissolved Metals									
Dissolved Mercury Filtration Location	FIELD			No Unit	25-MAY-21				
Dissolved Metals Filtration Location	FIELD			No Unit	21-MAY-21				
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	25-MAY-21	20000	20000		
Arsenic (As)-Dissolved	0.28		0.10	ug/L	25-MAY-21	1900	1900		
Barium (Ba)-Dissolved	146		0.10	ug/L	25-MAY-21	29000	29000		
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	25-MAY-21	67	67		
Boron (B)-Dissolved	67		10	ug/L	25-MAY-21	45000	45000		
Cadmium (Cd)-Dissolved	<0.010		0.010	ug/L	25-MAY-21	2.7	2.7		
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	25-MAY-21	810	810		
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	25-MAY-21	66	66		
Copper (Cu)-Dissolved	1.09		0.20	ug/L	25-MAY-21	87	87		
Lead (Pb)-Dissolved	0.087		0.050	ug/L	25-MAY-21	25	25		
Mercury (Hg)-Dissolved	<0.0050		0.0050	ug/L	26-MAY-21	0.29	2.8		
Molybdenum (Mo)-Dissolved	1.31		0.050	ug/L	25-MAY-21	9200	9200		
Nickel (Ni)-Dissolved	<0.50		0.50	ug/L	25-MAY-21	490	490		
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	25-MAY-21	63	63		
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	25-MAY-21	1.5	1.5		
Sodium (Na)-Dissolved	14900		500	ug/L	25-MAY-21	2300000	2300000		
Thallium (TI)-Dissolved	<0.010		0.010	ug/L	25-MAY-21	510	510		
Uranium (U)-Dissolved	0.097		0.010	ug/L	25-MAY-21	420	420		
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	25-MAY-21	250	250		
Zinc (Zn)-Dissolved	1.3		1.0	ug/L	25-MAY-21	1100	1100		
Speciated Metals					00.14337.03				
Chromium, Hexavalent	<0.50		0.50	ug/L	22-MAY-21	140	140		
Volatile Organic Compounds									
Acetone	<30		30	ug/L	31-MAY-21	130000	130000		
Benzene	<0.50		0.50	ug/L	31-MAY-21	44	430		
Bromodichloromethane	<2.0		2.0	ug/L	31-MAY-21	85000	85000		
Bromoform	<5.0		5.0	ug/L	31-MAY-21	380	770		
Bromomethane	<0.50		0.50	ug/L	31-MAY-21	5.6	56		
Carbon tetrachloride	<0.20		0.20	ug/L	31-MAY-21	0.79	8.4		
Chlorobenzene Dibromochloromethane	<0.50		0.50	ug/L	31-MAY-21	630	630		
	<2.0		2.0	ug/L	31-MAY-21	82000	82000		
Chloroform	<1.0		1.0	ug/L	31-MAY-21	2.4	22		
1,2-Dibromoethane	<0.20		0.20	ug/L	31-MAY-21	0.25	0.83		
1,2-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	4600	9600		
1,3-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	9600	9600		
1,4-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	8	67		

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



### **ANALYTICAL GUIDELINE REPORT**

L2590710 CONTD.... Page 3 of 15

CCO-22-0244	^	MALII	ICAL	GUID	LLIINL	KLFOR	\ I	Page 3 of 31-MAY-21 07:51				
Sample Details			<b>-</b>							1101 (1111)		
Grouping Analyte		Result	Qualifier	D.L.	Units	Analyzed		Guidelir	ne Limits			
L2590710-1 MW1												
Sampled By: CLIENT or	n 20-MAY-21 @ 10:30							"0				
Matrix: WATER							#1	#2				
Volatile Organic Compo	ounds											
Dichlorodifluorometha		<2.0		2.0	ug/L	31-MAY-21	4400	4400				
1,1-Dichloroethane		<0.50		0.50	ug/L	31-MAY-21	320	3100				
1,2-Dichloroethane		<0.50		0.50	ug/L	31-MAY-21	1.6	12				
1,1-Dichloroethylene		<0.50		0.50	ug/L	31-MAY-21	1.6	17				
cis-1,2-Dichloroethyle	ne	< 0.50		0.50	ug/L	31-MAY-21	1.6	17				
trans-1,2-Dichloroethy		< 0.50		0.50	ug/L	31-MAY-21	1.6	17				
Methylene Chloride		<5.0		5.0	ug/L	31-MAY-21	610	5500				
1,2-Dichloropropane		< 0.50		0.50	ug/L	31-MAY-21	16	140				
cis-1,3-Dichloroproper	ne	< 0.30		0.30	ug/L	31-MAY-21						
trans-1,3-Dichloroprop		< 0.30		0.30	ug/L	31-MAY-21						
1,3-Dichloropropene (		< 0.50		0.50	ug/L	31-MAY-21	5.2	45				
Ethylbenzene	,	< 0.50		0.50	ug/L	31-MAY-21	2300	2300				
n-Hexane		< 0.50		0.50	ug/L	31-MAY-21	51	520				
Methyl Ethyl Ketone		<20		20	ug/L	31-MAY-21	470000	1500000				
Methyl Isobutyl Keton	e	<20		20	ug/L	31-MAY-21	140000	580000				
MTBE		<2.0		2.0	ug/L	31-MAY-21	190	1400				
Styrene		< 0.50		0.50	ug/L	31-MAY-21	1300	9100				
1,1,1,2-Tetrachloroeth	nane	< 0.50		0.50	ug/L	31-MAY-21	3.3	28				
1,1,2,2-Tetrachloroeth	nane	< 0.50		0.50	ug/L	31-MAY-21	3.2	15				
Tetrachloroethylene		< 0.50		0.50	ug/L	31-MAY-21	1.6	17				
Toluene		< 0.50		0.50	ug/L	31-MAY-21	18000	18000				
1,1,1-Trichloroethane		< 0.50		0.50	ug/L	31-MAY-21	640	6700				
1,1,2-Trichloroethane		< 0.50		0.50	ug/L	31-MAY-21	4.7	30				
Trichloroethylene		< 0.50		0.50	ug/L	31-MAY-21	1.6	17				
Trichlorofluoromethan	е	<5.0		5.0	ug/L	31-MAY-21	2500	2500				
Vinyl chloride		< 0.50		0.50	ug/L	31-MAY-21	0.5	1.7				
o-Xylene		< 0.30		0.30	ug/L	31-MAY-21						
m+p-Xylenes		< 0.40		0.40	ug/L	31-MAY-21						
Xylenes (Total)		< 0.50		0.50	ug/L	31-MAY-21	4200	4200				
Surrogate: 4-Bromoflu	iorobenzene	98.4		70-130	%	31-MAY-21						
Surrogate: 1,4-Difluore	obenzene	99.8		70-130	%	31-MAY-21						
Hydrocarbons												
F1 (C6-C10)		<25		25	ug/L	31-MAY-21	750	750				
F1-BTEX		<25		25	ug/L	31-MAY-21	750	750				
F2 (C10-C16)		<100		100	ug/L	26-MAY-21	150	150				
F2-Naphth		<100		100	ug/L	31-MAY-21						
F3 (C16-C34)		<250		250	ug/L	26-MAY-21	500	500				
F3-PAH		<250		250	ug/L	31-MAY-21						
F4 (C34-C50)		<250		250	ug/L	26-MAY-21	500	500				
Total Hydrocarbons (C		<370		370	ug/L	31-MAY-21						
Chrom. to baseline at		YES			No Unit	26-MAY-21						
Surrogate: 2-Bromobe		89.0		60-140	%	26-MAY-21						
Surrogate: 3,4-Dichlor		76.8		60-140	%	31-MAY-21						
Polycyclic Aromatic Hyd	drocarbons											
Acenaphthene		<0.020		0.020	ug/L	28-MAY-21	600	1700				
Acenaphthylene		<0.020		0.020	ug/L	28-MAY-21	1.8	1.8				

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



### ANALYTICAL GUIDELINE REPORT

L2590710 CONTD.... Page 4 of 15

CCO-22-0244 31-MAY-21 07:51 (MT) Sample Details Qualifier D.L. Units Grouping Analyte Result Analyzed **Guideline Limits** L2590710-1 MW1 Sampled By: CLIENT on 20-MAY-21 @ 10:30 #1 #2 Matrix: WATER **Polycyclic Aromatic Hydrocarbons** < 0.020 0.020 ug/L 28-MAY-21 Anthracene 2.4 2.4 Benzo(a)anthracene < 0.020 0.020 ug/L 28-MAY-21 4.7 4.7 Benzo(a)pyrene < 0.010 0.010 ug/L 28-MAY-21 0.81 0.81 < 0.020 0.020 28-MAY-21 Benzo(b&j)fluoranthene ug/L 0.75 0.75 Benzo(q,h,i)perylene < 0.020 0.020 ug/L 28-MAY-21 0.2 0.2 Benzo(k)fluoranthene < 0.020 0.020 ug/L 28-MAY-21 0.4 0.4 Chrysene < 0.020 0.020 ug/L 28-MAY-21 1 Dibenz(a,h)anthracene < 0.020 0.020 ug/L 28-MAY-21 0.52 0.52 Fluoranthene < 0.020 0.020 ug/L 28-MAY-21 130 130 < 0.020 0.020 ug/L 28-MAY-21 400 Fluorene 400 28-MAY-21 Indeno(1,2,3-cd)pyrene < 0.020 0.020 ug/L 0.2 0.2 1+2-Methylnaphthalenes < 0.028 0.028 ug/L 28-MAY-21 1800 1800 1-Methylnaphthalene < 0.020 0.020 ug/L 28-MAY-21 1800 1800 28-MAY-21 2-Methylnaphthalene < 0.020 0.020 ug/L 1800 1800 Naphthalene < 0.050 0.050 ug/L 28-MAY-21 6400 1400 < 0.020 0.020 28-MAY-21 Phenanthrene ug/L 580 580 Pyrene < 0.020 0.020 ug/L 28-MAY-21 68 68 Surrogate: Naphthalene d8 91.8 60-140 % 28-MAY-21 Surrogate: Phenanthrene d10 102.6 60-140 % 28-MAY-21 L2590710-2 MW2 Sampled By: CLIENT on 20-MAY-21 @ 11:30 #1 #2 WATER Matrix: **Physical Tests** Conductivity 1 48 0.0030 mS/cm 22-MAY-21 рΗ 22-MAY-21 7.75 0.10 pH units **Anions and Nutrients** Chloride (CI) 245 2.5 mg/L 24-MAY-21 2300 2300 Cyanides Cyanide, Weak Acid Diss <2.0 2.0 ug/L 25-MAY-21 66 66 **Dissolved Metals** Dissolved Mercury Filtration Location **FIELD** No Unit 25-MAY-21 Dissolved Metals Filtration Location **FIELD** No Unit 21-MAY-21 < 0.10 0.10 ug/L 25-MAY-21 Antimony (Sb)-Dissolved 20000 20000 Arsenic (As)-Dissolved 0.10 0.10 ug/L 25-MAY-21 1900 1900 Barium (Ba)-Dissolved 176 0.10 ug/L 25-MAY-21 29000 29000 25-MAY-21 Beryllium (Be)-Dissolved < 0.10 0.10 ug/L 67 67 Boron (B)-Dissolved 15 10 ug/L 25-MAY-21 45000 45000 Cadmium (Cd)-Dissolved < 0.010 0.010 ug/L 25-MAY-21 2.7 2.7 Chromium (Cr)-Dissolved < 0.50 0.50 ug/L 25-MAY-21 810 810 < 0.10 0.10 25-MAY-21 66 Cobalt (Co)-Dissolved ug/L 66 25-MAY-21 Copper (Cu)-Dissolved 0.77 0.20 ug/L 87 87 Lead (Pb)-Dissolved < 0.050 0.050 ug/L 25-MAY-21 25 25

< 0.0050

0.304

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

0.0050

0.050

ug/L

ug/L

26-MAY-21

25-MAY-21

Mercury (Hg)-Dissolved

Molybdenum (Mo)-Dissolved

2.8

9200

0.29

9200

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



### **ANALYTICAL GUIDELINE REPORT**

L2590710 CONTD.... Page 5 of 15

CO-22-0244							3	1-MAY-21 0	7:51 (MT)
Sample Details Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelin	e Limits	
L2590710-2 MW2									
Sampled By: CLIENT on 20-MAY-21 @ 11:30									
Matrix: WATER						#1	#2		
Dissolved Metals									
Nickel (Ni)-Dissolved	<0.50		0.50	ug/L	25-MAY-21	490	490		
Selenium (Se)-Dissolved	0.428		0.050	ug/L	25-MAY-21	63	63		
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	25-MAY-21	1.5	1.5		
Sodium (Na)-Dissolved	162000	DLHC	500	ug/L	25-MAY-21	2300000	2300000		
Thallium (TI)-Dissolved	< 0.010		0.010	ug/L	25-MAY-21	510	510		
Uranium (U)-Dissolved	1.15		0.010	ug/L	25-MAY-21	420	420		
Vanadium (V)-Dissolved	0.69		0.50	ug/L	25-MAY-21	250	250		
Zinc (Zn)-Dissolved	<1.0		1.0	ug/L	25-MAY-21	1100	1100		
Speciated Metals	11.0		1.0		20 10,717 21	1100	1100		
Chromium, Hexavalent	<0.50		0.50	ug/L	22-MAY-21	140	140		
Volatile Organic Compounds									
Acetone	<30		30	ug/L	31-MAY-21	130000	130000		
Benzene	<0.50		0.50	ug/L	31-MAY-21	44	430		
Bromodichloromethane	<2.0		2.0	ug/L	31-MAY-21	85000	85000		
Bromoform	<5.0		5.0	ug/L	31-MAY-21	380	770		
Bromomethane	<0.50		0.50	ug/L	31-MAY-21	5.6	56		
Carbon tetrachloride	<0.20		0.20	ug/L	31-MAY-21	0.79	8.4		
Chlorobenzene	<0.50		0.50	ug/L	31-MAY-21	630	630		
Dibromochloromethane	<2.0		2.0	ug/L	31-MAY-21	82000	82000		
Chloroform	<1.0		1.0	ug/L	31-MAY-21	2.4	22		
1,2-Dibromoethane	<0.20		0.20	ug/L	31-MAY-21	0.25	0.83		
1,2-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	4600	9600		
1,3-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	9600	9600		
1,4-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	8	67		
Dichlorodifluoromethane	<2.0		2.0	ug/L	31-MAY-21	4400	4400		
1,1-Dichloroethane	<0.50		0.50	ug/L	31-MAY-21	320	3100		
1,2-Dichloroethane	<0.50		0.50	ug/L	31-MAY-21	1.6	12		
1,1-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
Methylene Chloride	<5.0		5.0	ug/L	31-MAY-21	610	5500		
1,2-Dichloropropane	<0.50		0.50	ug/L	31-MAY-21	16	140		
cis-1,3-Dichloropropene	<0.30		0.30	ug/L	31-MAY-21				
trans-1,3-Dichloropropene	<0.30		0.30	ug/L	31-MAY-21				
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L	31-MAY-21	5.2	45		
Ethylbenzene	<0.50		0.50	ug/L	31-MAY-21	2300	2300		
n-Hexane	<0.50		0.50	ug/L	31-MAY-21	51	520		
Methyl Ethyl Ketone	<20		20	ug/L	31-MAY-21	470000	1500000		
Methyl Isobutyl Ketone	<20		20	ug/L	31-MAY-21	140000	580000		
MTBE	<2.0		2.0	ug/L	31-MAY-21	190	1400		
Styrene	<0.50		0.50	ug/L	31-MAY-21	1300	9100		
	<0.50		0.50	ug/L	31-MAY-21	3.3	28		
1,1,1,2-Tetrachloroethane									
1,1,1,2-Tetrachloroethane 1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.2	15		
	1		0.50 0.50	ug/L ug/L	31-MAY-21 31-MAY-21	3.2 1.6	15 17		

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



### **ANALYTICAL GUIDELINE REPORT**

L2590710 CONTD.... Page 6 of 15

Result <0.50 <0.50 <0.50 <5.0 <0.50 <0.40 <0.50 98.6 99.3 <25 <25 <100 <100 <250	Qualifier	0.50 0.50 0.50 0.50 0.50 0.50 0.40 0.50 70-130 25 25 100	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21	#1 640 4.7 1.6 2500 0.5 4200	#2 6700 30 17 2500 1.7 4200	Limits
<0.50 <0.50 <5.0 <0.50 <0.30 <0.40 <0.50 98.6 99.3 <25 <25 <100 <100		0.50 0.50 0.50 5.0 0.50 0.30 0.40 0.50 70-130 25 25	ug/L ug/L ug/L ug/L ug/L ug/L wg/L	31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21	640 4.7 1.6 2500 0.5	#2 6700 30 17 2500 1.7	
<0.50 <0.50 <5.0 <0.50 <0.30 <0.40 <0.50 98.6 99.3 <25 <25 <100 <100		0.50 0.50 5.0 0.50 0.30 0.40 0.50 70-130 25 25	ug/L ug/L ug/L ug/L ug/L ug/L wg/L	31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21	640 4.7 1.6 2500 0.5	6700 30 17 2500 1.7	
<0.50 <0.50 <5.0 <0.50 <0.30 <0.40 <0.50 98.6 99.3 <25 <25 <100 <100		0.50 0.50 5.0 0.50 0.30 0.40 0.50 70-130 25 25	ug/L ug/L ug/L ug/L ug/L ug/L wg/L	31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21	640 4.7 1.6 2500 0.5	6700 30 17 2500 1.7	
<0.50 <0.50 <5.0 <0.50 <0.30 <0.40 <0.50 98.6 99.3 <25 <25 <100 <100		0.50 0.50 5.0 0.50 0.30 0.40 0.50 70-130 25 25	ug/L ug/L ug/L ug/L ug/L ug/L wg/L	31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21	4.7 1.6 2500 0.5	30 17 2500 1.7 4200	
<0.50 <0.50 <5.0 <0.50 <0.30 <0.40 <0.50 98.6 99.3 <25 <25 <100 <100		0.50 0.50 5.0 0.50 0.30 0.40 0.50 70-130 25 25	ug/L ug/L ug/L ug/L ug/L ug/L wg/L	31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21	4.7 1.6 2500 0.5	30 17 2500 1.7 4200	
<0.50 <0.50 <5.0 <0.50 <0.30 <0.40 <0.50 98.6 99.3 <25 <25 <100 <100		0.50 0.50 5.0 0.50 0.30 0.40 0.50 70-130 25 25	ug/L ug/L ug/L ug/L ug/L ug/L wg/L	31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21	4.7 1.6 2500 0.5	30 17 2500 1.7 4200	
<0.50 <5.0 <0.50 <0.30 <0.40 <0.50 98.6 99.3 <25 <25 <100 <100		0.50 5.0 0.50 0.30 0.40 0.50 70-130 70-130	ug/L ug/L ug/L ug/L ug/L ug/L %	31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21	1.6 2500 0.5 4200	17 2500 1.7 4200	
<5.0 <0.50 <0.30 <0.40 <0.50 98.6 99.3 <25 <25 <100 <100		5.0 0.50 0.30 0.40 0.50 70-130 70-130	ug/L ug/L ug/L ug/L ug/L % %	31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21	2500 0.5 4200	2500 1.7 4200	
<0.50 <0.30 <0.40 <0.50 98.6 99.3 <25 <25 <100 <100		0.50 0.30 0.40 0.50 70-130 70-130 25 25	ug/L ug/L ug/L ug/L % %	31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21	0.5 4200	1.7 4200	
<0.30 <0.40 <0.50 98.6 99.3 <25 <25 <100 <100		0.30 0.40 0.50 70-130 70-130 25 25	ug/L ug/L ug/L % % ug/L	31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21	4200	4200	
<0.40 <0.50 98.6 99.3 <25 <25 <100 <100		0.40 0.50 70-130 70-130 25 25	ug/L ug/L % % ug/L	31-MAY-21 31-MAY-21 31-MAY-21 31-MAY-21			
<0.50 98.6 99.3 <25 <25 <100 <100		0.50 70-130 70-130 25 25	ug/L % % ug/L	31-MAY-21 31-MAY-21 31-MAY-21			
98.6 99.3 <25 <25 <100 <100		70-130 70-130 25 25	% % ug/L	31-MAY-21 31-MAY-21			
99.3 <25 <25 <100 <100		70-130 25 25	% ug/L	31-MAY-21	750	750	
<25 <25 <100 <100		25 25	ug/L		750	750	
<25 <100 <100		25	•	31-MAY-21	750	750	1
<25 <100 <100		25	•	31-IVIA Y-21	/50		
<100 <100				31-MAY-21		750	
<100			_	26-MAY-21	750	750	
			ug/L	-	150	150	
		100	ug/L	31-MAY-21	500	500	
			_		500	500	
			_		500	500	
			_		300	300	
		370					
		60-140					
				_			
<0.020		0.020	ug/L	28-MAY-21	600	1700	
< 0.020		0.020	_	28-MAY-21	1.8	1.8	
<0.020			_	28-MAY-21			
< 0.020		0.020	_	28-MAY-21			
<0.010		0.010	_	28-MAY-21	0.81	0.81	
< 0.020			_	28-MAY-21	0.75	0.75	
< 0.020		0.020	_	28-MAY-21	0.2	0.2	
<0.020			I	28-MAY-21		I .	
< 0.020		0.020		28-MAY-21	1	1	
< 0.020		0.020	ug/L	28-MAY-21	0.52	0.52	
< 0.020		0.020	ug/L	28-MAY-21	130	130	
<0.020		0.020	ug/L	28-MAY-21	400	400	
<0.020		0.020	ug/L	28-MAY-21	0.2	0.2	
<0.028		0.028	ug/L	28-MAY-21	1800	1800	
<0.020		0.020	ug/L	28-MAY-21	1800	1800	
<0.020		0.020	ug/L	28-MAY-21	1800	1800	
< 0.050		0.050	ug/L	28-MAY-21	1400	6400	
<0.020		0.020	ug/L	28-MAY-21	580	580	
< 0.020		0.020	ug/L	28-MAY-21	68	68	
85.9		60-140	%	28-MAY-21			
96.1		60-140	%	28-MAY-21			
	<0.020 <0.020 <0.020 <0.010 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.050 <0.020 <0.020 <0.020 <0.050 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020	<250 <250 <250 <370 YES 86.4 78.5 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.050 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020 <0.020	<250	<250	<250	<250	<250

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



L2590710 CONTD....
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31-MAY-21 07:51 (MT)

Sample Details   Strong   Analyte   Result   Qualifier   D.L.   Units   Analyzed   Quideline Limits	CO-22-0244	ANALT HEAL GUIDELINE REPORT Page 7 of 15 CCO-22-0244 31-MAY-21 07:51 (MT)										
2590710-3 MW2-DUP	Sample Details Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelin	e Limits			
Acation	7		Qualifor		Office	/ maryzoa		Galaciii	io Elimito			
Activative Organic Compounds												
Acetone		'					#1	#2				
Acetone	WATER											
Benzene	Volatile Organic Compounds											
Bromodichloromethane	Acetone	<30		30	ug/L	31-MAY-21	130000	130000				
Bromoform	Benzene	<0.50		0.50	ug/L	31-MAY-21	44	430				
Brommethane	Bromodichloromethane	<2.0		2.0	ug/L	31-MAY-21	85000	85000				
Carbon tetrachloride         <0.20         0.20         ug/L         31-MAY-21         0.79         8.4           Chlorobenzene         <0.550	Bromoform	<5.0		5.0	ug/L	31-MAY-21	380	770				
Chlorobenzene	Bromomethane	<0.50		0.50	ug/L	31-MAY-21	5.6	56				
Dibromochloromethane	Carbon tetrachloride	<0.20		0.20	ug/L	31-MAY-21	0.79	8.4				
Chloroform	Chlorobenzene	<0.50		0.50	ug/L	31-MAY-21	630	630				
1,2-Dibromoethane         <0.20	Dibromochloromethane	<2.0		2.0	ug/L	31-MAY-21	82000	82000				
1,2-Dichlorobenzene	Chloroform	<1.0		1.0	ug/L	31-MAY-21	2.4	22				
1,3-Dichlorobenzene         <0.50	1,2-Dibromoethane	<0.20		0.20	ug/L	31-MAY-21	0.25	0.83				
1,4-Dichlorobenzene	1,2-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	4600	9600				
1,4-Dichlorobenzene         <0.50	1,3-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	9600	9600				
1,1-Dichloroethane         <0.50	1,4-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	8	67				
1,2-Dichloroethane         <0.50	Dichlorodifluoromethane	<2.0		2.0	ug/L	31-MAY-21	4400	4400				
1,2-Dichloroethane         <0.50	1,1-Dichloroethane	<0.50		0.50	ug/L	31-MAY-21	320	3100				
1,1-Dichloroethylene         <0.50	1,2-Dichloroethane	<0.50		0.50	_	31-MAY-21	1.6	12				
cis-1,2-Dichloroethylene         <0.50	1,1-Dichloroethylene				_	31-MAY-21	1.6	17				
trans-1,2-Dichloroethylene         <0.50         0.50         ug/L         31-MAY-21         1.6         17           Methylene Chloride         <5.0	cis-1,2-Dichloroethylene	<0.50			_	31-MAY-21	1.6	17				
Methylene Chloride         <5.0         5.0         ug/L         31-MAY-21         610         5500           1,2-Dichloropropane         <0.50	•	<0.50			_	31-MAY-21						
1,2-Dichloropropane         <0.50	•				_	31-MAY-21						
cis-1,3-Dichloropropene         <0.30	•				_	31-MAY-21	16	140				
trans-1,3-Dichloropropene         <0.30	• •				_							
1,3-Dichloropropene (cis & trans)					_	31-MAY-21						
n-Hexane         <0.50         0.50         ug/L         31-MAY-21         51         520           Methyl Ethyl Ketone         <20	• •				•	31-MAY-21	5.2	45				
Methyl Ethyl Ketone         <20         20         ug/L         31-MAY-21         470000         1500000           Methyl Isobutyl Ketone         <20	Ethylbenzene	<0.50		0.50	ug/L	31-MAY-21	2300	2300				
Methyl Ethyl Ketone         <20         20         ug/L         31-MAY-21         470000         1500000           Methyl Isobutyl Ketone         <20	n-Hexane	<0.50		0.50	ug/L	31-MAY-21	51	520				
Methyl Isobutyl Ketone         <20         20         ug/L         31-MAY-21         140000         580000           MTBE         <2.0	Methyl Ethyl Ketone				_	31-MAY-21	470000					
MTBE         <2.0         2.0         ug/L         31-MAY-21         190         1400           Styrene         <0.50				20	_	31-MAY-21	140000	580000				
Styrene         <0.50         0.50         ug/L         31-MAY-21         1300         9100           1,1,1,2-Tetrachloroethane         <0.50				2.0	•	31-MAY-21	190					
1,1,1,2-Tetrachloroethane       <0.50					•		1300	9100				
1,1,2,2-Tetrachloroethane       <0.50	•				_							
Tetrachloroethylene         <0.50												
Toluene         <0.50         0.50         ug/L         31-MAY-21         18000         18000           1,1,1-Trichloroethane         <0.50												
1,1,1-Trichloroethane       <0.50	•											
1,1,2-Trichloroethane       <0.50												
Trichloroethylene         <0.50												
Trichlorofluoromethane         <5.0	• •											
Vinyl chloride         <0.50	•											
o-Xylene       <0.30												
m+p-Xylenes       <0.40	•				_		2.0					
Xylenes (Total)       <0.50	•				_							
Surrogate: 4-Bromofluorobenzene         96.5         70-130         %         31-MAY-21           Surrogate: 1,4-Difluorobenzene         99.8         70-130         %         31-MAY-21           4ydrocarbons         31-MAY-21         %         31-MAY-21					_		4200	4200				
Surrogate: 1,4-Difluorobenzene 99.8 70-130 % 31-MAY-21 Hydrocarbons												
lydrocarbons	=											
	Hydrocarbons				-							
		<25		25	ug/L	31-MAY-21	750	750				

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



L2590710 CONTD.... Page 8 of 15

CCO-22-0244	MALII	ICAL	GUID		KEPUK	A I	9	Page 8 of 15 31-MAY-21 07:51 (MT)
Sample Details								71-WA1-21 07.31 (W1)
Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelir	ne Limits
L2590710-3 MW2-DUP								
Sampled By: CLIENT on 20-MAY-21 @ 11:30								
Matrix: WATER						#1	#2	
Hydrocarbons								
F1-BTEX	<25		25	ug/L	31-MAY-21	750	750	
F2 (C10-C16)	<100		100	ug/L	26-MAY-21	150	150	
F2-Naphth	<100		100	ug/L	31-MAY-21	100	100	
F3 (C16-C34)	<250		250	ug/L	26-MAY-21	500	500	
F3-PAH	<250		250	ug/L	31-MAY-21			
F4 (C34-C50)	<250		250	ug/L	26-MAY-21	500	500	
Total Hydrocarbons (C6-C50)	<370		370	ug/L	31-MAY-21			
Chrom. to baseline at nC50	YES			No Unit	26-MAY-21			
Surrogate: 2-Bromobenzotrifluoride	90.7		60-140	%	26-MAY-21			
Surrogate: 3,4-Dichlorotoluene	77.1		60-140	%	31-MAY-21			
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	< 0.020		0.020	ug/L	28-MAY-21	600	1700	
Acenaphthylene	< 0.020		0.020	ug/L	28-MAY-21	1.8	1.8	
Anthracene	< 0.020		0.020	ug/L	28-MAY-21	2.4	2.4	
Benzo(a)anthracene	< 0.020		0.020	ug/L	28-MAY-21	4.7	4.7	
Benzo(a)pyrene	<0.010		0.010	ug/L	28-MAY-21	0.81	0.81	
Benzo(b&j)fluoranthene	< 0.020		0.020	ug/L	28-MAY-21	0.75	0.75	
Benzo(g,h,i)perylene	< 0.020		0.020	ug/L	28-MAY-21	0.2	0.2	
Benzo(k)fluoranthene	< 0.020		0.020	ug/L	28-MAY-21	0.4	0.4	
Chrysene	< 0.020		0.020	ug/L	28-MAY-21	1	1	
Dibenz(a,h)anthracene	< 0.020		0.020	ug/L	28-MAY-21	0.52	0.52	
Fluoranthene	<0.020		0.020	ug/L	28-MAY-21	130	130	
Fluorene	<0.020		0.020	ug/L	28-MAY-21	400	400	
Indeno(1,2,3-cd)pyrene	< 0.020		0.020	ug/L	28-MAY-21	0.2	0.2	
1+2-Methylnaphthalenes	<0.028		0.028	ug/L	28-MAY-21	1800	1800	
1-Methylnaphthalene	<0.020		0.020	ug/L	28-MAY-21	1800	1800	
2-Methylnaphthalene	< 0.020		0.020	ug/L	28-MAY-21	1800	1800	
Naphthalene	< 0.050		0.050	ug/L	28-MAY-21	1400	6400	
Phenanthrene	<0.020		0.020	ug/L	28-MAY-21	580	580	
Pyrene	< 0.020		0.020	ug/L	28-MAY-21	68	68	
Surrogate: Chrysene d12	116.0		50-150	%	28-MAY-21			
Surrogate: Naphthalene d8	113.3		60-140	%	28-MAY-21			
Surrogate: Phenanthrene d10	110.4		60-140	%	28-MAY-21			
L2590710-4 MW3								
Sampled By: CLIENT on 20-MAY-21 @ 12:30								
Matrix: WATER						#1	#2	
Physical Tests								
Conductivity	1.60		0.0030	mS/cm	22-MAY-21			
pH	7.86		0.10	pH units	22-MAY-21			
Anions and Nutrients				'				
Chloride (CI)	290		2.5	mg/L	24-MAY-21	2300	2300	
Cyanides				3-				
Cyanide, Weak Acid Diss	<2.0		2.0	ug/L	25-MAY-21	66	66	
Dissolved Metals				3, -		30		
Dissolved Mercury Filtration Location	FIELD			No Unit	25-MAY-21			
The state of the s		I .		1.0001111			l .	<u> </u>

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



CCO-22-0244

## **ANALYTICAL GUIDELINE REPORT**

L2590710 CONTD.... Page 9 of 15 31-MAY-21 07:51 (MT)

CCO-22-0244							3	1-MAY-21 0	7:51 (MT)
Sample Details Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelin	ne Limits	
L2590710-4 MW3									
Sampled By: CLIENT on 20-MAY-21 @ 12:30									
Matrix: WATER						#1	#2		
Dissolved Metals	E1E1 B				04.1411/.04				
Dissolved Metals Filtration Location	FIELD		0.40	No Unit	21-MAY-21	20000	20000		
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	25-MAY-21	20000	20000		
Arsenic (As)-Dissolved	0.13 101		0.10 0.10	ug/L	25-MAY-21 25-MAY-21	1900	1900		
Barium (Ba)-Dissolved	<0.10		0.10	ug/L ug/L	25-MAY-21	29000 67	29000 67		
Beryllium (Be)-Dissolved	<0.10 17		10	"	25-MAY-21	45000	45000		
Boron (B)-Dissolved Cadmium (Cd)-Dissolved	0.018		0.010	ug/L	25-MAY-21		45000 2.7		
Chromium (Cd)-Dissolved	< 0.50		0.010	ug/L ug/L	25-MAY-21	2.7 810	2. <i>1</i> 810		
Cobalt (Co)-Dissolved	<0.10		0.30	ug/L	25-MAY-21	66	66		
` '	1.07		0.10	-	25-MAY-21		87		
Copper (Cu)-Dissolved Lead (Pb)-Dissolved	<0.050		0.20	ug/L ug/L	25-MAY-21	87 25	67 25		
Mercury (Hg)-Dissolved	<0.050		0.050	ug/L ug/L	26-MAY-21	0.29	25 2.8		
Molybdenum (Mo)-Dissolved	0.266		0.050	ug/L	25-MAY-21	9200	9200		
Nickel (Ni)-Dissolved	0.54		0.050	ug/L	25-MAY-21	490	490		
Selenium (Se)-Dissolved	0.156		0.050	ug/L	25-MAY-21	63	63		
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	25-MAY-21	1.5	1.5		
Sodium (Na)-Dissolved	156000	DLHC	500	ug/L	25-MAY-21	2300000	2300000		
Thallium (TI)-Dissolved	<0.010	DEITO	0.010	ug/L	25-MAY-21	510	510		
Uranium (U)-Dissolved	1.11		0.010	ug/L	25-MAY-21	420	420		
Vanadium (V)-Dissolved	1.38		0.50	ug/L	25-MAY-21	250	250		
Zinc (Zn)-Dissolved	<1.0		1.0	ug/L	25-MAY-21	1100	1100		
Speciated Metals	11.0					1100	1100		
Chromium, Hexavalent	<0.50		0.50	ug/L	22-MAY-21	140	140		
Volatile Organic Compounds	10.00		0.00	ag/L		140	140		
Acetone	<30		30	ug/L	31-MAY-21	130000	130000		
Benzene	<0.50		0.50	ug/L	31-MAY-21	44	430		
Bromodichloromethane	<2.0		2.0	ug/L	31-MAY-21	85000	85000		
Bromoform	<5.0		5.0	ug/L	31-MAY-21	380	770		
Bromomethane	< 0.50		0.50	ug/L	31-MAY-21	5.6	56		
Carbon tetrachloride	<0.20		0.20	ug/L	31-MAY-21	0.79	8.4		
Chlorobenzene	< 0.50		0.50	ug/L	31-MAY-21	630	630		
Dibromochloromethane	<2.0		2.0	ug/L	31-MAY-21	82000	82000		
Chloroform	<1.0		1.0	ug/L	31-MAY-21	2.4	22		
1,2-Dibromoethane	< 0.20		0.20	ug/L	31-MAY-21	0.25	0.83		
1,2-Dichlorobenzene	< 0.50		0.50	ug/L	31-MAY-21	4600	9600		
1,3-Dichlorobenzene	< 0.50		0.50	ug/L	31-MAY-21	9600	9600		
1,4-Dichlorobenzene	< 0.50		0.50	ug/L	31-MAY-21	8	67		
Dichlorodifluoromethane	<2.0		2.0	ug/L	31-MAY-21	4400	4400		
1,1-Dichloroethane	< 0.50		0.50	ug/L	31-MAY-21	320	3100		
1,2-Dichloroethane	< 0.50		0.50	ug/L	31-MAY-21	1.6	12		
1,1-Dichloroethylene	< 0.50		0.50	ug/L	31-MAY-21	1.6	17		
cis-1,2-Dichloroethylene	< 0.50		0.50	ug/L	31-MAY-21	1.6	17		
trans-1,2-Dichloroethylene	< 0.50		0.50	ug/L	31-MAY-21	1.6	17		
Methylene Chloride	<5.0		5.0	ug/L	31-MAY-21	610	5500		
1,2-Dichloropropane	<0.50		0.50	ug/L	31-MAY-21	16	140		
		1	I	1	1	1		I	I

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



L2590710 CONTD....
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31-MAY-21 07:51 (MT)

CCO-22-0244 ANALI HOAL GOIDELINE REPORT Page 10 of 15										
Sample Details	5 "	0 ""	5.	11. %						
Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guideline	e Limits		
L2590710-4 MW3										
Sampled By: CLIENT on 20-MAY-21 @ 12:3	0									
Matrix: WATER						#1	#2			
Volatile Organic Compounds										
cis-1,3-Dichloropropene	<0.30		0.30	ug/L	31-MAY-21					
trans-1,3-Dichloropropene	<0.30		0.30	ug/L	31-MAY-21					
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L	31-MAY-21	5.2	45			
Ethylbenzene	<0.50		0.50	ug/L	31-MAY-21	2300	2300			
n-Hexane	<0.50		0.50	ug/L	31-MAY-21	51	520			
Methyl Ethyl Ketone	<20		20	ug/L	31-MAY-21	470000	1500000			
Methyl Isobutyl Ketone	<20		20	ug/L	31-MAY-21	140000	580000			
MTBE	<2.0		2.0	ug/L	31-MAY-21	190	1400			
Styrene	< 0.50		0.50	ug/L	31-MAY-21	1300	9100			
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.3	28			
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.2	15			
Tetrachloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17			
Toluene	<0.50		0.50	ug/L	31-MAY-21	18000	18000			
1,1,1-Trichloroethane	<0.50		0.50	ug/L	31-MAY-21	640	6700			
1,1,2-Trichloroethane	<0.50		0.50	ug/L	31-MAY-21	4.7	30			
Trichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17			
Trichlorofluoromethane	<5.0		5.0	ug/L	31-MAY-21	2500	2500			
Vinyl chloride	<0.50		0.50	ug/L	31-MAY-21	0.5	1.7			
o-Xylene	<0.30		0.30	ug/L	31-MAY-21					
m+p-Xylenes	<0.40		0.40	ug/L	31-MAY-21					
Xylenes (Total)	<0.50		0.50	ug/L	31-MAY-21	4200	4200			
Surrogate: 4-Bromofluorobenzene	96.7		70-130	%	31-MAY-21					
Surrogate: 1,4-Difluorobenzene	99.3		70-130	%	31-MAY-21					
Hydrocarbons										
F1 (C6-C10)	<25		25	ug/L	31-MAY-21	750	750			
F1-BTEX	<25		25	ug/L	31-MAY-21	750	750			
F2 (C10-C16)	<100		100	ug/L	26-MAY-21	150	150			
F2-Naphth	<100		100	ug/L	31-MAY-21					
F3 (C16-C34)	<250		250	ug/L	26-MAY-21	500	500			
F3-PAH	<250		250	ug/L	31-MAY-21					
F4 (C34-C50)	<250		250	ug/L	26-MAY-21	500	500			
Total Hydrocarbons (C6-C50)	<370		370	ug/L	31-MAY-21					
Chrom. to baseline at nC50	YES			No Unit	26-MAY-21					
Surrogate: 2-Bromobenzotrifluoride	85.8		60-140	%	26-MAY-21					
Surrogate: 3,4-Dichlorotoluene	79.8		60-140	%	31-MAY-21					
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	<0.020		0.020	ug/L	28-MAY-21	600	1700			
Acenaphthylene	<0.020		0.020	ug/L	28-MAY-21	1.8	1.8			
Anthracene	<0.020		0.020	ug/L	28-MAY-21	2.4	2.4			
Benzo(a)anthracene	<0.020		0.020	ug/L	28-MAY-21	4.7	4.7			
Benzo(a)pyrene	<0.010		0.010	ug/L	28-MAY-21	0.81	0.81			
Benzo(b&j)fluoranthene	<0.020		0.020	ug/L	28-MAY-21	0.75	0.75			
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	28-MAY-21	0.2	0.2			
Benzo(k)fluoranthene	<0.020		0.020	ug/L	28-MAY-21	0.4	0.4			
Chrysene	<0.020		0.020	ug/L	28-MAY-21	1	1			
Dibenz(a,h)anthracene	<0.020		0.020	ug/L	28-MAY-21	0.52	0.52			

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



L2590710 CONTD.... Page 11 of 15

CCO-22-0244							3	1 age 11 31-MAY-21 0	
Sample Details Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelir	ne Limits	
L2590710-4 MW3									
Sampled By: CLIENT on 20-MAY-21 @ 12:30									
Matrix: WATER						#1	#2		
Polycyclic Aromatic Hydrocarbons									
Fluoranthene	<0.020		0.020	ug/L	28-MAY-21	130	130		
Fluorene	< 0.020		0.020	ug/L	28-MAY-21	400	400		
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	28-MAY-21	0.2	0.2		
1+2-Methylnaphthalenes	<0.028		0.028	ug/L	28-MAY-21	1800	1800		
1-Methylnaphthalene	< 0.020		0.020	ug/L	28-MAY-21	1800	1800		
2-Methylnaphthalene	<0.020		0.020	ug/L	28-MAY-21	1800	1800		
Naphthalene	< 0.050		0.050	ug/L	28-MAY-21	1400	6400		
Phenanthrene	< 0.020		0.020	ug/L	28-MAY-21	580	580		
Pyrene	< 0.020		0.020	ug/L	28-MAY-21	68	68		
Surrogate: Naphthalene d8	88.9		60-140	%	28-MAY-21				
Surrogate: Phenanthrene d10	100.4		60-140	%	28-MAY-21				
L2590710-5 TRIP BLANK									
Sampled By: CLIENT on 20-MAY-21									
Matrix: WATER						#1	#2		
Volatile Organic Compounds									
Acetone	<30		30	/!	31-MAY-21	130000	130000		
Benzene	<0.50			ug/L	31-MAY-21				
			0.50 2.0	ug/L		44	430		
Bromodichloromethane Bromoform	<2.0 <5.0		5.0	ug/L	31-MAY-21 31-MAY-21	85000	85000		
Bromorethane				ug/L	31-MAY-21 31-MAY-21	380	770		
Carbon tetrachloride	<0.50 <0.20		0.50 0.20	ug/L	31-MAY-21	5.6 0.79	56		
Chlorobenzene	<0.50		0.20	ug/L	31-MAY-21	630	8.4 630		
Dibromochloromethane	<2.0		2.0	ug/L	31-MAY-21	82000	82000		
Chloroform	<2.0 <1.0		1.0	ug/L ug/L	31-MAY-21	2.4	22		
1,2-Dibromoethane	<0.20		0.20	ug/L ug/L	31-MAY-21	0.25	0.83		
1,2-Diction detriane 1.2-Dichlorobenzene	<0.50		0.20	ug/L ug/L	31-MAY-21	4600	9600		
1,3-Dichlorobenzene	<0.50		0.50	ug/L ug/L	31-MAY-21	9600	9600		
1,4-Dichlorobenzene	<0.50		0.50	ug/L	31-MAY-21	8	67		
Dichlorodifluoromethane	<2.0		2.0	ug/L	31-MAY-21	4400	4400		
1,1-Dichloroethane	<0.50		0.50	ug/L	31-MAY-21	320	3100		
1,2-Dichloroethane	<0.50		0.50	ug/L	31-MAY-21	1.6	12		
1,1-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
Methylene Chloride	<5.0		5.0	ug/L	31-MAY-21	610	5500		
1,2-Dichloropropane	<0.50		0.50	ug/L	31-MAY-21	16	140		
cis-1,3-Dichloropropene	< 0.30		0.30	ug/L	31-MAY-21				
trans-1,3-Dichloropropene	< 0.30		0.30	ug/L	31-MAY-21				
1,3-Dichloropropene (cis & trans)	< 0.50		0.50	ug/L	31-MAY-21	5.2	45		
Ethylbenzene	< 0.50		0.50	ug/L	31-MAY-21	2300	2300		
n-Hexane	< 0.50		0.50	ug/L	31-MAY-21	51	520		
Methyl Ethyl Ketone	<20		20	ug/L	31-MAY-21	470000	1500000		
Methyl Isobutyl Ketone	<20		20	ug/L	31-MAY-21	140000	580000		
MTBE	<2.0		2.0	ug/L	31-MAY-21	190	1400		
Styrene	<0.50		0.50	ug/L	31-MAY-21	1300	9100		

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

<sup>\*</sup> Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:



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CO-22-0244							3	1-MAY-21 07	
Sample Details Grouping Analyte	Result	Qualifier	D.L.	Units	Analyzed		Guidelir	ne Limits	
L2590710-5 TRIP BLANK									
Sampled By: CLIENT on 20-MAY-21									
Matrix: WATER						#1	#2		
Volatile Organic Compounds									
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.3	28		
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L	31-MAY-21	3.2	15		
Tetrachloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
Toluene	<0.50		0.50	ug/L	31-MAY-21	18000	18000		
1,1,1-Trichloroethane	<0.50		0.50	ug/L	31-MAY-21	640	6700		
1,1,2-Trichloroethane	<0.50		0.50	ug/L	31-MAY-21	4.7	30		
Trichloroethylene	<0.50		0.50	ug/L	31-MAY-21	1.6	17		
Trichlorofluoromethane	<5.0		5.0	ug/L	31-MAY-21	2500	2500		
Vinyl chloride	<0.50		0.50	ug/L	31-MAY-21	0.5	1.7		
o-Xylene	<0.30		0.30	ug/L	31-MAY-21	-			
m+p-Xylenes	<0.40		0.40	ug/L	31-MAY-21				
Xylenes (Total)	<0.50		0.50	ug/L	31-MAY-21	4200	4200		
Surrogate: 4-Bromofluorobenzene	96.6		70-130	%	31-MAY-21				
Surrogate: 1,4-Difluorobenzene	99.4		70-130	%	31-MAY-21				
Hydrocarbons									
F1 (C6-C10)	<25		25	ug/L	31-MAY-21	750	750		
F1-BTEX	<25		25	ug/L	31-MAY-21	750	750		
Surrogate: 3,4-Dichlorotoluene	85.8		60-140	%	31-MAY-21				

<sup>\*\*</sup> Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

### **Reference Information**

Sample Parameter Qualifier key listed:

Description Qualifier DLHC Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Methods Listed (if applicable):

ALS Test Code Matrix **Test Description** Method Reference\*\*\* 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 EPA 7199

2011)
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).

EC-R511-WT Conductivity-O.Reg 153/04 (July APHA 2510 B Water

2011)
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).

**EC-SCREEN-WT** Water Conductivity Screen (Internal

**APHA 2510** Use Only)

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

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

**Parameters** 

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

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).

### **Reference Information**

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

Water

Diss. Mercury in Water by

EPA 1631E (mod)

CVAAS (ug/L)

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

Diss. Metals in Water by ICPMS EPA 200.8

(ug/L)

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 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

APHA 4500 H-Flectrode

Water samples are analyzed directly by a calibrated pH meter.

Water

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

VOC-1,3-DCP-CALC-WT

Regulation 153 VOCs

SW8260B/SW8270C

VOC-511-HS-WT

Water

VOC by GCMS HS O.Reg

SW846 8260

153/04 (July 2011)

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-

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.

Chain of Custody numbers:

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	Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

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## **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-adjusted weight mg/L - unit of concentration based on volume, parts per million. < - Less than.

D.L. - The reporting limit.

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

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

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

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

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.



Workorder: L2590710 Report Date: 31-MAY-21 Page 1 of 14

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT	Water							
Batch R5467616								
WG3540264-9 DUP Chloride (CI)		<b>L2590710-1</b> 65.2	65.3		mg/L	0.1	20	24-MAY-21
<b>WG3540264-7 LCS</b> Chloride (CI)			102.3		%		90-110	24-MAY-21
<b>WG3540264-6 MB</b> Chloride (CI)			<0.50		mg/L		0.5	24-MAY-21
<b>WG3540264-10 MS</b> Chloride (CI)		L2590710-1	102.1		%		75-125	24-MAY-21
CN-WAD-R511-WT	Water							
Batch R5466558								
WG3540437-9 DUP Cyanide, Weak Acid Disa	s	<b>WG3540437-8</b> <2.0	<2.0	RPD-NA	ug/L	N/A	20	25-MAY-21
WG3540437-7 LCS Cyanide, Weak Acid Disa	s		96.1		%		80-120	25-MAY-21
WG3540437-6 MB Cyanide, Weak Acid Dis	s		<2.0		ug/L		2	25-MAY-21
WG3540437-10 MS Cyanide, Weak Acid Dis	s	WG3540437-8	101.3		%		75-125	25-MAY-21
CR-CR6-IC-R511-WT	Water							
Batch R5466576								
WG3539907-4 DUP Chromium, Hexavalent		<b>WG3539907-3</b> <0.50	<0.50	RPD-NA	ug/L	N/A	20	22-MAY-21
WG3539907-2 LCS Chromium, Hexavalent			101.1		%		80-120	22-MAY-21
WG3539907-1 MB Chromium, Hexavalent			<0.50		ug/L		0.5	22-MAY-21
WG3539907-5 MS Chromium, Hexavalent		WG3539907-3	102.5		%		70-130	22-MAY-21
EC-R511-WT	Water							
Batch R5465465								
WG3539939-4 DUP Conductivity		<b>WG3539939-3</b> 0.522	0.521		mS/cm	0.2	10	22-MAY-21
WG3539939-2 LCS Conductivity			102.3		%		90-110	22-MAY-21
WG3539939-1 MB Conductivity			<0.0030		mS/cm		0.003	22-MAY-21



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
		Water							<b>,</b> - <del>-</del>
EC-R511-WT	- 405 400	vvater							
Batch R5 WG3539940-4	5465466 DUP		WG3539940-3						
Conductivity	БОР		1.37	1.36		mS/cm	0.3	10	22-MAY-21
WG3539940-2	LCS								
Conductivity				103.1		%		90-110	22-MAY-21
WG3539940-1	МВ								
Conductivity				<0.0030		mS/cm		0.003	22-MAY-21
Batch R	5465476								
WG3539941-4	DUP		WG3539941-3						
Conductivity			1.26	1.27		mS/cm	1.0	10	22-MAY-21
WG3539941-2	LCS			100.5		0.4			
Conductivity				102.8		%		90-110	22-MAY-21
WG3539941-1 Conductivity	MB			<0.0030		mS/cm		0.003	22 MAY 24
				<0.0030		IIIO/CIII		0.003	22-MAY-21
F1-HS-511-WT		Water							
	5475461								
<b>WG3543076-4</b> F1 (C6-C10)	DUP		<b>WG3543076-3</b> <25	<25	RPD-NA	ug/L	N/A	30	31-MAY-21
WG3543076-1	LCS		120	120	IN D INA	~ <i>9</i> / =	IN/A	30	31-WAT-21
F1 (C6-C10)	LUS			93.8		%		80-120	31-MAY-21
WG3543076-2	МВ								
F1 (C6-C10)				<25		ug/L		25	31-MAY-21
Surrogate: 3,4-	Dichlorot	oluene		92.4		%		60-140	31-MAY-21
WG3543076-5	MS		WG3543076-3						
F1 (C6-C10)				91.2		%		60-140	31-MAY-21
F2-F4-511-WT		Water							
Batch R	5468698								
WG3540369-2	LCS								
F2 (C10-C16)				111.3		%		70-130	26-MAY-21
F3 (C16-C34)				106.4		%		70-130	26-MAY-21
F4 (C34-C50)				99.6		%		70-130	26-MAY-21
WG3540369-1	MB			100				400	
F2 (C10-C16)				<100		ug/L		100	26-MAY-21
F3 (C16-C34)				<250		ug/L		250	26-MAY-21
F4 (C34-C50)				<250		ug/L		250	26-MAY-21
Surrogate: 2-Bi	romobenz	zotrifluoride		85.4		%		60-140	26-MAY-21
Ì									



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McIntosh Perry Engineering Consultants (Ottawa) Client:

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Contact: Bradley Sutherland

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	Water							
Batch R5469476								
<b>WG3540802-2 LCS</b> F2 (C10-C16)			108.6		%		70.400	00.140./.04
F3 (C16-C34)			108.6		%		70-130	26-MAY-21
F4 (C34-C50)			104.9		%		70-130 70-130	26-MAY-21 26-MAY-21
WG3540802-1 MB			104.5		70		70-130	20-IVIA 1 -2 I
F2 (C10-C16)			<100		ug/L		100	26-MAY-21
F3 (C16-C34)			<250		ug/L		250	26-MAY-21
F4 (C34-C50)			<250		ug/L		250	26-MAY-21
Surrogate: 2-Bromobenz	otrifluoride		85.5		%		60-140	26-MAY-21
HG-D-UG/L-CVAA-WT	Water							
Batch R5468683								
WG3540464-4 DUP		WG3540464-3						
Mercury (Hg)-Dissolved		<0.0050	<0.0050	RPD-NA	ug/L	N/A	20	26-MAY-21
WG3540464-2 LCS Mercury (Hg)-Dissolved			103.0		%		80-120	26-MAY-21
WG3540464-1 MB			.00.0		,-		00-120	20 WAT-21
Mercury (Hg)-Dissolved			<0.0050		ug/L		0.005	26-MAY-21
WG3540464-6 MS		WG3540464-5						
Mercury (Hg)-Dissolved			99.1		%		70-130	26-MAY-21
MET-D-UG/L-MS-WT	Water							
Batch R5468236								
WG3539642-4 DUP Antimony (Sb)-Dissolved	I	<b>WG3539642-3</b> <0.10	<0.10	RPD-NA	ug/L	N/A	20	25-MAY-21
Arsenic (As)-Dissolved		0.28	0.26	IN D IN	ug/L	8.9	20	25-MAY-21
Barium (Ba)-Dissolved		146	144		ug/L	1.3	20	25-MAY-21
Beryllium (Be)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	25-MAY-21
Boron (B)-Dissolved		67	65		ug/L	2.9	20	25-MAY-21
Cadmium (Cd)-Dissolved	d	0.0095	0.0069	J	ug/L	0.0026	0.01	25-MAY-21
Chromium (Cr)-Dissolve		<0.50	<0.50	RPD-NA	ug/L	N/A	20	25-MAY-21
Cobalt (Co)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	25-MAY-21
Copper (Cu)-Dissolved		1.09	1.08		ug/L	1.2	20	25-MAY-21
Lead (Pb)-Dissolved		0.087	0.084		ug/L	3.5	20	25-MAY-21
Molybdenum (Mo)-Disso	lved	1.31	1.30		ug/L	1.1	20	25-MAY-21
Nickel (Ni)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	25-MAY-21
Selenium (Se)-Dissolved	I	<0.050	<0.050	RPD-NA	ug/L	N/A	20	25-MAY-21



Workorder: L2590710 Report Date: 31-MAY-21 Page 4 of 14

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	Water							
Batch R5468236	6							
WG3539642-4 DUP		WG3539642-		DDD MA	ua/l	N1/A	20	05 MAY 24
Silver (Ag)-Dissolved	ı	<0.050	<0.050	RPD-NA	ug/L	N/A	20	25-MAY-21
Sodium (Na)-Dissolved		14900	14700	000 114	ug/L	1.3	20	25-MAY-21
Thallium (TI)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	25-MAY-21
Uranium (U)-Dissolved		0.097	0.094		ug/L	2.6	20	25-MAY-21
Vanadium (V)-Dissolve	ea	<0.50	<0.50	RPD-NA	ug/L	N/A	20	25-MAY-21
Zinc (Zn)-Dissolved		1.3	1.2		ug/L	6.5	20	25-MAY-21
WG3539642-2 LCS Antimony (Sb)-Dissolve	ed		100.5		%		80-120	25-MAY-21
Arsenic (As)-Dissolved			104.2		%		80-120	25-MAY-21
Barium (Ba)-Dissolved			103.1		%		80-120	25-MAY-21
Beryllium (Be)-Dissolve	ed		99.96		%		80-120	25-MAY-21
Boron (B)-Dissolved			100.7		%		80-120	25-MAY-21
Cadmium (Cd)-Dissolv	ed		102.2		%		80-120	25-MAY-21
Chromium (Cr)-Dissolv	red		102.0		%		80-120	25-MAY-21
Cobalt (Co)-Dissolved			103.0		%		80-120	25-MAY-21
Copper (Cu)-Dissolved			103.8		%		80-120	25-MAY-21
Lead (Pb)-Dissolved			108.3		%		80-120	25-MAY-21
Molybdenum (Mo)-Diss	solved		100.5		%		80-120	25-MAY-21
Nickel (Ni)-Dissolved			102.6		%		80-120	25-MAY-21
Selenium (Se)-Dissolve	ed		100.5		%		80-120	25-MAY-21
Silver (Ag)-Dissolved			108.2		%		80-120	25-MAY-21
Sodium (Na)-Dissolved	i		111.3		%		80-120	25-MAY-21
Thallium (TI)-Dissolved	I		108.0		%		80-120	25-MAY-21
Uranium (U)-Dissolved			109.9		%		80-120	25-MAY-21
Vanadium (V)-Dissolve	ed		104.9		%		80-120	25-MAY-21
Zinc (Zn)-Dissolved			103.3		%		80-120	25-MAY-21
WG3539642-1 MB								
Antimony (Sb)-Dissolve			<0.10		ug/L		0.1	25-MAY-21
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	25-MAY-21
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	25-MAY-21
Beryllium (Be)-Dissolve	ea		<0.10		ug/L		0.1	25-MAY-21
Boron (B)-Dissolved			<10		ug/L		10	25-MAY-21
Cadmium (Cd)-Dissolv			<0.0050		ug/L		0.005	25-MAY-21
Chromium (Cr)-Dissolv	red		<0.50		ug/L		0.5	25-MAY-21



Workorder: L2590710 Report Date: 31-MAY-21 Page 5 of 14

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Contact: Bradley Sutherland

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	Water							
Batch R546823	36							
WG3539642-1 MB								
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	25-MAY-21
Copper (Cu)-Dissolve	d		<0.20		ug/L		0.2	25-MAY-21
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	25-MAY-21
Molybdenum (Mo)-Dis	ssolved		<0.050		ug/L		0.05	25-MAY-21
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	25-MAY-21
Selenium (Se)-Dissol	ved		<0.050		ug/L		0.05	25-MAY-21
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	25-MAY-21
Sodium (Na)-Dissolve			<50		ug/L		50	25-MAY-21
Thallium (TI)-Dissolve			<0.010		ug/L		0.01	25-MAY-21
Uranium (U)-Dissolve			<0.010		ug/L		0.01	25-MAY-21
Vanadium (V)-Dissolv	red .		<0.50		ug/L		0.5	25-MAY-21
Zinc (Zn)-Dissolved			<1.0		ug/L		1	25-MAY-21
WG3539642-5 MS Antimony (Sb)-Dissolv	ved	WG3539642-6	99.0		%		70-130	25-MAY-21
Arsenic (As)-Dissolve			108.7		%		70-130	25-MAY-21
Barium (Ba)-Dissolve			N/A	MS-B	%		-	25-MAY-21
Beryllium (Be)-Dissolv	/ed		102.0		%		70-130	25-MAY-21
Boron (B)-Dissolved			96.3		%		70-130	25-MAY-21
Cadmium (Cd)-Dissol	ved		96.6		%		70-130	25-MAY-21
Chromium (Cr)-Disso	lved		100.2		%		70-130	25-MAY-21
Cobalt (Co)-Dissolved	d		97.6		%		70-130	25-MAY-21
Copper (Cu)-Dissolve	d		91.6		%		70-130	25-MAY-21
Lead (Pb)-Dissolved			96.4		%		70-130	25-MAY-21
Molybdenum (Mo)-Dis	ssolved		105.0		%		70-130	25-MAY-21
Nickel (Ni)-Dissolved			93.3		%		70-130	25-MAY-21
Selenium (Se)-Dissol	ved		113.0		%		70-130	25-MAY-21
Silver (Ag)-Dissolved			99.0		%		70-130	25-MAY-21
Sodium (Na)-Dissolve	ed		N/A	MS-B	%		-	25-MAY-21
Thallium (TI)-Dissolve	ed		97.6		%		70-130	25-MAY-21
Uranium (U)-Dissolve	d		N/A	MS-B	%		-	25-MAY-21
Vanadium (V)-Dissolv	ved .		106.6		%		70-130	25-MAY-21
Zinc (Zn)-Dissolved			98.9		%		70-130	25-MAY-21

PAH-511-WT Water



Workorder: L2590710 Report Date: 31-MAY-21 Page 6 of 14

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

PAH-511-WT	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
Majs460389-2 LCS   1-Methy/maphthalene   105.0   %   50.140   27-MAY-21   2-Methy/maphthalene   100.5   %   50.140   27-MAY-21   2-Methy/maphthalene   108.2   %   50.140   27-MAY-21   2-Methy/maphthalene   108.2   %   50.140   27-MAY-21   2-MAY-21   2	PAH-511-WT	Water							
1-Methylnaphthalene         105.0         %         50-140         27-MAY-21           2-Methylnaphthalene         100.5         %         50-140         27-MAY-21           Acenaphthene         108.2         %         50-140         27-MAY-21           Acenaphthylene         101.4         %         50-140         27-MAY-21           Anthracene         106.4         %         50-140         27-MAY-21           Benzo(a)anthracene         108.9         %         50-140         27-MAY-21           Benzo(ba)jifuoranthene         118.6         %         50-140         27-MAY-21           Benzo(gh,li)perlyene         125.3         %         50-140         27-MAY-21           Benzo(gk)fluoranthene         118.8         %         50-140         27-MAY-21           Chrysene         112.2         %         50-140         27-MAY-21           Chrysene         113.9         %         50-140         27-MAY-21           Fluoranthene         107.3         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21 <td>Batch R5473422</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Batch R5473422								
2-Methylnaphthalene         100.5         %         50.140         27-MAY-21           Acenaphthene         108.2         %         50.140         27-MAY-21           Acenaphthylene         101.4         %         50.140         27-MAY-21           Anthracene         105.4         %         50.140         27-MAY-21           Benzo(a)anthracene         108.9         %         50.140         27-MAY-21           Benzo(a)Bylloranthene         118.6         %         50.140         27-MAY-21           Benzo(b, fl)perylene         125.3         %         50.140         27-MAY-21           Benzo(k)fluoranthene         118.8         %         50.140         27-MAY-21           Benzo(k)fluoranthene         118.8         %         50.140         27-MAY-21           Chrysene         112.2         %         50.140         27-MAY-21           Chrysene         112.2         %         50.140         27-MAY-21           Chrysene         114.6         %         50.140         27-MAY-21           Fluoranthene         113.9         %         50.140         27-MAY-21           Fluoranthene         114.6         %         50.140         27-MAY-21           I				405.0		0/			
Acenaphthene 108.2 % 50.140 27-MAY-21 Acenaphthylene 101.4 % 50.140 27-MAY-21 Acenaphthylene 101.4 % 50.140 27-MAY-21 Anthracene 105.4 % 50.140 27-MAY-21 Benzo(a)nthracene 108.9 % 50.140 27-MAY-21 Benzo(ba))fluoranthene 107.8 % 50.140 27-MAY-21 Benzo(ba))fluoranthene 118.6 % 50.140 27-MAY-21 Benzo(ba))fluoranthene 118.6 % 50.140 27-MAY-21 Benzo(gh,il)perylene 125.3 % 50.140 27-MAY-21 Benzo(gh,il)perylene 118.8 % 50.140 27-MAY-21 Benzo(gh,il)perylene 118.8 % 50.140 27-MAY-21 Dibenz(a,h)anthracene 118.8 % 50.140 27-MAY-21 Dibenz(a,h)anthracene 113.9 % 50.140 27-MAY-21 Fluoranthene 114.6 % 50.140 27-MAY-21 Fluoranthene 114.6 % 50.140 27-MAY-21 Riudeno(1,2.3-cd))pyrene 124.0 % 50.140 27-MAY-21 Naphthalene 94.0 % 50.140 27-MAY-21 Naphthalene 94.0 % 50.140 27-MAY-21 Naphthalene 118.3 % 50.140 27-MAY-21 Naphthalene 94.0 % 50.140 27-MAY-21 Naphthalene 94									
Acenaphthylene         101.4         %         50.140         27-MAY-21           Anthracene         105.4         %         50-140         27-MAY-21           Benzo(a)anthracene         108.9         %         50-140         27-MAY-21           Benzo(b)pyrene         107.8         %         50-140         27-MAY-21           Benzo(b)fluoranthene         118.6         %         50-140         27-MAY-21           Benzo(k)fluoranthene         118.8         %         50-140         27-MAY-21           Chrysene         112.2         %         50-140         27-MAY-21           Chrysene         113.9         %         50-140         27-MAY-21           Fluoranthene         114.6         %         50-140         27-MAY-21           Fluorene         107.3         %         50-140         27-MAY-21           Indeno(1,2,3-d)pyrene         194.0         %         50-140         27-MAY-21									
Anthracene 105.4 % 50-140 27-MAY-21 Benzo(a)anthracene 108.9 % 50-140 27-MAY-21 Benzo(a)pyrene 107.8 % 50-140 27-MAY-21 Benzo(a)pyrene 107.8 % 50-140 27-MAY-21 Benzo(b&)l/lucranthene 118.6 % 50-140 27-MAY-21 Benzo(b,h)perylene 125.3 % 50-140 27-MAY-21 Benzo(k)fluoranthene 118.8 % 50-140 27-MAY-21 Benzo(k)fluoranthene 118.8 % 50-140 27-MAY-21 Dibenz(a,h)anthracene 112.2 % 50-140 27-MAY-21 Dibenz(a,h)anthracene 113.9 % 50-140 27-MAY-21 Dibenz(a,h)anthracene 114.6 % 50-140 27-MAY-21 Dibenz(a,h)anthracene 114.6 % 50-140 27-MAY-21 Indeno(1,2,3-cd)pyrene 114.6 % 50-140 27-MAY-21 Indeno(1,2,3-cd)pyrene 124.0 % 50-140 27-MAY-21 Indeno(1,2,3-cd)pyrene 124.0 % 50-140 27-MAY-21 Indeno(1,2,3-cd)pyrene 118.3 % 50-140 27-MAY-21 Indeno(1,2,3-cd)pyrene 118.3 % 50-140 27-MAY-21 Indeno(1,2,3-cd)pyrene 114.6 % 50-140 27-MAY-21 Indeno(1,2,3-cd)pyrene 114									
Benzo(a)anthracene         108.9         %         50-140         27-MAY-21           Benzo(a)pyrene         107.8         %         50-140         27-MAY-21           Benzo(bă)filuoranthene         118.6         %         50-140         27-MAY-21           Benzo(g), riperylene         125.3         %         50-140         27-MAY-21           Benzo(k)filuoranthene         118.8         %         50-140         27-MAY-21           Chrysene         112.2         %         50-140         27-MAY-21           Dibenz(a,h)anthracene         113.9         %         50-140         27-MAY-21           Fluoranthene         114.6         %         50-140         27-MAY-21           Fluorene         107.3         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1         WB         4         50-140         27-MAY-21           W									
Benzo(a)pyrene         107.8         %         50-140         27-MAY-21           Benzo(b&)fluoranthene         118.6         %         50-140         27-MAY-21           Benzo(g,h,l)perylene         125.3         %         50-140         27-MAY-21           Benzo(k)fluoranthene         118.8         %         50-140         27-MAY-21           Chrysene         112.2         %         50-140         27-MAY-21           Dibenz(a,h)anthracene         113.9         %         50-140         27-MAY-21           Fluoranthene         114.6         %         50-140         27-MAY-21           Fluoranthene         107.3         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540389-1         MB         1-Methylnaphthalene         <0.020									
Benzo(b&j)fluoranthene         118.6         %         50.140         27-MAY-21           Benzo(g,h,i)perylene         125.3         %         50.140         27-MAY-21           Benzo(k)fluoranthene         118.8         %         50.140         27-MAY-21           Chrysene         112.2         %         50.140         27-MAY-21           Dibenz(a,h)anthracene         113.9         %         50.140         27-MAY-21           Fluoranthene         114.6         %         50.140         27-MAY-21           Fluoranthene         107.3         %         50.140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50.140         27-MAY-21           Naphthalene         94.0         %         50.140         27-MAY-21           Naphthalene         94.0         %         50.140         27-MAY-21           Pyrene         118.3         %         50.140         27-MAY-21           WG3540369-1         MB         1         1.46         %         50.140         27-MAY-21           WG3540369-1         MB         1          0.02         27-MAY-21         0.02         27-MAY-21           WG3540369-1         MB									
Benzo(g,h.i)perylene         125.3         %         50-140         27-MAY-21           Benzo(k)fluoranthene         118.8         %         50-140         27-MAY-21           Chrysene         112.2         %         50-140         27-MAY-21           Dibenz(a,h)anthracene         113.9         %         50-140         27-MAY-21           Fluoranthene         114.6         %         50-140         27-MAY-21           Fluoranthene         107.3         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1         MB         1         1.46         %         50-140         27-MAY-21           VG3540369-1         MB         1         1.46         %         50-140         27-MAY-21           VG3540369-1         MB         1         1.46         %         50-140         27-MAY-21           VG3540369-1         MB									
Benzo(k)fluoranthene         118.8         %         50-140         27-MAY-21           Chrysene         112.2         %         50-140         27-MAY-21           Dibenz(a,h)anthracene         113.9         %         50-140         27-MAY-21           Fluoranthene         114.6         %         50-140         27-MAY-21           Fluorene         107.3         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1         MB         1         14.6         %         50-140         27-MAY-21           WG3540369-1         MB         1         4.002         27-MAY-21         0.02         27-MAY-21           WG3540369-1         MB         1         4.002         27-MAY-21         0.02         27-MAY-21           WG3540369-1         MB         1         4.002         27-MAY-21         0.02         27-MAY-21           <		<b>:</b>							
Chrysene         112.2         %         50-140         27-MAY-21           Dibenz(a,h)anthracene         113.9         %         50-140         27-MAY-21           Fluoranthene         114.6         %         50-140         27-MAY-21           Fluorene         107.3         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           Pyrene         10.2         27-MAY-21         0.02         27-MAY-21           Pyrene         10.2         27-MAY-21         0.02         27-MAY-21           Pyrene         10.2         0.02         0.02         27-MAY-21           Pyrene         0.02         0.02         0.02         27-MAY-21           2-Methylnaphthalene         <0.020								50-140	
Dibenz(a,h)anthracene         113.9         %         50-140         27-MAY-21           Fluoranthene         114.6         %         50-140         27-MAY-21           Fluorene         107.3         %         50-140         27-MAY-21           Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           Pyrene         0.020         ug/L         0									
Fluoranthene	-							50-140	27-MAY-21
Fluorene   107.3   %   50-140   27-MAY-21     Indeno(1,2,3-cd)pyrene   124.0   %   50-140   27-MAY-21     Naphthalene   94.0   %   50-140   27-MAY-21     Phenanthrene   118.3   %   50-140   27-MAY-21     Phenanthrene   118.3   %   50-140   27-MAY-21     Pyrene   114.6   %   50-140   27-MAY-21     Pyrene   114.6   %   50-140   27-MAY-21     WG3540369-1   MB								50-140	27-MAY-21
Indeno(1,2,3-cd)pyrene         124.0         %         50-140         27-MAY-21           Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1         MB         1-Methylnaphthalene         <0.020								50-140	27-MAY-21
Naphthalene         94.0         %         50-140         27-MAY-21           Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1         MB         MB         WG3540369-1         WG35403-1	Fluorene			107.3		%		50-140	27-MAY-21
Phenanthrene         118.3         %         50-140         27-MAY-21           Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1         MB	Indeno(1,2,3-cd)pyrene			124.0		%		50-140	27-MAY-21
Pyrene         114.6         %         50-140         27-MAY-21           WG3540369-1 MB         MB         Ug/L         0.02         27-MAY-21           2-Methylnaphthalene         <0.020	Naphthalene			94.0		%		50-140	27-MAY-21
WG3540369-1         MB           1-Methylnaphthalene         <0.020	Phenanthrene			118.3		%		50-140	27-MAY-21
1-Methylnaphthalene       <0.020	Pyrene			114.6		%		50-140	27-MAY-21
2-Methylnaphthalene       <0.020				0.000		//		0.00	
Acenaphthene       <0.020						•			
Acenaphthylene       <0.020									
Anthracene       <0.020									
Benzo(a)anthracene       <0.020									27-MAY-21
Benzo(a)pyrene       <0.010									
Benzo(b&j)fluoranthene       <0.020									
Benzo(g,h,i)perylene       <0.020									27-MAY-21
Benzo(k)fluoranthene       <0.020		<b>;</b>				· ·			
Chrysene         <0.020									27-MAY-21
Dibenz(a,h)anthracene         <0.020         ug/L         0.02         27-MAY-21           Fluoranthene         <0.020	` ,								27-MAY-21
Fluoranthene         <0.020         ug/L         0.02         27-MAY-21           Fluorene         <0.020	-								27-MAY-21
Fluorene <0.020 ug/L 0.02 27-MAY-21				<0.020				0.02	27-MAY-21
	Fluoranthene			<0.020		ug/L		0.02	27-MAY-21
Indeno(1,2,3-cd)pyrene <0.020 ug/L 0.02 27-MAY-21	Fluorene			<0.020		ug/L		0.02	27-MAY-21
	Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	27-MAY-21



Workorder: L2590710 Report Date: 31-MAY-21 Page 7 of 14

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	Water							
Batch R54734	22							
WG3540369-1 MB	1						2.25	
Naphthalene			<0.050		ug/L		0.05	27-MAY-21
Phenanthrene			<0.020		ug/L		0.02	27-MAY-21
Pyrene			<0.020		ug/L		0.02	27-MAY-21
Surrogate: Naphthale			98.3		%		60-140	27-MAY-21
Surrogate: Phenanth	rene d10		111.4		%		60-140	27-MAY-21
Batch R54747								
WG3540802-2 LC3 1-Methylnaphthalene	-		95.8		%		50-140	28-MAY-21
2-Methylnaphthalene			93.7		%		50-140	28-MAY-21
Acenaphthene	•		102.6		%		50-140	28-MAY-21
Acenaphthylene			101.7		%		50-140	28-MAY-21
Anthracene			109.6		%		50-140	28-MAY-21
Benzo(a)anthracene			132.5		%		50-140	28-MAY-21
Benzo(a)pyrene			109.2		%		50-140	28-MAY-21
Benzo(b&j)fluoranthe	ene		109.6		%		50-140	28-MAY-21
Benzo(g,h,i)perylene			123.6		%		50-140	28-MAY-21
Benzo(k)fluoranthene			111.4		%		50-140	28-MAY-21
Chrysene			131.1		%		50-140	28-MAY-21
Dibenz(a,h)anthrace	ne		125.5		%		50-140	28-MAY-21
Fluoranthene			116.7		%		50-140	28-MAY-21
Fluorene			106.7		%		50-140	28-MAY-21
Indeno(1,2,3-cd)pyre	ene		138.2		%		50-140	28-MAY-21
Naphthalene			91.1		%		50-140	28-MAY-21
Phenanthrene			116.0		%		50-140	28-MAY-21
Pyrene			114.2		%		50-140	28-MAY-21
WG3540802-1 MB	<b>.</b>						00 1 10	20 1017(1 21
1-Methylnaphthalene			<0.020		ug/L		0.02	28-MAY-21
2-Methylnaphthalene	•		<0.020		ug/L		0.02	28-MAY-21
Acenaphthene			<0.020		ug/L		0.02	28-MAY-21
Acenaphthylene			<0.020		ug/L		0.02	28-MAY-21
Anthracene			<0.020		ug/L		0.02	28-MAY-21
Benzo(a)anthracene			<0.020		ug/L		0.02	28-MAY-21
Benzo(a)pyrene			<0.010		ug/L		0.01	28-MAY-21
Benzo(b&j)fluoranthe	ene		<0.020		ug/L		0.02	28-MAY-21



Workorder: L2590710 Report Date: 31-MAY-21 Page 8 of 14

Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	Water							
Batch R5474752 WG3540802-1 MB			0.000				0.00	
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	28-MAY-21
Benzo(k)fluoranthene			<0.020		ug/L		0.02	28-MAY-21
Chrysene			<0.020		ug/L		0.02	28-MAY-21
Dibenz(a,h)anthracene			<0.020		ug/L		0.02	28-MAY-21
Fluoranthene			<0.020		ug/L		0.02	28-MAY-21
Fluorene			<0.020		ug/L		0.02	28-MAY-21
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	28-MAY-21
Naphthalene			<0.050		ug/L		0.05	28-MAY-21
Phenanthrene			<0.020		ug/L		0.02	28-MAY-21
Pyrene			<0.020		ug/L		0.02	28-MAY-21
Surrogate: Naphthalene	d8		95.1		%		60-140	28-MAY-21
Surrogate: Phenanthren	e d10		99.9		%		60-140	28-MAY-21
Surrogate: Chrysene d12	2		114.4		%		50-150	28-MAY-21
PH-WT	Water							
Batch R5465465								
<b>WG3539939-4 DUP</b> pH		<b>WG3539939-3</b> 8.34	8.32	J	pH units	0.02	0.2	22-MAY-21
<b>WG3539939-2 LCS</b> pH			7.00		pH units		6.9-7.1	22-MAY-21
Batch R5465466								
<b>WG3539940-4 DUP</b> pH		<b>WG3539940-3</b> 7.67	7.66	J	pH units	0.01	0.2	22-MAY-21
<b>WG3539940-2 LCS</b> pH			7.00		pH units		6.9-7.1	22-MAY-21
Batch R5465476					•		0.0	
<b>WG3539941-4 DUP</b> pH		<b>WG3539941-3</b> 8.37	8.43	J	pH units	0.06	0.2	22-MAY-21
<b>WG3539941-2 LCS</b> pH			7.01		pH units		6.9-7.1	22-MAY-21
VOC-511-HS-WT	Water							
Batch R5475461								
WG3543076-4 DUP 1,1,1,2-Tetrachloroethan	ie	<b>WG3543076-3</b> <0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,1,2,2-Tetrachloroethan	ne	<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R5475461								
WG3543076-4 DUP		WG3543076-						
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	31-MAY-21
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	31-MAY-21
Benzene		<0.50	< 0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	31-MAY-21
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	31-MAY-21
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	31-MAY-21
Chlorobenzene		<0.50	< 0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	31-MAY-21
cis-1,2-Dichloroethylene	:	<0.50	< 0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
cis-1,3-Dichloropropene		<0.30	< 0.30	RPD-NA	ug/L	N/A	30	31-MAY-21
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	31-MAY-21
Dichlorodifluoromethane	)	<2.0	<2.0	RPD-NA	ug/L	N/A	30	31-MAY-21
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
m+p-Xylenes		<0.40	< 0.40	RPD-NA	ug/L	N/A	30	31-MAY-21
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	31-MAY-21
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	31-MAY-21
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	31-MAY-21
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	31-MAY-21
o-Xylene		<0.30	< 0.30	RPD-NA	ug/L	N/A	30	31-MAY-21
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
trans-1,2-Dichloroethyle	ne	<0.50	<0.50		ug/L			31-MAY-21
•					-			- · · · · · · · - ·



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test Mati	rix Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT Wat	ter						
Batch R5475461							
WG3543076-4 DUP	WG3543076						
trans-1,2-Dichloroethylene	<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
trans-1,3-Dichloropropene	<0.30	<0.30	RPD-NA	ug/L	N/A	30	31-MAY-21
Trichloroethylene	<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
Trichlorofluoromethane	<5.0	<5.0	RPD-NA	ug/L	N/A	30	31-MAY-21
Vinyl chloride	<0.50	<0.50	RPD-NA	ug/L	N/A	30	31-MAY-21
WG3543076-1 LCS 1,1,1,2-Tetrachloroethane		102.1		%		70-130	31-MAY-21
1,1,2,2-Tetrachloroethane		108.3		%		70-130	31-MAY-21
1,1,1-Trichloroethane		96.7		%		70-130	31-MAY-21
1,1,2-Trichloroethane		103.5		%		70-130	31-MAY-21
1,1-Dichloroethane		100.7		%		70-130	31-MAY-21
1,1-Dichloroethylene		98.7		%		70-130	31-MAY-21
1,2-Dibromoethane		108.2		%		70-130	31-MAY-21
1,2-Dichlorobenzene		102.2		%		70-130	31-MAY-21
1,2-Dichloroethane		106.5		%		70-130	31-MAY-21
1,2-Dichloropropane		106.1		%		70-130	31-MAY-21
1,3-Dichlorobenzene		97.6		%		70-130	31-MAY-21
1,4-Dichlorobenzene		97.7		%		70-130	31-MAY-21
Acetone		119.6		%		60-140	31-MAY-21
Benzene		98.3		%		70-130	31-MAY-21
Bromodichloromethane		104.4		%		70-130	31-MAY-21
Bromoform		112.2		%		70-130	31-MAY-21
Bromomethane		95.8		%		60-140	31-MAY-21
Carbon tetrachloride		98.0		%		70-130	31-MAY-21
Chlorobenzene		100.5		%		70-130	31-MAY-21
Chloroform		103.6		%		70-130	31-MAY-21
cis-1,2-Dichloroethylene		103.5		%		70-130	31-MAY-21
cis-1,3-Dichloropropene		96.0		%		70-130	31-MAY-21
Dibromochloromethane		102.9		%		70-130	31-MAY-21
Dichlorodifluoromethane		89.1		%		50-140	31-MAY-21
Ethylbenzene		97.2		%		70-130	31-MAY-21
n-Hexane		95.3		%		70-130	31-MAY-21
m+p-Xylenes		99.1		%		70-130	31-MAY-21



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R5475461	I							
WG3543076-1 LCS								
Methyl Ethyl Ketone			105.6		%		60-140	31-MAY-21
Methyl Isobutyl Ketone			107.9		%		60-140	31-MAY-21
Methylene Chloride			106.0		%		70-130	31-MAY-21
MTBE			96.0		%		70-130	31-MAY-21
o-Xylene			109.5		%		70-130	31-MAY-21
Styrene			108.2		%		70-130	31-MAY-21
Tetrachloroethylene			94.0		%		70-130	31-MAY-21
Toluene			96.2		%		70-130	31-MAY-21
trans-1,2-Dichloroethyl			100.2		%		70-130	31-MAY-21
trans-1,3-Dichloroprope	ene		99.4		%		70-130	31-MAY-21
Trichloroethylene			97.6		%		70-130	31-MAY-21
Trichlorofluoromethane	)		96.9		%		60-140	31-MAY-21
Vinyl chloride			103.1		%		60-140	31-MAY-21
WG3543076-2 MB 1,1,1,2-Tetrachloroetha	ane		<0.50		ug/L		0.5	31-MAY-21
1,1,2,2-Tetrachloroetha			<0.50		ug/L		0.5	31-MAY-21
1,1,1-Trichloroethane			<0.50		ug/L		0.5	31-MAY-21
1,1,2-Trichloroethane			<0.50		ug/L		0.5	31-MAY-21
1,1-Dichloroethane			<0.50		ug/L		0.5	31-MAY-21
1,1-Dichloroethylene			<0.50		ug/L		0.5	31-MAY-21
1,2-Dibromoethane			<0.20		ug/L		0.2	31-MAY-21
1,2-Dichlorobenzene			<0.50		ug/L		0.5	31-MAY-21
1,2-Dichloroethane			<0.50		ug/L		0.5	31-MAY-21
1,2-Dichloropropane			<0.50		ug/L		0.5	31-MAY-21
1,3-Dichlorobenzene			<0.50		ug/L		0.5	31-MAY-21
1,4-Dichlorobenzene			<0.50		ug/L		0.5	31-MAY-21
Acetone			<30		ug/L		30	31-MAY-21
Benzene			<0.50		ug/L		0.5	31-MAY-21
Bromodichloromethane	9		<2.0		ug/L		2	31-MAY-21
Bromoform			<5.0		ug/L		5	31-MAY-21
Bromomethane			<0.50		ug/L		0.5	31-MAY-21
Carbon tetrachloride			<0.20		ug/L		0.2	31-MAY-21
Chlorobenzene			<0.50		ug/L		0.5	31-MAY-21
Chloroform			<1.0		ug/L		1	31-MAY-21
GG. G.G.			0		~ <del>y</del> , —		•	J1-181/Λ1-21



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R5475461								
WG3543076-2 MB cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	31-MAY-21
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	31-MAY-21
Dibromochloromethane			<2.0		ug/L		2	31-MAY-21
Dichlorodifluoromethane			<2.0		ug/L		2	31-MAY-21
Ethylbenzene			<0.50		ug/L		0.5	31-MAY-21
n-Hexane			<0.50		ug/L		0.5	31-MAY-21
m+p-Xylenes			<0.40		ug/L		0.4	31-MAY-21
Methyl Ethyl Ketone			<20		ug/L		20	31-MAY-21
Methyl Isobutyl Ketone			<20		ug/L		20	31-MAY-21
Methylene Chloride			<5.0		ug/L		5	31-MAY-21
MTBE			<2.0		ug/L		2	31-MAY-21
o-Xylene			< 0.30		ug/L		0.3	31-MAY-21
Styrene			<0.50		ug/L		0.5	31-MAY-21
Tetrachloroethylene			<0.50		ug/L		0.5	31-MAY-21
Toluene			<0.50		ug/L		0.5	31-MAY-21
trans-1,2-Dichloroethylen	e		<0.50		ug/L		0.5	31-MAY-21
trans-1,3-Dichloropropen	е		< 0.30		ug/L		0.3	31-MAY-21
Trichloroethylene			<0.50		ug/L		0.5	31-MAY-21
Trichlorofluoromethane			<5.0		ug/L		5	31-MAY-21
Vinyl chloride			<0.50		ug/L		0.5	31-MAY-21
Surrogate: 1,4-Difluorobe	enzene		99.6		%		70-130	31-MAY-21
Surrogate: 4-Bromofluoro	benzene		96.9		%		70-130	31-MAY-21
WG3543076-5 MS 1,1,1,2-Tetrachloroethand	e	WG3543076-	<b>3</b> 103.8		%		50-140	31-MAY-21
1,1,2,2-Tetrachloroethane	е		99.5		%		50-140	31-MAY-21
1,1,1-Trichloroethane			100.9		%		50-140	31-MAY-21
1,1,2-Trichloroethane			99.97		%		50-140	31-MAY-21
1,1-Dichloroethane			104.2		%		50-140	31-MAY-21
1,1-Dichloroethylene			104.9		%		50-140	31-MAY-21
1,2-Dibromoethane			100.5		%		50-140	31-MAY-21
1,2-Dichlorobenzene			104.3		%		50-140	31-MAY-21
1,2-Dichloroethane			101.4		%		50-140	31-MAY-21
1,2-Dichloropropane			108.0		%		50-140	31-MAY-21
1,3-Dichlorobenzene			102.3		%		50-140	31-MAY-21



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Client: McIntosh Perry Engineering Consultants (Ottawa)

115 Walgreen Road, R.R. 3

Carp ON K0A1L0

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R5475461								
WG3543076-5 MS		WG3543076-						
1,4-Dichlorobenzene			102.0		%		50-140	31-MAY-21
Acetone			104.8		%		50-140	31-MAY-21
Benzene			100.6		%		50-140	31-MAY-21
Bromodichloromethane			102.6		%		50-140	31-MAY-21
Bromoform			99.5		%		50-140	31-MAY-21
Bromomethane			92.9		%		50-140	31-MAY-21
Carbon tetrachloride			102.1		%		50-140	31-MAY-21
Chlorobenzene			102.5		%		50-140	31-MAY-21
Chloroform			104.7		%		50-140	31-MAY-21
cis-1,2-Dichloroethylene			103.6		%		50-140	31-MAY-21
cis-1,3-Dichloropropene			95.0		%		50-140	31-MAY-21
Dibromochloromethane			98.3		%		50-140	31-MAY-21
Dichlorodifluoromethane	)		89.7		%		50-140	31-MAY-21
Ethylbenzene			104.3		%		50-140	31-MAY-21
n-Hexane			104.8		%		50-140	31-MAY-21
m+p-Xylenes			105.6		%		50-140	31-MAY-21
Methyl Ethyl Ketone			90.8		%		50-140	31-MAY-21
Methyl Isobutyl Ketone			100.6		%		50-140	31-MAY-21
Methylene Chloride			101.3		%		50-140	31-MAY-21
MTBE			97.8		%		50-140	31-MAY-21
o-Xylene			116.1		%		50-140	31-MAY-21
Styrene			110.7		%		50-140	31-MAY-21
Tetrachloroethylene			96.4		%		50-140	31-MAY-21
Toluene			102.3		%		50-140	31-MAY-21
trans-1,2-Dichloroethyler	ne		104.3		%		50-140	31-MAY-21
trans-1,3-Dichloroproper	ne		99.3		%		50-140	31-MAY-21
Trichloroethylene			98.6		%		50-140	31-MAY-21
Trichlorofluoromethane			101.2		%		50-140	31-MAY-21
Vinyl chloride			107.1		%		50-140	31-MAY-21

Workorder: L2590710 Report Date: 31-MAY-21

Client: McIntosh Perry Engineering Consultants (Ottawa) Page 14 of 14

115 Walgreen Road, R.R. 3

Carp ON K0A1L0
Bradley Sutherland

Legend:

Contact:

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.

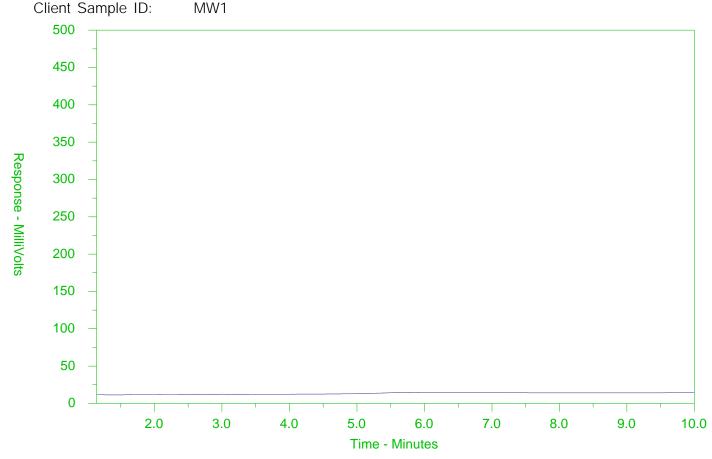
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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



ALS Sample ID: L2590710-1 Client Sample ID: MW1



<b>←</b> -F2-	→-	_F3 <b>→</b> F4-	<b>→</b>					
nC10	nC16	nC34	nC50					
174°C	287°C	481°C	575°C					
346°F	549°F	898°F	1067°F					
Gasolin	Gasoline → Motor Oils/Lube Oils/Grease—							
<b>←</b>	← Diesel/Jet Fuels→							

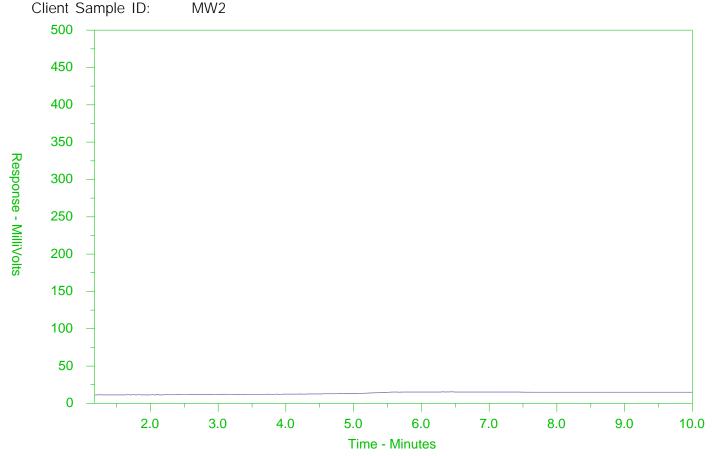
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2590710-2



<b>←</b> -F2-	→-	_F3 <b>→</b> F4-	<b>→</b>					
nC10	nC16	nC34	nC50					
174°C	287°C	481°C	575°C					
346°F	549°F	898°F	1067°F					
Gasolin	Gasoline → Motor Oils/Lube Oils/Grease—							
<b>←</b>	← Diesel/Jet Fuels→							

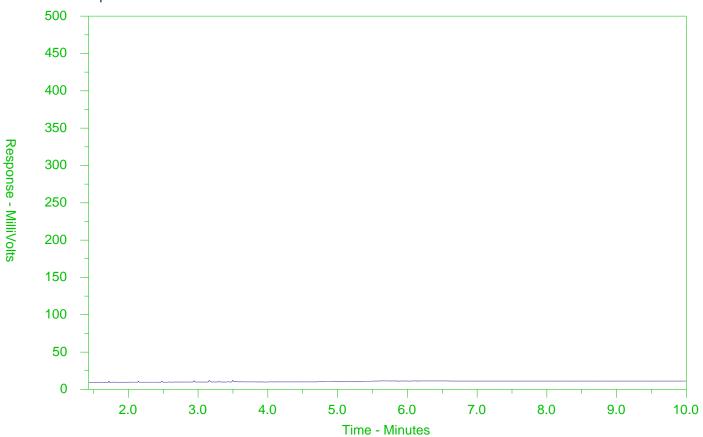
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2590710-3 Client Sample ID: MW2-DUP



<b>←</b> -F2-	→-	_F3 <b>→</b> F4-	<b>→</b>					
nC10	nC16	nC34	nC50					
174°C	287°C	481°C	575°C					
346°F	549°F	898°F	1067°F					
Gasolin	Gasoline → Motor Oils/Lube Oils/Grease—							
<b>←</b>	← Diesel/Jet Fuels→							

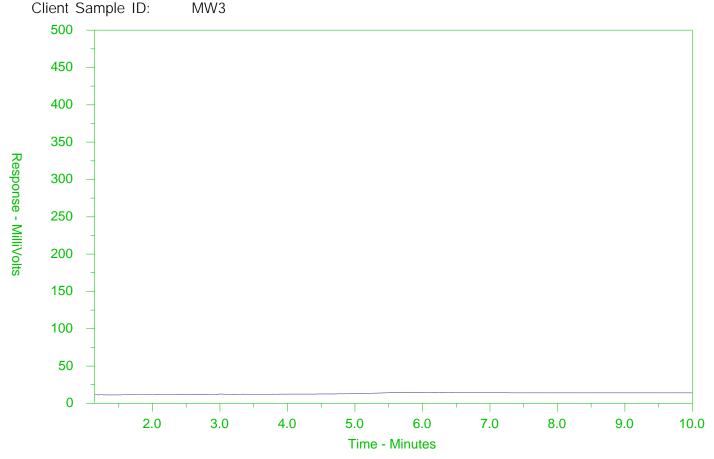
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2590710-4



<b>←</b> -F2-	→←	_F3 <del></del> F4_	<b>→</b>	
nC10	nC16	nC34	nC50	
174°C	287°C	481°C	575°C	
346°F	549°F	898°F	1067°F	
Gasolin	ie →	<b>←</b> Mo	otor Oils/Lube Oils/Grease——	-
<b>←</b>	-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.



COC Number: 20 -

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(ALS)	www.alsglobal.com			!																		
Report To	Contact and company name below will ap	pear on the final report		Reports / F	Recipients		1		rui	rnarou	ınd Tim	(TAT)	Reques	ted								
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Contact:	Bradley Sutherland		Merge QC/QC	I Reports with COA	YES NO	□ N/A						- 20% ru										
Phone:	613-903-5785		Compare Resul	lts to Criteria on Report	- provide details below	w if box checked						- 25% ru					AFFI	_	BARCO			EKE
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Street:	115 Walgreen Road RR3		Email 1 or Fax	b.sutherland@mc	intoshperry.com		Sam	ne day (i	E2]ifre	eceived	by 10am	M-S - 20 weekends	00% rus	h surch	arge. Ad	ditional						
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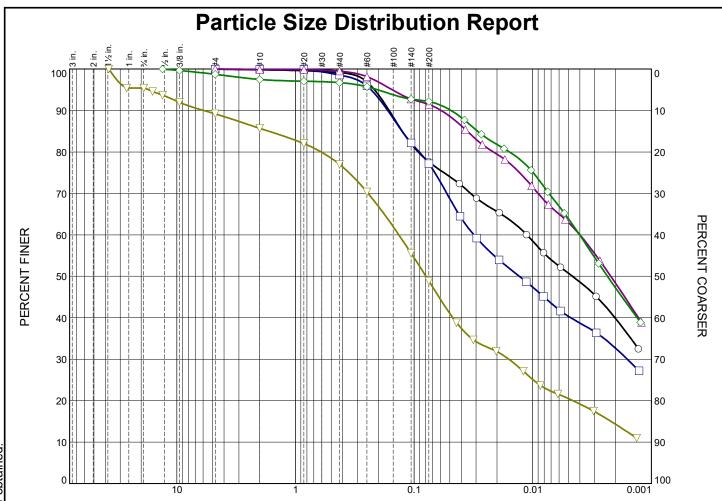
# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 16 EDGEWATER STREET, KANATA, ONTARIO



APPENDIX E GRAIN SIZE ANALYSIS

#### WATER CONTENT DETERMINATION

Test Method Utilized	~	MTO LS-701		ASTM D 2216	A	ASHTO T-265	
Project No.: CP17-0635					Date Rece	ived: 01/07/1	9
Project Name/Location: 6	Edgewater St. O	ttawa			Date Teste	ed: 01/09/19	
Material Type: Soils					Lab Sampl	e No.: OL-190	01
Borehole No.	Depth Sample Taken (ft')	Sample Container I.D.	Wet Sample + Tare (A)	Dry Sample + Tare (B)	Tare (C)	Mass of Sample (D) (B-C)	% Moisture (A-B)/Dx100
BH18-01 SS4	6-8	Tr.152	829.69	644.65	127.91	516.74	35.8
BH18-03 SS4	10-12	Tr.199	788.50	590.56	128.64	461.92	42.9
BH18-03 SS5	15-17	Tr.114	787.02	570.55	152.69	417.86	51.8
BH18-04 SS3	7.5-9.5	Tr.2.18s	777.56	536.10	139.60	396.50	60.9
BH18-05 ST4	10-12	Tr.169	1143.86	758.21	133.26	624.95	61.7
BH18-05 SS5	15-17	Tr.163	885.08	652.54	136.53	516.01	45.1
BH18-05 SS6	20-22	Tr.118	982.72	879.30	133.02	746.28	13.9
Non-Comformance's from	Test Procedure	: N/A					
Comments:							
Checked by: H.S.				Signature: 14	. Sm	not	



			GRAIN SIZE - mm.		
	% +3"	% Gravel	% Sand	% Silt	% Clay
0	0.0	0.0	22.4	26.9	50.7
	0.0	0.0	22.8	36.9	40.3
Δ	0.0	0.0	8.5	28.5	63.0
$\Diamond$	0.0	1.3	6.5	28.3	63.9
$\nabla$	0.0	10.8	40.3	28.4	20.5

				SOIL DATA	
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	uscs
0	Edgewater St.	BH1801 SS4	6'-8'	Silty Sandy Clay	
	Edgewater St.	BH1803 SS4	10'-12'	Sandy Clay and Silt	
Δ	Edgewater St.	BH1804 SS3	7.5'-9.5'	Silty Clay trace Sand	
$\Diamond$	Edgewater St.	BH1805 ST4	10'-12'	Silty Clay trace Sand trace Gravel	CL
$\nabla$	Edgewater St.	BH1805 SS6	20'-22'	Silty Clayey Sand some Gravel	

	1	C	IN	Т	0	S	Н	P	F	R	R	Y
п			IIN		V							

Client:

**Project:** Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

Project No.: CP17-0635 Figure

Checked By: H.Smith

#### **GRAIN SIZE DISTRIBUTION TEST DATA**

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

**Project Number:** CP17-0635 **Location:** Edgewater St.

Depth: 6'-8' Sample Number: BH1801 SS4

Material Description: Silty Sandy Clay

Checked by: H.Smith

			Sieve	e Test Data			
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained	
516.74	0.00	0.00	4.75mm	0.00	100.0	0.0	
			2.00mm	1.02	99.8	0.2	
55.66	0.00	0.00	0.850mm	0.11	99.6	0.4	
			0.425mm	0.38	99.1	0.9	
			0.250mm	1.60	96.9	3.1	
			0.106mm	9.94	82.0	18.0	
			0.075mm	12.39	77.6	22.4	
			l broke we	otor Took Doto			

#### **Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 99.8

Weight of hydrometer sample =55.66

**Automatic temperature correction** 

Composite correction (fluid density and meniscus height) at 20 deg. C = -4.5

Meniscus correction only = -1.0Specific gravity of solids = 2.750

Hydrometer type = 152H

Hydrometer effective depth equation: L = 16.7270 - 0.154 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
1.00	21.0	45.5	41.2	0.0131	44.5	9.9	0.0411	72.2	27.8
2.00	21.0	43.5	39.2	0.0131	42.5	10.2	0.0295	68.7	31.3
5.00	21.0	41.5	37.2	0.0131	40.5	10.5	0.0190	65.2	34.8
15.00	21.0	38.5	34.2	0.0131	37.5	11.0	0.0112	60.0	40.0
30.00	21.0	36.0	31.7	0.0131	35.0	11.3	0.0080	55.6	44.4
60.00	21.0	34.0	29.7	0.0131	33.0	11.6	0.0058	52.1	47.9
250.00	21.0	30.0	25.7	0.0131	29.0	12.3	0.0029	45.0	55.0
1440.00	20.0	23.0	18.5	0.0133	22.0	13.3	0.0013	32.4	67.6

\_\_\_\_ McIntosh Perry \_

## Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	0.0	22.4	26.9	50.7

D <sub>5</sub>	D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>40</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
					0.0020	0.0046	0.0112	0.0925	0.1258	0.1624	0.2152

Fineness Modulus 0.14

\_\_\_\_\_ McIntosh Perry \_\_\_\_\_

#### **GRAIN SIZE DISTRIBUTION TEST DATA**

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

**Project Number:** CP17-0635 **Location:** Edgewater St.

Depth: 10'-12' Sample Number: BH1803 SS4

Material Description: Sandy Clay and Silt

Checked by: H.Smith

			Sieve	e Test Data			
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained	
461.92	0.00	0.00	4.75mm	0.00	100.0	0.0	
			2.00mm	0.22	100.0	0.0	
55.81	0.00	0.00	0.850mm	0.00	100.0	0.0	
			0.425mm	0.78	98.6	1.4	
			0.250mm	2.23	96.0	4.0	
			0.106mm	9.93	82.2	17.8	
			0.075mm	12.72	77.2	22.8	
_	_	_		otor Toot Date		22.0	

#### **Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 55.81

**Automatic temperature correction** 

Composite correction (fluid density and meniscus height) at 20 deg. C = -4.5

Meniscus correction only = -1.0Specific gravity of solids = 2.734

Hydrometer type = 152H

Hydrometer effective depth equation: L = 16.1047 - 0.160 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
1.00	21.0	41.0	36.7	0.0131	40.0	9.7	0.0410	64.5	35.5
2.00	21.0	38.0	33.7	0.0131	37.0	10.2	0.0297	59.2	40.8
5.00	21.0	35.0	30.7	0.0131	34.0	10.7	0.0192	53.9	46.1
15.00	21.0	32.0	27.7	0.0131	31.0	11.1	0.0113	48.7	51.3
30.00	21.0	30.0	25.7	0.0131	29.0	11.5	0.0081	45.1	54.9
60.00	21.0	28.0	23.7	0.0131	27.0	11.8	0.0058	41.6	58.4
250.00	21.0	25.0	20.7	0.0131	24.0	12.3	0.0029	36.4	63.6
1440.00	20.0	20.0	15.5	0.0133	19.0	13.1	0.0013	27.2	72.8

\_\_\_\_ McIntosh Perry \_

## Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	0.0	22.8	36.9	40.3

D <sub>5</sub>	D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>40</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
				0.0016	0.0048	0.0130	0.0314	0.0907	0.1262	0.1668	0.2298

Fineness Modulus 0.15

\_\_\_\_\_ McIntosh Perry \_\_\_\_\_

#### **GRAIN SIZE DISTRIBUTION TEST DATA**

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

**Project Number:** CP17-0635 **Location:** Edgewater St.

**Depth**: 7.5'-9.5' **Sample Number**: BH1804 SS3

Material Description: Silty Clay trace Sand

Checked by: H.Smith

			Sieve	e Test Data			
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained	
396.50	0.00	0.00	4.75mm	0.00	100.0	0.0	
			2.00mm	0.50	99.9	0.1	
53.84	0.00	0.00	0.850mm	0.01	99.9	0.1	
			0.425mm	0.20	99.5	0.5	
			0.250mm	0.91	98.2	1.8	
			0.106mm	3.83	92.8	7.2	
			0.075mm	4.53	91.5	8.5	

#### Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 99.9

Weight of hydrometer sample =53.84

**Automatic temperature correction** 

Composite correction (fluid density and meniscus height) at 20 deg. C = -4.5

Meniscus correction only = -1.0Specific gravity of solids = 2.761

Hydrometer type = 152H

Hydrometer effective depth equation: L = 16.1047 - 0.160 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
1.00	21.0	51.5	47.2	0.0130	50.5	8.0	0.0370	85.4	14.6
2.00	21.0	49.5	45.2	0.0130	48.5	8.3	0.0266	81.8	18.2
5.00	21.0	47.5	43.2	0.0130	46.5	8.7	0.0172	78.2	21.8
15.00	21.0	44.0	39.7	0.0130	43.0	9.2	0.0102	71.8	28.2
30.00	21.0	41.5	37.2	0.0130	40.5	9.6	0.0074	67.3	32.7
60.00	21.0	39.5	35.2	0.0130	38.5	9.9	0.0053	63.7	36.3
250.00	21.0	34.0	29.7	0.0130	33.0	10.8	0.0027	53.7	46.3
1440.00	20.0	26.0	21.5	0.0132	25.0	12.1	0.0012	38.9	61.1

\_\_\_\_ McIntosh Perry \_

## Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	0.0	8.5	28.5	63.0

D <sub>5</sub>	D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>40</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
					0.0013	0.0022	0.0040	0.0214	0.0356	0.0591	0.1531

Fineness Modulus 0.07

\_\_\_\_ McIntosh Perry \_\_\_\_\_

#### **GRAIN SIZE DISTRIBUTION TEST DATA**

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

**Project Number:** CP17-0635 Location: Edgewater St.

**Depth:** 10'-12' Sample Number: BH1805 ST4

Material Description: Silty Clay trace Sand trace Gravel

USCS: CL

Checked by: H.Smith

			Sieve	e Test Data		
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained
624.95	0.00	0.00	13.2mm	0.00	100.0	0.0
			9.5mm	2.12	99.7	0.3
			4.75mm	7.92	98.7	1.3
			2.00mm	15.66	97.5	2.5
54.78	0.00	0.00	0.850mm	0.24	97.1	2.9
			0.425mm	0.43	96.7	3.3
			0.250mm	0.99	95.7	4.3
			0.106mm	2.67	92.7	7.3
			0.075mm	2.99	92.2	7.8

#### **Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 97.5

Weight of hydrometer sample =54.78

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -4.5

Meniscus correction only = -1.0Specific gravity of solids = 2.779 Hydrometer type = 152H

Hydrometer effective depth equation: L = 16.7270 - 0.154 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
1.00	21.0	55.0	50.7	0.0130	54.0	8.4	0.0376	87.7	12.3
2.00	21.0	53.0	48.7	0.0130	52.0	8.7	0.0271	84.3	15.7
5.00	21.0	51.0	46.7	0.0130	50.0	9.0	0.0174	80.8	19.2
15.00	21.0	48.0	43.7	0.0130	47.0	9.5	0.0103	75.6	24.4
30.00	21.0	45.0	40.7	0.0130	44.0	10.0	0.0075	70.4	29.6
60.00	21.0	42.0	37.7	0.0130	41.0	10.4	0.0054	65.2	34.8
250.00	21.0	35.0	30.7	0.0130	34.0	11.5	0.0028	53.1	46.9
1440.00	20.0	27.0	22.5	0.0131	26.0	12.7	0.0012	38.9	61.1

\_ McIntosh Perry \_

## Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	1.3	6.5	28.3	63.9

D <sub>5</sub>	D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>40</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
					0.0013	0.0023	0.0040	0.0157	0.0292	0.0487	0.2028

Fineness Modulus 0.20

\_\_\_\_\_ McIntosh Perry \_\_\_\_

#### **GRAIN SIZE DISTRIBUTION TEST DATA**

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

Project Number: CP17-0635 Location: Edgewater St.

Depth: 20'-22' Sample Number: BH1805 SS6

Material Description: Silty Clayey Sand some Gravel

Checked by: H.Smith

			Sieve	Test Data			
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained	
746.28	0.00	0.00	37.5mm	0.00	100.0	0.0	
			26.5mm	34.22	95.4	4.6	
			19.0mm	34.22	95.4	4.6	
			16.0mm	40.36	94.6	5.4	
			13.2mm	46.79	93.7	6.3	
			9.5mm	59.88	92.0	8.0	
			4.75mm	80.60	89.2	10.8	
			2.00mm	106.79	85.7	14.3	
61.20	0.00	0.00	0.850mm	2.62	82.0	18.0	
			0.425mm	6.20	77.0	23.0	
			0.250mm	10.95	70.4	29.6	
			0.106mm	21.52	55.6	44.4	
			0.075mm	26.30	48.9	51.1	

#### **Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 85.7

Weight of hydrometer sample =61.20 Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -4.5

 $\begin{array}{l} \text{Meniscus correction only = -1.0} \\ \text{Specific gravity of solids = } 2.725 \\ \text{Hydrometer type = } 152H \\ \end{array}$ 

Hydrometer effective depth equation: L = 16.1047 - 0.160 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
1.00	21.0	32.5	28.2	0.0132	31.5	11.1	0.0438	38.8	61.2
2.00	21.0	29.5	25.2	0.0132	28.5	11.5	0.0317	34.7	65.3
5.00	21.0	27.5	23.2	0.0132	26.5	11.9	0.0203	31.9	68.1
15.00	21.0	24.0	19.7	0.0132	23.0	12.4	0.0120	27.1	72.9
30.00	21.0	21.5	17.2	0.0132	20.5	12.8	0.0086	23.7	76.3
60.00	21.0	20.0	15.7	0.0132	19.0	13.1	0.0062	21.6	78.4
250.00	21.0	17.0	12.7	0.0132	16.0	13.5	0.0031	17.5	82.5
1440.00	20.0	12.5	8.0	0.0133	11.5	14.3	0.0013	11.0	89.0

\_\_\_\_ McIntosh Perry \_\_\_\_\_

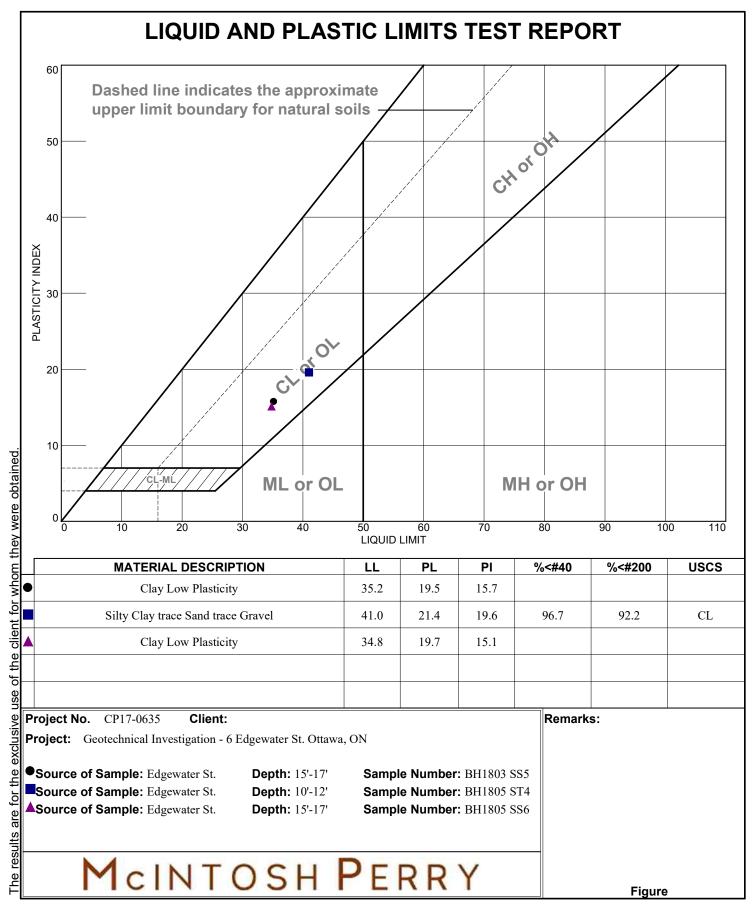
## Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	10.8	40.3	28.4	20.5

D <sub>5</sub>	D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>40</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
		0.0022	0.0046	0.0159	0.0471	0.0794	0.1345	0.6066	1.6815	5.9332	17.2074

Fineness Modulus

\_\_\_\_\_ McIntosh Perry \_\_\_\_\_



#### LIQUID AND PLASTIC LIMIT TEST DATA

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

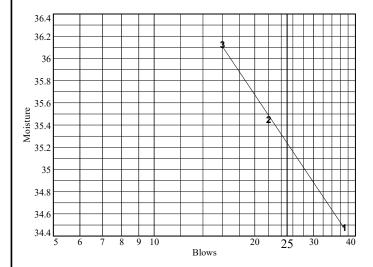
Project Number: CP17-0635 Location: Edgewater St.

Depth: 15'-17' Sample Number: BH1803 SS5

Material Description: Clay Low Plasticity

Checked by: H.Smith

Liquid Limit Data								
Run No.	1	2	3	4	5	6		
Wet+Tare	27.73	30.32	31.01					
Dry+Tare	25.93	27.70	28.34					
Tare	20.71	20.31	20.95					
# Blows	37	22	16					
Moisture	34.5	35.5	36.1					



Liquid Limit= _	35.2
Plastic Limit=	19.5
Plasticity Index=	15.7
Natural Moisture=	51.8
Liquidity Index=	2.1

Plastic Limit Data								
Run No.	1	2	3	4				
Wet+Tare	23.90	22.82						
Dry+Tare	23.30	22.43						
Tare	20.25	20.42						
Moisture	19.7	19.4						

# Wet+Tare Dry+Tare Tare Moisture 787.02 570.55 152.69 51.8

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#### LIQUID AND PLASTIC LIMIT TEST DATA

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

Project Number: CP17-0635 Location: Edgewater St.

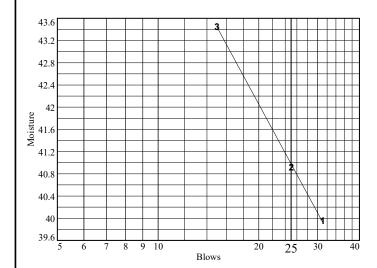
Depth: 10'-12' Sample Number: BH1805 ST4

**Material Description:** Silty Clay trace Sand trace Gravel

%<#40: 96.7 %<#200: 92.2 USCS: CL AASHTO: A-7-6(19)

Checked by: H.Smith

Liquid Limit Data										
Run No.										
Wet+Tare	28.20	29.42	28.67							
Dry+Tare	25.95	26.78	26.18							
Tare	20.32	20.33	20.45							
# Blows	31	25	15							
Moisture	40.0	40.9	43.5							



Liquid Limit=	41.0
Plastic Limit=	21.4
Plasticity Index=	19.6
Natural Moisture=	61.7
Liquidity Index=	2.1

Plastic Limit Data								
Run No.	1	2	3	4				
Wet+Tare	22.68	23.06						
Dry+Tare	22.26	22.58						
Tare	20.28	20.35						
Moisture	21.2	21.5						

		Natural N	Moisture Data
Wet+Tare	Dry+Tare	Tare	Moisture
1143.86	758 21	133.26	61.7

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#### LIQUID AND PLASTIC LIMIT TEST DATA

2019-01-17

Project: Geotechnical Investigation - 6 Edgewater St. Ottawa, ON

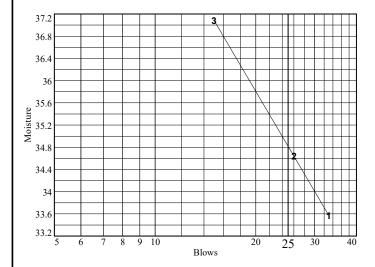
Project Number: CP17-0635 Location: Edgewater St.

Depth: 15'-17' Sample Number: BH1805 SS6

Material Description: Clay Low Plasticity

Checked by: H.Smith

Liquid Limit Data							
Run No.	1	2	3	4	5	6	
Wet+Tare	37.86	28.08	37.60				
Dry+Tare	35.58	26.15	35.26				
Tare	28.79	20.58	28.95				
# Blows	33	26	15				
Moisture	33.6	34.6	37.1				



Liquid Limit= _	34.8
Plastic Limit=	19.7
Plasticity Index=	15.1
Natural Moisture=	45.1
Liquidity Index=	1.7

			Plastic Limit I	Data	
Run No.	1	2	3	4	
Wet+Tare	23.60	23.87			
Dry+Tare	23.02	23.30			
Tare	20.13	20.35			
Moisture	20.1	19.3			

# Wet+Tare Dry+Tare Tare Moisture 885.08 652.54 136.53 45.1

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