Phase Two Environmental Site Assessment
1154, 1176, 1180, and 1208 Old Montreal Road, Ottawa, Ontario

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Phase Two Environmental Site Assessment

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Executive Summary

EXP Services Inc. (EXP) was retained by DCR Phoenix Group to complete a Phase Two Environmental Site Assessment (ESA) of the property located at 1154, 1176, 1180, 1208 Old Montreal Road, Ottawa, Ontario hereinafter referred to as the 'Phase Two property'. The objectives of the Phase Two ESA investigation are to assess the quality of the soil and groundwater conditions within the areas of potential environmental concern (APEC) identified in a Phase One ESA prepared by EXP.

The most recent use of the Phase Two property is for residential/agricultural use. The proposed use is for multi-storey residential buildings. Consequently, in accordance with Regulation 153/04, as amended, a Record of Site Condition (RSC) is not required.

This report has been prepared in accordance with the Phase Two ESA standard as defined by Ontario Regulation 153/04 (as amended), and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Limitation of liability, scope of report and third-party reliance are outlined in Section 8 of this report.

The APEC and potentially contaminating activity (PCA), relative degree of environmental risk, and recommendations from the EXP Phase I ESA are tabulated below.

Table EX.1: Areas of Potential Environmental Concern

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
APEC #1	Area near dispensing area for former fuel AST on 1208 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
APEC #2	Area around furnace oil AST on 1208 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
APEC #3	Area around furnace oil AST on 1176 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
APEC #4	Area around furnace oil AST on 1180 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
APEC #5	Fill material present at 1208 Old Montreal Road	PCA #30 – Importation of fill of unknown quality	On-Site	PHC and BTEX, metals	Soil
APEC #6	Area around generator AST at the communications tower on 1208 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater

The scope of work for the Phase Two ESA was as follows:

- Drilling 19 boreholes on the subject property and completing 11 as monitoring wells;
- Conducting an elevation survey of the boreholes and monitoring wells;
- Submitting selected soil samples from the boreholes for laboratory analysis of the following parameters: petroleum hydrocarbons (PHC); benzene, toluene, ethylbenzene, xylenes (BTEX) and metal parameters;
- Submitting groundwater samples from the monitoring wells for laboratory analysis of PHC and BTEX;
- Comparing the results of the soil and groundwater chemical analyses to applicable Ontario Ministry of the Environment, Conservation and Parks (MECP) 2011 Table 2 site condition standards; and,
- Preparing a report summarizing the results of the assessment activities.

The Phase Two property is located on the south side of Old Montreal Road, at 1154, 1176, 1180, and 1208 Old Montreal Road. The property at 1172 Old Montreal Road is not included in this assessment. At the time of the investigation, the Phase Two property was used for residential and agricultural purposes. The surrounding properties are mostly residential and agricultural. The Phase Two property is occupied by four residences and has an area of approximately 5.6 ha. The Phase Two property has the property identification numbers (PIN): 145260023, 145260025, 145260026, 145260028, and 145262280.

The topography of the Phase Two property consists of a topographic high at the house and barn locations of the site, with a steep slope downwards to the north to Old Montreal Road. The local groundwater flow direction is anticipated to be northerly towards the Ottawa River, at a distance of 1.2 km.

A summary of the soil and groundwater sampling program is as follows:

- A 0.1 m thick layer of grey crushed stone was observed in several boreholes at the ground surface. Brown sand and gravel mixed with silty sand was found in each of the boreholes either below the crushed stone or at the ground surface. The brown sand and gravel ranged in thickness from 0.5 m to 0.8 m. No indications of petroleum impact were identified in the fill. Below the fill was a brown to grey silty clay. The silty clay extended to 21.3 m. Gravelly sand till was found from 21.3 m to 23.0. A sand and gravel till layer was found in BH13 at a depth of 4.16 m. Petroleum odours were detected in soil samples in BH7 from 1.5 m to 3.3 m, BH7A from 1.5 m to 3.2 m, and in BH7C from 0.3 m to 3.0 m;
- Seventeen (17) soil samples were submitted for laboratory analysis of PHC and BTEX. The concentrations of BTEX parameters in BH7, BH7A and BH7C exceeded the MECP 2011 Table 2 SCS. The concentration of PHC F1 in the sample from BH7A also exceeded the MECP 2011 Table 2 SCS. The remaining soil samples had PHC and BTEX concentrations that were less than the laboratory detection limits and were less than the MECP 2011 Table 2 SCS;
- Five (5) soil samples were submitted for metals analysis. All metals concentrations were less than the MECP 2011 Table 2 SCS;
- Seventeen (17) groundwater and a blind duplicate sample were submitted for chemical analysis of BTEX and PHC. The monitoring wells are labeled BH7 to BH13 and MW-1 to MW-4. The BTEX concentrations measured in the groundwater sample collected from BH7 significantly exceeded the MECP 2011 Table 3 SCS. The concentrations of PHC and BTEX measured in the remaining groundwater samples were less than the laboratory detection limits and were less than the MECP 2011 Table 2 SCS;
- BTEX and PHC impacted soil and groundwater were identified at the former tractor refuelling area at 1208 Old Montreal Road associated with APEC 1. Based on laboratory results indicating exceedances of the MECP Table 2 SCS and field observations, the maximum thickness of PHC impact of 3.5 m was measured in BH7. The area of impacted soil has been estimated to be between 600 m^2 and 1,050 m^2. Assuming an estimated average thickness of impact of 1.5 m, the resulting volume of PHC impacted soil in this zone is estimated to be between 900 m^3 and 1,575 m^3.

- This impacted soil and groundwater must be removed from the site and confirmatory soil samples collected to demonstrate that the remaining soil concentrations satisfy the MECP Table 2 SCS.
- If the wells are no longer needed, they should be decommissioned in accordance with Ontario Regulation 903.

This executive summary is a brief synopsis of the report and should not be read in lieu of reading the report in its entirety.

1.0 Introduction

EXP Services Inc. (EXP) was retained by DCR Phoenix Group to complete a Phase Two Environmental Site Assessment (ESA) of the property located at 1208 Old Montreal Road, Ottawa, Ontario hereinafter referred to as the 'Phase Two property'. The objectives of the Phase Two ESA investigation are to assess the quality of the soil and groundwater conditions within the areas of potential environmental concern (APEC) identified in a Phase One ESA prepared by EXP.

The most recent use of the Phase Two property is for residential/agricultural use. The proposed use is for multi-storey residential buildings. Consequently, in accordance with Regulation 153/04, as amended, a Record of Site Condition (RSC) is not required.

This report has been prepared in accordance with the Phase Two ESA standard as defined by Ontario Regulation 153/04 (as amended), and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Limitation of liability, scope of report and third-party reliance are outlined in Section 8 of this report.

Leah Wells, P. Eng., was the report author for this project. Ms. Wells was supervised by Mark McCalla, B.Sc., P. Geo. Mr. McCalla is a Qualified Person, as defined by Ontario Regulation 153/04.

1.1 Site Description

The Phase Two property is located on the south side of Old Montreal Road, at 1154, 1176, 1180, and 1208 Old Montreal Road, as shown on Figure 1 in Appendix A. The property at 1172 Old Montreal Road is not included in this assessment. At the time of the investigation, the Phase Two property was used for residential and agricultural purposes. The surrounding properties are mostly residential and agricultural. The Phase Two property is occupied by 4 residences and has an area of approximately 5.6 ha. A site plan is provided in Figure 2 of Appendix A.

The Phase Two property has the property identification numbers (PIN): 145260023, 145260025, 145260026, 145260028, and 145262280.

The legal description of the Phase Two property is:

- 1154 Old Montreal Road – PT LT 28 CON 1OS CUMBERLAND AS IN RR138993; OTTAWA
- 1176 Old Montreal Road – PT LT 27 CON 1OS CUMBERLAND AS IN N752036 T/W RR133367; OTTAWA
- 1180 Old Montreal Road – PT LT 27 CON 1OS CUMBERLAND PARTS 1,2 & 3, 50R6772 S/T RR133366; OTTAWA
- 1208 Old Montreal Road – FIRSTLY: PART LOT 27, CONCESSION 1OS CUMBERLAND AS IN N759565; SECONDLY: PART LOT 27, CONCESSION 1OS CUMBERLAND, PART 1, PLAN 4R31597; T/W RR133367 CITY OF OTTAWA

The approximate Universal Transverse Mercator (UTM) coordinates for the Phase Two property centroid are Zone 18, 463549 m E and 5038049 m N. The UTM coordinates are based on measurements from Google Earth Pro, published by the Google Limited Liability Company (LLC). The accuracy of the centroid is estimated to be less than 10 m

The topography of the Phase Two property consists of a topographic high at the house and barn locations of the site, with a steep slope downwards to the north to Old Montreal Road. The local groundwater flow direction is anticipated to be northerly towards the Ottawa River, at a distance of 1.2 km. A legal survey of the Phase Two property is presented in Appendix B.

1.2 Property Ownership

The property owner of all of the civic addresses is Phoenix Harbour Old Montreal Road Inc. Authorization to proceed with this investigation was provided by Michael Boucher, Manager of Planning, Phoenix Homes. Contact information for Mr. Boucher is 18 Bentley Avenue, Ottawa, Ontario, K2E 6T8.

1.3 Current and Proposed Future Use

The Phase Two property is currently residential, and the proposed future use of the property is residential. Therefore, a Record of Site Condition (RSC) is not required, per Ontario Regulation 153/04.

1.4 Applicable Site Condition Standards

Analytical results obtained for soil and groundwater samples were compared to Site Condition Standards (SCS) established under subsection 169.4(1) of the Environmental Protection Act, and presented in the document entitled *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, 2011. This document provides tabulated background SCS (Table 1) applicable to environmentally sensitive sites and effects-based generic SCS (Tables 2 to 9) applicable to non-environmentally sensitive sites. The effects-based SCS (Tables 2 to 9) are protective of human health and the environment for different groundwater conditions (potable and non-potable), land use scenarios (residential, parkland, institutional, commercial, industrial, community and agricultural/other), soil texture (coarse or medium/fine) and restoration depth (full or stratified).

Table 1 to 9 SCS are summarized as follows:

- Table 1 – applicable to sites where background concentrations must be met (full depth), such as sensitive sites where site-specific criteria have not been derived
- Table 2 – applicable to sites with potable groundwater and full depth restoration
- Table 3 – applicable to sites with non-potable groundwater and full depth restoration
- Table 4 – applicable to sites with potable groundwater and stratified restoration
- Table 5 – applicable to sites with non-potable groundwater and stratified restoration
- Table 6 – applicable to sites with potable groundwater and shallow soils (bedrock encountered at depths of 2 metres or less across one-third or more of the site)
- Table 7 – applicable to sites with non-potable groundwater and shallow soils (bedrock encountered at depths of 2 metres or less across one-third or more of the site)
- Table 8 – applicable to sites with potable groundwater and that are within 30 m of a water body
- Table 9 – applicable to sites with non-potable groundwater and that are within 30 m of a water body

Application of the generic or background SCS to a specific site is based on a consideration of site conditions related to soil pH, thickness and extent of overburden material, and proximity to an area of environmental sensitivity or of natural significance. For some chemical parameters, consideration is also given to soil textural classification with SCS having been derived for both coarse and medium-fine textured soil conditions.

For assessment purposes, EXP selected the 2011 Table 2 SCS in a potable groundwater condition for all types of residential/parkland/institutional property use, fine and medium grained soils. The selection of this category was based on the following factors:

- Bedrock is greater than 2 metres below grade across the subject property;
- The Phase Two property does not include and is not within 30 m of a water body;
- The Phase Two property is not located within an area of natural significance, does not include nor is adjacent to an area of natural significance, and does not include land that is within 30 metres of an area of natural significance;
- Some residences in the area are supplied by potable water wells;

Soil pH is within acceptable range for surface and subsurface soils;

- The Phase Two property is planned for residential use; and
- It is the opinion of the Qualified Person who oversaw this work that the Phase Two property is not a sensitive site.

2.0 Background Information

2.1 Physical Setting

The Phase Two property is located on the south side of Old Montreal Road, at 1154, 1176, 1180, and 1208 Old Montreal Road, as shown on Figure 1 in Appendix A. The property at 1172 Old Montreal Road is not included in this assessment. At the time of the investigation, the Phase Two property was used for residential and agricultural purposes. The surrounding properties are mostly residential and agricultural. The Phase Two property is occupied by four residences and has an area of approximately 5.6 ha.

The Phase Two property is located in a mixed agricultural/residential area. Potable water on the site and properties on the south side of Montreal Road rely on water wells for potable water. Municipal water is available from the City of Ottawa for the properties north of Montreal Road.

The topography of the Phase Two property consists of a topographic high at the northern portion of the site, with a steep slope downwards in the centre section of the site just south of 1180 Old Montreal Road, and then flat agricultural lands at the southern portion of the site.

In accordance with Section 41 of the Ontario Regulation 153/04 (as amended), the Phase Two property is not an environmentally sensitive area. In addition, the Phase Two property is not located within an area of natural significance and it does not include land that is within 30 metres of an area of natural significance.

Based on the Phase Two ESA investigation, the Phase Two property is not a shallow soil property as defined in Section 43.1 of the regulation. The Phase Two property is not within 30 m of a water body.

Based on the surficial geology map examined, beneath any fill, the surficial geology of the subject site is characterised by fine textured glaciomarine deposits of silt and clay with minor sand and gravel. An examination of the bedrock geology map shows the subject site is underlain by limestone, dolostone and shale of the Ottawa Group. The local groundwater flow direction is anticipated to be west towards Cardinal Creek.

2.2 Past Investigations

EXP prepared a report entitled *Phase I Environmental Site Assessment 1154, 1172, 1176, 1180, and1208 Old Montreal Road, Ottawa, Ontario* dated August 19, 2016. Based on the results of the Phase One ESA, EXP identified one APEC.

Table 2.1: Findings of Phase I ESA

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
APEC #1	Area near dispensing area for former fuel AST on 1208 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
APEC #2	Area around furnace oil AST on 1208 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
APEC #3	Area around furnace oil AST on 1176 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
APEC #4	Area around furnace oil AST on 1180 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
APEC #5	Fill material present at 1208 Old Montreal Road	PCA #30 – Importation of fill of unknown quality	On-Site	PHC and BTEX, metals	Soil
APEC #6	Area around generator AST at the communications tower on 1208 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater

The locations of the APEC are shown in Figure 4 in Appendix A.

The Phase One ESA was conducted per the requirements of Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices.

3.0 Scope of the Investigation

3.1 Overview of the Site Investigation

The purpose of the Phase Two ESA was to investigate the soil and groundwater quality at the Phase Two property and to obtain soil and groundwater data to further characterize conditions in the soil and groundwater related to the PCA described above within the APEC shown on Figure 4 in Appendix A.

Subsurface investigations were undertaken in 2016 and in 2021.

3.2 Scope of Work

The scope of work for the Phase Two ESA was as follows:

- Request local public utility locating companies (cable, telephone, gas, hydro) to mark any underground utilities present at the Site;
- Retain a private utility locating company to mark all underground utilities present in the vicinity of the borehole locations and to clear the individual borehole locations;
- Advance a total of 19 boreholes at the Site, and instrument 11 of them with a monitoring well to facilitate groundwater sampling;
- Collect representative soil samples for chemical analysis of petroleum hydrocarbon fractions (PHC) F1-F4 and benzene, toluene, ethylbenzene, xylenes (BTEX), and/or metals;
- Collect groundwater samples from the monitoring wells for chemical analysis of BTEX and PHC.
- Measure groundwater levels of the monitoring wells and complete an elevation survey of the monitoring wells relative to a geodetic benchmark;
- Comparing the results of the soil and groundwater chemical analyses to applicable criteria, as set out by the Ontario Ministry of the Environment, Conservation and Parks (MECP); and
- Preparing a report summarizing the results of the assessment activities.

This report has been prepared in accordance with the Phase Two ESA standard as defined by Ontario Regulation 153/04 (as amended), and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Limitation of liability, scope of report and third-party reliance are outlined in Section 8 of this report.

3.3 Media Investigated

The Phase Two ESA included the investigation of soil and groundwater on the Phase Two property. As there are no water bodies on the Phase Two property, no surface water or sediment sampling was required.

The contaminants of potential concern (COPC) identified in the Phase One ESA were identified as target parameters for this Phase Two ESA. The APEC and COPC identified in the Phase One ESA are outlined in Section 2.2.

3.4 Phase One Conceptual Site Model

The Phase One conceptual site model (CSM) was developed by considering the following physical characteristics and pathways. The CSM showing the topography of the site, inferred groundwater flow, general site features, APEC, and PCA is shown in Figures 2 and 4.

The following PCA were identified:

- On site: PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks
- PCA #30 – Importation of fill of unknown quality

The following areas of potential environmental concern (APEC) were identified:

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
APEC #1	Area near dispensing area for former fuel AST on 1208 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
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APEC #4	Area around furnace oil AST on 1180 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
APEC #5	Fill material present at 1208 Old Montreal Road	PCA #30 – Importation of fill of unknown quality	On-Site	PHC and BTEX, metals	Soil
APEC #6	Area around generator AST at the communications tower on 1208 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater

3.5 Deviations from Sampling and Analysis Plan

The field investigative and sampling program was carried out following the requirements of the Phase Two property, as described in Section 4.

No significant deviations from the sampling and analysis plan (SAAP), as provided in Appendix C, were reported that affected the sampling and data quality objectives for the Phase Two property.

3.6 Impediments

No physical impediments were encountered during the field investigation. The entire Phase Two property was accessible at the time of the investigation.

4.0 Investigation Methodology

4.1 General

The current investigation was performed following requirements given under Ontario Regulation 153/04 and in accordance with generally accepted professional practices.

The site investigative activities consisted of the drilling of boreholes to facilitate the collection of soil samples for visual inspection, to record relevant geotechnical information and the installation of monitoring wells for hydrogeological property characterization and the collection of groundwater samples for chemical analysis.

4.2 Borehole Drilling

Prior to the commencement of drilling, the locations of underground public utilities including telephone, natural gas and electrical lines were marked at the subject property by public locating companies. A private utility locating contractor was also retained to clear the individual borehole locations.

In mid-August 2016, seven boreholes were advanced at the Site by Marathon Drilling Company Ltd., a licensed well contractor. One environmental borehole (BH7) was located in the dispensing area of the former gasoline storage tank. Impacted soil and groundwater were found at this location. On August 19, 2016, three (3) additional boreholes (BH7A to BH7C) were advanced at the Site approximately 5 m north, south and west of BH7 in an attempt to delineate the petroleum impact. Impacted soil and groundwater were found to the north and south, and to a lesser extent to the south.

On August 31, 2016, six (6) boreholes (BH8 to BH13) were drilled to the south (BH10), east (BH8 and BH9), and north (BH11 to BH13) of BH7 in an attempt to delineate the impact to soil and groundwater at the site. This phase of drilling was completed by M3 Drilling, a licensed well contractor.

On August 25 to September 2, 2021, four (4) boreholes were drilled on the Phase Two property. One borehole each were drilled to assess APEC 2 to 4 and APEC 6, and they were completed as monitoring wells. In addition, five (5) hand auger boreholes were drilled to assess APEC 5 (fill quality). The borehole located at APEC 2 was drilled using a manual crew within the basement of the residence near the former location of the heating oil AST.

The drilling was completed under the full-time supervision of EXP staff. The locations of the boreholes and monitoring wells are presented on Figure 5 in Appendix A.

The boreholes were generally advanced to a maximum depth of 8.23 m below ground surface (bgs), using both a power auger drilling rig. Representative soil samples were recovered from the boreholes at regular depth intervals using stainless steel split spoon samplers. Dedicated nitrile gloves (i.e., one pair per sample) were used during sample handling. No petroleum-based greases or solvents were used during drilling activities.

4.3 Soil Sampling

The soil sampling during the completion of this Phase Two ESA was undertaken in general accordance with the SAAP presented in Appendix C.

EXP staff continuously monitored the drilling activities to log the stratigraphy observed from the recovered soil cores, to record the depth of soil sample collection, to record total depths of borings, and to record visual or olfactory observations of potential impacts. Field observations are summarized on the borehole logs provided in Appendix D.

Soil samples identified for possible laboratory analysis were collected from the boreholes and placed directly into pre-cleaned, laboratory-supplied glass sample jars/vials. Samples to be analysed for PHC fraction F1 and BTEX were collected using a soil core sampler and placed into vials containing methanol as a preservative. The jars and vials were sealed with

Teflon-lined lids to minimize headspace and reduce the potential for induced volatilization during storage/transport prior to analysis. All soil samples were placed in clean coolers containing ice prior to and during transportation to the subcontract laboratory. The samples were transported/submitted within 24 hours of collection to the laboratory following chain of custody protocols for chemical analysis.

4.4 Field Screening Measurements

The remaining portion of each soil sample was placed in a sealed Ziploc plastic bag and allowed to reach ambient temperature prior to field screening with a combustible vapour meter calibrated to hexane gas prior to use. The field screening measurements were made by inserting the instrument's probe into the plastic bag while manipulating the sample to ensure volatilization of the soil gases. These 'headspace' readings provide a real-time indication of the relative concentration of combustible vapours encountered in the subsurface during drilling and are used to aid in the assessment of the vertical and horizontal extent of potential impacts and the selection of soil samples for analysis.

Readings of potential hydrocarbon vapour concentrations in the soil samples collected during the test pitting investigation were recorded using an RKI Eagle 2, where there was sufficient recovery. This instrument is designed to detect and measure concentrations of combustible gas in the atmosphere to within 5 parts per million by volume (ppmv) from 0 ppmv to 200 ppmv, 10 ppmv increments from 200 ppmv to 1,000 ppmv, 50 ppmv increments from 1,000 ppmv to 10,000 ppmv, and 250 ppmv increments above 10,000 ppmv. It is equipped with two ranges of measurement, reading concentrations in ppmv or in percentage lower explosive limit (% LEL). The RKI Eagle 2 instrument can determine combustible vapour concentrations in the range equivalent to 0 to 11,000 ppmv of hexane.

The instrument was configured to eliminate any response from methane for all sampling conducted at the subject property. Instrument calibration is checked on a daily basis in both the ppmv range and % LEL range using standard gases comprised of known concentrations of hexane (400 ppmv, 40% LEL) in air. If the instrument readings are within ±10% of the standard gas value, then the instrument is deemed to be calibrated, however if the readings are greater than ±10% of the standard gas value then the instrument is re-calibrated prior to use.

The field screening measurements, in parts per million by volume (ppmv), are presented in the borehole logs provided in Appendix D.

4.5 Groundwater: Monitoring Well Installation

A groundwater monitoring well was installed in boreholes BH7, BH7B, and BH8 to BH13, and MW-1 to MW-4. The monitoring wells were installed in general accordance with the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 and were installed by licensed well contractors (Marathon Drilling and M3 Drilling).

The monitoring wells were constructed of a 30 mm diameter, 3.0 m long Schedule 40 PVC screen and appropriate length riser pipe. The well screen has a slot size of approximately 0.25 mm (slot 10) and was sealed at the base with a PVC end cap. The annular space around the well screen was backfilled with silica sand to approximately 0.3 m above the top of the screen. The sand pack was extended above the screen to allow for compaction of the sand pack and expansion of the overlying well seal. A granular bentonite ('Hole Plug') seal was placed in the borehole annulus from the top of the sand pack to approximately 0.3 m below ground surface. The 2016 monitoring wells were completed with a flush-mount protective steel casing cemented into place. MW-1 to MW-4 did not have a protective casing and the top of casing was above the ground surface. Details of the well installations are provided on the borehole logs in Appendix D.

4.6 Groundwater: Field Measurement and Water Quality Parameters

Field measurement of water quality parameters is described in Section 4.7.

All measurements of petroleum vapours in the monitor riser were made with an RKI Eagle 2 in methane elimination mode. Immediately after removing the well cap, the collection tube of the Eagle was inserted into the riser and the peak instrument reading was recorded. EXP used a Heron water level tape to measure the static water level in each monitoring well. The measuring tape was cleaned with phosphate-free soap and tap water, rinsed with distilled water after each measurement.

4.7 Groundwater: Sampling

As part of the Phase Two ESA groundwater samples from eight monitoring wells (MW-7, MW-7B, MW-8 to MW-13) were collected in 2016 via a low flow sampling technique using a YSI 550 multi probe water quality meter. In 2021, the four new monitoring wells (MW-1 to MW-4) and three existing wells (BH7B, and BH8 and BH9) were sampled using low flow techniques. The remaining older wells could not be found due to site clearing and high vegetation. The YSI probe was calibrated using in-house reference standards. Prior to collecting the groundwater samples, water quality field parameters (turbidity, dissolved oxygen, conductivity, temperature, pH, and oxidation reduction potential) were monitored until stable readings were achieved. These parameters are considered to be stable when three consecutive readings meet the following conditions:

- Turbidity: within 10% for values greater than 5 nephelometric turbidity units (NTU), or three values less than 5 NTU;
- Dissolved oxygen: within 10% for values greater than 0.5 mg/L, or three values less than 0.5 mg/L;
- Conductivity: within 3%;
- Temperature: ± 1°C;
- pH: ± 0.1 unit; and,
- Oxidation reduction potential: ±10 millivolts.

When stabilization occurs, equilibrium between groundwater within a monitor and the surrounding formation water is attained. As such, samples collected when stabilization occurs are considered to be representative of formation water.

Seventeen groundwater samples were submitted for analysis of BTEX and PHC. The groundwater samples were placed in clean coolers containing ice packs prior to and during transportation to the contract laboratory. The samples were transported to the laboratory within 24 hours of collection with a chain of custody.

4.8 Sediment: Sampling

As no water body was present at the Phase Two property, sediment sampling was not required.

4.9 Analytical Testing

The contracted laboratory selected to perform chemical analysis on the soil and water samples from 2016 was Paracel Laboratories Ltd. (Paracel). The contract laboratory selected to perform chemical analysis on the soil and water samples from 2021 was Bureau Veritas Ltd. (BVL). Paracel and BVL are accredited laboratories under the Standards Council of Canada/Canadian Association for Laboratory Accreditation in accordance with ISO/IEC 17025:1999- General Requirements for the Competence of Testing and Calibration Laboratories.

4.10 Residue Management

The drill cuttings from drilling activities remained on site. Fluids from cleaning drilling equipment were disposed of by the driller at their facility. Purge water from groundwater sampling was stored in pails on the site.

4.10 Elevation Surveying

An elevation survey of the monitoring wells was completed on September 6, 2016 and August 2021. Elevations were referenced to a geodetic benchmark using a high precision global positioning system meter relative to mean sea level (m AMSL).

4.12 Quality Assurance and Quality Control Measures

All soil and groundwater samples were placed in coolers containing ice packs prior to and during transportation to the contract laboratories. The contracted laboratory selected to perform chemical analysis on the soil and water samples from 2016 was Paracel Laboratories Ltd. (Paracel) and in 2021 the contract laboratory was Bureau Veritas. QA/QC program was also implemented to ensure that the analytical results received are accurate and dependable. A QA/QC program is a system of documented checks that validate the reliability of the data. Quality Assurance is a system that ensures that quality control procedures are correctly performed and documented. Quality Control refers to the established procedures observed both in the field and in the laboratory, designed to ensure that the resulting end data meet intended quality objectives. The QA/QC program implemented by EXP incorporated the following components:

- Blind duplicate soil and groundwater samples were collected;
- Using dedicated and/or disposable sampling equipment;
- Following proper decontamination protocols to minimize cross-contamination;
- Maintaining field notes and completing field forms to document field activities; and
- Using only laboratory-supplied sample containers and following prescribed sample protocols, including using proper preservation techniques, meeting sample hold times, and documenting sample transmission on chains of custody, to ensure the integrity of the samples is maintained.

Paracel's QA/QC program involved the systematic analysis of control standards for the purpose of optimizing the measuring system as well as establishing system precision and accuracy and included calibration standards, method blanks, reference standards, spiked samples, surrogates and duplicates.

5.0 Review and Evaluation

5.1 Geology

The detailed soil profiles encountered in the borehole are provided on the borehole logs in Appendix D. Boundaries of soils indicated on the logs are intended to reflect transition zones for the purpose of environmental assessment and should not be interpreted as exact planes of geological change

5.1.1 Fill Material

A 0.1 m thick layer of grey crushed stone was observed in several boreholes at the ground surface. Brown sand and gravel mixed with silty sand was found in each of the boreholes either below the crushed stone or at the ground surface. The brown sand and gravel ranged in thickness from 0.5 m to 0.8 m. No indications of petroleum impact were identified in the fill.

5.1.2 Native Material

Below the fill was a brown to grey silty clay. This extended to the maximum depth drilled of 8.23 m. A sand a gravel till layer was found in BH13 at a depth of 4.16 m. There were petroleum odours noticed in soil samples in BH7 from 1.5 m to 3.3 m, BH7A from 1.5 m to 3.2 m, and in BH7C from 0.3 m to 3.0 m.

5.1.3 Bedrock

Bedrock was encountered during the investigation at a depth of 13.6 m and 23.3 m. Available information indicates that the bedrock in the area is likely to be shale of the Rockcliffe Formation.

5.2 Groundwater: Elevations and Flow Direction

Groundwater elevations and water levels were measured at the Phase Two property on September 8, 2016 and September 9, 2021. Groundwater was encountered at a depth of 1.24 m to 5.80 m bgs in 2016 and at a depth of 1.96 to. Petroleum sheens and odours were observed in the purge water from BH7. No other petroleum sheens or odours were observed during the sampling event. Monitoring consisted of inspection for general physical condition, groundwater depth, the presence of phase-separated liquid petroleum and petroleum vapour. Groundwater monitoring and elevation data are provided below.

Table 5-1: Monitoring and Elevation Data

Monitoring Well ID/ Installation ID	Grade Elevation	Top of Casing Elevation (mbTOC)	Screen Depth (mbgs)	Depth to Groundwater (mbTOC) 2016	Groundwater Elevation Sept. 8, 2016	Depth to Groundwater (mbTOC) 2021	Groundwater Elevation Sept. 9, 2021
BH7	85.17	85.17	2.5 to 5.5	1.24	83.93	NM	NA
BH7B	84.88	84.99	2.5 to 5.5	1.79	83.20	3.06	81.93
BH8	84.57	84.49	3.8 to 6.8	2.48	82.01	3.39	81.18
BH9	85.49	86.29	4.6 to 7.6	2.42	83.87	2.66	82.83
BH10	85.97	85.80	3.8 to 6.8	1.79	84.01	NM	NA
BH11	79.25	79.18	4.6 to 7.6	5.73	73.45	NM	NA
BH12	77.29	77.10	4.2 to 8.2	5.22	71.88	NM	NA

Monitoring Well ID/ Installation ID	Grade Elevation	Top of Casing Elevation (mbTOC)	Screen Depth (mbgs)	Depth to Groundwater (mbTOC) 2016	Groundwater Elevation Sept. 8, 2016	Depth to Groundwater (mbTOC) 2021	Groundwater Elevation Sept. 9, 2021
BH13	75.32	75.14	2.1 to 5.1	2.19	72.95	NM	NA
MW-1	81.39	81.81	2.7 to 5.7	NA	NA	3.38	78.43
MW-2	86.45	88.00	3.1 to 6.1	NA	NA	4.40	83.60
MW-3	85.63	87.30	3.1 to 6.1	NA	NA	4.21	83.09
MW-4	85.45	85.63	3.1 to 6.1	NA	NA	1.96	83.67
BH-14	84.04	NA	8 to 10	NA	NA	2.29	81.75
BH-15	85.03	NA	8 to 10	NA	NA	3.83	81.20
BH-16	85.50	NA	8 to 10	NA	NA	5.09	80.41

Notes: Elevations were measured to a geodetic elevation.
mbgs – metres below ground surface
mbTOC – metres below top of monitor casing
ND – non-detectable

Based on the water levels measured on September 9, 2021, the principal direction of groundwater flow in the overburden materials was to the west northwest. The groundwater contour plan for 2016 is provided as Figure 6A and for 2021 is Figure 6B in Appendix A. The overburden groundwater direction was the same in 2016 and 2021.

EXP notes that groundwater levels can be influenced by seasonal changes, the presence of subsurface structures, or fill.

5.3 Groundwater: Hydraulic Gradients

Horizontal hydraulic gradients were estimated for the groundwater flow components identified in the bedrock aquifer based on the September 2016 groundwater elevations.

The horizontal hydraulic gradient is calculated across the using the following equation:

$i = \Delta h / \Delta s$

Where,
i = horizontal hydraulic gradient;
Δh (m) = groundwater elevation difference; and,
Δs (m) = separation distance.

The horizontal hydraulic gradient was calculated to be 0.003 m/m to 0.023 m/m in the south part of the site. In the north part of the site the horizontal hydraulic gradient was calculated to be 0.11 m/m 0.14 m/m.

5.4 Soil Texture

Two grain size analyses performed on the silty clay yielded a soil composition of 61 to 69 percent clay, 30 to 37 percent silt and 1 to 2 percent sand. This indicates that the soil texture is fine to medium grained. The pH of the soil ranged from 6.40 to 6.81.

5.5 Soil: Field Screening

Field screening involved using the combustible vapour meter to measure vapour concentrations, in ppmv, in the collected soil samples in order to assess the presence of soil gases which would imply potential petroleum hydrocarbon impact. The soil sample vapour readings ranged from non-detectable to 1600 ppmv. No staining or odours were observed in any of the soil samples.

5.6 Soil: Quality

In accordance with the scope of work, chemical analyses were performed on selected soil samples recovered from the boreholes. The selection of representative "worst case" soil samples from each borehole was based on field screening for combustible vapours and visual and/or olfactory evidence, where observed. Soil analytical results are summarized on Tables 1 and 2 in Appendix E and the Certificates of Analysis are enclosed in Appendix F.

The concentrations of BTEX parameters in BH7, BH7A and BH7C exceeded the MECP 2011 Table 2 SCS. The concentration of PHC F1 in the sample from BH7A also exceeded the MECP 2011 Table 2 SCS. The remaining soil samples had PHC and BTEX concentrations that were less than the laboratory detection limits and were less than the MECP 2011 Table 2 SCS. The PHC and BTEX soil concentrations are shown on Figures 7, 10 and 12.

Five (5) soil samples were submitted for metals analysis. All metals concentrations were less than the MECP 2011 Table 2 SCS. The metals soil concentrations are shown on Figures 8, 11, and 13.

Maximum soil concentrations are provided in Table 3 in Appendix E.

BTEX and PHC impacted soil was identified at the former tractor refuelling area at 1208 Old Montreal Road and is associated with APEC 1. Based on laboratory results indicating exceedances of the MECP Table 2 SCS and field observations, the maximum thickness of PHC impact of 3.5 m was measured in BH7. The likely area of impacted soil has been estimated to be 600 m^2. Assuming an estimated average thickness of impact of 1.5 m, the resulting volume of impacted soil in this zone is 900 m^3.

5.7 Groundwater: Quality

Chemical analyses were performed on groundwater samples collected fromeleven monitoring wells. All groundwater samples were collected via a low flow sampling technique. EXP monitored several water quality parameters (such as water level, temperature, dissolved oxygen, conductivity, salinity, pH, oxygen reduction potential and turbidity) in order to ensure that the samples collected were representative of actual groundwater conditions.

Eight groundwater samples (BH7 to BH13 and one field duplicate) were submitted for chemical analysis of BTEX and PHC in 2016. The BTEX concentrations measured in the groundwater sample collected from BH7 significantly exceeded the MECP 2011 Table 2SCS. The concentrations of PHC and BTEX measured in the remaining groundwater samples were less than the laboratory detection limits and were less than the MECP 2011 Table 2 SCS. The results are presented in Table 4 in Appendix E. The four new monitoring wells (MW-1 to MW-4) and three existing wells (BH7B, and BH8 and BH9) were sampled on September 9 and 10, 2021 and had non-detectable concentrations of PHC and BTEX and therefore, the extent of groundwater impact has not increased. The PHC F2 concentration measured in MW-3 initially exceeded the MECP Table 2 SCS, but this was likely due to sediment, so MW was re-developed and re-sampled on Sep 21, 2021 and result was non-detectable, confirming that the initial result was a false positive. The groundwater PHC concentrations are shown on Figures 9, 10, and 12.

Maximum groundwater concentrations are provided in Table 5 in Appendix E.

Copies of the laboratory Certificates of Analysis are provided in Appendix F.

5.7.1 Chemical Transformation and Contaminant Sources

There are four soil samples located west of the steel barn at 1208 Old Montreal Road that had one or more exceedances of BTEX and PHC F1 of the MECP Table 2 SCS. The groundwater at MW7 also had concentrations of BTEX that exceeded the MECP Table 2 SCS. Chemical transformations are a potential concern at the Site. This impacted soil and groundwater should be removed from the Phase Two property.

5.7.2 Evidence of Non-Aqueous Phase Liquid

Inspection of the groundwater monitoring wells did not indicate the presence of non-aqueous phase liquid (NAPL).

5.8 Maximum Concentrations

Maximum soil and groundwater concentrations are provided in Tables 3 and 5, respectively, in Appendix E.

5.9 Sediment: Quality

As there were no water bodies on the Phase Two property, surface water and sediment sampling were not required.

5.10 Quality Assurance and Quality Control Results

Bureau Veritas and Paracel's QA/QC programs consisted of the preparation and analysis of laboratory duplicate samples to assess precision and sample homogeneity, method blanks to assess analytical bias, spiked blanks and QC standards to evaluate analyte recovery, matrix spikes to evaluate matrix interferences and surrogate compound recoveries to evaluate extraction efficiency. The laboratory QA/QC results are presented in the Quality Assurance Report provided in the Certificates of Analysis prepared by BV Labs. The QA/QC results are reported as percent recoveries for matrix spikes, spiked blanks and QC standards, relative percent difference for laboratory duplicates and analyte concentrations for method blanks.

Review of the laboratory QA/QC results reported indicated that they were mostly within acceptable control limits or below applicable alert criteria for the sampled media and analytical test groups. Based on the assessment of the QA/QC, the analytical results reported by Paracel and BV labs are of acceptable quality and further data qualifications are not required.

5.11 Phase Two Conceptual Site Model

This section presents a Conceptual Site Model (CSM) providing a narrative, graphical and tabulated description integrating information related to the Phase Two property's geologic and hydrogeological conditions, areas of potential environmental concern/potential contaminating activities, the presence and distribution of contaminants of concern, contaminant fate and transport, and potential exposure pathways.

5.11.1 Introduction

EXP Services Inc. (EXP) was retained by DCR Phoenix Group to complete a Phase Two Environmental Site Assessment (ESA) of the property located at 1208 Old Montreal Road, Ottawa, Ontario hereinafter referred to as the 'Phase Two property'. The objectives of the Phase Two ESA investigation are to assess the quality of the soil and groundwater conditions within the areas of potential environmental concern (APEC) identified in a Phase One ESA prepared by EXP.

5.11.2 Physical Site Description

The Phase Two property is located on the south side of Old Montreal Road, at 1154, 1176, 1180, and 1208 Old Montreal Road, as shown on Figure 1 in Appendix A. The property at 1172 Old Montreal Road is not included in this assessment. At the time of the investigation, the Phase Two property was used for residential and agricultural purposes. The surrounding

properties are mostly residential and agricultural. The Phase Two property is occupied by 4 residences and several barns/sheds and has an area of approximately 5.6 ha. A site plan is provided in Figure 2 of Appendix A.

The Phase Two property has the property identification numbers (PIN): 145260023, 145260025, 145260026, 145260028, and 145262280.

The legal description of the Phase Two property is:

- 1154 Old Montreal Road – PT LT 28 CON 1OS CUMBERLAND AS IN RR138993; OTTAWA
- 1176 Old Montreal Road – PT LT 27 CON 1OS CUMBERLAND AS IN N752036 T/W RR133367; OTTAWA
- 1180 Old Montreal Road – PT LT 27 CON 1OS CUMBERLAND PARTS 1,2 & 3, 50R6772 S/T RR133366; OTTAWA
- 1208 Old Montreal Road – FIRSTLY: PART LOT 27, CONCESSION 1OS CUMBERLAND AS IN N759565; SECONDLY: PART LOT 27, CONCESSION 1OS CUMBERLAND, PART 1, PLAN 4R31597; T/W RR133367 CITY OF OTTAWA

The approximate Universal Transverse Mercator (UTM) coordinates for the Phase Two property centroid are Zone 18, 463549 m E and 5038049 m N. The UTM coordinates are based on measurements from Google Earth Pro, published by the Google Limited Liability Company (LLC). The accuracy of the centroid is estimated to be less than 10 m

The topography of the Phase Two property consists of a topographic high at the house and barn locations of the site, with a steep slope downwards to the north to Old Montreal Road. The local groundwater flow direction is anticipated to be north towards the Ottawa River, at a distance of 1.2 km.

The Phase Two property is located in a mixed agricultural/residential area. Potable water on the site and properties on the south side of Montreal Road rely on water wells for potable water. Municipal water is available from the City of Ottawa for the properties north of Montreal Road. Thus, in accordance with Section 35 of Ontario Regulation 153/04, potable water standards apply to the Phase Two property.

In accordance with Section 41 of Ontario Regulation 153/04, the Phase Two property is not an environmentally sensitive area. In addition, the Phase Two property is not located within an area of natural significance and it does not include land that is within 30 metres of an area of natural significance.

Based on the Phase Two ESA investigation, the Phase Two property is a shallow soil property as defined in Section 43.1 of the regulation. The Phase Two property does not include and is not within 30 m of a water body. The Madawaska River is located approximately 30 m west of the Phase Two property.

5.11.3 Geological and Hydrogeological

A 0.1 m thick layer of grey crushed stone was observed in several boreholes at the ground surface. Brown sand and gravel mixed with silty sand was found in each of the boreholes either below the crushed stone or at the ground surface. The brown sand and gravel ranged in thickness from 0.5 m to 0.8 m. No indications of petroleum impact were identified in the fill. Below the fill was a brown to grey silty clay. This extended to the maximum depth drilled of 8.23 m. A sand a gravel till layer was found in BH13 at a depth of 4.16 m. There were petroleum odours noticed in soil samples in BH7 from 1.5 m to 3.3 m, BH7A from 1.5 m to 3.2 m, and in BH7C from 0.3 m to 3.0 m.

Available information indicates that the bedrock in the area is likely to be shale of the Rockcliffe Formation. The depth to bedrock ranges from 13.6 m and 23.3 m across the property.

The groundwater flow direction was determined to be to the north as shown in Figure 6. EXP notes that groundwater levels can be influenced by seasonal changes, the presence of subsurface structures, or fill.

A plan view showing cross-sections is provided as Figure 6A while the Phase Two property geology is depicted in cross-sections on Figures 10 to 13.

A summary of factors that apply to the Phase Two property is provided in Table 5.2

Table 5-2: Site Characteristics

Characteristic	Description
Minimum Depth to Bedrock	22.8 m
Minimum Depth to Overburden Groundwater	1.34 m at BH7
Shallow Soil Property	No
Proximity to water body or ANSI	60 m
Soil pH	6.40 to 6.81
Soil Texture	Fine and medium grained
Current Property Use	Residential
Future Property Use	Residential
Proposed Future Building	Multi-storey residential

5.11.4 Utilities

Overhead electrical lines are present at the Phase Two property, however active underground utilities are not expected to be present. The sites rely on private wells and septic systems. It is unlikely that the groundwater flow would be influenced by the septic systems.

5.11.5 Potentially Contaminating Activities

Ontario Regulation 153/04 defines a PCA as one of 59 operations set out in Table 2 of Schedule D that occurs or has occurred in a Phase Two study area. The following PCAs were identified:

- PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks
- PCA #30 – Importation of fill of unknown quality

5.11.6 Areas of Potential Environmental Concern/Potential Contaminants of Concern

Ontario Regulation 153/04 defines an APEC as an area on a property where one or more contaminants are potentially present. The following APEC were identified on the Phase Two property, as shown on Figure 4 in Appendix A:

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
APEC #1	Area near dispensing area for former fuel AST on 1208 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
APEC #2	Area around furnace oil AST on 1208 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
APEC #3	Area around furnace oil AST on 1176 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
APEC #4	Area around furnace oil AST on 1180 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater
APEC #5	Fill material present at 1208 Old Montreal Road	PCA #30 – Importation of fill of unknown quality	On-Site	PHC and BTEX, metals	Soil
APEC #6	Area around generator AST at the communications tower on 1208 Old Montreal Road	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHC and BTEX	Soil and Groundwater

5.11.7 Investigation

The Phase Two ESA was conducted to assess the soil and groundwater quality at the Phase Two property. The site investigative activities consisted of drilling boreholes and monitoring wells to facilitate the collection of soil and groundwater samples for visual inspection, to record relevant geotechnical information and submit samples for chemical analysis. The analytical program of the Phase Two ESA included testing of soil for metals, BTEX and PHC and groundwater for BTEX and PHC. The borehole and monitoring well locations are shown on Figure 5 in Appendix A.

Prior to the commencement of excavation, the locations of underground public utilities including telephone, natural gas and electrical lines were marked at the subject property by public locating companies.

5.11.8 Soil Sampling

Representative soil samples were recovered from the boreholes at regular depth intervals using stainless steel split spoon samplers. Soil samples identified for possible laboratory analysis were collected from the boreholes and placed directly into pre-cleaned, laboratory-supplied glass sample jars/vials. All soil samples were placed in clean coolers containing ice prior to and during transportation to the subcontract laboratory, Paracel Laboratories and Bureau Veritas of Ottawa, Ontario. The samples were transported/submitted within 24 hours of collection to the laboratory following chain of custody protocols for chemical analysis.

Seventeen soil samples were submitted for laboratory analysis of PHC and BTEX. The concentrations of BTEX parameters in BH7, BH7A and BH7C exceeded the MECP 2011 Table 2 SCS. The concentration of PHC F1 in the sample from BH7A also exceeded the MECP 2011 Table 2 SCS. The remaining soil samples had PHC and BTEX concentrations that were less than the laboratory detection limits and were less than the MECP 2011 Table 2 SCS. Five (5) soil samples were submitted for metals analysis. All metals concentrations were less than the MECP 2011 Table 2 SCS. The soil concentrations are shown on Figure 7, 8 and 10 to 13.

BTEX and PHC impacted soil and groundwater was identified at the former tractor refuelling area at 1208 Old Montreal Road and is associated with APEC 1. Based on laboratory results indicating exceedances of the MECP Table 2 SCS and field observations, the maximum thickness of PHC impact of 3.5 m was measured in BH7. The likely area of impacted soil has been estimated to be 600 m^2. Assuming an estimated average thickness of impact of 1.5 m, the resulting volume of PHC impacted soil in this zone is 900 m^3. This area is shown on Figures 7, 10 to 13.

5.11.9 Groundwater Sampling

All groundwater samples were collected via a low flow sampling technique. EXP monitored several water quality parameters (such as water level, temperature, dissolved oxygen, conductivity, salinity, pH, oxygen reduction potential and turbidity) in order to ensure that the samples collected were representative of actual groundwater conditions.

Seventeen (17) groundwater samples plus a blind duplicate were submitted for chemical analysis of BTEX and PHC. The monitoring wells are labeled BH7 to BH13 and MW-1 to MW-4. The BTEX concentrations measured in the groundwater sample collected from BH7 significantly exceeded the MECP 2011 Table 2 SCS. The concentrations of PHC and BTEX measured in the remaining groundwater samples were less than the laboratory detection limits and were less than the MECP 2011 Table 2 SCS. The results are presented in Table 4 in Appendix E. The groundwater concentrations are shown on Figure 9 and 10 to 13.

5.11.10 Contaminants of Concern

Based on the results of the investigation, BTEX and PHC in soil and groundwater at the Phase Two property exceeded the applicable MECP Table 2 SCS. The analytical results are provided in Figures 7 and 10 to 13 in Appendix A.

5.11.11 Contaminant Fate and Transport

Inspection of groundwater monitoring wells did not indicate the presence of non-aqueous phase liquid (NAPL).

The PHC impacted soil and groundwater was identified at the former tractor refuelling area at 1208 Old Montreal Road and is associated with APEC 1. This area is shown on Figures 7 to 13. The depth of soil impact was found from 1.8 m to 2.4 m. The source of the impact was a fuel dispensing area beside the steel barn.

A variety of physical, chemical and biochemical mechanisms affect the fate and transport of the potential COCs in soil, the contribution of which is dependent on the soil conditions and the chemical/physical properties of the COCs. Relevant fate and transport mechanisms are natural attenuation mechanisms, including advection mixing, mechanical dispersion/molecular diffusion, phase partitions (i.e. sorption and volatilization), and possibly abiotic or biotic chemical reactions, which effectively reduce COC concentrations.

As a result of the various natural attenuation mechanisms in the soil environment, the concentrations of any COCs in soil will be reduced at the Site. It is recommended that the impacted soil be removed from the Phase Two property.

6.0 Conclusion

During the current investigation, the soil and groundwater quality at the Phase Two property were investigated. The investigation included pre- and post-remedial soil sampling and a groundwater sampling program. Results were compared to Regulation 153/04 Table 2 standards for a residential/parkland/institutional property use and fine textured soils in a non-potable groundwater condition.

A summary of the soil and groundwater sampling program is as follows:

- A 0.1 m thick layer of grey crushed stone was observed in several boreholes at the ground surface. Brown sand and gravel mixed with silty sand was found in each of the boreholes either below the crushed stone or at the ground surface. The brown sand and gravel ranged in thickness from 0.5 m to 0.8 m. No indications of petroleum impact were identified in the fill. Below the fill was a brown to grey silty clay. The silty clay extended to 21.3 m. Gravelly sand till was found from 21.3 m to 23.0. A sand and gravel till layer was found in BH13 at a depth of 4.16 m. Petroleum odours were detected in soil samples in BH7 from 1.5 m to 3.3 m, BH7A from 1.5 m to 3.2 m, and in BH7C from 0.3 m to 3.0 m;
- Seventeen (17) soil samples were submitted for laboratory analysis of PHC and BTEX. The concentrations of BTEX parameters in BH7, BH7A and BH7C exceeded the MECP 2011 Table 2 SCS. The concentration of PHC F1 in the sample from BH7A also exceeded the MECP 2011 Table 2 SCS. The remaining soil samples had PHC and BTEX concentrations that were less than the laboratory detection limits and were less than the MECP 2011 Table 2 SCS;
- Five (5) soil samples were submitted for metals analysis. All metals concentrations were less than the MECP 2011 Table 2 SCS;
- Seventeen (17) groundwater and a blind duplicate sample were submitted for chemical analysis of BTEX and PHC. The monitoring wells are labeled BH7 to BH13 and MW-1 to MW-4. The BTEX concentrations measured in the groundwater sample collected from BH7 significantly exceeded the MECP 2011 Table 3 SCS. The concentrations of PHC and BTEX measured in the remaining groundwater samples were less than the laboratory detection limits and were less than the MECP 2011 Table 2 SCS;
- BTEX and PHC impacted soil and groundwater were identified at the former tractor refuelling area at 1208 Old Montreal Road associated with APEC 1. Based on laboratory results indicating exceedances of the MECP Table 2 SCS and field observations, the maximum thickness of PHC impact of 3.5 m was measured in BH7. The area of impacted soil has been estimated to be between 600 m^2 and 1,050 m^2. Assuming an estimated average thickness of impact of 1.5 m, the resulting volume of PHC impacted soil in this zone is estimated to be between 900 m^3 and 1,575 m^3.
- This impacted soil and groundwater must be removed from the site and confirmatory soil samples collected to demonstrate that the remaining soil concentrations satisfy the MECP Table 2 SCS.
- If the wells are no longer needed, they should be decommissioned in accordance with Ontario Regulation 903.

The Qualified Person can confirm that the Phase Two Environmental Site Assessment was conducted per the requirements of Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices.

7.0 References

This study was conducted in accordance with the applicable Regulations, Guidelines, Policies, Standards, Protocols and Objectives. Specific reference is made to the following documents.

- City of Ottawa. 2011. Characterization of Ottawa's Watersheds: An Environmental Foundation Document with Supporting Information Base. March.
- Environmental Protection Act, R.S.O. 1990, Chapter E.19, as amended, September 2004.
- EXP Services Inc. *Phase One Environmental Site Assessment 1208, 1353, and 1365 Old Montreal Road, Ottawa, Ontario,* dated February 9, 2021.
- Ministry of the Environment [MOE] (1996) Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario. Ontario Ministry of the Environment, December 1996.
- MOE (2011) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. Ontario Ministry of the Environment, April 15, 2011.
- MOE (2011) Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04. Ontario Ministry of the Environment, June 2011.
- MOE (2011) Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Ontario Ministry of the Environment, March 2004, amended as of July 1, 2011.
- Ontario Regulation 153/04, made under the Environmental Protection Act, May 2004, last amended to O.Reg.333/13.
- Ontario Water Resources Act – R.R.O. 1990, Regulation 903, amended to O.Reg. 128/03, August 2003.
- Groundwater, Freeze and Cherry 1979. Prentice Hall.
- Singer, S.N., C.K. Cheng, M.G. Scafe. 2003. Hydrogeology of Southern Ontario. Hydrogeology of Ontario Series – Report 1. Prepared for Ministry of Environment.
- WESA. 2006. Watershed Characterization: Geologic Model and Conceptual Hydrogeological Model, Raisin Region CA and South Nation Conservation, Source Protection Plan Partnership.

8.0 General Limitations

Basis of Report

This report ("Report") is based on site conditions known or inferred by the investigation undertaken as of the date of the Report. Should changes occur which potentially impact the condition of the site the recommendations of EXP may require re-evaluation. Where special concerns exist, or DCR Phoenix Group ("the Client") has special considerations or requirements, these should be disclosed to EXP to allow for additional or special investigations to be undertaken not otherwise within the scope of investigation conducted for the purpose of the Report.

Reliance on Information Provided

The evaluation and conclusions contained in the Report are based on conditions in evidence at the time of site inspections and information provided to EXP by the Client and others. The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose as communicated by the Client. EXP has relied in good faith upon such representations, information and instructions and accepts no responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of any misstatements, omissions, misrepresentation or fraudulent acts of persons providing information. Unless specifically stated otherwise, the applicability and reliability of the findings, recommendations, suggestions or opinions expressed in the Report are only valid to the extent that there has been no material alteration to or variation from any of the information provided to exp. If new information about the environmental conditions at the Site is found, the information should be provided to EXP so that it can be reviewed and revisions to the conclusions and/or recommendations can be made, if warranted.

Standard of Care

The Report has been prepared in a manner consistent with the degree of care and skill exercised by engineering consultants currently practicing under similar circumstances and locale. No other warranty, expressed or implied, is made. Unless specifically stated otherwise, the Report does not contain environmental consulting advice.

Complete Report

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment form part of the Report. This material includes, but is not limited to, the terms of reference given to EXP by the Client, communications between EXP and the Client, other reports, proposals or documents prepared by EXP for the Client in connection with the site described in the Report. In order to properly understand the suggestions, recommendations and opinions expressed in the Report, reference must be made to the Report in its entirety. EXP is not responsible for use by any party of portions of the Report.

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9.0 Signatures

We trust this report meets your current needs. If you have any questions pertaining to the investigation undertaken by EXP, please do not hesitate to contact the undersigned.

Mark McCalla, P.Geo., QP$_{ESA}$
Senior Geoscientist
Earth and Environment

Patricia Stelmack, M.Sc., P. Eng.
Senior Engineer
Earth and Environment

Appendix A: Figures

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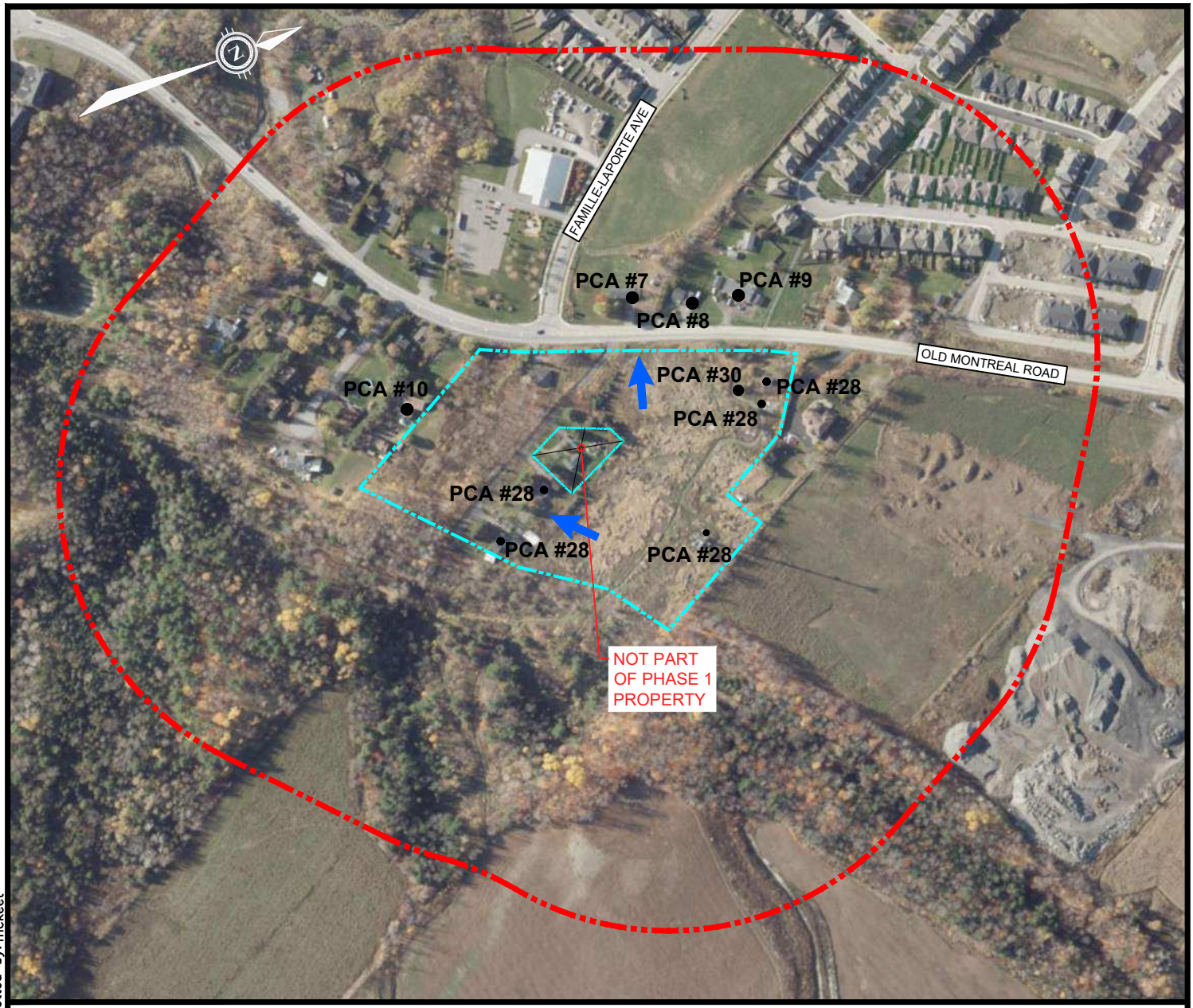
DATE: SEPT 2021	CLIENT: PHOENIX HOMES, PROPOSED SUBDIVISION	project no. OTT-00234493-B0
DESIGN: M.M. / CHECKED: M.M.	TITLE: SITE LOCATION PLAN	scale: NTS
DRAWN BY: T.M.	1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO	FIG 1



LEGEND

- PROPERTY BOUNDARY
- STUDY AREA (250m)
- INFERRED GROUNDWATER FLOW DIRECTION
- PCA IDENTIFIER

POTENTIALLY CONTAMINATING ACTIVITY (PCA)

PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks
PCA #30 – Imported Fill Material of Unknown Quality

0 50m 100m 200m

HORIZONTAL 1:5,000

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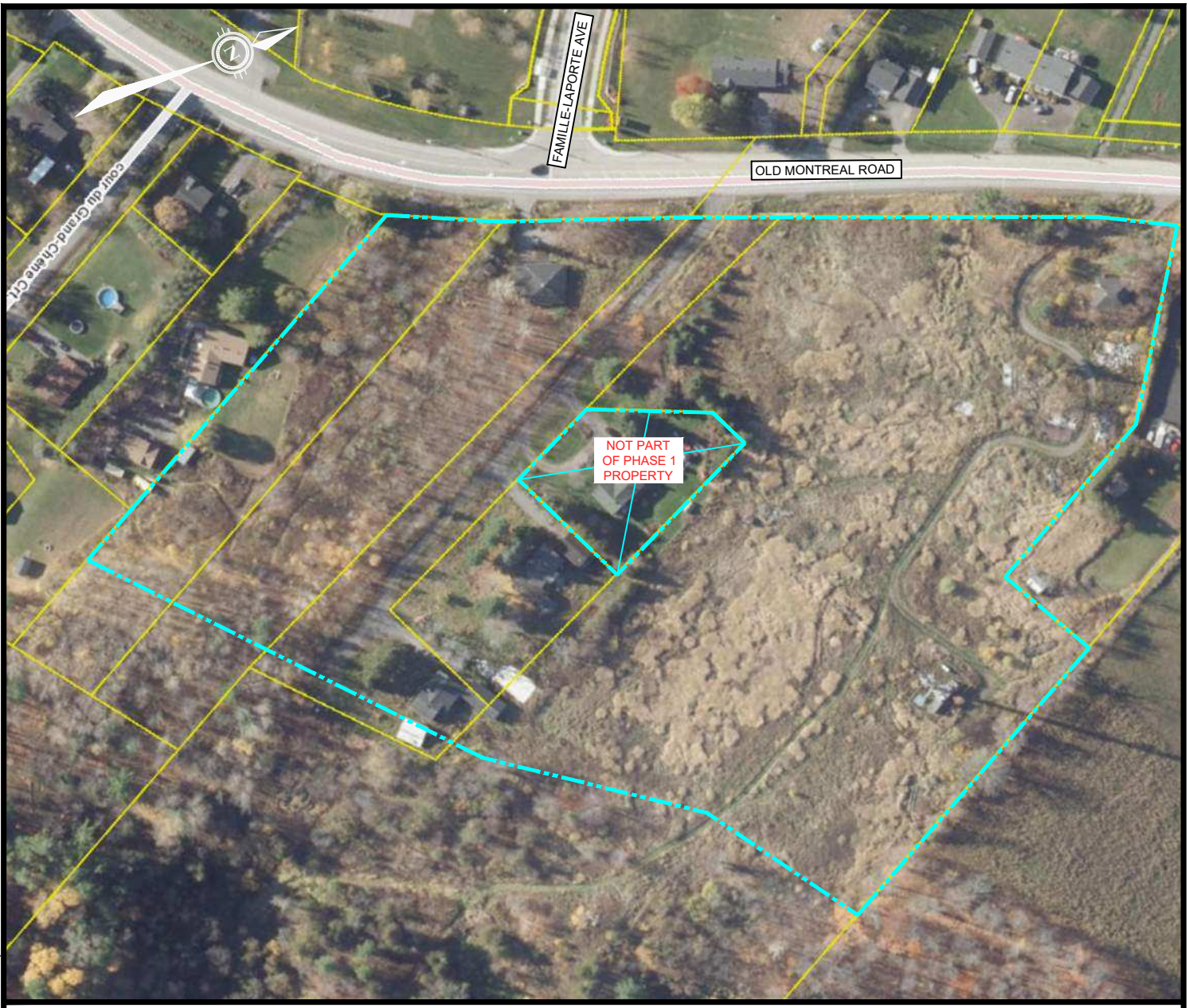
DESIGN: M.M. / CHECKED: M.M.		scale: 1:5,000
DRAWN BY: T.M.	TITLE: POTENTIALLY CONTAMINATING ACTIVITY (PCA) 1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO	FIG 2

Filename: P:\Projects\Environmental\230000s\230000\234000\234493-B0 PhOneESA 1208 Old Montreal Rd\Drawings\Phase Two ESA\234493-B0 Phoenix Harbour FIG 1-8.dwg
Last Saved: Oct 5, 2021 2:58 PM Last Plotted: Oct 5, 2021 3:00 PM Plotted by: mckeet



LEGEND

PROPERTY BOUNDARY

NOTE:
NO DETECTABLE UTILITIES WERE FOUND
ON THE PROPERTY

0 20m 40m 80m

HORIZONTAL 1:2000

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DESIGN: M.M. / CHECKED: M.M.		scale 1:2000
DRAWN BY: T.M.	TITLE: SITE PLAN AND UTILITIES 1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO	FIG 3

Filename: P:\Projects\Environmental\230000s\230000\234000\234493-B0 PhOneESA 1208 Old Montreal Rd\Drawings\Phase Two ESA\234493-B0 Phoenix Harbour FIG 1-8.dwg
Last Saved: Oct 5, 2021 2:58 PM Last Plotted: Oct 5, 2021 3:00 PM Plotted by: mckeet

SYMBOL	AREA OF POTENTIAL ENVIRONMENTAL CONCERN (APEC)	POTENTIALLY CONTAMINATING ACTIVITY
	APEC 1	#28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS
	APEC 2	#28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS
	APEC 3	#28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS
	APEC 4	#28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS
	APEC 5	#30 - IMPORTED FILL MATERIAL OF UNKNOWN QUALITY
	APEC 6	#28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS

LEGEND

PROPERTY BOUNDARY

0 20m 40m 80m

HORIZONTAL 1:2000

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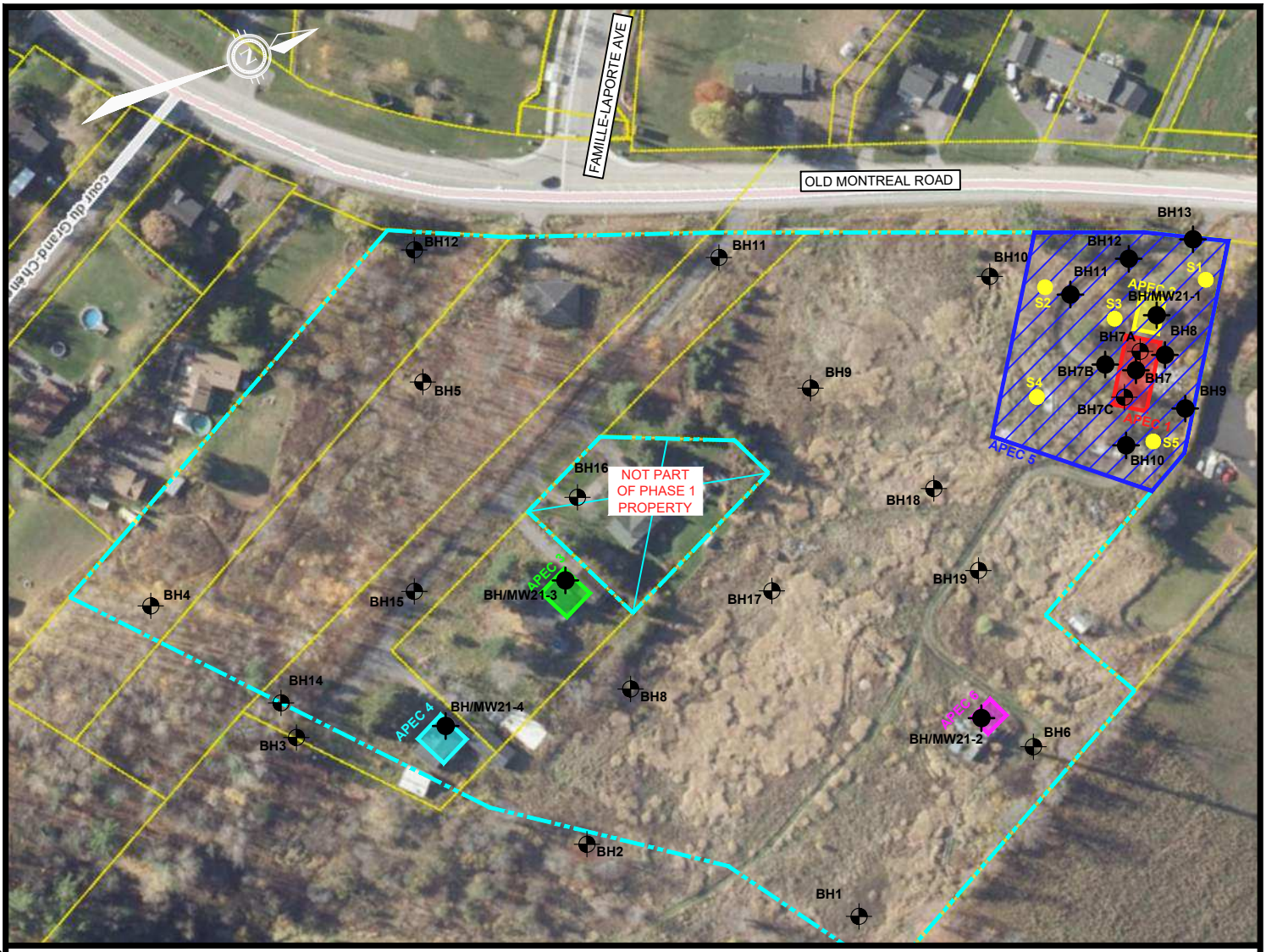
CLIENT: PHOENIX HOMES, PROPOSED SUBDIVISION

TITLE: AREA OF POTENTIAL ENVIRONMENTAL CONCERN (APEC)
1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO

project no. OTT-00234493-B0
scale 1:2000
FIG 4



SYMBOL	AREA OF POTENTIAL ENVIRONMENTAL CONCERN (APEC)	POTENTIALLY CONTAMINATING ACTIVITY
	APEC 1	#28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS
	APEC 2	#28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS
	APEC 3	#28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS
	APEC 4	#28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS
	APEC 5	#30 - IMPORTED FILL MATERIAL OF UNKNOWN QUALITY
	APEC 6	#28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS

LEGEND

PROPERTY BOUNDARY

MW101 — MONITORING WELL NAME AND LOCATION

BH12 — BOREHOLE NAME AND LOCATION

S1 — HAND AUGERED HOLE NAME AND LOCATION

0 20m 40m 80m

HORIZONTAL 1:2000

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DATE: SEPT 2021
DESIGN: M.M.
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DRAWN BY: T.M.

CLIENT: PHOENIX HOMES, PROPOSED SUBDIVISION

TITLE: BOREHOLES AND MONITORING WELLS AND APECs
1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO

project no. OTT-00234493-B0
scale 1:2000
FIG 5

Filename: P:\Projects\Environmental\230000s\230000\234000\234493-B0 PhOneESA 1208 Old Montreal Rd\Drawings\Phase Two ESA\234493-B0 Phoenix Harbour FIG 1-8.dwg
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LEGEND

- PROPERTY BOUNDARY
- MW101 — MONITORING WELL NAME AND LOCATION
- BH12 — BOREHOLE NAME AND LOCATION
- 83.0 — GROUND WATER CONTOUR
- GROUND WATER FLOW DIRECTION
- (78.65) — WATER LEVEL ELEVATIONS (SEPTEMBER 8, 2016)

0 20m 40m 80m

HORIZONTAL 1:2000

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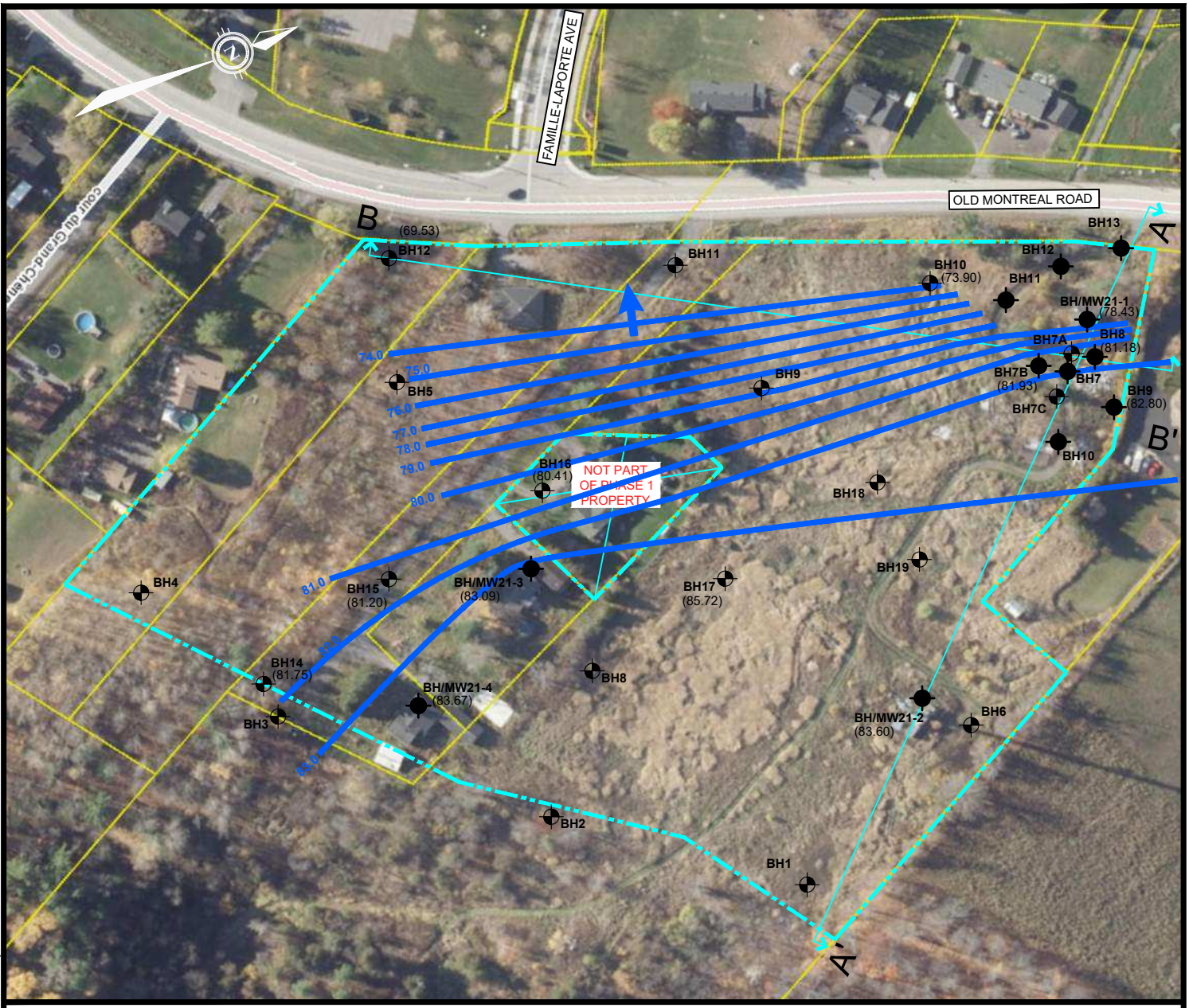
DESIGN: M.M. / CHECKED: M.M.		scale 1:2000
DRAWN BY: T.M.	TITLE: GROUNDWATER CONTOURS (2016) 1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO	FIG 6A

Filename: P:\Projects\Environmental\230000s\230000\234000\234493-B0 PhOneESA 1208 Old Montreal Rd\Drawings\Phase Two ESA\234493-B0 Phoenix Harbour FIG 1-8.dwg
Last Saved: Oct 5, 2021 2:58 PM Last Plotted: Oct 5, 2021 3:00 PM Plotted by: mckeet



LEGEND

- PROPERTY BOUNDARY
- MW101 — MONITORING WELL NAME AND LOCATION
- BH12 — BOREHOLE NAME AND LOCATION
- 83.0 — GROUND WATER CONTOUR
- GROUND WATER FLOW DIRECTION
- (78.65) — WATER LEVEL ELEVATIONS (SEPTEMBER 21, 2021)

0 20m 40m 80m

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DESIGN: M.M. / CHECKED: M.M.		scale 1:2000
DRAWN BY: T.M.	TITLE: GROUNDWATER CONTOURS (2021) 1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO	FIG 6B

Filename: P:\Projects\Environmental\230000s\230000\234000\234493-B0 PhOneESA 1208 Old Montreal Rd\Drawings\Phase Two ESA\234493-B0 Phoenix Harbour FIG 1-8.dwg
Last Saved: Oct 5, 2021 2:58 PM Last Plotted: Oct 5, 2021 3:00 PM Plotted by: mckeet

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH7 SS4	16-Aug-16	3.1 - 3.7	6.67	3.25	14.7	7.74	27	26	<8	<6

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH7 SS5	16-Aug-16	4.6 - 5.2	6.74	1.12	0.3	1.63	8	<4	<8	<6

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH7A SS3	19-Aug-16	2.3 - 2.9	2.62	9.15	18.5	33.1	76	13	<8	<6

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH7B SS3	19-Aug-16	2.3 - 2.9	<0.02	<0.05	<0.05	<0.05	<7	<4	<8	<6

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH7C SS3	19-Aug-16	2.3 - 2.9	0.4	1.25	0.67	2.71	<7	47	<8	<6

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH8 SS6	31-Aug-16	4.6 - 5.2	<0.02	<0.05	<0.05	<0.05	<7	<4	<8	<6

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH9 SS6	31-Aug-16	4.6 - 5.2	<0.02	<0.05	<0.05	<0.05	<7	<4	<8	<6

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH10 SS2	31-Aug-16	1.5 - 2.1	<0.02	<0.05	<0.05	<0.05	<7	<4	<8	<6

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH11 SS9	1-Sep-16	6.8 - 7.4	<0.02	<0.05	<0.05	<0.05	<7	<4	<8	<6

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH12 SS3	1-Sep-16	4.6 - 5.2	<0.02	<0.05	<0.05	<0.05	<7	<4	<8	<6

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH13 SS3	1-Sep-16	4.6 - 5.2	<0.02	<0.05	<0.05	<0.05	<7	<4	<8	<6

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
MW-1 SS7	3-Sep-21	3.9 - 4.5	<0.020	<0.020	<0.020	<0.040	<10	<10	<50	<50

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
MW-2 SS7	30-Aug-21	4.6 - 5.2	<0.020	<0.020	0.025	<0.040	<10	<10	<50	<50

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
MW-3 SS6	30-Aug-21	4.0 - 4.4	<0.020	<0.020	0.028	<0.040	<10	<10	<50	<50

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
MW-4 SS8	27-Aug-21	5.5 - 6.0	<0.040	<0.040	<0.040	<0.080	<20	<20	<100	<100

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
S1	30/08/21	0.15 - 0.45	<0.040	<0.040	<0.040	<0.080	<20	<10	860	280

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
S2	30/08/21	0.15 - 0.45	<0.020	<0.020	<0.020	<0.040	<10	<10	53	53

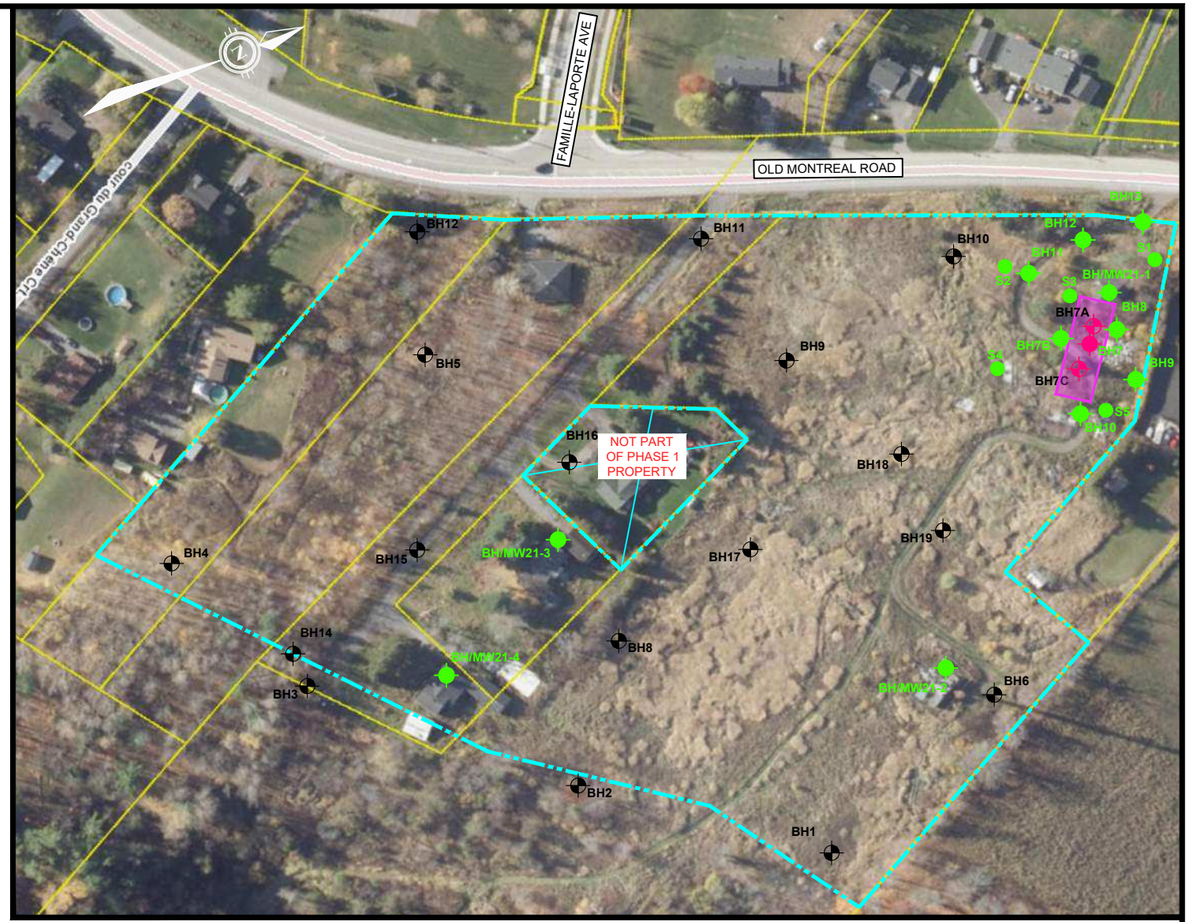
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
S3	30/08/21	0.15 - 0.40	<0.040	<0.040	<0.040	<0.080	<20	<10	130	2800
DUP	30/08/21	0.15 - 0.40	<0.020	<0.020	0.021	<0.040	<10	<10	110	1800

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
S4	30/08/21	0.15 - 0.40	<0.020	<0.020	0.033	<0.040	<10	<10	54	56

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
S5	30/08/21	0.10 - 0.20	<0.020	<0.020	<0.020	<0.040	<10	<10	170	62

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 2 POTABLE RESIDENTIAL SC RAINED SOIL.
* DENOTES SAMPLE NO LONGER PRESENT AFTER PREMEDIATION
- DENOTES PARAMETER NOT ANALYSED

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARD
Benzene	B	0.17
Toluene	T	1.6
Ethylbenzene	E	6
Total Xylenes	X	25
F1 (C6-C10)	F1	65
F2 (C10-C16)	F2	150
F3 (C16-C34)	F3	1300
F4 (C34-C50)	F4	5600



LEGEND

- PROPERTY BOUNDARY
- MW101 — MONITORING WELL NAME AND LOCATION
- BH12 — BOREHOLE NAME AND LOCATION
- SAMPLE EXCEEDS REG 153/04 TABLE 2 SCS
- ALL SAMPLES ARE WITHIN REG 153/04 TABLE 2 SCS
- S1 — HAND AUGERED HOLE NAME AND LOCATION
- ESTIMATED AREA OF PHC IMPACTED SOIL

0 20m 40m 80m

HORIZONTAL 1:2000

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DATE: SEPT 2021	CLIENT: PHOENIX HOMES, PROPOSED SUBDIVISION		project no. OTT-00234493-B0
DESIGN: M.M. / CHECKED: M.M.	TITLE: SOIL CONCENTRATIONS – PHC AND BTEX 1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO		scale 1:2000
DRAWN BY: T.M.			FIG 7

Filename: P:\Projects\Environmental\230000s\230000\234000\234493-B0 PhOneESA 1208 Old Montreal Rd\Drawings\Phase Two ESA\234493-B0 Phoenix Harbour FIG 1-8.dwg
Last Saved: Oct 6, 2021 9:54 AM Last Plotted: Oct 6, 2021 10:14 AM Plotted by: mckeet

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
S1	30/08/21	0.15 - 0.45	<0.20	1.8	190	0.64	5.9	0.37	84	16	63	28	<0.50	46	<0.50	0.20	0.27	0.83	68	150

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
S2	30/08/21	0.15 - 0.45	<0.20	1.6	210	0.70	5.4	0.18	96	18	35	16	<0.50	50	<0.50	<0.20	0.32	0.94	78	110

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
S3	30/08/21	0.15 - 0.40	0.23	3.3	170	0.27	6.9	0.17	14	5.0	12	21	0.99	12	<0.50	<0.20	0.21	0.50	17	51
DUP	30/08/21	0.15 - 0.40	<0.20	2.5	150	0.25	6.4	0.13	13	4.3	9.1	16	0.88	11	<0.50	<0.20	0.15	0.46	15	44

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
S4	30/08/21	0.15 - 0.40	<0.20	1.6	120	0.40	<5.0	0.14	37	8.4	22	21	0.76	22	<0.50	<0.20	0.20	0.58	37	67

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
S5	30/08/21	0.10 - 0.20	<0.20	1.5	120	0.28	5.1	0.18	20	4.7	11	33	<0.50	13	<0.50	<0.20	0.12	0.40	17	45

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 2 POTABLE RESIDENTIAL SC RAINED SOIL.
* DENOTES SAMPLE NO LONGER PRESENT AFTER PREMEDIATION
\- DENOTES PARAMETER NOT ANALYSED

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Antimony	Sb	7.5
Arsenic	As	18
Barium	Ba	390
Beryllium	Be	4
Boron	B	120
Boron (HW)	BHW	1.5
Cadmium	Cd	1.2
Chromium	Cr	160
Chromiun VI	CrV	8
Cobalt	Co	22
Copper	Cu	140
Lead	Pb	120
Mercury	Hg	0.27
Molybdenum	Mo	6.9
Nickel	Ni	100
Selenium	Se	2.4
Silver	Ag	20
Thallium	Tl	1
Uranium	U	23
Vanadium	V	86
Zinc	Zn	340

LEGEND

- PROPERTY BOUNDARY
- MW101 — MONITORING WELL NAME AND LOCATION
- BH12 — BOREHOLE NAME AND LOCATION
- SAMPLE EXCEEDS REG 153/04 TABLE 2 SCS
- ALL SAMPLES ARE WITHIN REG 153/04 TABLE 2 SCS
- S1 — HAND AUGERED HOLE NAME AND LOCATION

0 20m 40m 80m
HORIZONTAL 1:2000

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DESIGN: M.M. / CHECKED: M.M.	TITLE: SOIL CONCENTRATION - METALS	scale 1:2000
DRAWN BY: T.M.	1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO	FIG 8

Filename: P:\Projects\Environmental\230000s\230000\234000\234000-B0 PhOneESA 1208 Old Montreal Rd\Drawings\Phase Two ESA\234493-B0 Phoenix Harbour FIG 1-8.dwg
Last Saved: Oct 5, 2021 2:58 PM Last Plotted: Oct 5, 2021 3:00 PM Plotted by: mckeet

BH7								
Date	B	T	E	X	F1	F2	F3	F4
8/18/2016	18600	1000	16800	9900	<25	<100	<100	<100

BH7B								
Date	B	T	E	X	F1	F2	F3	F4
9/11/2016	<0.5	<0.5	<0.5	<0.5	<25	<100	<100	<100
'9/14/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	<200	<200

BH8								
Date	B	T	E	X	F1	F2	F3	F4
'9/11/2016	<0.5	<0.5	<0.5	<0.5	<25	<100	<100	<100
'9/15/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	250	<200

BH9								
Date	B	T	E	X	F1	F2	F3	F4
'9/11/2016	<0.5	<0.5	<0.5	<0.5	<25	<100	<100	<100
'9/15/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	<200	<200

BH10								
Date	B	T	E	X	F1	F2	F3	F4
'9/11/2016	<0.5	<0.5	<0.5	<0.5	<25	<100	<100	<100

BH11								
Date	B	T	E	X	F1	F2	F3	F4
'9/11/2016	<0.5	<0.5	<0.5	<0.5	<25	<100	<100	<100

BH12								
Date	B	T	E	X	F1	F2	F3	F4
'9/11/2016	<0.5	<0.5	<0.5	<0.5	<25	<100	<100	<100

BH13								
Date	B	T	E	X	F1	F2	F3	F4
'9/11/2016	<0.5	<0.5	<0.5	<0.5	<25	<100	<100	<100

MW-1								
Date	B	T	E	X	F1	F2	F3	F4
'9/15/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	250	<200

MW-2								
Date	B	T	E	X	F1	F2	F3	F4
'9/15/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	<200	<200
'9/15/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	<200	<200

MW-3								
Date	B	T	E	X	F1	F2	F3	F4
'9/15/2021	<0.2	<0.2	<0.2	<0.4	<25	220	220	<200
'9/21/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	<200	<200

MW-4								
Date	B	T	E	X	F1	F2	F3	F4
'9/15/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	<200	<200

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 2 POTABLE SCS FOR ALL TYPES OF PROPERTY USE, COARSE GRAINED SOIL.
- DENOTES PARAMETER NOT ANALYSED

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Benzene	B	5
Toluene	T	2.4
Ethylbenzene	E	24
Total Xylenes	X	300
F1 (C6-C10)	F1	750
F2 (C10-C16)	F2	150
F3 (C16-C34)	F3	500
F4 (C34-C50)	F4	500

LEGEND

- PROPERTY BOUNDARY
- MW101 — MONITORING WELL NAME AND LOCATION
- BH12 — BOREHOLE NAME AND LOCATION
- SAMPLE EXCEEDS REG 153/04 TABLE 2 SCS
- ALL SAMPLES ARE WITHIN REG 153/04 TABLE 2 SCS
- S1 — HAND AUGERED HOLE NAME AND LOCATION
- ESTIMATED AREA OF PHC IMPACTED SOIL

0 20m 40m 80m

HORIZONTAL 1:2000

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TITLE: GROUNDWATER CONCENTRATIONS – PHC AND BTEX
1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO

project no. OTT-00234493-B0
scale 1:2000
FIG 9

Filename: P:\Projects\Environmental\230000s\230000\234000\234493-B0 PhOneESA 1208 Old Montreal Rd\Drawings\Phase Two ESA\234493-B0 Phoenix Harbour FIG 1-8.dwg
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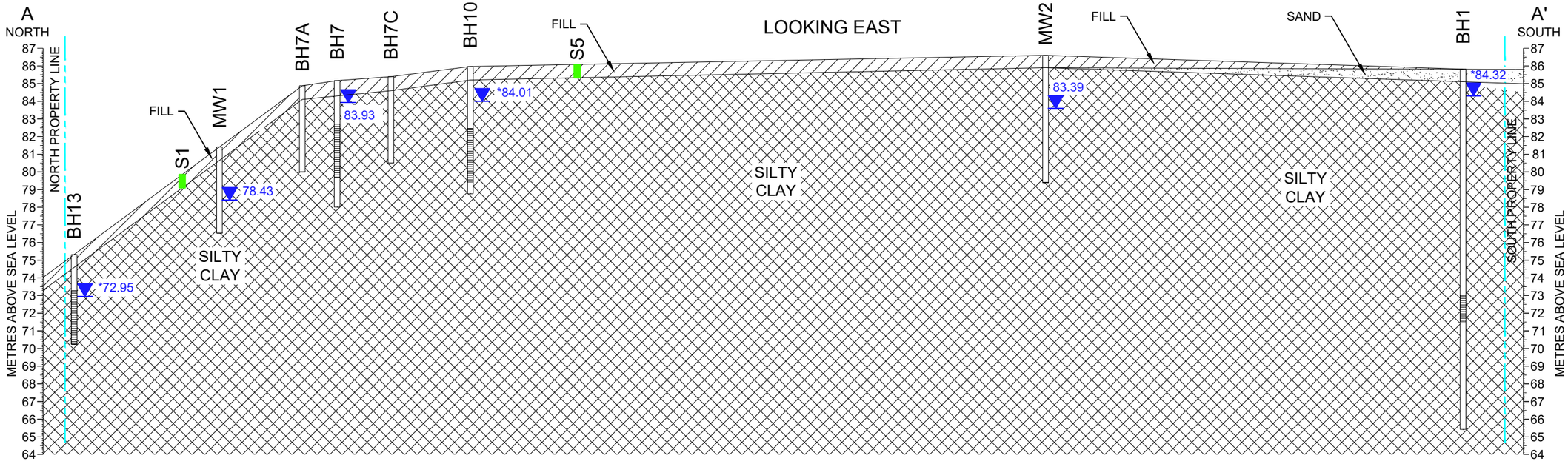
SOIL

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Antimony	Sb	7.5
Arsenic	As	18
Barium	Ba	390
Beryllium	Be	4
Boron	B	120
Boron (HW)	BHW	1.5
Cadmium	Cd	1.2
Chromium	Cr	160
Chromiun VI	CrVI	8
Cobalt	Co	22
Copper	Cu	140
Lead	Pb	120
Mercury	Hg	0.27
Molybdenum	Mo	6.9
Nickel	Ni	100
Selenium	Se	2.4
Silver	Ag	20
Thallium	Tl	1
Uranium	U	23
Vanadium	V	86
Zinc	Zn	340

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
S1	30/08/21	0.15 - 0.45	<0.20	1.8	190	0.64	5.9	0.37	84	16	63	28	<0.50	46	<0.50	0.20	0.27	0.83	68	150

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
S5	30/08/21	0.10 - 0.20	<0.20	1.5	120	0.28	5.1	0.18	20	4.7	11	33	<0.50	13	<0.50	<0.20	0.12	0.40	17	45



CROSS SECTION A-A'

VERTICAL SCALE: AS SHOWN

0 5m 10m 30m

HORIZONTAL 1:750

LEGEND

- FILL
- SILTY CLAY
- SAND
- *GROUNDWATER LEVEL FROM SEPTEMBER 8, 2016
- GROUNDWATER LEVEL FROM SEPTEMBER 21, 2021
- SOIL QUALITY SATISFIES MECP TABLE 2 SCS
- SOIL QUALITY EXCEEDS MECP TABLE 2 SCS

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 2 POTABLE RESIDENTIAL SCS, MEDIUM AND FINE GRAINED SOIL.
* DENOTES SAMPLE NO LONGER PRESENT AFTER REMEDIATION
- DENOTES PARAMETER NOT ANALYSED

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TITLE: CROSS SECTION A-A' - METALS
1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO

project no. OTT-00234493-B0
scale AS NOTED
FIG 11

SOIL

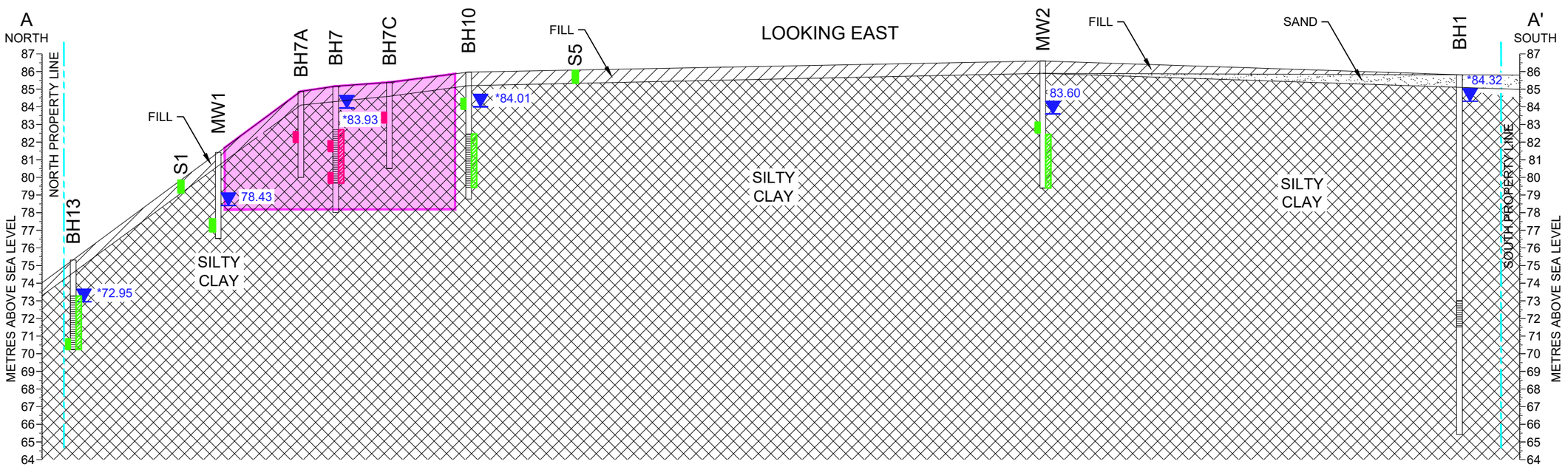
PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Benzene	B	0.17
Toluene	T	1.6
Ethylbenzene	E	6
Total Xylenes	X	25
F1 (C6-C10)	F1	65
F2 (C10-C16)	F2	150
F3 (C16-C34)	F3	1300
F4 (C34-C50)	F4	5600

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH7 SS4	16-Aug-16	3.1 - 3.7	6.67	3.25	14.7	7.74	27	26	<8	<6
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH7 SS5	16-Aug-16	4.6 - 5.2	6.74	1.12	0.3	1.63	8	<4	<8	<6
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH7A SS3	19-Aug-16	2.3 - 2.9	2.62	9.15	18.5	33.1	76	13	<8	<6
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH7C SS3	19-Aug-16	2.3 - 2.9	0.4	1.25	0.67	2.71	<7	47	<8	<6
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH10 SS2	31-Aug-16	1.5 - 2.1	<0.02	<0.05	<0.05	<0.05	<7	<4	<8	<6
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH13 SS3	1-Sep-16	4.6 - 5.2	<0.02	<0.05	<0.05	<0.05	<7	<4	<8	<6
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
MW-1 SS7	3-Sep-21	3.9 - 4.5	<0.020	<0.020	<0.020	<0.040	<10	<10	<50	<50
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
MW-2 SS7	30-Aug-21	4.6 - 5.2	<0.020	<0.020	0.025	<0.040	<10	<10	<50	<50
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
S1	30/08/21	0.15 - 0.45	<0.040	<0.040	<0.040	<0.080	<20	<10	860	280
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
S5	30/08/21	0.10 - 0.20	<0.020	<0.020	<0.020	<0.040	<10	<10	170	62

GROUNDWATER

BH7								
Date	B	T	E	X	F1	F2	F3	F4
8/18/2016	18600	1000	16800	9900	<25	<100	<100	<100
BH10								
Date	B	T	E	X	F1	F2	F3	F4
'9/11/2016	<0.5	<0.5	<0.5	<0.5	<25	<100	<100	<100
BH13								
Date	B	T	E	X	F1	F2	F3	F4
'9/11/2016	<0.5	<0.5	<0.5	<0.5	<25	<100	<100	<100
MW-1								
Date	B	T	E	X	F1	F2	F3	F4
'9/15/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	250	<200
MW-2								
Date	B	T	E	X	F1	F2	F3	F4
'9/15/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	<200	<200
'9/15/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	<200	<200

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Benzene	B	5
Toluene	T	2.4
Ethylbenzene	E	24
Total Xylenes	X	300
F1 (C6-C10)	F1	750
F2 (C10-C16)	F2	150
F3 (C16-C34)	F3	500
F4 (C34-C50)	F4	500



CROSS SECTION A-A'

VERTICAL SCALE: AS SHOWN

0 5m 10m 30m

HORIZONTAL 1:750

LEGEND

- FILL
- SILTY CLAY
- SAND
- ESTIMATED AREA OF PHC IMPACTED SOIL
- *GROUNDWATER LEVEL FROM SEPTEMBER 8, 2016
- GROUNDWATER LEVEL FROM SEPTEMBER 21, 2021
- SOIL QUALITY SATISFIES MECP TABLE 2 SCS
- SOIL QUALITY EXCEEDS MECP TABLE 2 SCS
- GROUNDWATER QUALITY MEETS MECP TABLE 2 SCS
- GROUNDWATER QUALITY EXCEEDS MECP TABLE 2 SCS

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 2 POTABLE RESIDENTIAL SCS, MEDIUM AND FINE GRAINED SOIL.
* DENOTES SAMPLE NO LONGER PRESENT AFTER REMEDIATION
- DENOTES PARAMETER NOT ANALYSED

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CLIENT: PHOENIX HOMES, PROPOSED SUBDIVISION

TITLE: CROSS SECTION A-A' - PHC AND BTEX
1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO

project no. OTT-00234493-B0
scale AS NOTED
FIG 10

SOIL

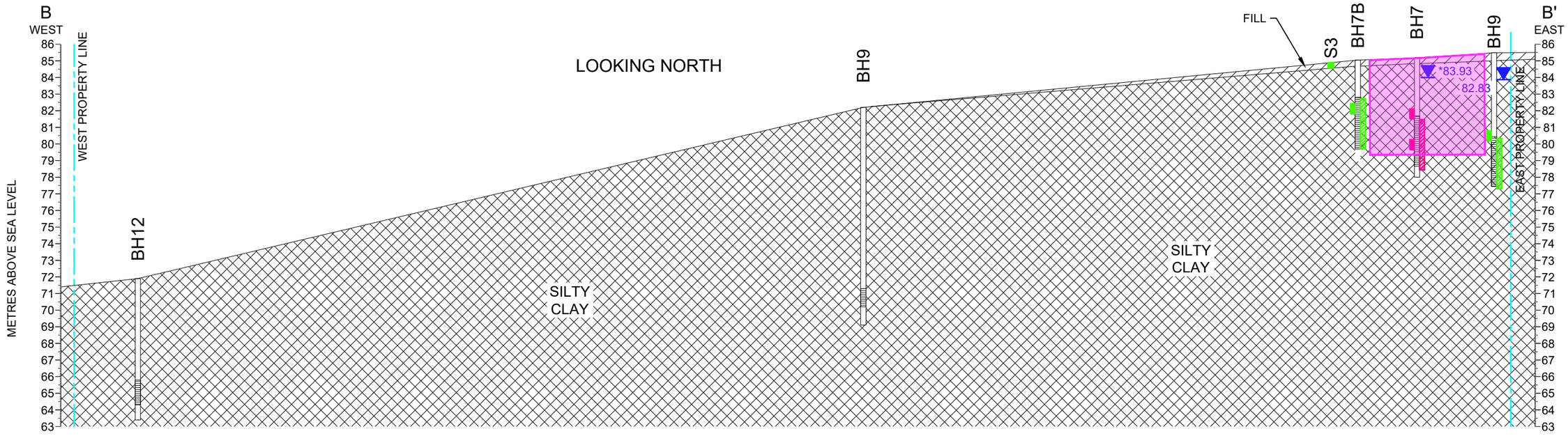
PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Benzene	B	0.17
Toluene	T	1.6
Ethylbenzene	E	6
Total Xylenes	X	25
F1 (C6-C10)	F1	65
F2 (C10-C16)	F2	150
F3 (C16-C34)	F3	1300
F4 (C34-C50)	F4	5600

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH7 SS4	16-Aug-16	3.1 - 3.7	6.67	3.25	14.7	7.74	27	26	<8	<6
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH7 SS5	16-Aug-16	4.6 - 5.2	6.74	1.12	0.3	1.63	8	<4	<8	<6
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH7B SS3	19-Aug-16	2.3 - 2.9	<0.02	<0.05	<0.05	<0.05	<7	<4	<8	<6
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
BH9 SS6	31-Aug-16	4.6 - 5.2	<0.02	<0.05	<0.05	<0.05	<7	<4	<8	<6
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4
S3	30/08/21	0.15 - 0.40	<0.040	<0.040	<0.040	<0.080	<20	<10	130	2800
DUP	30/08/21	0.15 - 0.40	<0.020	<0.020	0.021	<0.040	<10	<10	110	1800

GROUNDWATER

BH7								
Date	B	T	E	X	F1	F2	F3	F4
8/18/2016	18600	1000	16800	9900	<25	<100	<100	<100
BH7B								
Date	B	T	E	X	F1	F2	F3	F4
9/11/2016	<0.5	<0.5	<0.5	<0.5	<25	<100	<100	<100
'9/14/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	<200	<200
BH9								
Date	B	T	E	X	F1	F2	F3	F4
'9/11/2016	<0.5	<0.5	<0.5	<0.5	<25	<100	<100	<100
'9/15/2021	<0.2	<0.2	<0.2	<0.4	<25	<100	<200	<200

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Benzene	B	5
Toluene	T	2.4
Ethylbenzene	E	24
Total Xylenes	X	300
F1 (C6-C10)	F1	750
F2 (C10-C16)	F2	150
F3 (C16-C34)	F3	500
F4 (C34-C50)	F4	500



CROSS SECTION B-B'

VERTICAL SCALE: AS SHOWN

0 5m 10m 30m

HORIZONTAL 1:750

LEGEND

- FILL
- SILTY CLAY
- SAND
- ESTIMATED AREA OF PHC IMPACTED SOIL
- *GROUNDWATER LEVEL FROM SEPTEMBER 8, 2016
- GROUNDWATER LEVEL FROM SEPTEMBER 21, 2021
- SOIL QUALITY SATISFIES MECP TABLE 2 SCS
- SOIL QUALITY EXCEEDS MECP TABLE 2 SCS
- GROUNDWATER QUALITY MEETS MECP TABLE 2 SCS
- GROUNDWATER QUALITY EXCEEDS MECP TABLE 2 SCS

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 2 POTABLE RESIDENTIAL SCS, MEDIUM AND FINE GRAINED SOIL.
* DENOTES SAMPLE NO LONGER PRESENT AFTER REMEDIATION
- DENOTES PARAMETER NOT ANALYSED

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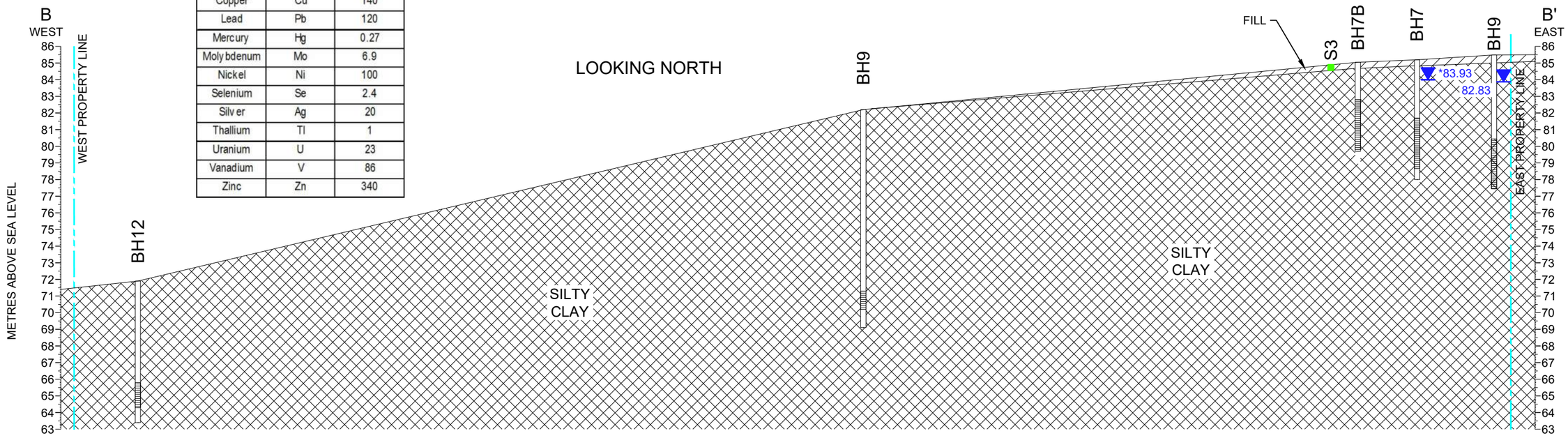
DESIGN: M.M. / CHECKED: M.M.		scale: AS NOTED
DRAWN BY: T.M.	TITLE: CROSS SECTION B-B' - PHC AND BTEX 1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO	FIG 12

PARAMETERS	ABBREVIATIO	REG 153/04 TABLE 2 STANDARDS
Antimony	Sb	7.5
Arsenic	As	18
Barium	Ba	390
Beryllium	Be	4
Boron	B	120
Boron (HW)	BHW	1.5
Cadmium	Cd	1.2
Chromium	Cr	160
Chromiun VI	CIV	8
Cobalt	Co	22
Copper	Cu	140
Lead	Pb	120
Mercury	Hg	0.27
Molybdenum	Mo	6.9
Nickel	Ni	100
Selenium	Se	2.4
Silver	Ag	20
Thallium	Tl	1
Uranium	U	23
Vanadium	V	86
Zinc	Zn	340

SOIL

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
S3	30/08/21	0.15 - 0.40	0.23	3.3	170	0.27	6.9	0.17	14	5.0	12	21	0.99	12	<0.50	<0.20	0.21	0.50	17	51
DUP	30/08/21	0.15 - 0.40	<0.20	2.5	150	0.25	6.4	0.13	13	4.3	9.1	16	0.88	11	<0.50	<0.20	0.15	0.46	15	44



CROSS SECTION B-B'

VERTICAL SCALE: AS SHOWN

0 5m 10m 30m

HORIZONTAL 1:750

LEGEND

- FILL
- SILTY CLAY
- SAND
- *GROUNDWATER LEVEL FROM SEPTEMBER 8, 2016
- GROUNDWATER LEVEL FROM SEPTEMBER 21, 2021
- SOIL QUALITY SATISFIES MECP TABLE 2 SCS
- SOIL QUALITY EXCEEDS MECP TABLE 2 SCS

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 2 POTABLE RESIDENTIAL SCS, MEDIUM AND FINE GRAINED SOIL.
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TITLE: CROSS SECTION B-B' - METALS
1154, 1176, 1180, 1208 OLD MONTREAL ROAD, ORLEANS, ONTARIO

project no. OTT-00234493-B0
scale AS NOTED
FIG 13

Appendix B: Survey Plan

Appendix C: Sampling and Analysis Plan

1 Introduction

This appendix presents the Sampling and Analysis Plan (SAAP) that was developed in support of the Phase Two Environmental Site Assessment (ESA) for the property located at 1154, 1176, 1180, 1208 Old Montreal Road in Ottawa, Ontario (hereinafter referred to as the 'site'). The SAAP presents the procedures and measures that will be undertaken during field investigative activities to characterize the site conditions and meet the data quality objectives of the Phase Two ESA.

The SAAP presents the sampling program proposed for the site, the recommended procedures and protocols for sampling and related field activities, the data quality objectives, and the quality assurance/ quality control measures that will be undertaken to provide for the collection of accurate, reproducible and representative data. These components are described in further detail below.

2 Field Sampling Program

The field sampling program was developed to provide for the collection of samples of the soil and groundwater for chemical analysis of petroleum hydrocarbons (PHC), benzene, toluene, ethylbenzene and xylenes (collectively known as 'BTEX') and/or metals. The soil sampling media is to consist of the overburden materials. The soil sampling will be location-specific to assess for the potential presence of PHC, BTEX, and/or metals based on the identification of potential areas of potential environmental concern identified in a Phase One ESA completed by EXP in 2021. Vapour readings will also be taken in the field to determine samples to be submitted for laboratory analysis.

Each of the groundwater samples will be submitted for analysis of metals, PHC and BTEX. The monitoring well network is to comprise of eleven monitoring wells.

Vertical control of the boreholes and monitoring wells will be obtained through the completion of an elevation survey with reference to a geodetic benchmark. Groundwater flow and direction in the overburden aquifer will also be determined through groundwater level measurements and the elevations established in the site elevation survey.

3 Field Methods

To meet the requirements of the field sampling program, the following field investigative methods will be undertaken:

- Borehole Drilling;
- Soil Sampling;
- Monitoring Well Installation;
- Groundwater Level Measurements;
- Elevation Survey; and,
- Groundwater Sampling.

The field investigative methods will be performed following the procedures and protocols set out in EXP's standard operating procedures and are outlined below:

3.1 Borehole Drilling

Boreholes will be advanced at the site to facilitate the collection of soil samples for chemical analysis and geologic characterization; and, for the installation of groundwater monitoring wells. A total of nineteen boreholes are proposed to be advanced at the site, up to a maximum overburden depth of approximately 6 m below grade, to provide for the collection of samples of the surficial and overburden materials beneath the site. The borehole locations will be selected to delineate the extent and magnitude of PCOC related impacts to the soils and the groundwater.

Prior to borehole drilling, utility clearances will be obtained from public and private locators, as required. The borehole drilling program will be conducted by a licensed driller under the oversight of EXP field staff. All drilling equipment will be cleaned prior to the commencement of drilling at each borehole location.

3.2 Soil Sampling

Soil samples will be collected for chemical analysis and geologic property characterization. The soil samples will be collected using 5 cm diameter, 60 cm long, stainless steel split-spoon sampling devices advanced ahead of the direct push drilling equipment at continuous intervals. The split spoon sampling devices will be attached to drill rods and advanced into the soil by means of a standard penetrating hammer. Upon retrieval from the boreholes, the split-spoon samplers will be placed on a flat surface and disassembled by drilling personnel to provide access of the recovered cores. Geologic and sampling details of the recovered cores will be logged and the samples will be assessed for the potential presence of non-aqueous phase liquids. Samples for chemical analysis will be selected on the basis of visual and olfactory evidence of impacts and at specific intervals to define the lateral and vertical extent of known impacts.

Recommended volumes of soil samples selected for chemical analysis will be collected into pre-cleaned, laboratory supplied, analytical test group specific containers. The samples will be placed into clean insulated coolers chilled with ice for storage and transport. Samples intended for analysis of VOC, BTEX and PHC F1-F2 will be collected into 40 ml vials. The samples will be assigned unique identification numbers, and the date, time, location, and requested analyses for each sample will be documented in a bound field note book. The samples will be submitted to the contract laboratory within analytical test group holding times under Chain of Custody (COC) protocols. New disposable chemical resistant gloves will be used for each soil core to prevent sample cross-contamination.

3.3 Monitoring Well Installation

It is proposed that five boreholes will be instrumented as a groundwater monitoring well installed with slotted screens intercepting either the native overburden material or the shallow bedrock, where the water table aquifer is expected, extending to depths of approximately 6 m below grade. The monitoring wells will be constructed using 37 mm diameter, Schedule 40, PVC riser pipe and number 10 slot size (0.25 mm) well screens. The base of the well screens will be sealed with threaded flush PVC end caps. All well pipe connections will be factory machined threaded flush couplings. The annular space around the well screens will be backfilled with silica sand, to an average height of 0.3 m above the top of the screen. Granular bentonite will be placed in the borehole annulus from the top of the sand pack to approximately 0.3 m below grade. The monitoring wells will be completed with either a flush-mounted protective steel casing or above ground protective casings cemented into place.

3.4 Monitoring Well Development

The newly installed monitoring wells will be developed to remove fine sediment particles potentially lodged in the sand pack and well screen to enhance hydraulic communication with the surrounding formation waters.

Standing water volumes will be determined by means of an electronic water level meter. Prior to collecting groundwater samples, the monitoring wells will be developed using low flow sampling techniques to reduce the amount of sediment in the samples. Well development details will be documented on a well development log sheet or in a bound hard cover notebook. All development waters will be collected and stored in labeled, sealed containers.

3.5 Groundwater Level Measurements

Groundwater level measurements will be recorded for the monitoring wells to determine groundwater flow and direction in the water table aquifer beneath the site. Water levels will be measured with respect to the top of the casing by means of an electronic water level meter. The water levels will be recorded on water level log sheets. The water level meter probe will be decontaminated between monitoring well locations.

3.6 Elevation Survey

An elevation survey will be conducted to obtain vertical control of all monitoring well locations. The top of casing and ground surface elevation of each monitoring well location will be surveyed against a known geodetic benchmark, or if unavailable, against a suitable arbitrary benchmark. Elevations measured against using a high precision GPS unit and a benchmark with an assigned elevation will be recorded as meters above mean sea level (m AMSL). The elevation survey will be accurate to within ± 0.5 cm.

3.7 Groundwater Sampling

Groundwater samples will be collected from the monitoring wells for chemical analysis. The wells will be sampled using a “low flow” technique whereby the wells are continuously purged using an electric pump (equipped with dedicated tubing) and parameters within the purged water are monitored using a groundwater chemistry multi-meter at 3 minute intervals. These parameters include: pH, conductivity, temperature, and salinity. Once these parameters are found to deviate less than 10% over three testing events, equilibrium is deemed to have occurred and a sample of the groundwater will be collected. The purge water will also be continuously monitored for visual and olfactory evidence of petroleum and solvent impact (sheen and odour).

Recommended groundwater sample volumes will be collected into pre-clean laboratory-supplied vials or bottles provided with analytical test group specific preservatives, as required. The samples will be placed in an insulated cooler chilled with ice for storage and transport. Each VOC vial will be inverted and inspected for gas bubbles prior to being placed in the cooler to ensure that no head-space is present. All groundwater samples will be assigned unique identification numbers, and the date, time, project number, company name, location and requested analyses for each sample will be documented in a bound hard cover notebook. The samples will be submitted to the contractual laboratory within analytical test group holding times under COC protocols. New disposable chemical resistant gloves will be used for each sampling location to prevent sample cross-contamination.

4 Field Quality Assurance/Quality Control Program

The objective of the field quality assurance/quality control (QA/QC) program is to obtain soil and groundwater samples and other field measurements that provide data of acceptable quality that meets the objectives of the Phase Two ESA. The objectives of the QA/QC program will be achieved through the implementation of procedures for the collection of unbiased (i.e. non-contaminated) samples, sample documentation and the collection of appropriate QC samples to provide a measure of sample reproducibility and accuracy. The field QA/QC measures will comprise:

- Decontamination Protocols;
- Equipment Calibration;
- Sample Preservation;
- Sample Documentation; and,
- Field Quality Control Samples.

Details on the field QA/QC measures are provided below.

4.1 Decontamination Protocols

Decontamination protocols will be followed during field sampling where non-dedicated sampling equipment is used to prevent sample cross contamination. The split spoon soil sampling device will be cleaned/decontaminated between sampling intervals in according with SOP requirements. For the monitoring well installation, well components are not to come into contact with the ground surface prior to insertion into boreholes. Electronic water level meters will be decontaminated between monitoring well locations during well development, and purging activities. For hydraulic conductivity tests, the electronic water level meters will be decontaminated between sampling locations. All decontamination fluids will be collected and stored in sealed, labeled containers.

4.2 Equipment Calibration

All equipment requiring calibration will be calibrated in the field according to manufacturer's requirements using analytical grade reagents, or by the supplier prior to conducting field activities, and subsequently checked in the field. The calibration of all pre-calibrated instruments will be checked in the field using analytical grade reagents and re-calibrated as required. For multiple day sampling events, equipment calibration will be checked prior to the beginning of sampling activities. All calibration data will be documented in a bound hard cover notebook.

4.3 Sample Preservation

All samples will be preserved using appropriate analytical test group specific reagents, as required, and upon collection placed in pre-chilled insulated coolers packed with ice for storage and transport.

4.4 Sample Documentation

All samples will be assigned a unique identification number, which is to be recorded along with the date, time, project number, company name, location and requested analysis in a bound field notebook. All samples will be handled and transported following COC protocols.

4.5 Field Quality Control

Field quality controls samples will be collected to evaluate the accuracy and reproducibility of the field sampling procedures. For soil and groundwater sampling, one (1) field duplicate is to be collected for every ten (10) samples submitted for chemical analysis. The field duplicate samples will be assessed by calculating the relative percent difference and comparing to the analytical test group specific acceptance criteria.

Appendix D: Borehole Logs

Explanation of Terms Used on Borehole Records

SOIL DESCRIPTION

Terminology describing common soil genesis:

Topsoil: mixture of soil and humus capable of supporting good vegetative growth.

Peat: fibrous fragments of visible and invisible decayed organic matter.

Fill: where fill is designated on the borehole log it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of site fill materials. All fills should be expected to contain obstruction such as wood, large concrete pieces or subsurface basements, floors, tanks, etc.; none of these may have been encountered in the boreholes. Since boreholes cannot accurately define the contents of the fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. Fill at this site may have been monitored for the presence of methane gas and, if so, the results are given on the borehole logs. The monitoring process does not indicate the volume of gas that can be potentially generated nor does it pinpoint the source of the gas. These readings are to advise of the presence of gas only, and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic/hazardous waste that renders it unacceptable for deposition in any but designated land fill sites; unless specifically stated the fill on this site has not been tested for contaminants that may be considered toxic or hazardous. This testing and a potential hazard study can be undertaken if requested. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common and are generally not detected in a conventional geotechnical site investigation.

Till: the term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (60 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

Terminology describing soil structure:

Desiccated: having visible signs of weathering by oxidization of clay minerals, shrinkage cracks, etc.

Stratified: alternating layers of varying material or color with the layers greater than 6 mm thick.

Laminated: alternating layers of varying material or color with the layers less than 6 mm thick.

Fissured: material breaks along plane of fracture.

Varved: composed of regular alternating layers of silt and clay.

Slickensided: fracture planes appear polished or glossy, sometimes striated.

Blocky: cohesive soil that can be broken down into small angular lumps which resist further breakdown.

Lensed: inclusion of small pockets of different soil, such as small lenses of sand scattered through a mass of clay; not thickness.

Seam: a thin, confined layer of soil having different particle size, texture, or color from materials above and below.

Homogeneous: same color and appearance throughout.

Well Graded: having wide range in grain sized and substantial amounts of all predominantly on grain size.

Uniformly Graded: predominantly on grain size.

All soil sample descriptions included in this report follow the ASTM D2487-11 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System). The system divides soils into three major categories: (1) coarse grained, (2) fine-grained, and (3) highly organic. The soil is then subdivided based on either gradation or plasticity characteristics. The system provides a group symbol (e.g. SM) and group name (e.g. silty sand) for identification. The classification excludes particles larger than 76 mm. Please note that, with the exception of those samples where a grain size analysis has been made, all samples are classified visually in accordance with ASTM D2488-09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems. Others may use different classification systems; one such system is the ISSMFE Soil Classification.

ISSMFE SOIL CLASSIFICATION

CLAY	SILT			SAND			GRAVEL			COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE		

0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60	200

EQUIVALENT GRAIN DIAMETER IN MILLIMETRES

CLAY (PLASTIC) TO	FINE	MEDIUM	CRS.	FINE	COARSE
SILT (NONPLASTIC)	SAND			GRAVEL	

UNIFIED SOIL CLASSIFICATION

Terminology describing materials outside the USCS, (e.g. particles larger than 76 mm, visible organic matter, construction debris) is based upon the proportion of these materials present and as described below in accordance with Note 16 in ASTM D2488-09a:

Table a: Percent or Proportion of Soil, Pp

	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5≤Pp≤10%
Little	15≤Pp≤25%
Some	30≤Pp≤45%
Mostly	50≤Pp≤100%

The standard terminology to describe cohesionless soils includes the compactness as determined by the Standard Penetration Test 'N' value:

Table b: Apparent Density of Cohesionless Soil

	'N' Value (blows/0.3 m)
Very Loose	N<5
Loose	5≤N<10
Compact	10≤N<30
Dense	30≤N<50
Very Dense	50≤N

The standard terminology to describe cohesive soils includes consistency, which is based on undrained shear strength as measured by insitu vane tests, penetrometer tests, unconfined compression tests or similar field and laboratory analysis, Standard Penetration Test 'N' values can also be used to provide an approximate indication of the consistency and shear strength of fine grained, cohesive soils:

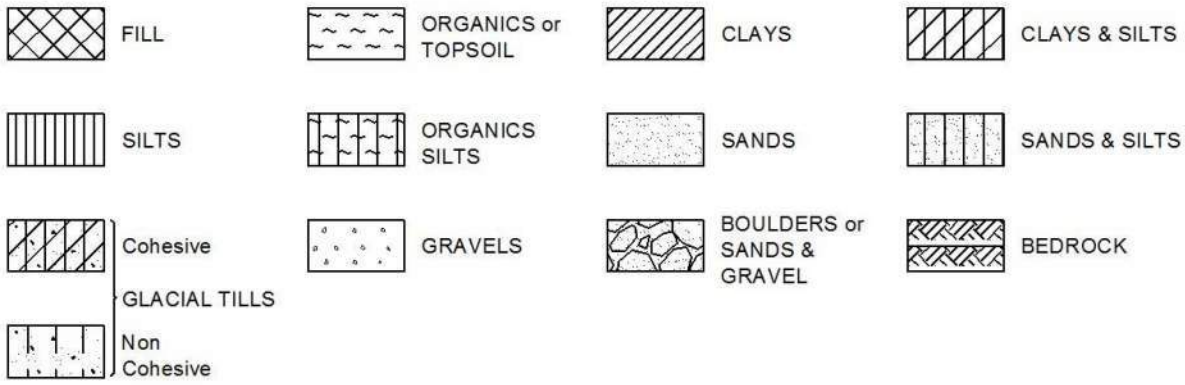
Table c: Consistency of Cohesive Soil

Consistency	Vane Shear Measurement (kPa)	'N' Value
Very Soft	<12.5	<2
Soft	12.5-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

Note: 'N' Value - The Standard Penetration Test records the number of blows of a 140 pound (64kg) hammer falling 30 inches (760mm), required to drive a 2 inch (50.8mm) O.D. split spoon sampler 1 foot (305mm). For split spoon samples where full penetration is not achieved, the number of blows is reported over the sampler penetration in meters (e.g. 50/0.15).

STRATA PLOT

Strata plots symbolize the soil or bedrock description. They are combinations of the following basic symbols:



WATER LEVEL MEASUREMENT

Log of Borehole BH7

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: 8/19/16

Drill Type: CME 75

Datum: Geodetic

Logged by: MAD Checked by: IT

Split Spoon Sample ☒
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits ⊢○
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		FILL Sand and gravel mixed with silty sand, brown, moist, (loose)	85.17	0	7	0		
			84.3	1	10	0		
▽		**SILTY CLAY** Brown to grey, moist to wet, petroleum odours from 1.5 m to 3.3 m, (hard to stiff).	83.83	2	13	290		
				3	9	460		
				4				
				5	4	85		
				6				
				7	0	0		
			78.0					
		Borehole Terminated at 7.16 m Depth						

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa
Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 20 40 60

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/5/21

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
5 days	2.1	-
23 days	1.3	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole BH7A

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: 8/19/16

Drill Type: CME 75

Datum: Geodetic

Logged by: TG Checked by: MM

Split Spoon Sample	⊠	Combustible Vapour Reading	□
Auger Sample	◧	Natural Moisture Content	×
SPT (N) Value	○	Atterberg Limits	⊢○
Dynamic Cone Test	———	Undrained Triaxial at % Strain at Failure	⊕
Shelby Tube	■	Shear Strength by Penetrometer Test	▲
Shear Strength by Vane Test	+ S		

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		FILL Crushed stone, grey, moist, no odours, (loose).	84.88 / 84.8	0	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60		
		FILL Sand, some silt, trace clay, brown to grey, moist, no odours, (loose).	84.1	1	13	0		
		SILTY CLAY Brown to grey, moist to wet, petroleum odours from 1.5 m to 3.2 m, (hard to stiff).		2	15	500		
				3		1600 / 65		
				4		0		
		Borehole Terminated at 4.88 m Depth	80.0					

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/5/21

Log of Borehole BH7B

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: 8/19/16

Drill Type: CME 75

Datum: Geodetic

Logged by: TG Checked by: MM

Split Spoon Sample ☒
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits |—○
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		FILL Crushed stone, grey, moist, no odours, (loose).	85.06 / 85.0	0
		FILL Sand, some silt, trace clay, brown to grey, moist, no odours, (loose).	84.3	
		SILTY CLAY Brown to grey, moist to wet, no odours , (hard to stiff).	83.2	1
				2
				3
				4
				5
		Borehole Terminated at 5.48 m Depth	79.6	

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa
Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60
SAMPLES
Natural Unit Wt. kN/m³

0 at 1 m; 0 at 2 m; 5 at 3 m; 0 at 4 m; 5 at 5 m

NOTES:
1. Borehole data requires interpretation by EXP before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
20 days	1.9	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/5/21

Log of Borehole BH7C

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: 8/19/16

Drill Type: CME 75

Datum: Geodetic

Logged by: TG Checked by: MM

Split Spoon Sample	⊠	Combustible Vapour Reading	□
Auger Sample	◧	Natural Moisture Content	×
SPT (N) Value	○	Atterberg Limits	⊢○
Dynamic Cone Test	———	Undrained Triaxial at % Strain at Failure	⊕
Shelby Tube	■	Shear Strength by Penetrometer Test	▲
Shear Strength by Vane Test	+ S		

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		FILL Crushed stone, grey, moist, no odours, (loose).	85.39 / 85.3	0
		FILL Sand, some silt, trace clay, brown to grey, moist, no odours, (loose).	84.6	1
		SILTY CLAY Brown to grey, moist to wet, petroleum odours from 2.3 m to 3.0 m, (hard to stiff).		2
				3
				4
		Borehole Terminated at 4.88 m Depth	80.5	

Standard Penetration Test N Value: 20 40 60 80

Shear Strength: 50 100 150 200 kPa

Combustible Vapour Reading (ppm): 250 500 750

Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

SAMPLES

Natural Unit Wt. kN/m³

0

10

500

20

5

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/5/21

Log of Borehole BH8

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: 8/31/16

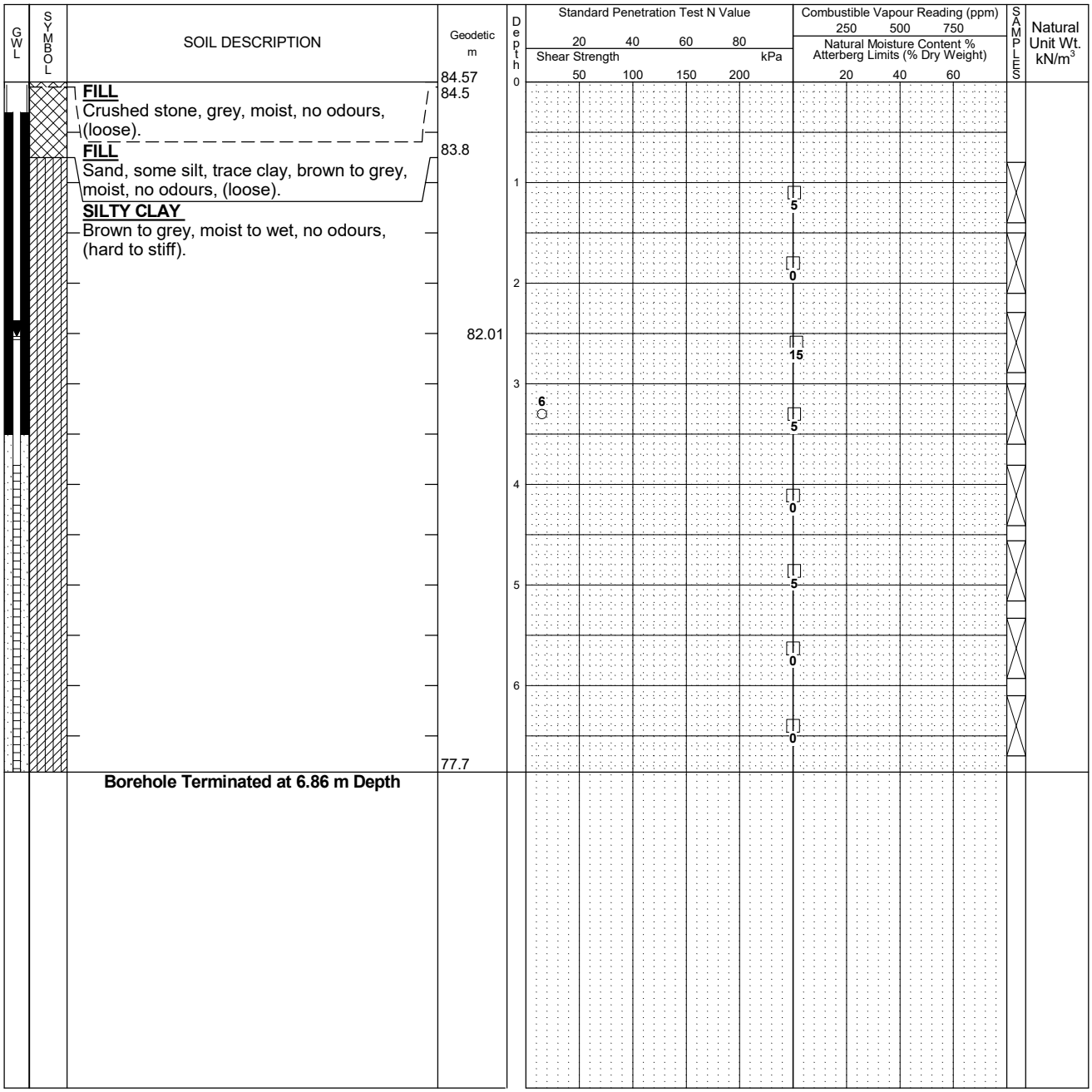
Drill Type: CME 75

Datum: Geodetic

Logged by: TG Checked by: MM

Split Spoon Sample ☒
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits |—○
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲



LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/5/21

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. An above ground monitoring well with a 31 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
8 days	2.6	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole BH9

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1208 Montreal Road, Ottawa

Figure No. ______

Date Drilled: 8/31/16

Drill Type: CME 75

Datum: Geodetic

Logged by: TG Checked by: MM

Legend	Symbol	Legend	Symbol
Split Spoon Sample	⊠	Combustible Vapour Reading	□
Auger Sample	◨	Natural Moisture Content	×
SPT (N) Value	○	Atterberg Limits	├─○
Dynamic Cone Test	───	Undrained Triaxial at % Strain at Failure	⊕
Shelby Tube	■	Shear Strength by Penetrometer Test	▲
Shear Strength by Vane Test	+ S		

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
			85.49	0
		FILL Sand and gravel mixed with silty sand, brown, moist, (loose)	84.6	
▼		**SILTY CLAY** Brown to grey, moist to wet, no odours, (hard to stiff).	83.87	1
			77.3	8
		Borehole Terminated at 8.23 m Depth		

Standard Penetration Test N Value: 20, 40, 60, 80; Shear Strength (kPa): 50, 100, 150, 200

Combustible Vapour Reading (ppm): 250, 500, 750; Natural Moisture Content %, Atterberg Limits (% Dry Weight): 20, 40, 60

Samples / Natural Unit Wt. kN/m³

Combustible vapour readings (top to bottom): 0, 0, 0, 0, 0, 20, 20, 0, 0, 0

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A flushmount monitoring well with a 31 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
8 days	1.6	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole BH10

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: 8/31/16

Drill Type: CME 75

Datum: Geodetic

Logged by: TG Checked by: MM

Split Spoon Sample ☒
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits |—○
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		FILL Crushed stone, grey, moist, no odours, (loose).	85.97 / 85.9	0
		FILL Sand, some silt, trace clay, brown to grey, moist, no odours, (loose).	85.2	1
▽		**SILTY CLAY** Brown to grey, moist to wet, no odours, (hard to stiff).	84.01	2
				3
				4
				5
				6
				7
			78.5	
		Borehole Terminated at 7.46 m Depth		

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa

Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

SAMPLES

Natural Unit Wt. kN/m³

NOTES:
1. Borehole data requires interpretation by EXP before use by others
2. A flushmount monitoring well with a 31 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
8 days	2.0	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/5/21

Log of Borehole BH11

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: 8/31/16

Drill Type: CME 75

Datum: Geodetic

Logged by: TG Checked by: MM

Split Spoon Sample ☒
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits |—○
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		FILL Crushed stone, grey, moist, no odours, (loose).	79.25 / 79.2	0
		FILL Sand, some silt, trace clay, brown to grey, moist, no odours, (loose).	78.5	
		SILTY CLAY Brown to grey, moist to wet, no odours, (hard to stiff).		1
				2
				3
				4
				5
			73.35	6
				7
		Borehole Terminated at 7.62 m Depth	71.6	

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa

Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 20 40 60

SAMPLES

Natural Unit Wt. kN/m³

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/5/21

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A flushmount monitoring well with a 31 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
8 days	5.9	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole BH12

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: 8/31/16

Drill Type: CME 75

Datum: Geodetic

Logged by: TG Checked by: MM

Split Spoon Sample ☒
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits |—○
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
		FILL Sand and gravel mixed with silty sand, brown, moist, (loose)	77.29	0
			76.4	1
		SILTY CLAY Brown to grey, moist to wet, no odours, (hard to stiff).		2
				3
				4
				5
			71.88	6
				7
			69.1	8
		Borehole Terminated at 8.23 m Depth		

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa

Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

0
20
35
15
0

SAMPLES

Natural Unit Wt. kN/m³

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/5/21

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A flushmount monitoring well with a 31 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
8 days	5.4	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole BH13

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: 8/31/16

Drill Type: CME 75

Datum: Geodetic

Logged by: TG Checked by: MM

Split Spoon Sample ☒
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits ⊢○
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
			75.32	0	20 40 60 80 / 50 100 150 200 kPa	250 500 750 / 20 40 60		
			75.3					
		SILTY CLAY	74.6					
		Brown to grey, moist to wet, no odours, (hard to stiff).		1				
				2		0		
			72.95					
				3		5		
				4				
				5		85		
			70.2					
		Borehole Terminated at 5.08 m Depth						

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A flushmount monitoring well with a 31 mm slotted standpipe was installed in the borehole upon completion.
3. Field work supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
8 days	2.4	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 10/5/21

Log of Borehole MW-1

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1155-1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: September 3rd, 2021

Drill Type: Manual

Datum: Geodetic

Logged by: JE Checked by: MM

Split Spoon Sample ⊠
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits ⊢○
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth
			85.055	0
		FILL Sand and gravel, some clay, brown, dry, no odour or staining.	84.8	
		SILTY CLAY Some sand, grey, dry to wet, no odour or staining.		1
				2
				3
				4
				5
			79.4	
		Borehole Terminated at 5.7 m Depth		

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa
Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60
SAMPLES
Natural Unit Wt. kN/m³

NOTES:
1. Borehole data requires interpretation by EXP before use by others
2. A 38mm PVC monitoring well was installed upon completion.
3. Fieldwork was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Sept. 9, 2021	3.0	5.7
Sept. 30, 2021	1.5	5.7

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES_MW1 TO MW4.GPJ TROW OTTAWA.GDT 10/2/21

Log of Borehole MW-2

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1155-1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: August 27th, 2021

Drill Type: Track Mounted

Datum: Geodetic

Logged by: JE Checked by: MM

Split Spoon Sample ⊠
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits ⊢○⊣
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
			86.449	0	20 40 60 80 / 50 100 150 200 kPa	250 500 750 / 20 40 60		
		FILL Sand and gravel, brown, moist, no odour or staining, (compact).	86.2					
		SILTY SAND Some clay and gravel, brown, moist, no odour or staining, (compact).	85.7	1	18	10		
		SILTY CLAY Grey, moist to wet, no odour or staining, (soft to very stiff).			16	25		
				2	15	15		
					9	20		
				3	7	5		
				4	3	10		
					hammer	25		
				5	3	25		
			80.3	6				
		Borehole Terminated at 6.1 m Depth						

LOG OF BOREHOLE LOGS OF BOREHOLES_MW1 TO MW4.GPJ TROW OTTAWA.GDT 10/2/21

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 50mm PVC monitoring well was installed upon completion.
3. Fieldwork was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Sept. 9, 2021	3.1	6.2
Sept. 21, 2021	2.8	6.2

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole MW-3

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1155-1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: August 30th, 2021

Drill Type: Track Mounted

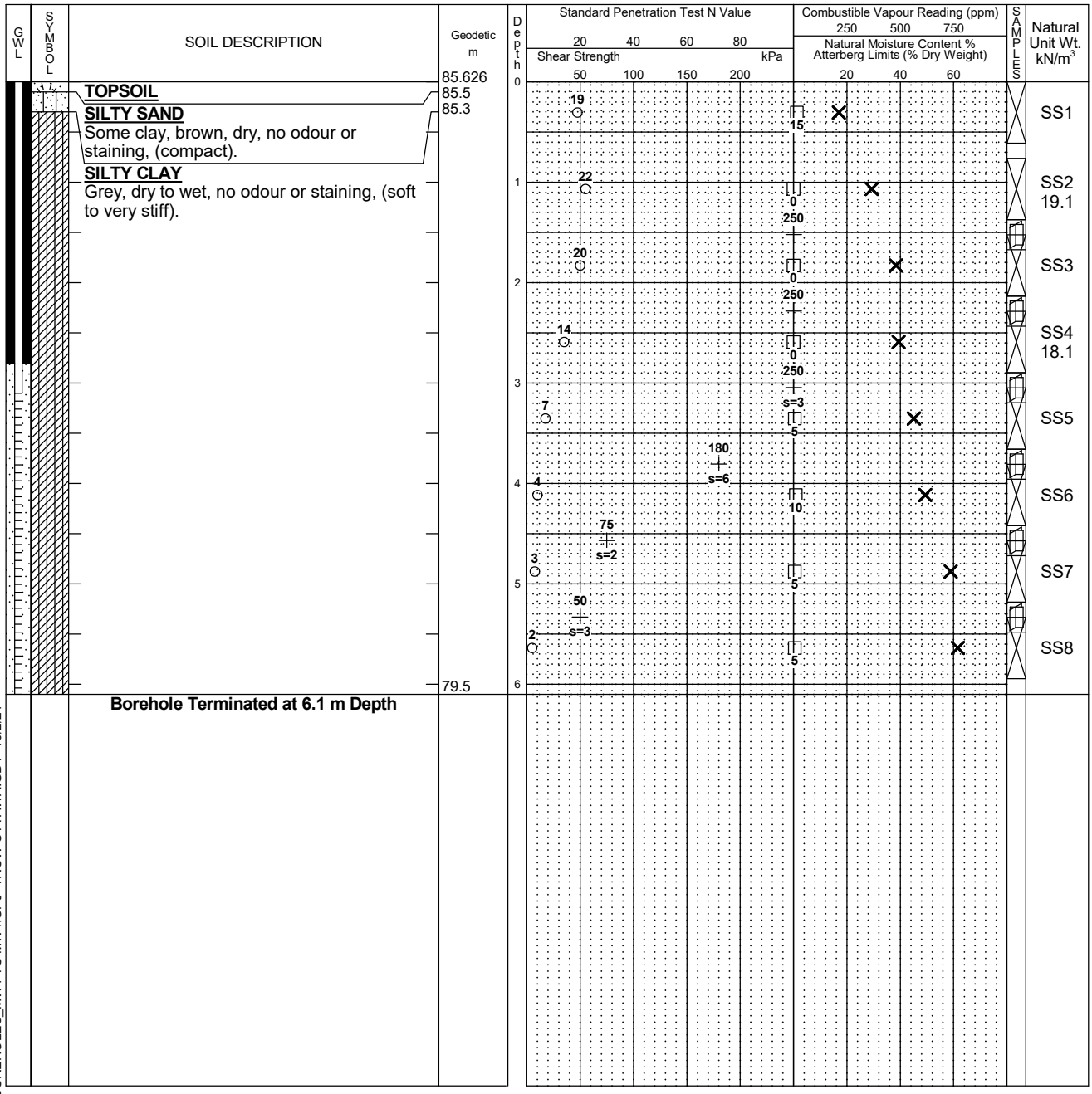
Datum: Geodetic

Logged by: JE Checked by: MM

Split Spoon Sample ⊠
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits ⊢○
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		TOPSOIL	85.626	0				
		SILTY SAND Some clay, brown, dry, no odour or staining, (compact).	85.5					
		SILTY CLAY Grey, dry to wet, no odour or staining, (soft to very stiff).	85.3					
				1				
				2				
				3				
				4				
				5				
			79.5	6				
		Borehole Terminated at 6.1 m Depth						



LOG OF BOREHOLE LOGS OF BOREHOLES_MW1 TO MW4.GPJ TROW OTTAWA.GDT 10/2/21

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 50mm PVC monitoring well was installed upon completion.
3. Fieldwork was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
Sept. 9, 2021	2.3	6.0
Sept. 21, 2021	2.5	6.0

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole MW-4

Project No: OTT-00234493-A0

Project: Phase II ESA

Location: 1155-1208 Montreal Road, Ottawa

Figure No. _____

Page. 1 of 1

Date Drilled: August 27th, 2021

Drill Type: Track Mounted

Datum: Geodetic

Logged by: JE Checked by: MM

Split Spoon Sample ⊠
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits ⊢○
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		TOPSOIL	85.445	0				
		SILTY SAND Brown, dry, no odour or staining, (compact).	85.3					
		SILTY CLAY Vertical seams, grey to brown, dry to wet, no odour or staining, (soft to very stiff).	85.1		10		SS1	18.8
				1	23		SS2	
					250		SS3	18.7
				2	19			
					250		SS4	
					15			
				3	244 s=3		SS5	
					10			
					250 s=3		SS6	
				4	7			
					140 s=4		SS7	
				5	3			
					130 s=4		SS8	
			79.3	6	2			
		Borehole Terminated at 6.1 m Depth						

LOG OF BOREHOLE LOGS OF BOREHOLES_MW1 TO MW4.GPJ TROW OTTAWA.GDT 10/2/21

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 50mm PVC monitoring well was installed upon completion.
3. Fieldwork was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00234493-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Sept. 9, 2021	1.9	6.0
Sept. 21, 2021	1.8	6.0

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

Appendix E: Analytical Summary Tables

TABLE 1 SOIL ANALYTICAL RESULTS *(µg/g)*
PETROLEUM HYDROCARBONS
1208 Old Montreal Road, Ottawa

Parameter	MECP Table 2[1]	BH7-SS4	BH7-SS5	BH7A-SS3	BH7B-SS3	BH7C-SS3
Sample Date (d/m/y)	Residential	8/16/2016	8/16/2016	8/19/2016	8/19/2016	8/19/2016
Sample Depth (mbsg)		3.1 - 3.7	4.6 - 5.2	2.3 - 2.9	2.3 - 2.9	2.3 - 2.9
Laboratory ID		1634172-01	1634297-01	1634410-01	1634410-02	1634410-03
Date of Analysis		'8/20/2016	'8/20/2016	'8/20/2016	'8/20/2016	'8/20/2016
Certificate of Analysis		1631472	1634297	1634410	1634410	1634410
Benzene	0.17	6.67	6.74	2.62	<0.02	0.4
Ethylbenzene	1.6	3.25	1.12	9.15	<0.05	1.25
Toluene	6	14.7	0.3	18.5	<0.05	0.67
Xylenes	25	7.74	1.63	33.1	<0.05	2.71
PHC F_1 (>C_6-C_{10})	65	27	8	76	<7	<7
PHC F_2 (>C_{10}-C_{16})	150	26	<4	13	<4	47
PHC F_3 (>C_{16}-C_{34})	1300	<8	<8	<8	<8	<8
PHC F_4 (>C_{34}-C_{50})	5600	<6	<6	<6	<6	<6

Parameter	MECP Table 2[1]	BH8-SS6	BH9-SS6	BH10-SS2	BH11-SS9	BH12-SS3	BH13-SS3
Sample Date (d/m/y)	Residential	8/31/2016	8/31/2016	8/31/2016	9/1/2016	9/1/2016	9/1/2016
Sample Depth (mbsg)		4.6 - 5.2	4.6 - 5.2	1.5 - 2.1	6.8 - 7.4	4.6 - 5.2	4.6 - 5.1
Laboratory ID		1636372-01	1636372-02	1636372-03	1636372-04	1636372-05	1636372-06
Date of Analysis		'9/8/2016	'9/8/2016	'9/8/2016	'9/8/2016	'9/8/2016	'9/8/2016
Certificate of Analysis		1638372	1638372	1638372	1638372	1638372	1638372
Benzene	0.17	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	1.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
PHC F_1 (>C_6-C_{10})	65	<7	<7	<7	<7	<7	<7
PHC F_2 (>C_{10}-C_{16})	150	<4	<4	<4	<4	<4	<4
PHC F_3 (>C_{16}-C_{34})	1300	<8	<8	<8	<8	<8	<8
PHC F_4 (>C_{34}-C_{50})	5600	<6	<6	<6	<6	<6	<6

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 2 potable residential standards, fine and medium grained soil.

Shaded Concentration exceeds MECP Table 2 residential soil quality standard.

TABLE 1 SOIL ANALYTICAL RESULTS *(µg/g)*
PETROLEUM HYDROCARBONS
1208 Old Montreal Road, Ottawa

Parameter	MECP Table 2[1]	MW-1 SS7	MW-2 SS7	MW-3 SS6	MW-4 SS8	S1
Sample Date (m/d/y)	Residential	9/3/2021	8/30/2021	8/30/2021	8/27/2021	8/30/2021
Sample Depth (mbsg)		3.9 - 4.5	4.6 - 5.2	4.0 - 4.4	5.5 - 6.0	0.15 - 0.45
Laboratory ID		QOJ802	QNG057	QNG056	QNG055	QNG058
Date of Analysis		'9/10/2021	'8/30/2021	'8/30/2021	'8/27/2021	'8/30/2021
Certificate of Analysis		C1P4382	C1O8699	C1O8699	C1O8699	C1O8699
Benzene	0.17	<0.020	<0.020	<0.020	<0.040	<0.040
Ethylbenzene	1.6	<0.020	<0.020	<0.020	<0.040	<0.040
Toluene	6	<0.020	0.025	0.028	<0.040	<0.040
Xylenes	25	<0.040	<0.040	<0.040	<0.080	<0.080
PHC F_1 (>C_6-C_{10})	65	<10	<10	<10	<20	<20
PHC F_2 (>C_{10}-C_{16})	150	<10	<10	<10	<20	<10
PHC F_3 (>C_{16}-C_{34})	1300	<50	<50	<50	<100	860
PHC F_4 (>C_{34}-C_{50})	5600	<50	<50	<50	<100	280

Parameter	MECP Table 2[1]	S2	S3	DUP	S4	S5
Sample Date (m/d/y)	Residential	8/30/2021	8/30/2021	Duplicate of	8/30/2021	8/30/2021
Sample Depth (mbsg)		0.15 - 0.45	0.15 - 0.40	S3	0.15 - 0.40	0.10 - 0.20
Laboratory ID		QNG059	QNG060	QNG063	QNG061	QNG062
Date of Analysis		'8/30/2021	'8/30/2021	'8/30/2021	'8/30/2021	'8/30/2021
Certificate of Analysis		C1O8699	C1O8699	C1O8699	C1O8699	C1O8699
Benzene	0.17	<0.020	<0.040	<0.020	<0.020	<0.020
Ethylbenzene	1.6	<0.020	<0.040	<0.020	<0.020	<0.020
Toluene	6	<0.020	<0.040	0.021	0.033	<0.020
Xylenes	25	<0.040	<0.080	<0.040	<0.040	<0.040
PHC F_1 (>C_6-C_{10})	65	<10	<20	<10	<10	<10
PHC F_2 (>C_{10}-C_{16})	150	<10	<10	<10	<10	<10
PHC F_3 (>C_{16}-C_{34})	1300	53	130	110	54	170
PHC F_4 (>C_{34}-C_{50})	5600	53	2800	1800	56	62

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 2 potable residential standards, fine and medium grained soil.

Shaded Concentration exceeds MECP Table 2 residential soil quality standard.

TABLE 2 SOIL ANALYTICAL RESULTS *(µg/g)*
METALS
1208 Old Montreal Road, Ottawa

Parameter	MECP Table 2[1]	S1	S2	S3	DUP	S4	S5
Sample Date (m/d/y)	Residential	8/30/2021	8/30/2021	8/30/2021	Duplicate of	8/30/2021	8/30/2021
Sample Depth (mbgs)		0.15 - 0.45	0.15 - 0.45	0.15 - 0.40	S3	0.15 - 0.40	0.10 - 0.20
Laboratory ID		QNG058	QNG059	QNG060	QNG063	QNG061	QNG062
Date of Analysis		'8/30/2021	'8/30/2021	'8/30/2021	'8/30/2021	'8/30/2021	'8/30/2021
Certificate of Analysis		C1O8699	C1O8699	C1O8699	C1O8699	C1O8699	C1O8699
Antimony	7.5	<0.20	<0.20	0.23	<0.20	<0.20	<0.20
Arsenic	18	1.8	1.6	3.3	2.5	1.6	1.5
Barium	390	190	210	170	150	120	120
Beryllium	4	0.64	0.70	0.27	0.25	0.40	0.28
Boron	120	5.9	5.4	6.9	6.4	<5.0	5.1
Cadmium	1.2	0.37	0.18	0.17	0.13	0.14	0.18
Chromium	160	84	96	14	13	37	20
Cobalt	22	16	18	5.0	4.3	8.4	4.7
Copper	140	63	35	12	9.1	22	11
Lead	120	28	16	21	16	21	33
Molybdenum	6.9	<0.50	<0.50	0.99	0.88	0.76	<0.50
Nickel	100	46	50	12	11	22	13
Selenium	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	20	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.27	0.32	0.21	0.15	0.20	0.12
Uranium	23	0.83	0.94	0.50	0.46	0.58	0.40
Vanadium	86	68	78	17	15	37	17
Zinc	340	150	110	51	44	67	45

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 2 potable residential standards, fine and medium grained soil.

Shaded/ Bold Concentration exceeds MECP Table 2 soil quality standard.

mbsg Metres below surface grade

Table 3 - Maximum Concentrations in Soil
1208 Old Montreal Road, Ottawa

Parameter	Sample Location	Sample Depth (mbgs)	Sampling Date	Maximum Concentration	MECP Table 2
Petroleum Hydrocarbons					
F1 PHC (C6 - C10) - BTEX	BH7A-SS3	2.3 - 2.9	19-Aug-16	76	65
F2 PHC (C10-C16)	BH7C-SS3	2.3 - 2.9	19-Aug-16	47	150
F3 PHC (C16-C34)	S1	0.15 - 0.45	30-Aug-21	860	1300
F4 PHC (C34-C50)	S3	0.15 - 0.40	30-Aug-21	2800	5600
Benzene	BH7-SS5	4.6 - 5.2	19-Aug-16	6.74	0.17
Ethylbenzene	BH7A-SS3	2.3 - 2.9	19-Aug-16	9.15	1.6
Toluene	BH7A-SS3	2.3 - 2.9	19-Aug-16	18.30	6
Xylenes, total	BH7A-SS3	2.3 - 2.9	19-Aug-16	33.10	25
Inorganic Parameters					
Antimony	S3	0.15 - 0.40	30-Aug-21	0.23	7.5
Arsenic	S3	0.15 - 0.40	30-Aug-21	3.3	18
Barium	S2	0.15 - 0.45	30-Aug-21	210	390
Beryllium	S2	0.0 - 0.6	30-Aug-21	0.70	4
Boron	S3	0.15 - 0.40	30-Aug-21	6.9	120
Cadmium	S1	0.15 - 0.40	30-Aug-21	0.37	1.2
Chromium	S2	0.15 - 0.45	30-Aug-21	96.0	160
Cobalt	S2	0.15 - 0.45	30-Aug-21	18.0	22
Copper	S1	0.15 - 0.40	30-Aug-21	63.0	140
Lead	S1	0.15 - 0.40	30-Aug-21	28.0	120
Molybdenum	S3	0.15 - 0.40	30-Aug-21	0.99	6.9
Nickel	S2	0.15 - 0.45	30-Aug-21	50.0	100
Selenium	All Locations	NA	30-Aug-21	<0.50	2.4
Silver	S1	0.15 - 0.40	30-Aug-21	0.2	20
Thallium	S2	0.15 - 0.45	30-Aug-21	0.32	1
Uranium	S2	0.15 - 0.45	30-Aug-21	0.9	23
Vanadium	S2	0.15 - 0.45	30-Aug-21	78.0	86
Zinc	S1	0.15 - 0.40	30-Aug-21	150.0	340

NOTES:

Analysis by Maxxam Analytics
All results are in ppm on dry weight basis
Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

Results were compared to Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non- Potable Ground Water Condition for Residential/Parkland/Institutional property use and coarse textured soils.

TABLE 4 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
PHC and BTEX
1208 Old Montreal Road, Ottawa

Parameter	MECP Table 2[1]	BH7	BH7B	BH7B	BH8	BH8	BH9	BH9	BH10
Sample Date (m/d/y)		8/18/2016	7/9/2016	9/10/2021	7/9/2016	9/9/2021	7/9/2016	9/10/2021	7/9/2016
Laboratory ID		1634298-01	1637215-01	QPP891	1637215-02	QPW362	1637215-03	QPP892	1637215-04
Date of Analysis		'8/17/2016	'9/11/2016	'9/14/2021	'9/11/2016	'9/15/2021	'9/11/2016	'9/14/2021	'9/11/2016
Certificate of Analysis		1634298	1637215	C1Q0105	1637215	C1Q1472	1637215	C1Q0105	1637215
Benzene	5	18600	<0.5	<0.2	<0.5	<0.2	<0.5	<0.2	<0.5
Ethylbenzene	2.4	1000	<0.5	<0.2	<0.5	<0.2	<0.5	<0.2	<0.5
Toluene	24	16800	<0.5	<0.2	<0.5	<0.2	<0.5	<0.2	<0.5
Xylenes	300	9900	<0.5	<0.4	<0.5	<0.4	<0.5	<0.4	<0.5
PHC F_1 (C_6-C_{10})	750	<25	<25	<25	<25	<25	<25	<25	<25
PHC F_2 (>C_{10}-C_{16})	150	<100	<100	<100	<100	<100	<100	<100	<100
PHC F_3 (>C_{16}-C_{34})	500	<100	<100	<200	<100	250	<100	<200	<100
PHC F_4 (>C_{34}-C_{50})	500	<100	<100	<200	<100	<200	<100	<200	<100

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 2 potable residential standards, fine and medium grained soil.

Shaded Concentration exceeds MECP Table 2 residential soil quality standard.

TABLE 4 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
PHC and BTEX
1208 Old Montreal Road, Ottawa

Parameter	MECP Table 2[1]	BH11	BH12	BH13	MW21-1	MW-2	Duplicate #1	MW-3	MW-3	MW-4
Sample Date (m/d/y)		7/9/2016	7/9/2016	7/9/2016	9/9/2021	9/9/2021	Duplicate of MW-2	9/9/2021	9/21/2021	9/9/2021
Laboratory ID		1637215-05	1637215-06	1637215-07	QPW361	QPW360	QPW363	QPW358	QSA941	QPW359
Date of Analysis		'9/11/2016	'9/11/2016	'9/11/2016	'9/15/2021	'9/15/2021	'9/15/2021	'9/15/2021	'9/22/2021	'9/15/2021
Certificate of Analysis		1637215	1637215	1637215	C1Q1472	C1Q1472	C1Q1472	C1Q1472	C1R1813	C1Q1472
Benzene	5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	2.4	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	24	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylenes	300	<0.5	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
PHC F_1 (C_6-C_{10})	750	<25	<25	<25	<25	<25	<25	<25	<25	<25
PHC F_2 (>C_{10}-C_{16})	150	<100	<100	<100	<100	<100	<100	220	<100	<100
PHC F_3 (>C_{16}-C_{34})	500	<100	<100	<100	250	<200	<200	220	<200	<200
PHC F_4 (>C_{34}-C_{50})	500	<100	<100	<100	<200	<200	<200	<200	<200	<200

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 2 potable residential standards, fine and medium grained soil.

Shaded Concentration exceeds MECP Table 2 residential soil quality standard.

Table 5 - Maximum Concentrations in Groundwater
1208 Old Montreal Road, Ottawa

Parameter	Sample Location	Screen Interval (mbgs)	Sampling Date	Maximum Concentration	MECP Table 2
Petroleum Hydrocarbons					
F1 PHC (C6 - C10) - BTEX	All Locations	NA	9-Jul-16	<25	750
F2 PHC (C10-C16)	All Locations	NA	9-Jul-16	<100	150
F3 PHC (C16-C34)	BH8	3.8 - 6.8	9-Jul-16	250	500
F4 PHC (C34-C50)	All Locations	NA	9-Jul-16	<200	500
Benzene	BH7	2.5 - 5.5	9-Jul-16	18600	5
Ethylbenzene	BH7	2.5 - 5.5	9-Jul-16	1000	2.4
Toluene	BH7	2.5 - 5.5	9-Jul-16	16800	24
Xylenes, total	BH7	2.5 - 5.5	9-Jul-16	9900	300

NOTES:

Analysis by Maxxam Analytics

All results are in ppb

Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

Results were compared to Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non- Potable Ground Water Condition for all types of property use and coarse textured soils.

TABLE 6 RELATIVE PERCENT DIFFERENCES
PETROLEUM HYDROCARBONS - SOIL
1208 Old Montreal Road, Ottawa

Parameter	Units	RDL	S3	DUP	RPD (%)	Alert Limit (%)
			30/8/2021	30/8/2021		
Petroleum Hydrocarbons						
PHC F_1 (>C_6-C10)	ug/g	10	<20	<10	nc	60
PHC F_2 (>C_{10}-C_{16})	ug/g	10	<10	<10	nc	60
PHC F_3 (>C_{16}-C_{34})	ug/g	50	130	110	nc	60
PHC F_4 (>C_{34}-C_{50})	ug/g	50	2800	1800	43	60
Volatiles						
Benzene	ug/g	0.020	<0.040	<0.020	nc	100
Ethylbenzene	ug/g	0.020	<0.040	<0.020	nc	100
Toluene	ug/g	0.020	<0.040	0.021	nc	100
Total Xylenes	ug/g	0.020	<0.080	<0.040	nc	100

NOTES:

Analysis by Maxxam Analytics/BVL
All results on dry weight basis; <RDL means not detected at reporting detection limit (RDL)
- means "not analysed"
nc means "not calculable" - one (or both) of the results are <5x RDL
Exceedances of alert limits are shown in **bold**
Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 7 RELATIVE PERCENT DIFFERENCES
METALS - SOIL
1208 Old Montreal Road, Ottawa

Parameter	Units	RDL	S3	DUP	RPD (%)	Alert Limit (%)
			30/8/2021	30/8/2021		
Inorganic Parameters						
Antimony	ug/g	0.20	0.23	<0.20	nc	60
Arsenic	ug/g	1.0	3.3	2.5	nc	60
Barium	ug/g	0.50	170	150	13	60
Beryllium	ug/g	0.20	0.27	0.25	nc	60
Boron	ug/g	5.0	6.9	6.4	nc	60
Cadmium	ug/g	0.10	0.17	0.13	nc	60
Chromium	ug/g	1.0	14	13	7	60
Cobalt	ug/g	0.10	5.0	4.3	15	60
Copper	ug/g	0.50	12	9.1	27	60
Lead	ug/g	1.0	21	16	27	60
Molybdenum	ug/g	0.50	0.99	0.88	nc	60
Nickel	ug/g	0.50	12	11	9	60
Selenium	ug/g	0.20	<0.50	<0.50	nc	60
Silver	ug/g	0.50	<0.20	<0.20	nc	60
Thallium	ug/g	0.050	0.21	0.15	nc	60
Uranium	ug/g	0.050	0.50	0.46	8	60
Vanadium	ug/g	5.0	17	15	nc	60
Zinc	ug/g	5.0	51	44	15	60

NOTES:

Analysis by Maxxam Analytics/BVL

All results on dry weight basis; <RDL means not detected at reporting detection limit (RDL)

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 8 RELATIVE PERCENT DIFFERENCES
PETROLEUM HYDROCARBONS - GROUNDWATER
1208 Old Montreal Road, Ottawa

Parameter	Units	RDL	MW-2	Duplicate #1	RPD (%)	Alert Limit (%)
			09/09/21	09/09/21		
Petroleum Hydrocarbons						
PHC F_1 (>C_6-C10)	ug/L	25	<25	<25	nc	60
PHC F_2 (>C_{10}-C_{16})	ug/L	100	<100	<100	nc	60
PHC F_3 (>C_{16}-C_{34})	ug/L	100	<200	<200	nc	60
PHC F_4 (>C_{34}-C_{50})	ug/L	100	<200	<200	nc	60
Volatiles						
Benzene	ug/L	0.20	<0.2	<0.2	nc	60
Ethylbenzene	ug/L	0.20	<0.2	<0.2	nc	60
Toluene	ug/L	0.20	<0.2	<0.2	nc	60
Total Xylenes	ug/L	0.20	<0.4	<0.4	nc	60

NOTES:

Analysis by Maxxam Analytics/BVL

<RDL means not detected at reporting detection limit (RDL)

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

Appendix F: Laboratory Certificates of Analysis

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Certificate of Analysis

exp Services Inc. (Ottawa)
100-2650 Queensview Dr.
Ottawa, ON K2B 8K2
Attn: Mark Devlin

Client PO:
Project: OTT00234493-A
Custody: 32454

Report Date: 22-Aug-2016
Order Date: 16-Aug-2016

Order #: 1634172

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1634172-01	BH7-SS4

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	18-Aug-16	20-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	18-Aug-16	20-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	19-Aug-16	21-Aug-16
Solids, %	Gravimetric, calculation	18-Aug-16	18-Aug-16

Certificate of Analysis
Client: exp Services Inc. (Ottawa)
Client PO:

Report Date: 22-Aug-2016
Order Date: 16-Aug-2016
Project Description: OTT00234493-A

	Client ID:	BH7-SS4	-	-	-
	Sample Date:	16-Aug-16	-	-	-
	Sample ID:	1634172-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	67.4	-	-	-
Volatiles					
Benzene	0.02 ug/g dry	6.67	-	-	-
Ethylbenzene	0.05 ug/g dry	3.25	-	-	-
Toluene	0.05 ug/g dry	14.7	-	-	-
m,p-Xylenes	0.05 ug/g dry	4.72	-	-	-
o-Xylene	0.05 ug/g dry	3.02	-	-	-
Xylenes, total	0.05 ug/g dry	7.74	-	-	-
Toluene-d8	Surrogate	101%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	27	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	26	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*3.25*		*ug/g*		*102*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Physical Characteristics									
% Solids	59.9	0.1	% by Wt.	59.7			0.4	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*2.22*		*ug/g dry*		*103*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	192	7	ug/g		96.0	80-120			
F2 PHCs (C10-C16)	75	4	ug/g		83.8	80-120			
F3 PHCs (C16-C34)	163	8	ug/g		87.6	80-120			
F4 PHCs (C34-C50)	109	6	ug/g		87.9	80-120			
Volatiles									
Benzene	4.22	0.02	ug/g		106	60-130			
Ethylbenzene	4.78	0.05	ug/g		120	60-130			
Toluene	4.23	0.05	ug/g		106	60-130			
m,p-Xylenes	9.04	0.05	ug/g		113	60-130			
o-Xylene	4.60	0.05	ug/g		115	60-130			
Surrogate: Toluene-d8	*2.47*		*ug/g*		*77.2*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Chain of Custody
(Lab Use Only)
№ 32454

Page 1 of 1

Client Name: exp Services Inc.	Project Reference: OTT-00234493-A	**Turnaround Time:**
Contact Name: Mark Devlin / Taryn Glancey / Mark McCallum	Quote #	☐ 1 Day ☐ 3 Day
Address: 100-2650 Queensview Dr. Ottawa	PO #	☐ 2 Day ☒ Regular
Telephone: (613) 793 3319	Email Address:	Date Required:

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 2 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1634172

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHC (F1-F4)	BTEX									
1	BH7-SS4	S		2	Aug 16, 2016	10:00am	X	X								120ml + 1vial	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Mark Devlin	Received by Driver/Depot:	Received at Lab: Rachel Subject	Verified By:
Relinquished By (Print): Mark Devlin	Date/Time:	Date/Time: Aug 16/16 4:56	Date/Time: 16/08/16 17:04
Date/Time: Aug 16, 2016 / 4:55 pm	Temperature: °C	Temperature: 13.6 °C	pH Verified [ ] By:

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Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr.
Ottawa, ON K2B 8K2
Attn: Taryn Glancy

Client PO:
Project: OTT000234493
Custody: 32459

Report Date: 22-Aug-2016
Order Date: 18-Aug-2016

Order #: 1634297

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1634297-01	BH7 SS5

Approved By:

Tim McCooeye
Senior Advisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	18-Aug-16	18-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	18-Aug-16	18-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	19-Aug-16	21-Aug-16
Solids, %	Gravimetric, calculation	21-Aug-16	21-Aug-16

Certificate of Analysis
Client: exp Services Inc. (Ottawa)
Client PO:

Report Date: 22-Aug-2016
Order Date: 18-Aug-2016
Project Description: OTT000234493

	Client ID:	BH7 SS5	-	-	-
	Sample Date:	16-Aug-16	-	-	-
	Sample ID:	1634297-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	63.7	-	-	-
Volatiles					
Benzene	0.02 ug/g dry	6.74	-	-	-
Ethylbenzene	0.05 ug/g dry	1.12	-	-	-
Toluene	0.05 ug/g dry	0.30	-	-	-
m,p-Xylenes	0.05 ug/g dry	1.03	-	-	-
o-Xylene	0.05 ug/g dry	0.60	-	-	-
Xylenes, total	0.05 ug/g dry	1.63	-	-	-
Toluene-d8	Surrogate	106%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	8	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-

Certificate of Analysis
Client: exp Services Inc. (Ottawa)
Client PO:

Report Date: 22-Aug-2016
Order Date: 18-Aug-2016
Project Description: OTT000234493

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*3.25*		*ug/g*		*102*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Physical Characteristics									
% Solids	84.9	0.1	% by Wt.	85.3			0.5	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	192	7	ug/g		96.0	80-120			
F2 PHCs (C10-C16)	75	4	ug/g		83.8	80-120			
F3 PHCs (C16-C34)	163	8	ug/g		87.6	80-120			
F4 PHCs (C34-C50)	109	6	ug/g		87.9	80-120			
Volatiles									
Benzene	4.22	0.02	ug/g		106	60-130			
Ethylbenzene	4.78	0.05	ug/g		120	60-130			
Toluene	4.23	0.05	ug/g		106	60-130			
m,p-Xylenes	9.04	0.05	ug/g		113	60-130			
o-Xylene	4.60	0.05	ug/g		115	60-130			
Surrogate: Toluene-d8	*2.47*		*ug/g*		*77.2*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Client Name: exp	Project Reference: 234493	**Turnaround Time:**
Contact Name: Taryn Glancy / Mark McCalla	Quote #	☐ 1 Day ☐ 3 Day
Address: 100-2650 Queensview	PO #	☐ 2 Day ☐ Regular
Telephone: Ottawa, ON	Email Address:	Date Required: Monday Aug 22

Criteria: ☑ O. Reg. 153/04 (As Amended) Table 2 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number:
1634297 - Soil.
1634298 - Water.

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHC F1->F4	BTEX									
1	BH7 SS5	S			Aug 16		x	x						120ml + 1 vial			
2	BH7 SS6	S			2		x	x			(Hold)			↓			
3	MW 7	GW			Aug 18		x	x									
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Comments:

Method of Delivery: Walk in

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By: Rachel Sibyect
Relinquished By (Print):	Date/Time:	Date/Time: Aug 18/16	Date/Time: Aug 18/16 2:01
Date/Time: Aug 18/16 1015 hrs	Temperature: ____ °C	Temperature: 19.3 °C 10:15	pH Verified ☒ By: N/A

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Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr.
Ottawa, ON K2B 8K2
Attn: Mark McCalla

Client PO:
Project: OTT000234493A
Custody: 109572

Report Date: 22-Aug-2016
Order Date: 19-Aug-2016

Order #: 1634410

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1634410-01	BH7A
1634410-02	BH7B
1634410-03	BH7C

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis
Client: exp Services Inc. (Ottawa)
Client PO:

Report Date: 22-Aug-2016
Order Date: 19-Aug-2016
Project Description: OTT000234493A

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	21-Aug-16	22-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	21-Aug-16	22-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	20-Aug-16	21-Aug-16
Solids, %	Gravimetric, calculation	21-Aug-16	21-Aug-16

Certificate of Analysis

Client: exp Services Inc. (Ottawa)

Client PO:

Report Date: 22-Aug-2016

Order Date: 19-Aug-2016

Project Description: OTT000234493A

	Client ID:	BH7A	BH7B	BH7C	-
	Sample Date:	19-Aug-16	19-Aug-16	19-Aug-16	-
	Sample ID:	1634410-01	1634410-02	1634410-03	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	75.1	75.3	72.2	-
Volatiles					
Benzene	0.02 ug/g dry	2.62	<0.02	0.40	-
Ethylbenzene	0.05 ug/g dry	9.15	<0.05	1.25	-
Toluene	0.05 ug/g dry	18.5	<0.05	0.67	-
m,p-Xylenes	0.05 ug/g dry	22.3	<0.05	2.07	-
o-Xylene	0.05 ug/g dry	10.8	<0.05	0.64	-
Xylenes, total	0.05 ug/g dry	33.1	<0.05	2.71	-
Toluene-d8	Surrogate	100%	97.4%	96.4%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	76	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	13	<4	47	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*3.25*		*ug/g*		*102*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	96	7	ug/g dry	76			23.8	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	105	8	ug/g dry	75			32.9	30	QR-04
F4 PHCs (C34-C50)	23	6	ug/g dry	21			8.9	30	
Physical Characteristics									
% Solids	84.9	0.1	% by Wt.	85.3			0.5	25	
Volatiles									
Benzene	2.59	0.02	ug/g dry	2.62			1.0	50	
Ethylbenzene	9.78	0.05	ug/g dry	9.15			6.7	50	
Toluene	17.6	0.05	ug/g dry	18.5			4.9	50	
m,p-Xylenes	23.3	0.05	ug/g dry	22.3			4.4	50	
o-Xylene	11.2	0.05	ug/g dry	10.8			3.8	50	
Surrogate: Toluene-d8	*1.43*		*ug/g dry*		*94.7*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	192	7	ug/g		96.0	80-120			
F2 PHCs (C10-C16)	100	4	ug/g		111	80-120			
F3 PHCs (C16-C34)	206	8	ug/g		111	80-120			
F4 PHCs (C34-C50)	138	6	ug/g		111	80-120			
Volatiles									
Benzene	4.22	0.02	ug/g		106	60-130			
Ethylbenzene	4.78	0.05	ug/g		120	60-130			
Toluene	4.23	0.05	ug/g		106	60-130			
m,p-Xylenes	9.04	0.05	ug/g		113	60-130			
o-Xylene	4.60	0.05	ug/g		115	60-130			
Surrogate: Toluene-d8	*2.47*		*ug/g*		*77.2*	*50-140*			

Qualifier Notes:

QC Qualifiers :

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Chain of Custody
(Lab Use Only)
№ 109572

Page 1 of 1

Client Name: exp	Project Reference: 234493-A		**Turnaround Time:**
Contact Name: Matt McColla / Taryn Glang	Quote #		☒ 1 Day ☐ 3 Day
Address: 100-2650 Queensview, Ottawa	PO #		☐ 2 Day ☐ Regular
Telephone:	Email Address:		Date Required: Monday

Criteria: ☑ O. Reg. 153/04 (As Amended) Table 2 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ____ ☐ Other: ____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1634410

Required Analyses

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)							
1	BH7A	S			Aug 19		+								- 1 90ml + 1 vial -					/
2	BH7B	↓			↓		+								↓					/
3	BH7C	↓			↓		+								↓					/
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Comments:

Method of Delivery: Walk-In

Relinquished By (Sign): [signature]	Received by Driver/Depot: [signature]	Received at Lab: SUMETPORN DORMAI	Verified By: Rachel Subject
Relinquished By (Print):	Date/Time: 08/19/16 1:53pm	Date/Time: AUG 19, 2016 03:20	Date/Time: Aug 19/16 4:00
Date/Time: Aug 19/16 1:52 Pm	Temperature: 10.8 °C	Temperature: 14.3 °C	pH Verified ☒ By: N/A

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Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr.
Ottawa, ON K2B 8K2
Attn: Taryn Glancy

Client PO:
Project: OTT000234493
Custody: 32571

Report Date: 9-Sep-2016
Order Date: 2-Sep-2016

Order #: 1636372

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1636372-01	BH12 SS3
1636372-02	BH13 SS3
1636372-03	BH11 SS9
1636372-04	BH10 SS2
1636372-05	BH9 SS6
1636372-06	BH8 SS6

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	2-Sep-16	7-Sep-16
PHC F1	CWS Tier 1 - P&T GC-FID	2-Sep-16	7-Sep-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	6-Sep-16	7-Sep-16
Solids, %	Gravimetric, calculation	7-Sep-16	7-Sep-16

Certificate of Analysis
Client: exp Services Inc. (Ottawa)
Client PO:

Report Date: 09-Sep-2016
Order Date: 2-Sep-2016
Project Description: OTT000234493

	Client ID:	BH12 SS3	BH13 SS3	BH11 SS9	BH10 SS2
	Sample Date:	01-Sep-16	01-Sep-16	01-Sep-16	31-Aug-16
	Sample ID:	1636372-01	1636372-02	1636372-03	1636372-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	64.0	91.1	62.5	67.5
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene-d8	Surrogate	105%	104%	105%	105%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6

	Client ID:	BH9 SS6	BH8 SS6	-	-
	Sample Date:	31-Aug-16	31-Aug-16	-	-
	Sample ID:	1636372-05	1636372-06	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	66.1	66.3	-	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene	0.05 ug/g dry	<0.05	<0.05	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene-d8	Surrogate	105%	105%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*8.54*		*ug/g*		*107*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Physical Characteristics									
% Solids	87.6	0.1	% by Wt.	85.5			2.5	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*3.89*		*ug/g dry*		*108*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	189	7	ug/g		94.4	80-120			
F2 PHCs (C10-C16)	94	4	ug/g		104	80-120			
F3 PHCs (C16-C34)	220	8	ug/g		118	80-120			
F4 PHCs (C34-C50)	148	6	ug/g		119	80-120			
Volatiles									
Benzene	3.39	0.02	ug/g		84.9	60-130			
Ethylbenzene	3.37	0.05	ug/g		84.2	60-130			
Toluene	3.85	0.05	ug/g		96.3	60-130			
m,p-Xylenes	7.08	0.05	ug/g		88.5	60-130			
o-Xylene	3.29	0.05	ug/g		82.2	60-130			
Surrogate: Toluene-d8	*7.66*		*ug/g*		*95.7*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Chain of Custody
(Lab Use Only)
№ 32571

Page 1 of 1

Client Name: exp
Contact Name: Taryn Glang / Mark McCalla
Address: 100-2650 Queensview
Telephone: 613-688 1899
Project Reference: 234493
Quote #
PO #
Email Address:

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required: _____

Criteria: ☑ O. Reg. 153/04 (As Amended) Table 2 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1636372

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHC F1-F4	BTEX									
1	BH12 SS3	S		2	Sep 1		x	x		120 + vial.							
2	BH13 SS3																
3	BH11 SS9																
4	BH10 SS2				Aug 31												
5	BH9 SS6																
6	BH8 SS6																
7																	
8																	
9																	
10																	

Comments:

Method of Delivery: Walk in

Relinquished By (Sign): Taryn Glang	Received by Driver/Depot:	Received at Lab:	Verified By: Rachel Subject
Relinquished By (Print): Taryn Glang Sep 2 9:18a.m.	Date/Time:	Date/Time: Sept 2/16 9:18a	Date/Time: Sep 2/16 11:35
Date/Time:	Temperature: ___ °C	Temperature: 10.4 °C	pH Verified ☒ By: N/A

Your Project #: OTT-00234493-A0
Your C.O.C. #: 159763

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/09/10
Report #: R6805021
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1P4382
Received: 2021/09/03, 11:53

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 2)	1	N/A	2021/09/10	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	1	2021/09/08	2021/09/09	CAM SOP-00316	CCME CWS m
Moisture (1)	1	N/A	2021/09/07	CAM SOP-00445	Carter 2nd ed 51.2 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga
(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00234493-A0
Your C.O.C. #: 159763

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/09/10
Report #: R6805021
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1P4382
Received: 2021/09/03, 11:53

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C1P4382
Report Date: 2021/09/10

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: JE

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		QOJ802			QOJ802		
Sampling Date		2021/09/03 10:00			2021/09/03 10:00		
COC Number		159763			159763		
	UNITS	**MW-1-SS7**	**RDL**	**QC Batch**	**MW-1-SS7 Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Moisture	%	37	1.0	7562106	38	1.0	7562106
BTEX & F1 Hydrocarbons							
Benzene	ug/g	<0.020	0.020	7565706			
Toluene	ug/g	<0.020	0.020	7565706			
Ethylbenzene	ug/g	<0.020	0.020	7565706			
o-Xylene	ug/g	<0.020	0.020	7565706			
p+m-Xylene	ug/g	<0.040	0.040	7565706			
Total Xylenes	ug/g	<0.040	0.040	7565706			
F1 (C6-C10)	ug/g	<10	10	7565706			
F1 (C6-C10) - BTEX	ug/g	<10	10	7565706			
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	7565176			
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	7565176			
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	7565176			
Reached Baseline at C50	ug/g	Yes		7565176			
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	102		7565706			
4-Bromofluorobenzene	%	84		7565706			
D10-o-Xylene	%	104		7565706			
D4-1,2-Dichloroethane	%	104		7565706			
o-Terphenyl	%	99		7565176			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1P4382
Report Date: 2021/09/10

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: JE

TEST SUMMARY

BV Labs ID: QOJ802
Sample ID: MW-1-SS7
Matrix: Soil

Collected: 2021/09/03
Shipped:
Received: 2021/09/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7565706	N/A	2021/09/10	Lincoln Ramdahin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7565176	2021/09/08	2021/09/09	Ksenia Trofimova
Moisture	BAL	7562106	N/A	2021/09/07	Prgya Panchal

BV Labs ID: QOJ802 Dup
Sample ID: MW-1-SS7
Matrix: Soil

Collected: 2021/09/03
Shipped:
Received: 2021/09/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	7562106	N/A	2021/09/07	Prgya Panchal

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	11.0°C

Results relate only to the items tested.

BV Labs Job #: C1P4382
Report Date: 2021/09/10

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: JE

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7565176	o-Terphenyl	2021/09/09	92	60 - 130	100	60 - 130	103	%		
7565706	1,4-Difluorobenzene	2021/09/10	98	60 - 140	98	60 - 140	101	%		
7565706	4-Bromofluorobenzene	2021/09/10	100	60 - 140	100	60 - 140	90	%		
7565706	D10-o-Xylene	2021/09/10	84	60 - 140	86	60 - 140	85	%		
7565706	D4-1,2-Dichloroethane	2021/09/10	102	60 - 140	96	60 - 140	109	%		
7562106	Moisture	2021/09/07							3.0	20
7565176	F2 (C10-C16 Hydrocarbons)	2021/09/09	106	50 - 130	106	80 - 120	<10	ug/g	NC	30
7565176	F3 (C16-C34 Hydrocarbons)	2021/09/09	104	50 - 130	103	80 - 120	<50	ug/g	NC	30
7565176	F4 (C34-C50 Hydrocarbons)	2021/09/09	103	50 - 130	102	80 - 120	<50	ug/g	NC	30
7565706	Benzene	2021/09/10	102	50 - 140	102	50 - 140	<0.020	ug/g	NC	50
7565706	Ethylbenzene	2021/09/10	110	50 - 140	113	50 - 140	<0.020	ug/g	NC	50
7565706	F1 (C6-C10) - BTEX	2021/09/10					<10	ug/g	NC	30
7565706	F1 (C6-C10)	2021/09/10	96	60 - 140	90	80 - 120	<10	ug/g	NC	30
7565706	o-Xylene	2021/09/10	107	50 - 140	109	50 - 140	<0.020	ug/g	NC	50
7565706	p+m-Xylene	2021/09/10	102	50 - 140	106	50 - 140	<0.040	ug/g	NC	50
7565706	Toluene	2021/09/10	95	50 - 140	97	50 - 140	<0.020	ug/g	NC	50
7565706	Total Xylenes	2021/09/10					<0.040	ug/g	NC	50

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

BV Labs Job #: C1P4382
Report Date: 2021/09/10

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: JE

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

BUREAU VERITAS

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD 159763

Page 1 of 1

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: EXP Services Inc.	Company Name: EXP Servies Inc.	Quotation #:	[X] Regular TAT (5-7 days) Most analyses
Contact Name: Accounts Payable	Contact Name: Mark McCalla	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 100-2650 Queensview Dr- Ottawa	Address: 100-2650 Queensview Dr- ottawa	Project #: OTT-00234493-A0	Rush TAT (Surcharges will be applied)
Phone: 613-688-1899 Fax:	Phone: 613-688-1899 Fax:	Site Location:	[ ] 1 Day [ ] 2 Days [ ] 3-4 Days
Email: accounting.ottawa@exp.com	Email: mark.mccalla@exp.com	Site #:	Date Required:
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY		Site Location Province: ON Sampled By: Jeremy Eckart	Rush Confirmation #:

Regulation 153	Other Regulations
[ ] Table 1 [X] Res/Park [X] Med/ Fine	[ ] CCME [ ] Sanitary Sewer Bylaw
[ ] Table 2 [ ] Ind/Comm [ ] Coarse	[ ] MISA [ ] Storm Sewer Bylaw
[X] Table 3 [ ] Agri/ Other	[ ] PWQO Region
[ ] Table	[ ] Other (Specify)
FOR RSC (PLEASE CIRCLE) Y / N	[ ] REG 558 (MIN. 3 DAY TAT REQUIRED)
	[ ] REG 406 Table

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE): Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	HOLD- DO NOT ANALYZE
1	MW-1-557	2021/09/03	1000	S	3		X	X					
2													
3													
4													
5													
6													
7													
8													
9													
10													

RECEIVED IN OTTAWA

LABORATORY USE ONLY

CUSTODY SEAL Y / N		COOLER TEMPERATURES
Present	Intact	
✓	✓	10, 11, 12

COOLING MEDIA PRESENT: Y / N

COMMENTS: ON Ice

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Jeremy Eckart	2021/09/03	1100	Ice Jcy 3b	2021/09/03	11:53
			Freezer Freezer 4°C	2021/09/04	08:41

03-Sep-21 11:53
Katherine Szozda
C1P4382
DSG ENV-610

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Bureau Veritas Laboratories' standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms available at http://www.bvlabs.com/terms-and-conditions

2/4/0

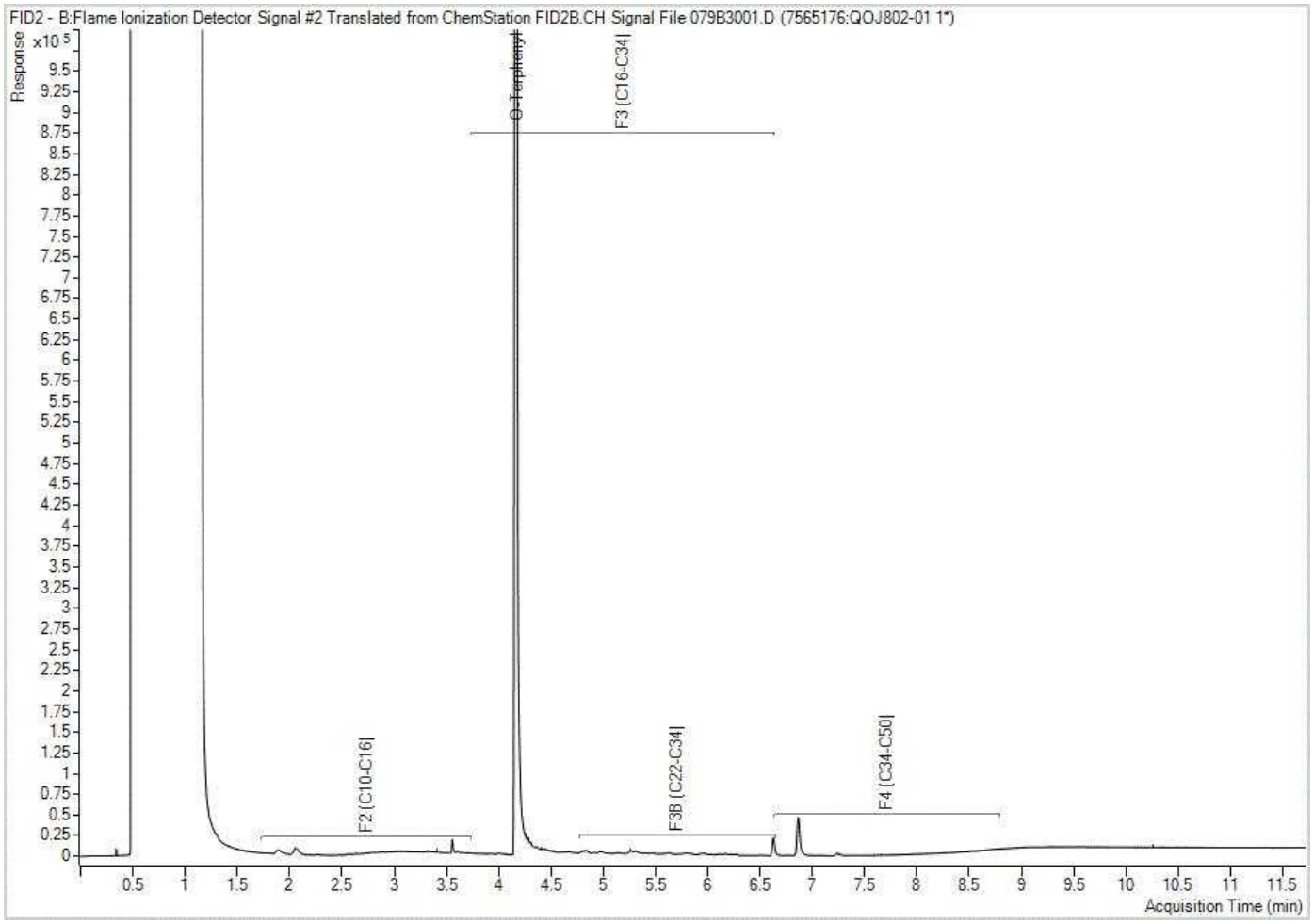
COC-1004 (06/19)

White: BV Labs - Yellow: Client

BV Labs Job #: C1P4382
Report Date: 2021/09/10
BV Labs Sample: QOJ802

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: MW-1-SS7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: OTT-00234493-A0
Your C.O.C. #: 157144

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/09/07
Report #: R6799633
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1O8699
Received: 2021/08/30, 16:00

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 2)	9	N/A	2021/09/02	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	9	2021/09/01	2021/09/02	CAM SOP-00316	CCME CWS m
F4G (CCME Hydrocarbons Gravimetric) (1)	2	2021/09/03	2021/09/03	CAM SOP-00316	CCME PHC-CWS m
Acid Extractable Metals by ICPMS (1)	6	2021/09/01	2021/09/03	CAM SOP-00447	EPA 6020B m
Moisture (1)	9	N/A	2021/08/31	CAM SOP-00445	Carter 2nd ed 51.2 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga
(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00234493-A0
Your C.O.C. #: 157144

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/09/07
Report #: R6799633
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1O8699
Received: 2021/08/30, 16:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

O.REG 153 ICPMS METALS (SOIL)

BV Labs ID		QNG058	QNG059	QNG060	QNG061	QNG062	QNG063		
Sampling Date		2021/08/30 14:00	2021/08/30 14:05	2021/08/30 14:10	2021/08/30 14:15	2021/08/30 14:20	2021/08/30 14:10		
COC Number		157144	157144	157144	157144	157144	157144		
	UNITS	**S1**	**S2**	**S3**	**S4**	**S5**	**DUP**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	0.23	<0.20	<0.20	<0.20	0.20	7553767
Acid Extractable Arsenic (As)	ug/g	1.8	1.6	3.3	1.6	1.5	2.5	1.0	7553767
Acid Extractable Barium (Ba)	ug/g	190	210	170	120	120	150	0.50	7553767
Acid Extractable Beryllium (Be)	ug/g	0.64	0.70	0.27	0.40	0.28	0.25	0.20	7553767
Acid Extractable Boron (B)	ug/g	5.9	5.4	6.9	<5.0	5.1	6.4	5.0	7553767
Acid Extractable Cadmium (Cd)	ug/g	0.37	0.18	0.17	0.14	0.18	0.13	0.10	7553767
Acid Extractable Chromium (Cr)	ug/g	84	96	14	37	20	13	1.0	7553767
Acid Extractable Cobalt (Co)	ug/g	16	18	5.0	8.4	4.7	4.3	0.10	7553767
Acid Extractable Copper (Cu)	ug/g	63	35	12	22	11	9.1	0.50	7553767
Acid Extractable Lead (Pb)	ug/g	28	16	21	21	33	16	1.0	7553767
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	0.99	0.76	<0.50	0.88	0.50	7553767
Acid Extractable Nickel (Ni)	ug/g	46	50	12	22	13	11	0.50	7553767
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7553767
Acid Extractable Silver (Ag)	ug/g	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7553767
Acid Extractable Thallium (Tl)	ug/g	0.27	0.32	0.21	0.20	0.12	0.15	0.050	7553767
Acid Extractable Uranium (U)	ug/g	0.83	0.94	0.50	0.58	0.40	0.46	0.050	7553767
Acid Extractable Vanadium (V)	ug/g	68	78	17	37	17	15	5.0	7553767
Acid Extractable Zinc (Zn)	ug/g	150	110	51	67	45	44	5.0	7553767

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		QNG055			QNG055			QNG056	QNG057		
Sampling Date		2021/08/27 16:00			2021/08/27 16:00			2021/08/30 10:00	2021/08/30 12:00		
COC Number		157144			157144			157144	157144		
	UNITS	**MW-4-SS8**	**RDL**	**QC Batch**	**MW-4-SS8 Lab-Dup**	**RDL**	**QC Batch**	**MW-3-SS6**	**MW-2-SS7**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	40	1.0	7552047				35	39	1.0	7552047
BTEX & F1 Hydrocarbons											
Benzene	ug/g	<0.040	0.040	7555372	<0.040	0.040	7555372	<0.020	<0.020	0.020	7555372
Toluene	ug/g	<0.040	0.040	7555372	<0.040	0.040	7555372	0.028	0.025	0.020	7555372
Ethylbenzene	ug/g	<0.040	0.040	7555372	<0.040	0.040	7555372	<0.020	<0.020	0.020	7555372
o-Xylene	ug/g	<0.040	0.040	7555372	<0.040	0.040	7555372	<0.020	<0.020	0.020	7555372
p+m-Xylene	ug/g	<0.080	0.080	7555372	<0.080	0.080	7555372	<0.040	<0.040	0.040	7555372
Total Xylenes	ug/g	<0.080	0.080	7555372	<0.080	0.080	7555372	<0.040	<0.040	0.040	7555372
F1 (C6-C10)	ug/g	<20	20	7555372	<20	20	7555372	<10	<10	10	7555372
F1 (C6-C10) - BTEX	ug/g	<20	20	7555372	<20	20	7555372	<10	<10	10	7555372
F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/g	<20	20	7554430				<10	<10	10	7554430
F3 (C16-C34 Hydrocarbons)	ug/g	<100	100	7554430				<50	<50	50	7554430
F4 (C34-C50 Hydrocarbons)	ug/g	<100	100	7554430				<50	<50	50	7554430
Reached Baseline at C50	ug/g	Yes		7554430				Yes	Yes		7554430
Surrogate Recovery (%)											
1,4-Difluorobenzene	%	107		7555372	101		7555372	102	102		7555372
4-Bromofluorobenzene	%	87		7555372	95		7555372	96	83		7555372
D10-o-Xylene	%	110		7555372	112		7555372	111	116		7555372
D4-1,2-Dichloroethane	%	91		7555372	94		7555372	92	96		7555372
o-Terphenyl	%	87		7554430				88	89		7554430

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		QNG058		QNG059		QNG060		QNG061	QNG062		
Sampling Date		2021/08/30 14:00		2021/08/30 14:05		2021/08/30 14:10		2021/08/30 14:15	2021/08/30 14:20		
COC Number		157144		157144		157144		157144	157144		
	UNITS	**S1**	**RDL**	**S2**	**RDL**	**S3**	**RDL**	**S4**	**S5**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	15	1.0	14	1.0	6.3	1.0	12	8.3	1.0	7552047
BTEX & F1 Hydrocarbons											
Benzene	ug/g	<0.040	0.040	<0.020	0.020	<0.040	0.040	<0.020	<0.020	0.020	7555372
Toluene	ug/g	<0.040	0.040	<0.020	0.020	<0.040	0.040	0.033	<0.020	0.020	7555372
Ethylbenzene	ug/g	<0.040	0.040	<0.020	0.020	<0.040	0.040	<0.020	<0.020	0.020	7555372
o-Xylene	ug/g	<0.040	0.040	<0.020	0.020	<0.040	0.040	<0.020	<0.020	0.020	7555372
p+m-Xylene	ug/g	<0.080	0.080	<0.040	0.040	<0.080	0.080	<0.040	<0.040	0.040	7555372
Total Xylenes	ug/g	<0.080	0.080	<0.040	0.040	<0.080	0.080	<0.040	<0.040	0.040	7555372
F1 (C6-C10)	ug/g	<20	20	<10	10	<20	20	<10	<10	10	7555372
F1 (C6-C10) - BTEX	ug/g	<20	20	<10	10	<20	20	<10	<10	10	7555372
F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	<10	10	<10	10	<10	<10	10	7554430
F3 (C16-C34 Hydrocarbons)	ug/g	860	50	53	50	130	50	54	170	50	7554430
F4 (C34-C50 Hydrocarbons)	ug/g	280	50	53	50	380	50	56	62	50	7554430
Reached Baseline at C50	ug/g	Yes		Yes		No		Yes	Yes		7554430
Surrogate Recovery (%)											
1,4-Difluorobenzene	%	103		103		108		111	103		7555372
4-Bromofluorobenzene	%	82		91		93		95	86		7555372
D10-o-Xylene	%	105		92		104		113	101		7555372
D4-1,2-Dichloroethane	%	94		95		101		94	93		7555372
o-Terphenyl	%	86		83		78		88	90		7554430

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		QNG063		
Sampling Date		2021/08/30 14:10		
COC Number		157144		
	UNITS	**DUP**	**RDL**	**QC Batch**
Inorganics				
Moisture	%	10	1.0	7552047
BTEX & F1 Hydrocarbons				
Benzene	ug/g	<0.020	0.020	7555372
Toluene	ug/g	0.021	0.020	7555372
Ethylbenzene	ug/g	<0.020	0.020	7555372
o-Xylene	ug/g	<0.020	0.020	7555372
p+m-Xylene	ug/g	<0.040	0.040	7555372
Total Xylenes	ug/g	<0.040	0.040	7555372
F1 (C6-C10)	ug/g	<10	10	7555372
F1 (C6-C10) - BTEX	ug/g	<10	10	7555372
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	7554430
F3 (C16-C34 Hydrocarbons)	ug/g	110	50	7554430
F4 (C34-C50 Hydrocarbons)	ug/g	290	50	7554430
Reached Baseline at C50	ug/g	No		7554430
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	104		7555372
4-Bromofluorobenzene	%	95		7555372
D10-o-Xylene	%	103		7555372
D4-1,2-Dichloroethane	%	90		7555372
o-Terphenyl	%	87		7554430

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		QNG060	QNG063		
Sampling Date		2021/08/30 14:10	2021/08/30 14:10		
COC Number		157144	157144		
	UNITS	**S3**	**DUP**	**RDL**	**QC Batch**
F2-F4 Hydrocarbons					
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	2800	1800	100	7557923

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

TEST SUMMARY

BV Labs ID: QNG055 **Collected:** 2021/08/27
Sample ID: MW-4-SS8 **Shipped:**
Matrix: Soil **Received:** 2021/08/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7555372	N/A	2021/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7554430	2021/09/01	2021/09/02	(Kent) Maolin Li
Moisture	BAL	7552047	N/A	2021/08/31	Prgya Panchal

BV Labs ID: QNG055 Dup **Collected:** 2021/08/27
Sample ID: MW-4-SS8 **Shipped:**
Matrix: Soil **Received:** 2021/08/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7555372	N/A	2021/09/02	Domnica Andronescu

BV Labs ID: QNG056 **Collected:** 2021/08/30
Sample ID: MW-3-SS6 **Shipped:**
Matrix: Soil **Received:** 2021/08/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7555372	N/A	2021/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7554430	2021/09/01	2021/09/02	(Kent) Maolin Li
Moisture	BAL	7552047	N/A	2021/08/31	Prgya Panchal

BV Labs ID: QNG057 **Collected:** 2021/08/30
Sample ID: MW-2-SS7 **Shipped:**
Matrix: Soil **Received:** 2021/08/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7555372	N/A	2021/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7554430	2021/09/01	2021/09/02	(Kent) Maolin Li
Moisture	BAL	7552047	N/A	2021/08/31	Prgya Panchal

BV Labs ID: QNG058 **Collected:** 2021/08/30
Sample ID: S1 **Shipped:**
Matrix: Soil **Received:** 2021/08/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7555372	N/A	2021/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7554430	2021/09/01	2021/09/02	(Kent) Maolin Li
Acid Extractable Metals by ICPMS	ICP/MS	7553767	2021/09/01	2021/09/03	Viviana Canzonieri
Moisture	BAL	7552047	N/A	2021/08/31	Prgya Panchal

BV Labs ID: QNG059 **Collected:** 2021/08/30
Sample ID: S2 **Shipped:**
Matrix: Soil **Received:** 2021/08/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7555372	N/A	2021/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7554430	2021/09/01	2021/09/02	(Kent) Maolin Li
Acid Extractable Metals by ICPMS	ICP/MS	7553767	2021/09/01	2021/09/03	Viviana Canzonieri

TEST SUMMARY

BV Labs ID: QNG059 **Collected:** 2021/08/30
Sample ID: S2 **Shipped:**
Matrix: Soil **Received:** 2021/08/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	7552047	N/A	2021/08/31	Prgya Panchal

BV Labs ID: QNG060 **Collected:** 2021/08/30
Sample ID: S3 **Shipped:**
Matrix: Soil **Received:** 2021/08/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7555372	N/A	2021/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7554430	2021/09/01	2021/09/02	(Kent) Maolin Li
F4G (CCME Hydrocarbons Gravimetric)	BAL	7557923	2021/09/03	2021/09/03	Jignakumari Mistry
Acid Extractable Metals by ICPMS	ICP/MS	7553767	2021/09/01	2021/09/03	Viviana Canzonieri
Moisture	BAL	7552047	N/A	2021/08/31	Prgya Panchal

BV Labs ID: QNG061 **Collected:** 2021/08/30
Sample ID: S4 **Shipped:**
Matrix: Soil **Received:** 2021/08/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7555372	N/A	2021/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7554430	2021/09/01	2021/09/02	(Kent) Maolin Li
Acid Extractable Metals by ICPMS	ICP/MS	7553767	2021/09/01	2021/09/03	Viviana Canzonieri
Moisture	BAL	7552047	N/A	2021/08/31	Prgya Panchal

BV Labs ID: QNG062 **Collected:** 2021/08/30
Sample ID: S5 **Shipped:**
Matrix: Soil **Received:** 2021/08/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7555372	N/A	2021/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7554430	2021/09/01	2021/09/02	(Kent) Maolin Li
Acid Extractable Metals by ICPMS	ICP/MS	7553767	2021/09/01	2021/09/03	Viviana Canzonieri
Moisture	BAL	7552047	N/A	2021/08/31	Prgya Panchal

BV Labs ID: QNG063 **Collected:** 2021/08/30
Sample ID: DUP **Shipped:**
Matrix: Soil **Received:** 2021/08/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	7555372	N/A	2021/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7554430	2021/09/01	2021/09/02	(Kent) Maolin Li
F4G (CCME Hydrocarbons Gravimetric)	BAL	7557923	2021/09/03	2021/09/03	Jignakumari Mistry
Acid Extractable Metals by ICPMS	ICP/MS	7553767	2021/09/01	2021/09/03	Viviana Canzonieri
Moisture	BAL	7552047	N/A	2021/08/31	Prgya Panchal

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.7°C

Sample QNG055 [MW-4-SS8] : F1 BTEX and F2 - F4 analysis : Detection limits were adjusted for high moisture content

Sample QNG058 [S1] : F1 BTEX analysis : Detection limits were adjusted for sample weight .

Sample QNG060 [S3] : F1 BTEX analysis : Detection limits were adjusted for sample weight .

Results relate only to the items tested.

BV Labs Job #: C1O8699
Report Date: 2021/09/07

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: JE

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7554430	o-Terphenyl	2021/09/01	84	60 - 130	76	60 - 130	71	%		
7555372	1,4-Difluorobenzene	2021/09/02	100	60 - 140	98	60 - 140	102	%		
7555372	4-Bromofluorobenzene	2021/09/02	101	60 - 140	97	60 - 140	92	%		
7555372	D10-o-Xylene	2021/09/02	112	60 - 140	98	60 - 140	91	%		
7555372	D4-1,2-Dichloroethane	2021/09/02	90	60 - 140	87	60 - 140	91	%		
7552047	Moisture	2021/08/31							14	20
7553767	Acid Extractable Antimony (Sb)	2021/09/03	96	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
7553767	Acid Extractable Arsenic (As)	2021/09/03	99	75 - 125	95	80 - 120	<1.0	ug/g	NC	30
7553767	Acid Extractable Barium (Ba)	2021/09/03	99	75 - 125	94	80 - 120	<0.50	ug/g	6.0	30
7553767	Acid Extractable Beryllium (Be)	2021/09/03	101	75 - 125	96	80 - 120	<0.20	ug/g	NC	30
7553767	Acid Extractable Boron (B)	2021/09/03	100	75 - 125	95	80 - 120	<5.0	ug/g	NC	30
7553767	Acid Extractable Cadmium (Cd)	2021/09/03	98	75 - 125	97	80 - 120	<0.10	ug/g	NC	30
7553767	Acid Extractable Chromium (Cr)	2021/09/03	103	75 - 125	99	80 - 120	<1.0	ug/g	2.2	30
7553767	Acid Extractable Cobalt (Co)	2021/09/03	98	75 - 125	94	80 - 120	<0.10	ug/g	8.8	30
7553767	Acid Extractable Copper (Cu)	2021/09/03	98	75 - 125	92	80 - 120	<0.50	ug/g	2.4	30
7553767	Acid Extractable Lead (Pb)	2021/09/03	99	75 - 125	99	80 - 120	<1.0	ug/g	1.1	30
7553767	Acid Extractable Molybdenum (Mo)	2021/09/03	98	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
7553767	Acid Extractable Nickel (Ni)	2021/09/03	102	75 - 125	101	80 - 120	<0.50	ug/g	15	30
7553767	Acid Extractable Selenium (Se)	2021/09/03	101	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
7553767	Acid Extractable Silver (Ag)	2021/09/03	101	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
7553767	Acid Extractable Thallium (Tl)	2021/09/03	97	75 - 125	99	80 - 120	<0.050	ug/g	1.1	30
7553767	Acid Extractable Uranium (U)	2021/09/03	98	75 - 125	100	80 - 120	<0.050	ug/g	2.5	30
7553767	Acid Extractable Vanadium (V)	2021/09/03	93	75 - 125	98	80 - 120	<5.0	ug/g	1.7	30
7553767	Acid Extractable Zinc (Zn)	2021/09/03	103	75 - 125	100	80 - 120	<5.0	ug/g	6.8	30
7554430	F2 (C10-C16 Hydrocarbons)	2021/09/02	91	50 - 130	82	80 - 120	<10	ug/g	NC	30
7554430	F3 (C16-C34 Hydrocarbons)	2021/09/02	90	50 - 130	82	80 - 120	<50	ug/g	NC	30
7554430	F4 (C34-C50 Hydrocarbons)	2021/09/02	88	50 - 130	80	80 - 120	<50	ug/g	NC	30
7555372	Benzene	2021/09/02	110	50 - 140	98	50 - 140	<0.020	ug/g	NC	50
7555372	Ethylbenzene	2021/09/02	123	50 - 140	109	50 - 140	<0.020	ug/g	NC	50
7555372	F1 (C6-C10) - BTEX	2021/09/02					<10	ug/g	NC	30
7555372	F1 (C6-C10)	2021/09/02	86	60 - 140	88	80 - 120	<10	ug/g	NC	30
7555372	o-Xylene	2021/09/02	123	50 - 140	105	50 - 140	<0.020	ug/g	NC	50

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7555372	p+m-Xylene	2021/09/02	120	50 - 140	104	50 - 140	<0.040	ug/g	NC	50
7555372	Toluene	2021/09/02	112	50 - 140	99	50 - 140	<0.020	ug/g	NC	50
7555372	Total Xylenes	2021/09/02					<0.040	ug/g	NC	50
7557923	F4G-sg (Grav. Heavy Hydrocarbons)	2021/09/03	73	65 - 135	101	65 - 135	<100	ug/g	14	50

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Brad Newman, B.Sc., C.Chem., Scientific Service Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

BUREAU VERITAS
6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD 157144

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required
Company Name:	ExP Services Inc.	Company Name:	ExP Services Inc.	Quotation #:		[X] Regular TAT (5-7 days) Most analyses
Contact Name:	Accounts Payable	Contact Name:	Mark McCalla	P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	100-2650 Queensview Dr. Ottawa, ON	Address:	100-2650 Queensview Dr. Ottawa, ON	Project #:	OTT-00234493-A0	Rush TAT (Surcharges will be applied) [ ] 1 Day [ ] 2 Days [ ] 3-4 Days
				Site Location:		
Phone:	613-688-1899 Fax:	Phone:	613-688-1899 Fax:	Site #:		Date Required:
Email:	accounting-ottawa@exp.com	Email:	mark.mccalla@exp.com	Site Location Province:	ON	Rush Confirmation #:
				Sampled By:	Jeremy Eckert	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY

Regulation 153: [ ] Table 1 [X] Res/Park [X] Med/ Fine; [ ] Table 2 [ ] Ind/Comm [ ] Coarse; [X] Table 3 [ ] Agri/ Other; [ ] Table ____; FOR RSC (PLEASE CIRCLE) Y / N

Other Regulations: [ ] CCME [ ] Sanitary Sewer Bylaw; [ ] MISA [ ] Storm Sewer Bylaw; [ ] PWQO Region ____; [ ] Other (Specify) ____; [ ] REG 558 (MIN. 3 DAY TAT REQUIRED); [ ] REG 406 Table ____

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

LABORATORY USE ONLY

Custody Seal Y / N: Present	Intact	Cooler Temperatures
		8, 9, 9
Y	Y	6, 6, 5
		6, 6, 7 °C

Cooling Media Present: Y / N (Y)

#	Sample Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of Containers Submitted	Field Filtered (circle) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 Metals & Inorganics	REG 153 ICPMS Metals	REG 153 Metals (Hg, Cr VI, ICPMS Metals, HWS - B)								Hold - Do Not Analyze	Comments
1	MW-4-SS8	2021/08/27	1600	S	3		X	X			~~X~~ JE										
2	MW-3-SS6	2021/08/30	1000	S	3		X	X			~~X~~ JE										
3	MW-2-SS7	2021/08/30	1200	S	3		X	X			~~X~~ JE										
4	S1	2021/08/30	1400	S	3		X	X			X										
5	S2	2021/08/30	1405	S	3		X	X			X										RECEIVED IN OTTAWA
6	S3	2021/08/30	1410	S	3		X	X			X										ON ICE
7	S4	2021/08/30	1415	S	3		X	X			X										
8	S5	2021/08/30	1420	S	3		X	X			X										
9	DUP	2021/08/30	1410	S	3		X	X			X										
10																					

Relinquished By: (Signature/Print)	Date: (YYYY/MM/DD)	Time: (HH:MM)	Received By: (Signature/Print)	Date: (YYYY/MM/DD)	Time: (HH:MM)
Jeremy Eckert	2021/08/30	1600	Jeny	2021/08/30	16:00
			Aaisha / AAISHA YAHORA	2021/08/31	08:00

30-Aug-21 16:00
Katherine Szozda
C1O8699
IKY ENV-814

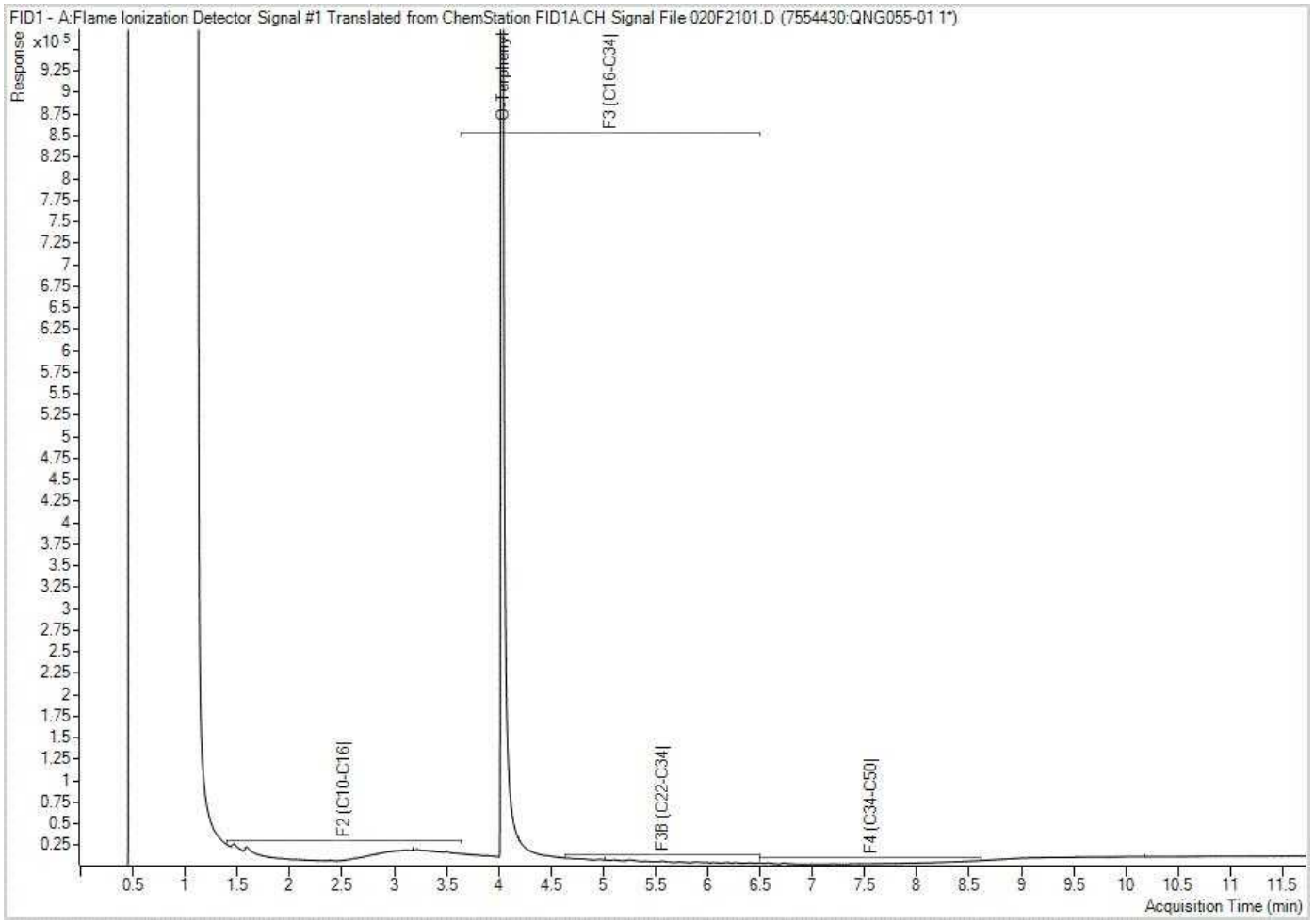
COC-1004 (06/19)

White: BV Labs - Yellow: Client

BV Labs Job #: C1O8699
Report Date: 2021/09/07
BV Labs Sample: QNG055

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: MW-4-SS8

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

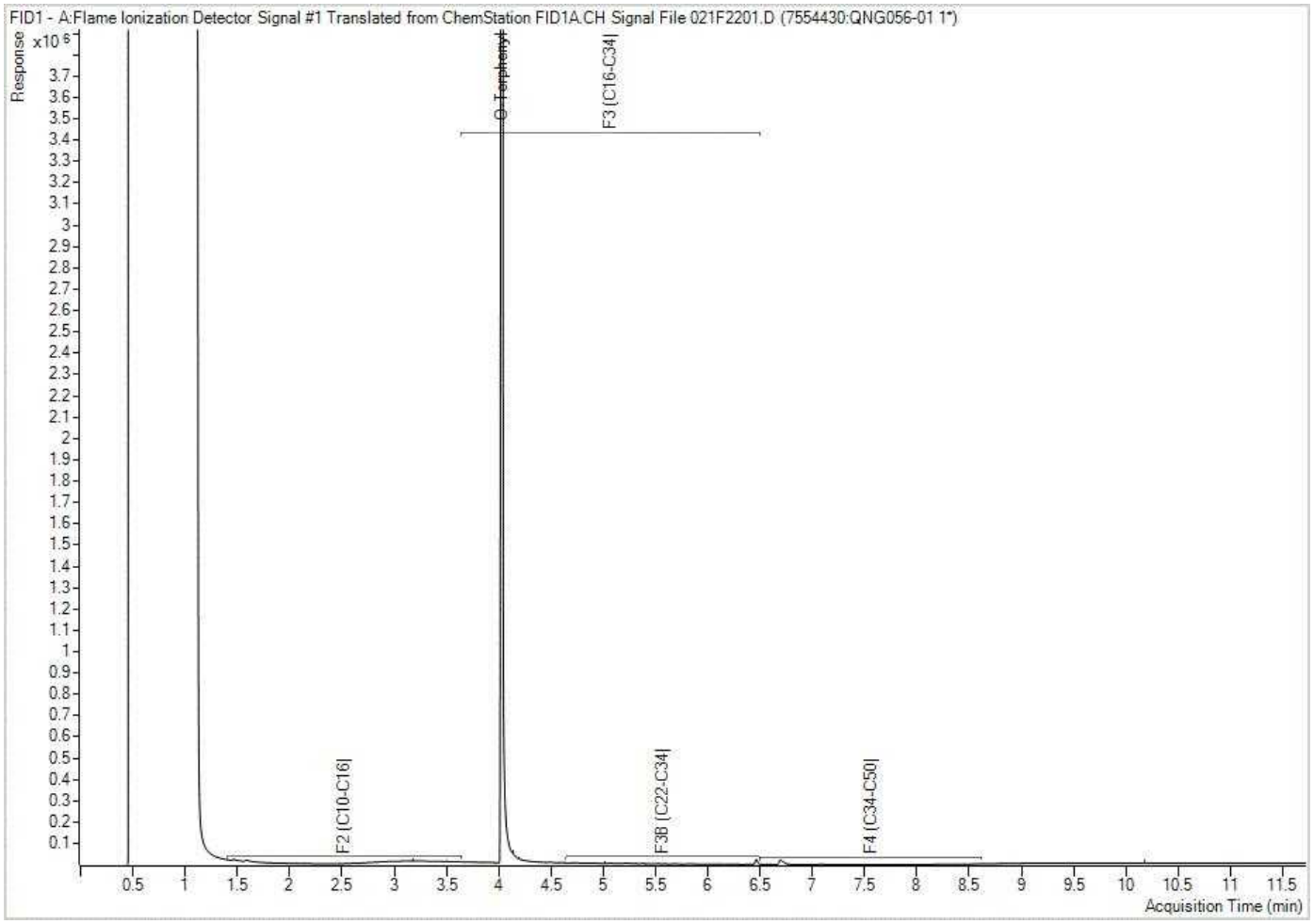


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1O8699
Report Date: 2021/09/07
BV Labs Sample: QNG056

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: MW-3-SS6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

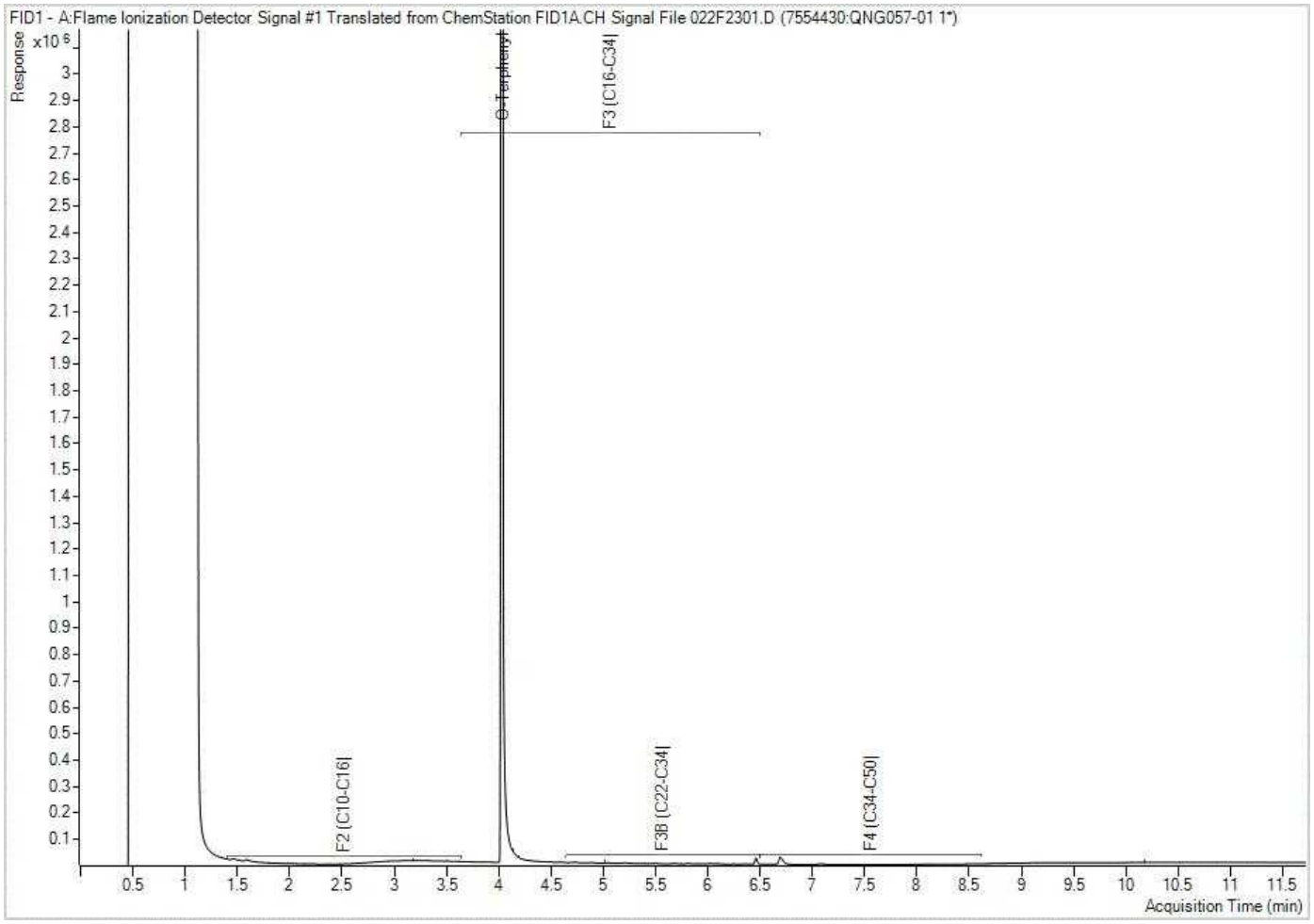


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1O8699
Report Date: 2021/09/07
BV Labs Sample: QNG057

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: MW-2-SS7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

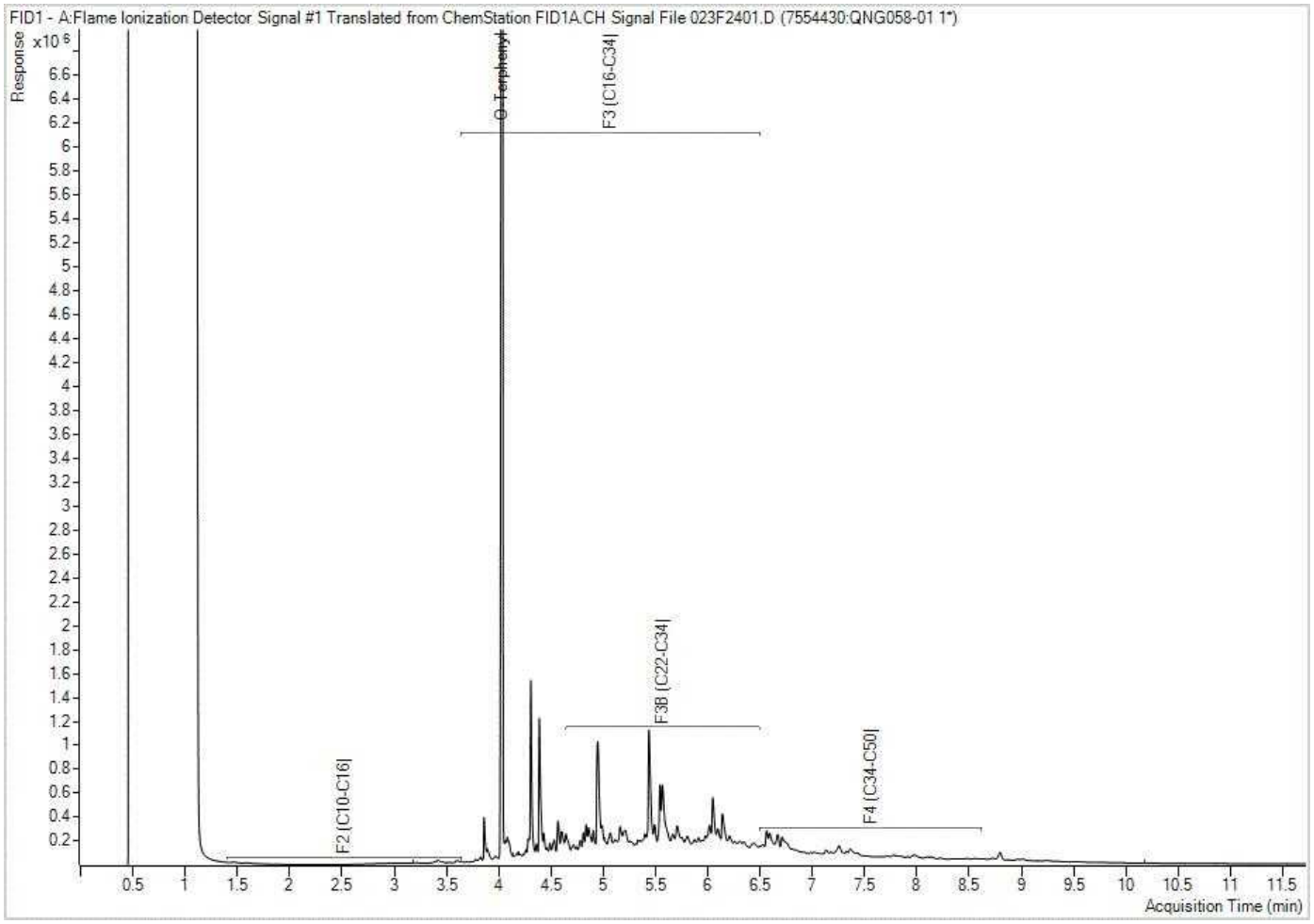


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1O8699
Report Date: 2021/09/07
BV Labs Sample: QNG058

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: S1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

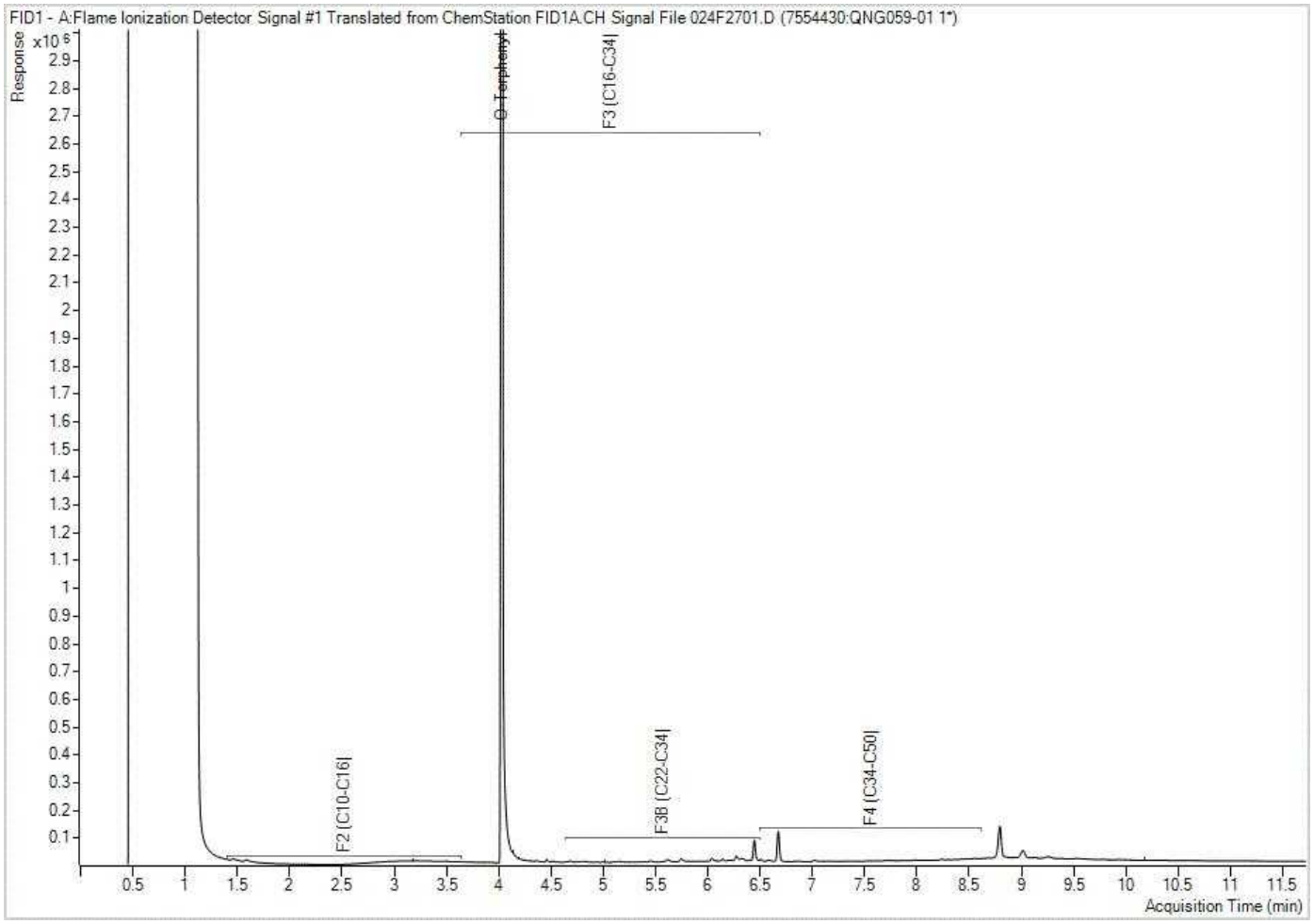


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1O8699
Report Date: 2021/09/07
BV Labs Sample: QNG059

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: S2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

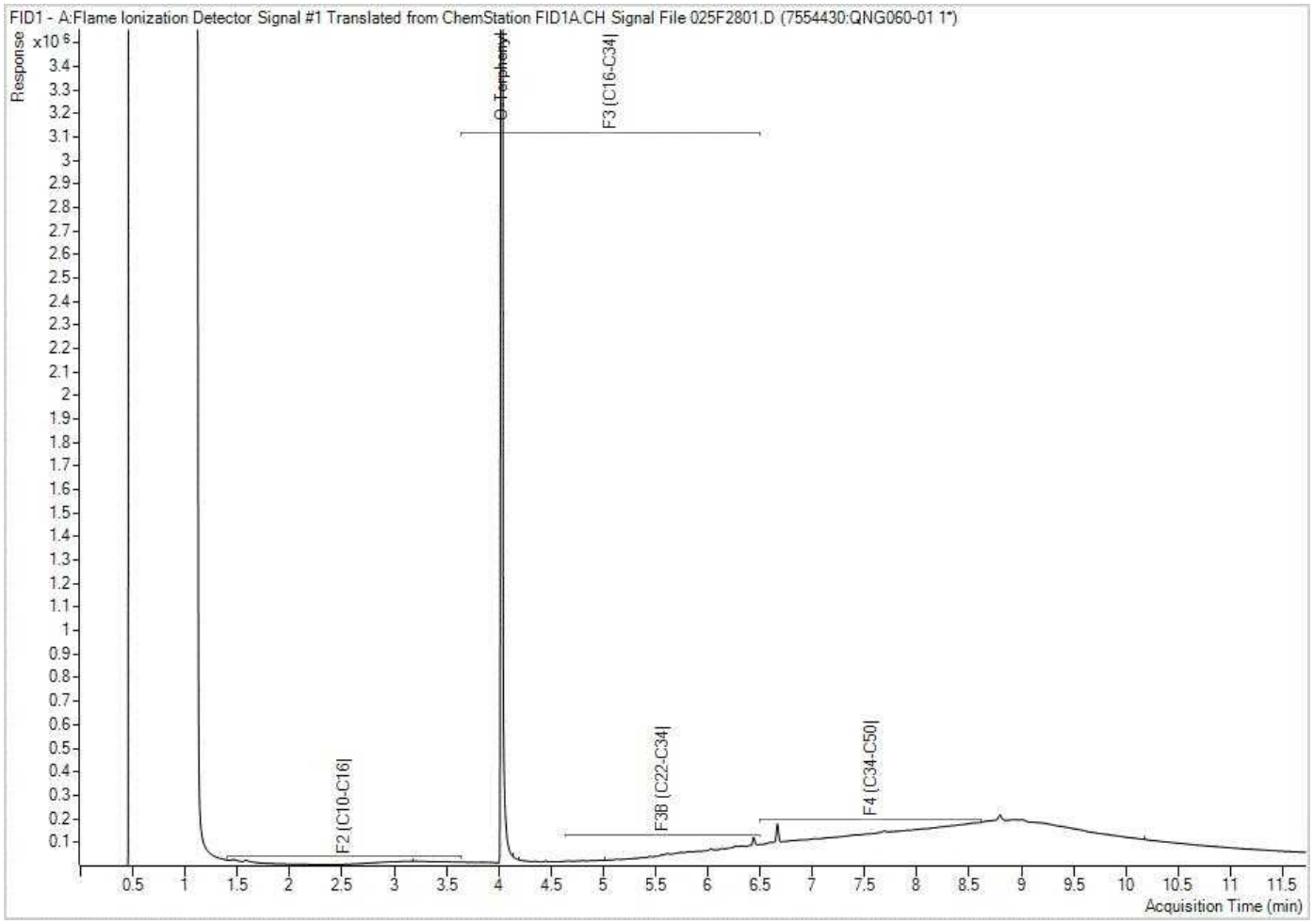


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1O8699
Report Date: 2021/09/07
BV Labs Sample: QNG060

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: S3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

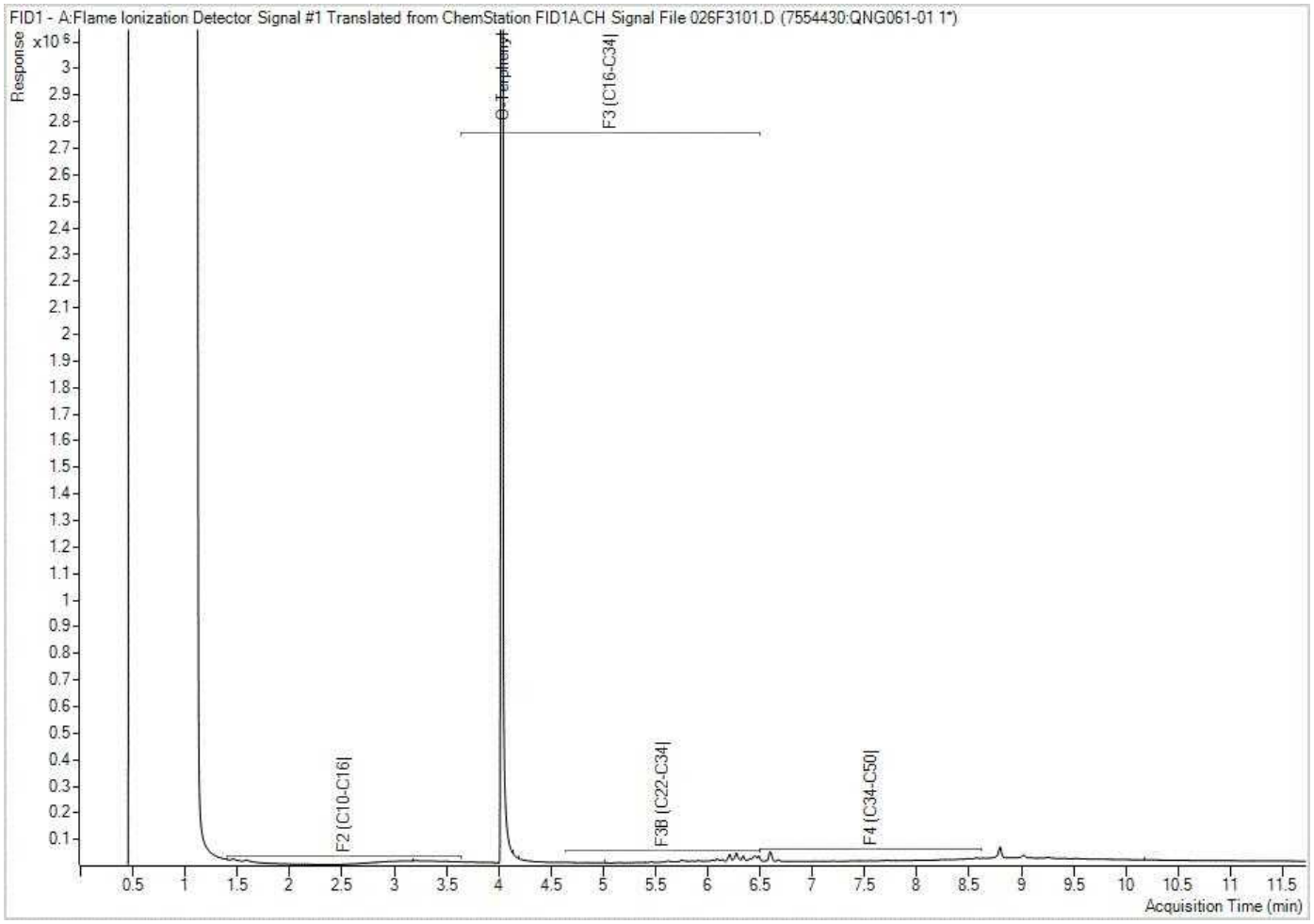


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1O8699
Report Date: 2021/09/07
BV Labs Sample: QNG061

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: S4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

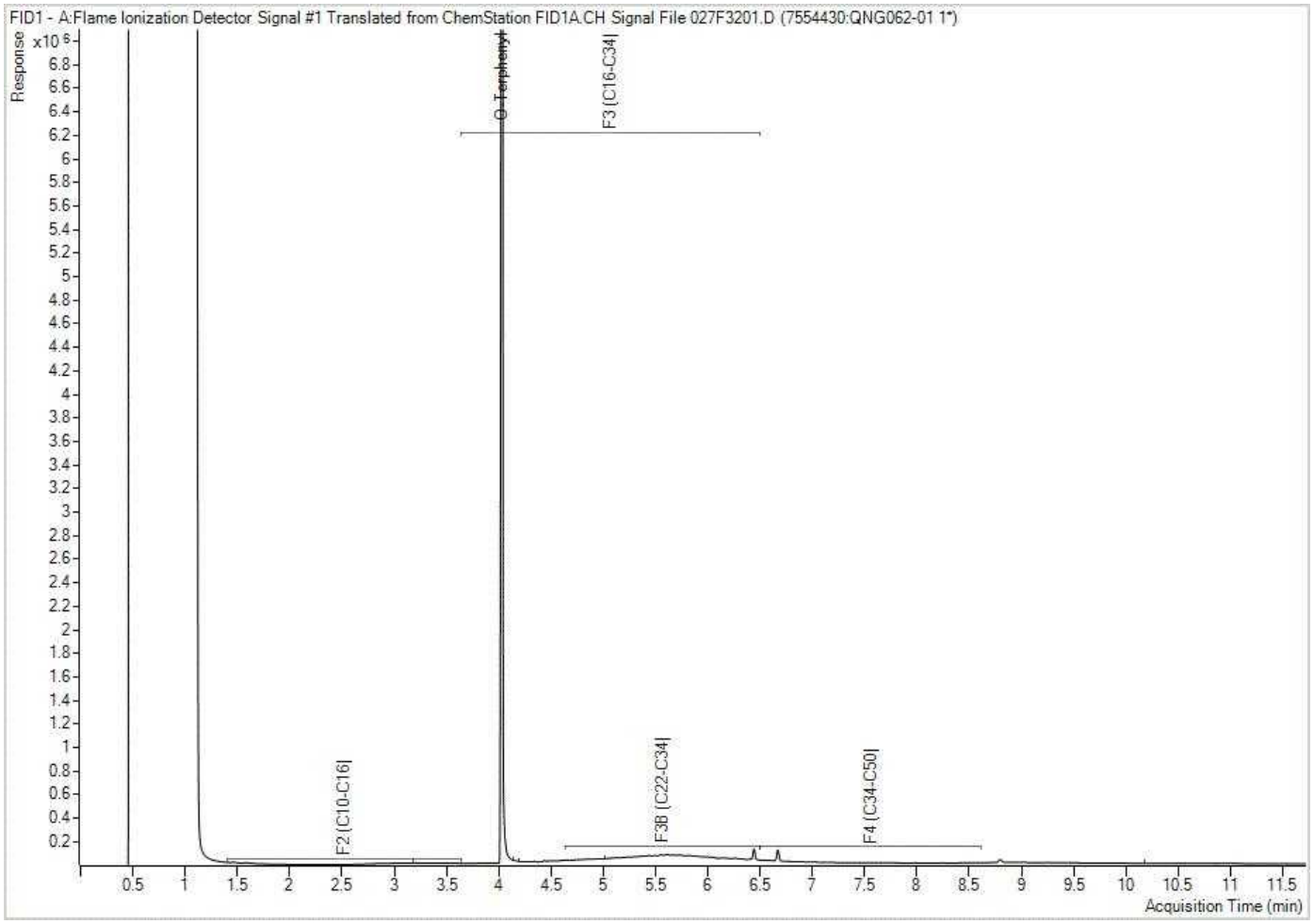


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1O8699
Report Date: 2021/09/07
BV Labs Sample: QNG062

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: S5

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

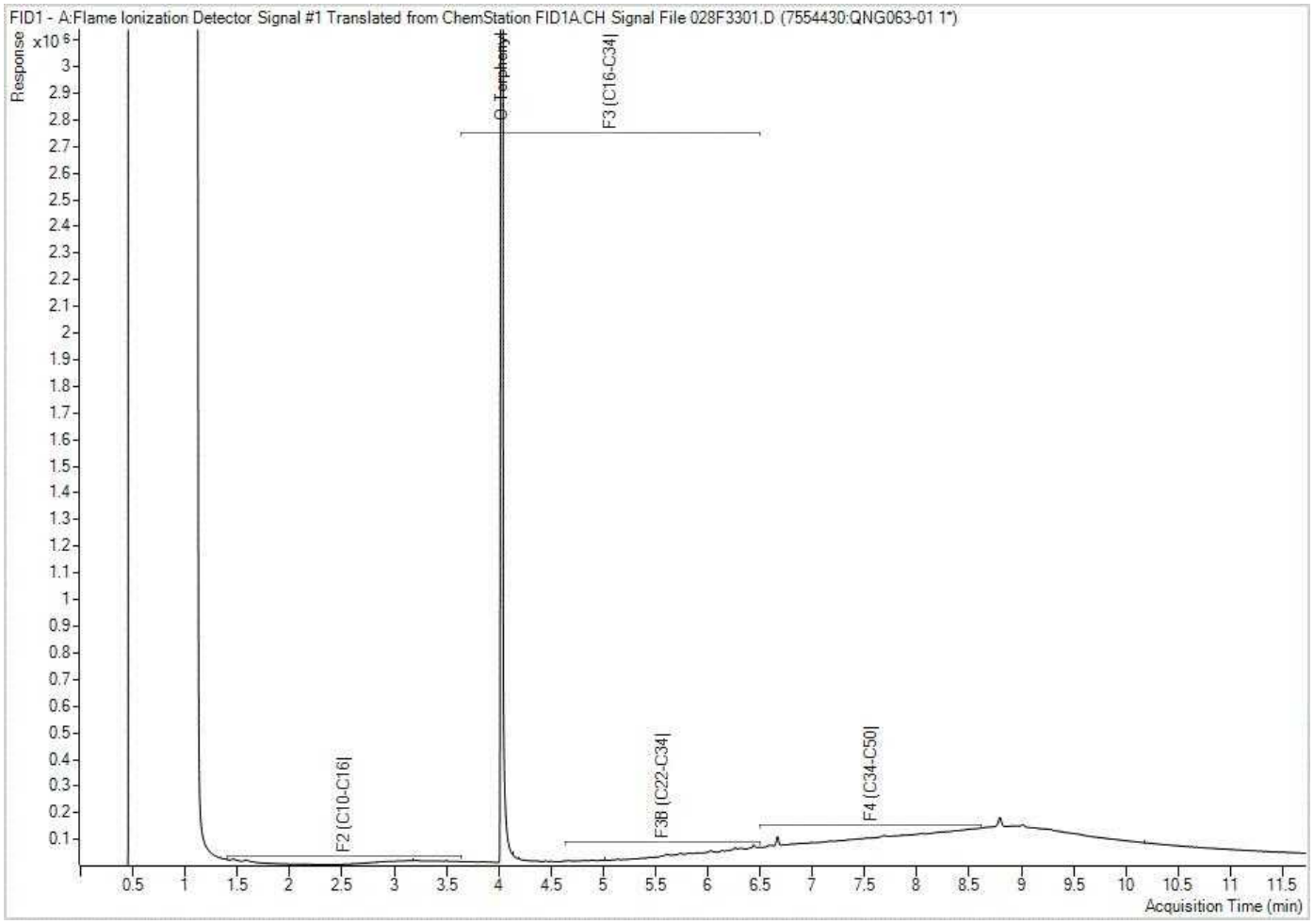


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1O8699
Report Date: 2021/09/07
BV Labs Sample: QNG063

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: DUP

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr.
Ottawa, ON K2B 8K2
Attn: Taryn Glancy

Client PO:
Project: OTT000234493
Custody: 32459

Report Date: 22-Aug-2016
Order Date: 18-Aug-2016

Order #: 1634298

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1634298-01	MW7

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	18-Aug-16	22-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	18-Aug-16	22-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	19-Aug-16	20-Aug-16

Certificate of Analysis
Client: exp Services Inc. (Ottawa)
Client PO:

Report Date: 22-Aug-2016
Order Date: 18-Aug-2016
Project Description: OTT000234493

	Client ID:	MW7	-	-	-
	Sample Date:	18-Aug-16	-	-	-
	Sample ID:	1634298-01	-	-	-
	MDL/Units	Water	-	-	-
Volatiles					
Benzene	0.5 ug/L	18600	-	-	-
Ethylbenzene	0.5 ug/L	1000	-	-	-
Toluene	0.5 ug/L	16800	-	-	-
m,p-Xylenes	0.5 ug/L	6330	-	-	-
o-Xylene	0.5 ug/L	3570	-	-	-
Xylenes, total	0.5 ug/L	9900	-	-	-
Toluene-d8	Surrogate	92.2%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	-	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	-	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	-	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	-	-	-
F1 + F2 PHCs	125 ug/L	<125	-	-	-
F3 + F4 PHCs	200 ug/L	<200	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: Toluene-d8	*85.0*		*ug/L*		*106*	*50-140*			

Certificate of Analysis
Client: exp Services Inc. (Ottawa)
Client PO:

Report Date: 22-Aug-2016
Order Date: 18-Aug-2016
Project Description: OTT000234493

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND				30	
Volatiles									
Benzene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: Toluene-d8	*84.6*		*ug/L*		*106*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	2240	25	ug/L		112	68-117			
F2 PHCs (C10-C16)	1670	100	ug/L		93.0	60-140			
F3 PHCs (C16-C34)	3160	100	ug/L		85.0	60-140			
F4 PHCs (C34-C50)	2120	100	ug/L		85.3	60-140			
Volatiles									
Benzene	29.5	0.5	ug/L	ND	73.8	50-140			
Ethylbenzene	34.0	0.5	ug/L	ND	84.9	50-140			
Toluene	31.5	0.5	ug/L	ND	78.8	50-140			
m,p-Xylenes	64.5	0.5	ug/L	ND	80.7	50-140			
o-Xylene	32.5	0.5	ug/L	ND	81.3	50-140			
Surrogate: Toluene-d8	*69.2*		*ug/L*		*86.5*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Ottawa, Ontario K1G 4J8
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e: paracel@paracellabs.com
www.paracellabs.com

Chain of Custody
(Lab Use Only)
№ 32459

Page 1 of 1

Client Name: exp	Project Reference: 234493
Contact Name: Taryn Clancy / Mark McCalla	Quote #
Address: 100-2650 Queensview	PO #
Telephone: Ottawa, ON	Email Address:

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☐ Regular
Date Required: Monday Aug 22

Criteria: ☑ O. Reg. 153/04 (As Amended) Table 2 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number:
1634297 - Soil.
1634298 - Water.

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHC F1->F4	BTEX									
1	BH7 SS.5	S			Aug 16		x	x							-120mL 1 vial		
2	BH7 SS6	S			〃		x	x			(Hold)				↓		
3	MW 7	GW			Aug 18		x	x									
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By: Rachel Sibcot
Relinquished By (Print):	Date/Time:	Date/Time: Aug 18/16	Date/Time: Aug 18/16 2:01
Date/Time: Aug 18/16 1015 hrs	Temperature: °C	Temperature: 19.3 °C 10:15	pH Verified (K) By: N/A

Your Project #: OTT-00234493-A0
Your C.O.C. #: 159776

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/09/17
Report #: R6814914
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Q0105
Received: 2021/09/10, 13:50

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Petroleum Hydro. CCME F1 & BTEX in Water (1)	2	N/A	2021/09/14	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	2	2021/09/15	2021/09/16	CAM SOP-00316	CCME PHC-CWS m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00234493-A0
Your C.O.C. #: 159776

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/09/17
Report #: R6814914
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Q0105
Received: 2021/09/10, 13:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633

==========

This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C1Q0105
Report Date: 2021/09/17

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: JE

O.REG 153 PHCS, BTEX/F1-F4 (WATER)

BV Labs ID		QPP891			QPP891			QPP892		
Sampling Date		2021/09/10 11:40			2021/09/10 11:40			2021/09/10 12:40		
COC Number		159776			159776			159776		
	UNITS	**BH-7B**	**RDL**	**QC Batch**	**BH-7B Lab-Dup**	**RDL**	**QC Batch**	**BH-9**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons										
Benzene	ug/L	<0.20	0.20	7576253				<0.20	0.20	7576253
Toluene	ug/L	<0.20	0.20	7576253				<0.20	0.20	7576253
Ethylbenzene	ug/L	<0.20	0.20	7576253				<0.20	0.20	7576253
o-Xylene	ug/L	<0.20	0.20	7576253				<0.20	0.20	7576253
p+m-Xylene	ug/L	<0.40	0.40	7576253				<0.40	0.40	7576253
Total Xylenes	ug/L	<0.40	0.40	7576253				<0.40	0.40	7576253
F1 (C6-C10)	ug/L	<25	25	7576253				<25	25	7576253
F1 (C6-C10) - BTEX	ug/L	<25	25	7576253				<25	25	7576253
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	7578054	<100	100	7578054	<100	100	7578054
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	7578054	<200	200	7578054	<200	200	7578054
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	7578054	<200	200	7578054	<200	200	7578054
Reached Baseline at C50	ug/L	Yes		7578054	Yes		7578054	Yes		7578054
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	101		7576253				101		7576253
4-Bromofluorobenzene	%	93		7576253				84		7576253
D10-o-Xylene	%	99		7576253				101		7576253
D4-1,2-Dichloroethane	%	109		7576253				107		7576253
o-Terphenyl	%	95		7578054	102		7578054	99		7578054

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1Q0105
Report Date: 2021/09/17

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: JE

TEST SUMMARY

BV Labs ID: QPP891
Sample ID: BH-7B
Matrix: Water

Collected: 2021/09/10
Shipped:
Received: 2021/09/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	7576253	N/A	2021/09/14	Abdikarim Ali
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7578054	2021/09/15	2021/09/16	Agnieszka Brzuzy-Snopko

BV Labs ID: QPP891 Dup
Sample ID: BH-7B
Matrix: Water

Collected: 2021/09/10
Shipped:
Received: 2021/09/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7578054	2021/09/15	2021/09/16	Agnieszka Brzuzy-Snopko

BV Labs ID: QPP892
Sample ID: BH-9
Matrix: Water

Collected: 2021/09/10
Shipped:
Received: 2021/09/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	7576253	N/A	2021/09/14	Abdikarim Ali
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7578054	2021/09/15	2021/09/16	Agnieszka Brzuzy-Snopko

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	8.7°C

Results relate only to the items tested.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

BV Labs Job #: C1Q0105
Report Date: 2021/09/17

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: JE

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7576253	1,4-Difluorobenzene	2021/09/14	96	70 - 130	95	70 - 130	101	%		
7576253	4-Bromofluorobenzene	2021/09/14	104	70 - 130	106	70 - 130	94	%		
7576253	D10-o-Xylene	2021/09/14	94	70 - 130	94	70 - 130	102	%		
7576253	D4-1,2-Dichloroethane	2021/09/14	103	70 - 130	98	70 - 130	103	%		
7578054	o-Terphenyl	2021/09/16	112	60 - 130	96	60 - 130	90	%		
7576253	Benzene	2021/09/14	104	50 - 140	103	50 - 140	<0.20	ug/L	NC	30
7576253	Ethylbenzene	2021/09/14	111	50 - 140	111	50 - 140	<0.20	ug/L	1.8	30
7576253	F1 (C6-C10) - BTEX	2021/09/14					<25	ug/L	NC	30
7576253	F1 (C6-C10)	2021/09/14	93	60 - 140	93	60 - 140	<25	ug/L	NC	30
7576253	o-Xylene	2021/09/14	109	50 - 140	108	50 - 140	<0.20	ug/L	0.67	30
7576253	p+m-Xylene	2021/09/14	106	50 - 140	107	50 - 140	<0.40	ug/L	2.5	30
7576253	Toluene	2021/09/14	102	50 - 140	102	50 - 140	<0.20	ug/L	NC	30
7576253	Total Xylenes	2021/09/14					<0.40	ug/L	2.1	30
7578054	F2 (C10-C16 Hydrocarbons)	2021/09/16	118	60 - 130	112	60 - 130	<100	ug/L	NC	30
7578054	F3 (C16-C34 Hydrocarbons)	2021/09/16	120	60 - 130	116	60 - 130	<200	ug/L	NC	30
7578054	F4 (C34-C50 Hydrocarbons)	2021/09/16	124	60 - 130	116	60 - 130	<200	ug/L	NC	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Brad Newman, B.Sc., C.Chem., Scientific Service Specialist

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Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

BUREAU VERITAS

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD 159776

Page 1 of 1

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: EXP Services Inc.	Company Name: EXP Services Inc.	Quotation #:	☒ Regular TAT (5-7 days) Most analyses
Contact Name: Accounts Payable	Contact Name: Mark McCalla	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 100-2650 Queensview Dr. Ottawa, ON	Address: 100-2650 Queensview Dr. Ottawa, ON	Project #: OTT-00234493-A0	Rush TAT (Surcharges will be applied)
Phone: 613-688-1899 Fax:	Phone: 613-688-1899 Fax:	Site Location:	☐ 1 Day ☐ 2 Days ☐ 3-4 Days
Email: accounting-ottawa@exp.com	Email: Mark.mccalla@exp.com	Site #:	Date Required:
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY		Site Location Province: / Sampled By: Jeremy Eckert	Rush Confirmation #:

Regulation 153	Other Regulations
☐ Table 1 ☒ Res/Park ☒ Med/ Fine	☐ CCME ☐ Sanitary Sewer Bylaw
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ MISA ☐ Storm Sewer Bylaw
☒ Table 3 ☐ Agri/ Other	☐ PWQO Region
☐ Table ____	☐ Other (Specify)
FOR RSC (PLEASE CIRCLE) Y / N	☐ REG 558 (MIN. 3 DAY TAT REQUIRED)
	☐ REG 406 Table

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Analysis Requested

LABORATORY USE ONLY

CUSTODY SEAL Y / N: Present / Intact

COOLER TEMPERATURES: 9.9, 1.8

COOLING MEDIA PRESENT: Y / N

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	HOLD- DO NOT ANALYZE	COMMENTS
1	BH-7B	2021/09/10	11:40	GW	4		X	X						
2	BH-9	2021/09/10	12:40	GW	4		X	X						
3														
4														ON Ice
5														
6														
7														
8														
9														
10														

10-Sep-21 13:50
Katherine Szozda
C1Q0105
KJY OTT-001

RECEIVED IN OTTAWA

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	BV JOB #
Jeremy Eckert	2021/09/10	1300	Kim Jury	2021/09/10	13:50	
			[illegible]	2021/09/11	09:10	

3/4/3

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Bureau Veritas Laboratories' standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms available at http://www.bvlabs.com/terms-and-conditions

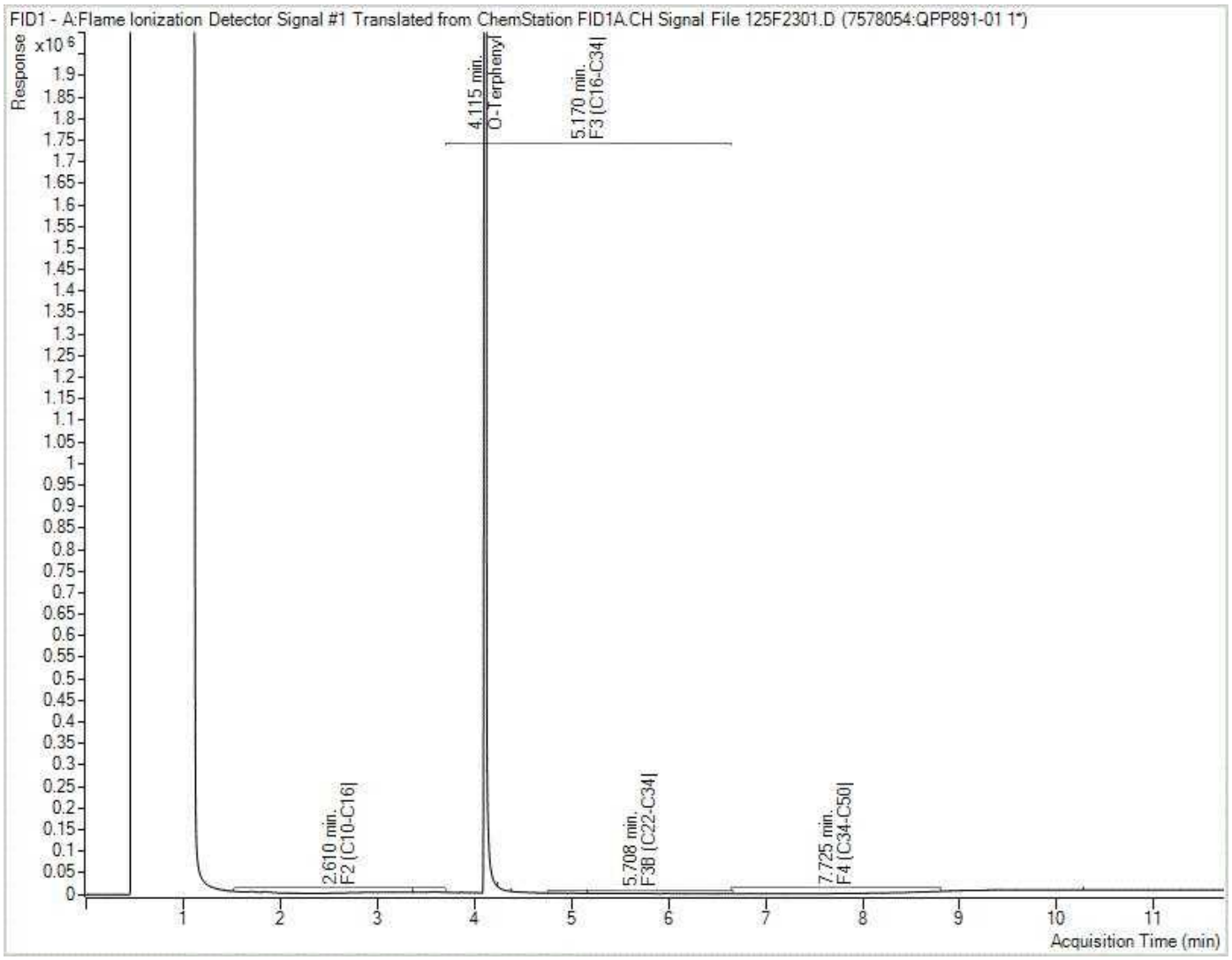
COC-1004 (06/19)

White: BV Labs - Yellow: Client

BV Labs Job #: C1Q0105
Report Date: 2021/09/17
BV Labs Sample: QPP891

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: BH-7B

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

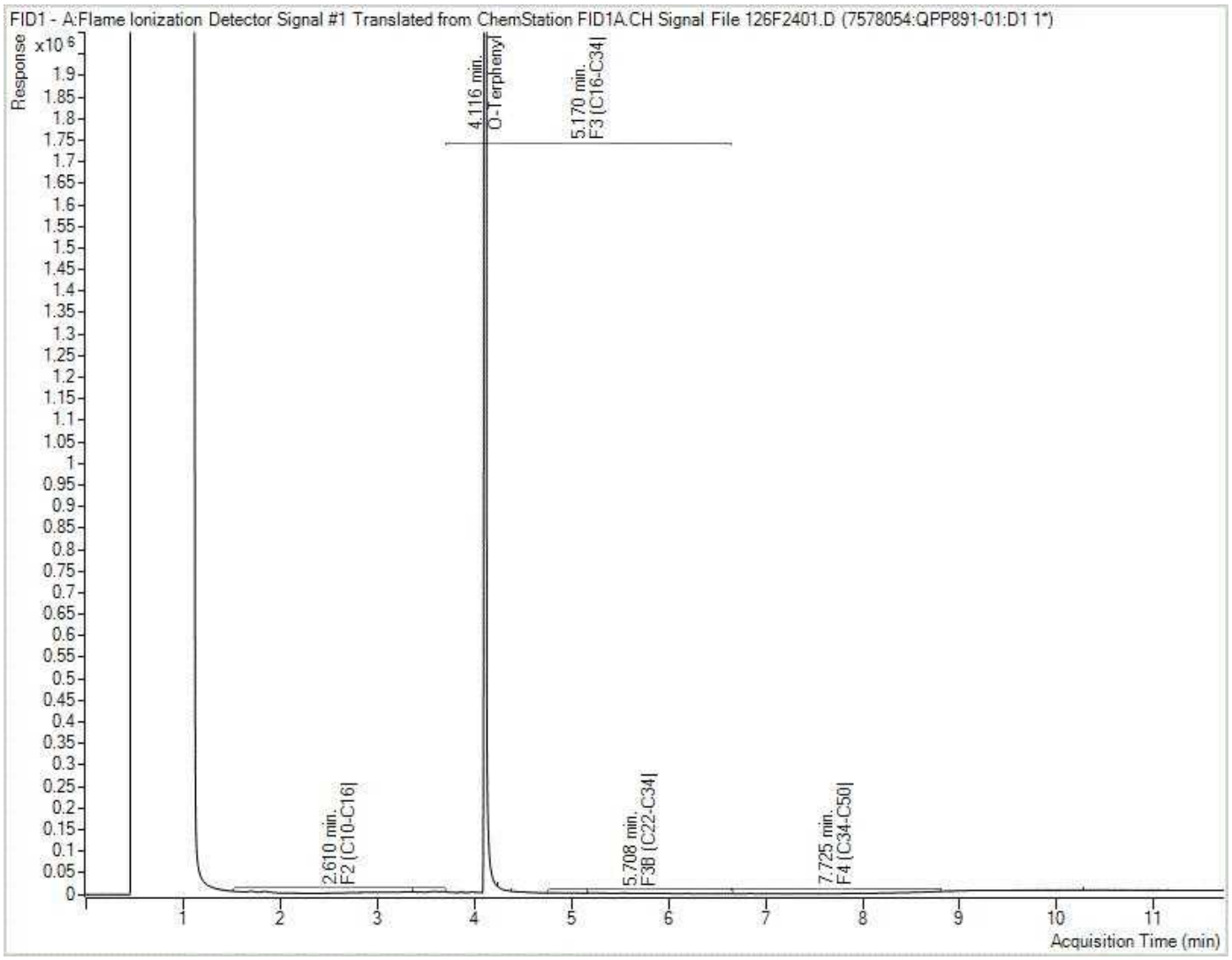


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1Q0105
Report Date: 2021/09/17
BV Labs Sample: QPP891 Lab-Dup

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: BH-7B

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

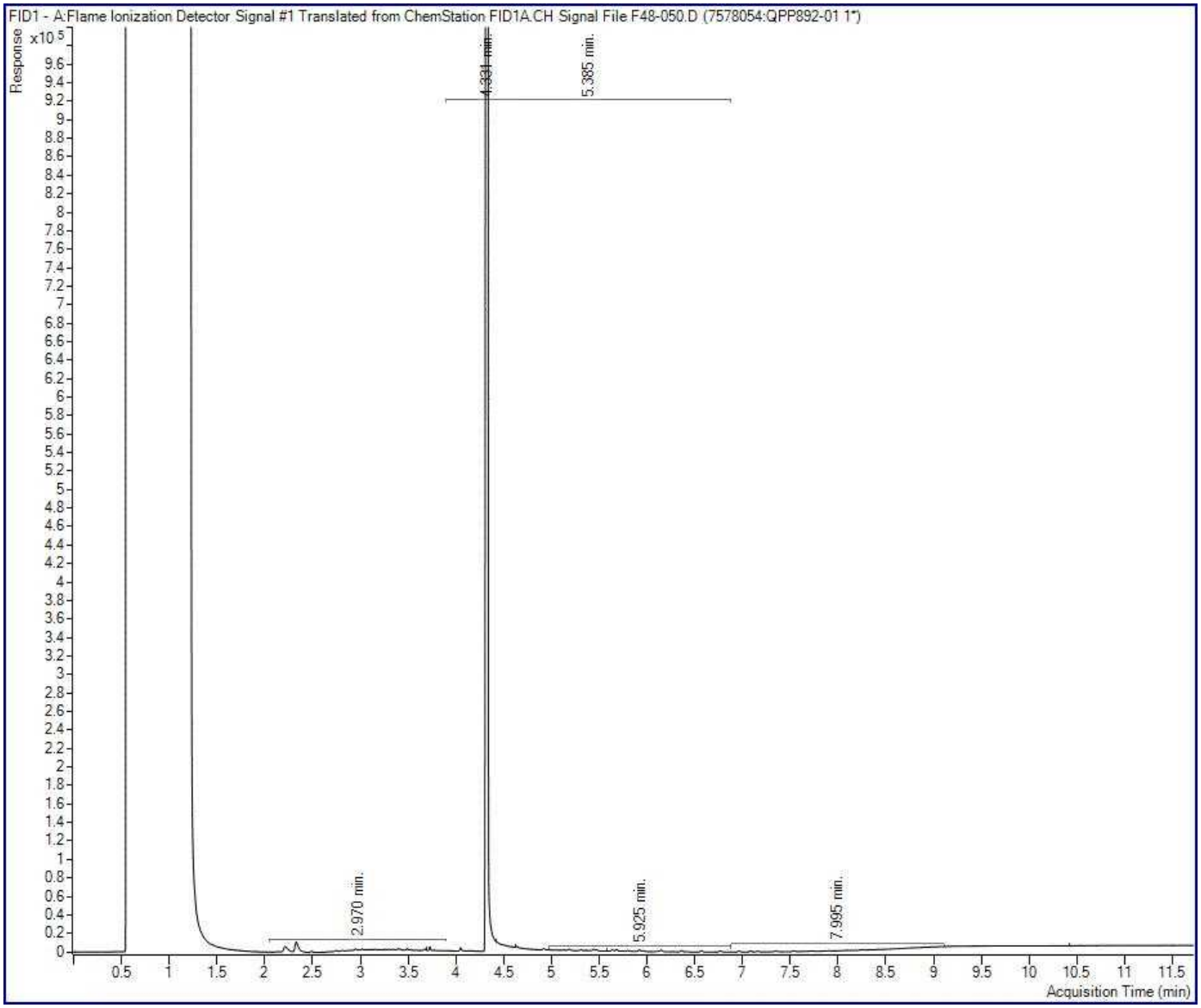


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1Q0105
Report Date: 2021/09/17
BV Labs Sample: QPP892

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: BH-9

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BUREAU VERITAS

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD 159776

Page 1 of 1

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: ExP Services Inc.	Company Name: ExP Services Inc.	Quotation #:	☒ Regular TAT (5-7 days) Most analyses
Contact Name: Accounts Payable	Contact Name: Mark McCalla	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 100-2650 Queensview Dr. Ottawa, ON	Address: 100-2650 Queensview Dr. Ottawa, ON	Project #: OTT-00234493-A0	Rush TAT (Surcharges will be applied)
Phone: 613-688-1899 Fax:	Phone: 613-688-1899 Fax:	Site Location:	☐ 1 Day ☐ 2 Days ☐ 3-4 Days
Email: accounting.ottawa@exp.com	Email: Mark.mccalla@exp.com	Site #:	Date Required:
		Site Location Province:	Rush Confirmation #:
		Sampled By: Jeremy Eckert	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY

Regulation 153

☐ Table 1 ☒ Res/Park ☒ Med/ Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☒ Table 3 ☐ Agri/ Other
☐ Table ____
FOR RSC (PLEASE CIRCLE) Y / N

Other Regulations

☐ CCME ☐ Sanitary Sewer Bylaw
☐ MISA ☐ Storm Sewer Bylaw
☐ PWQO Region ____
☐ Other (Specify) ____
☐ REG 558 (MIN. 3 DAY TAT REQUIRED)
☐ REG 406 Table ____

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	HOLD- DO NOT ANALYZE
1	BH-7B	2021/09/10	1140	GW	4		X	X					
2	BH-9	2021/09/10	1240	GW	4		X	X					
3													
4													
5													
6													
7													
8													
9													
10													

10-Sep-21 13:50
Katherine Szozda
C1Q0105
KJY OTT-001

RECEIVED IN OTTAWA

LABORATORY USE ONLY

CUSTODY SEAL Y / N		COOLER TEMPERATURES
Present	Intact	
✓	✓	9.9.6

COOLING MEDIA PRESENT: Y / N

COMMENTS: ON Ice

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Jeremy Eckert	2021/09/10	1300	Kim Jay	2021/09/10	13:50

BV JOB #

PARACEL LABORATORIES LTD.
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300 - 2319 St. Laurent Blvd
Ottawa, ON, K1G 4J8
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr.
Ottawa, ON K2B 8K2
Attn: Mark McCalla

Client PO:
Project: OTT000234493A
Custody: 32595

Report Date: 12-Sep-2016
Order Date: 8-Sep-2016

Order #: 1637215

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1637215-01	BH7B
1637215-02	BH8
1637215-03	BH9
1637215-04	BH10
1637215-05	BH11
1637215-06	BH12
1637215-07	BH13

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	10-Sep-16	11-Sep-16
PHC F1	CWS Tier 1 - P&T GC-FID	10-Sep-16	11-Sep-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	9-Sep-16	9-Sep-16

Certificate of Analysis
Client: exp Services Inc. (Ottawa)
Client PO:

Report Date: 12-Sep-2016
Order Date: 8-Sep-2016
Project Description: OTT000234493A

	Client ID:	BH7B	BH8	BH9	BH10
	Sample Date:	08-Sep-16	08-Sep-16	08-Sep-16	08-Sep-16
	Sample ID:	1637215-01	1637215-02	1637215-03	1637215-04
	MDL/Units	Water	Water	Water	Water
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene-d8	Surrogate	101%	103%	102%	101%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100
F1 + F2 PHCs	125 ug/L	<125	<125	<125	<125
F3 + F4 PHCs	200 ug/L	<200	<200	<200	<200

	Client ID:	BH11	BH12	BH13	-
	Sample Date:	08-Sep-16	08-Sep-16	08-Sep-16	-
	Sample ID:	1637215-05	1637215-06	1637215-07	-
	MDL/Units	Water	Water	Water	-
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene-d8	Surrogate	103%	100%	102%	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	-
F1 + F2 PHCs	125 ug/L	<125	<125	<125	-
F3 + F4 PHCs	200 ug/L	<200	<200	<200	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: Toluene-d8	*33.8*		*ug/L*		*106*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND				30	
Volatiles									
Benzene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: Toluene-d8	*32.8*		*ug/L*		*102*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1900	25	ug/L		95.1	68-117			
F2 PHCs (C10-C16)	1740	100	ug/L		96.8	60-140			
F3 PHCs (C16-C34)	3610	100	ug/L		97.1	60-140			
F4 PHCs (C34-C50)	2350	100	ug/L		94.8	60-140			
Volatiles									
Benzene	25.6	0.5	ug/L		64.0	60-130			
Ethylbenzene	39.6	0.5	ug/L		99.0	60-130			
Toluene	49.1	0.5	ug/L		123	60-130			
m,p-Xylenes	96.6	0.5	ug/L		121	60-130			
o-Xylene	51.1	0.5	ug/L		128	60-130			
Surrogate: Toluene-d8	*25.5*		*ug/L*		*79.7*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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www.paracellabs.com

Chain of Custody
(Lab Use Only)
№ 32595

Page 1 of 1

Client Name: EXP	Project Reference: 234493-A
Contact Name: Mark McCallo / David Clerke	Quote #
Address: 100-2650 Queensview Dr	PO #
Telephone: 613 688 1899	Email Address: Mark.mccallo@exp.com; Daniel.Clerke@exp.com

Turnaround Time:
☐ 1 Day ☐ 3 Day
☒ 2 Day ☐ Regular
Date Required: _____

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 2 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1637215

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHC 1-4	BTEX
1	BH7B	GW		3	Sept 8/16		X	X
2	BH8							
3	BH9							
4	BH10							
5	BH11							
6	BH12							
7	BH13							
8								
9								
10								

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Daniel Clerke	Received by Driver/Depot:	Received at Lab: [signature]	Verified By: Rachel Subject
Relinquished By (Print): Daniel Clerke	Date/Time:	Date/Time: Sept 8/16 3:18 p	Date/Time: Sep 8/16 3:35
Date/Time: Sept 8/16	Temperature: ___ °C	Temperature: 10.3 °C	pH Verified ☐ By: N/A

Your Project #: OTT-00234493-A0
Your C.O.C. #: 845168-01-01

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/09/15
Report #: R6811725
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Q1472
Received: 2021/09/10, 08:30

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Petroleum Hydro. CCME F1 & BTEX in Water (1)	6	N/A	2021/09/15	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	6	2021/09/14	2021/09/15	CAM SOP-00316	CCME PHC-CWS m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00234493-A0
Your C.O.C. #: 845168-01-01

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/09/15
Report #: R6811725
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Q1472
Received: 2021/09/10, 08:30

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C1Q1472
Report Date: 2021/09/15

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: PO

O.REG 153 PHCS, BTEX/F1-F4 (WATER)

BV Labs ID		QPW358	QPW359	QPW360	QPW361	QPW362	QPW363		
Sampling Date		2021/09/09 10:10	2021/09/09 11:40	2021/09/09 13:00	2021/09/09 14:30	2021/09/09 15:40	2021/09/09 16:30		
COC Number		845168-01-01	845168-01-01	845168-01-01	845168-01-01	845168-01-01	845168-01-01		
	UNITS	**MW-3**	**MW-4**	**MW-2**	**MW-1**	**BH8**	**DUPLICATE 1**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7577351
Toluene	ug/L	<0.20	<0.20	<0.20	0.25	<0.20	<0.20	0.20	7577351
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7577351
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7577351
p+m-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	7577351
Total Xylenes	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	7577351
F1 (C6-C10)	ug/L	<25	<25	<25	<25	<25	<25	25	7577351
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	<25	<25	<25	25	7577351
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/L	220	<100	<100	<100	<100	<100	100	7576822
F3 (C16-C34 Hydrocarbons)	ug/L	220	<200	<200	260	250	<200	200	7576822
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	<200	200	7576822
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes	Yes		7576822
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	104	102	104	103	102	102		7577351
4-Bromofluorobenzene	%	98	98	80	92	101	97		7577351
D10-o-Xylene	%	107	113	115	113	115	109		7577351
D4-1,2-Dichloroethane	%	101	111	110	113	106	112		7577351
o-Terphenyl	%	105	103	104	105	102	103		7576822

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

TEST SUMMARY

BV Labs ID: QPW358 **Collected:** 2021/09/09
Sample ID: MW-3 **Shipped:**
Matrix: Water **Received:** 2021/09/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	7577351	N/A	2021/09/15	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7576822	2021/09/14	2021/09/15	Dennis Ngondu

BV Labs ID: QPW359 **Collected:** 2021/09/09
Sample ID: MW-4 **Shipped:**
Matrix: Water **Received:** 2021/09/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	7577351	N/A	2021/09/15	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7576822	2021/09/14	2021/09/15	Dennis Ngondu

BV Labs ID: QPW360 **Collected:** 2021/09/09
Sample ID: MW-2 **Shipped:**
Matrix: Water **Received:** 2021/09/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	7577351	N/A	2021/09/15	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7576822	2021/09/14	2021/09/15	Dennis Ngondu

BV Labs ID: QPW361 **Collected:** 2021/09/09
Sample ID: MW-1 **Shipped:**
Matrix: Water **Received:** 2021/09/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	7577351	N/A	2021/09/15	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7576822	2021/09/14	2021/09/15	Dennis Ngondu

BV Labs ID: QPW362 **Collected:** 2021/09/09
Sample ID: BH8 **Shipped:**
Matrix: Water **Received:** 2021/09/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	7577351	N/A	2021/09/15	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7576822	2021/09/14	2021/09/15	Dennis Ngondu

BV Labs ID: QPW363 **Collected:** 2021/09/09
Sample ID: DUPLICATE 1 **Shipped:**
Matrix: Water **Received:** 2021/09/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	7577351	N/A	2021/09/15	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7576822	2021/09/14	2021/09/15	Dennis Ngondu

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.7°C

Results relate only to the items tested.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

BV Labs Job #: C1Q1472
Report Date: 2021/09/15

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: PO

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7576822	o-Terphenyl	2021/09/15	105	60 - 130	103	60 - 130	101	%		
7577351	1,4-Difluorobenzene	2021/09/14	99	70 - 130	100	70 - 130	104	%		
7577351	4-Bromofluorobenzene	2021/09/14	106	70 - 130	105	70 - 130	84	%		
7577351	D10-o-Xylene	2021/09/14	101	70 - 130	101	70 - 130	113	%		
7577351	D4-1,2-Dichloroethane	2021/09/14	102	70 - 130	100	70 - 130	107	%		
7576822	F2 (C10-C16 Hydrocarbons)	2021/09/15	109	60 - 130	108	60 - 130	<100	ug/L	NC	30
7576822	F3 (C16-C34 Hydrocarbons)	2021/09/15	109	60 - 130	111	60 - 130	<200	ug/L	NC	30
7576822	F4 (C34-C50 Hydrocarbons)	2021/09/15	107	60 - 130	108	60 - 130	<200	ug/L	NC	30
7577351	Benzene	2021/09/14	108	50 - 140	109	50 - 140	<0.20	ug/L	NC	30
7577351	Ethylbenzene	2021/09/14	116	50 - 140	119	50 - 140	<0.20	ug/L	NC	30
7577351	F1 (C6-C10) - BTEX	2021/09/14					<25	ug/L	NC	30
7577351	F1 (C6-C10)	2021/09/14	96	60 - 140	99	60 - 140	<25	ug/L	NC	30
7577351	o-Xylene	2021/09/14	114	50 - 140	115	50 - 140	<0.20	ug/L	NC	30
7577351	p+m-Xylene	2021/09/14	114	50 - 140	116	50 - 140	<0.40	ug/L	NC	30
7577351	Toluene	2021/09/14	104	50 - 140	106	50 - 140	<0.20	ug/L	NC	30
7577351	Total Xylenes	2021/09/14					<0.40	ug/L	NC	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

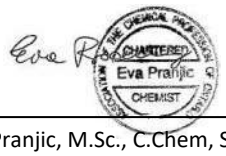
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

10-Sep-21 08:30

Katherine Szozda

C1Q1472

VTH ENV1333

Presence of Visible Particulate/Sediment

Maxxam Analytics
CAM FCD-01013/5
Page 1 of 1

When there is >1cm of visible particulate/sediment, the amount will be recorded in the field below

		Bottle Types																														
		Inorganics						Organics													Hydrocarbons							Volatiles				Other
	Sample ID	All	CrVI	CN	General	Hg	Metals (Diss.)	Organic 1 of 2	Organic 2 of 2	PCB 1 of 2	PCB 2 of 2	Pest/ Herb 1 of 2	Pest/ Herb 2 of 2	SVOE/ ABN 1 of 2	SVOC/ ABN 2 of 2	PAH 1 of 2	PAH 2 of 2	Dioxin /Furan	F1 Vial 1	F1 Vial 2	F1 Vial 3	F1 Vial 4	F2-F4 1 of 2	F2-F4 2 of 2	F4G	VOC Vial 1	VOC Vial 2	VOC Vial 3	VOC Vial 4	
1	MW-1	TS																														
2	BH8	TS																														
3																																
4																																
5																																
6																																
7																																
8																																
9																																
10																																

Comments:

N/A.

Legend:	
P	Suspended Particulate
TS	Trace Settled Sediment (just covers bottom of container or less)
S	Sediment greater than (>) Trace, but less than (<) 1 cm

Recorded By: (signature/print) E. THOMPSON

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.bvlabs.com

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name	#17498 exp Services Inc	Company Name		Quotation #	B91718 Stream 3	BV Labs Job #:	Bottle Order #: 845168
Attention	Accounts Payable	Attention	MARK McCalla	P.O. #			
Address	100-2650 Queensview Drive	Address		Project	OTT-00234493-A0	COC #:	Project Manager:
	Ottawa ON K2B 8H6			Project Name			
Tel	(613) 688-1899 Fax (613) 225-7337	Tel	Fax	Site #		C#845168-01-01	Katherine Szozda
Email	AP@exp.com; Karen.Burke@exp.com	Email	Mark.McCalla@exp.com	Sampled By	Philip Olivera		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1, Table 2, Table 3, Table; Res/Park, Medium/Fine, Ind/Comm, Coarse, Agri/Other, For RSC

Other Regulations: CCME, Reg 558, MISA, PWQO, Other; Sanitary Sewer Bylaw, Storm Sewer Bylaw, Municipality, Reg 406 Table

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI; O.Reg 153 PHCs BTEX/F1-F4

Turnaround Time (TAT) Required: Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____
Rush Confirmation Number: ____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered Metals/Hg/Cr VI	O.Reg 153 PHCs BTEX/F1-F4	# of Bottles	Comments
1		MW-3	Sept.09,2021	10h10	GW		X	4	
2		MW-4	↓	11h40	↓		↓	↓	
3		MW-2	↓	13h00	↓		↓	↓	
4		MW-1	↓	14h30	↓		↓	↓	
5		BH8	↓	15h40	↓		↓	↓	
6		Duplicate 1	↓	16h30	↓		↓	↓	On Ice Pack
7									
8									
9									
10									

10-Sep-21 08:30
Katherine Szozda
C1Q1472
VTH ENV-1333

RECEIVED IN OTTAWA

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Laboratory Use Only
Philip Olivera	2021-09-09	17h30	BISLING MULCAHY	2021/09/10	08:30			Temperature (°C) on Receipt: 3, 2, 3
Philip Olivera				2021/09/11	09:03			Custody Seal Present: Yes; Intact: Yes

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

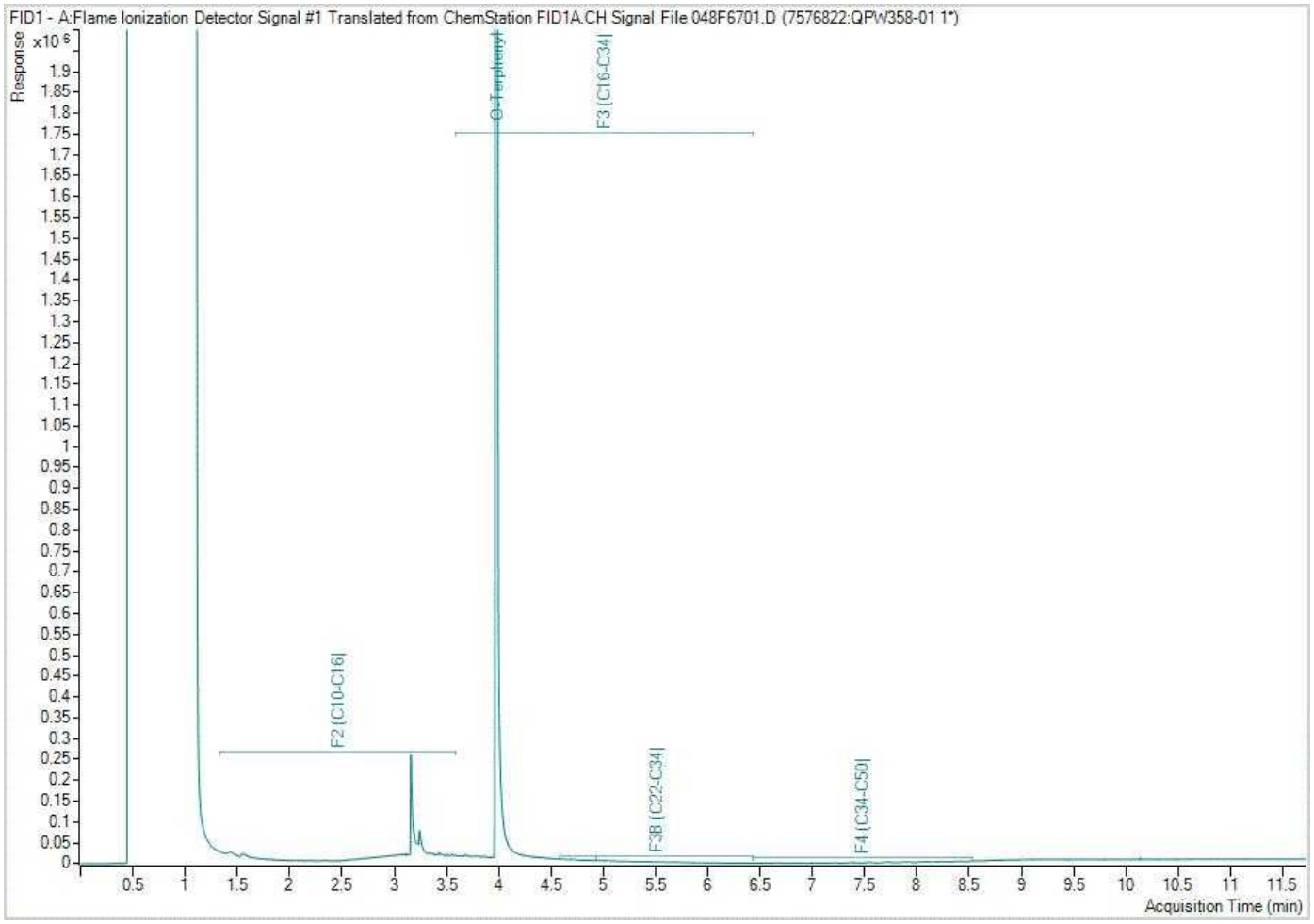
White: BV Labs Yellow: Client

4/3/4

BV Labs Job #: C1Q1472
Report Date: 2021/09/15
BV Labs Sample: QPW358

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: MW-3

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

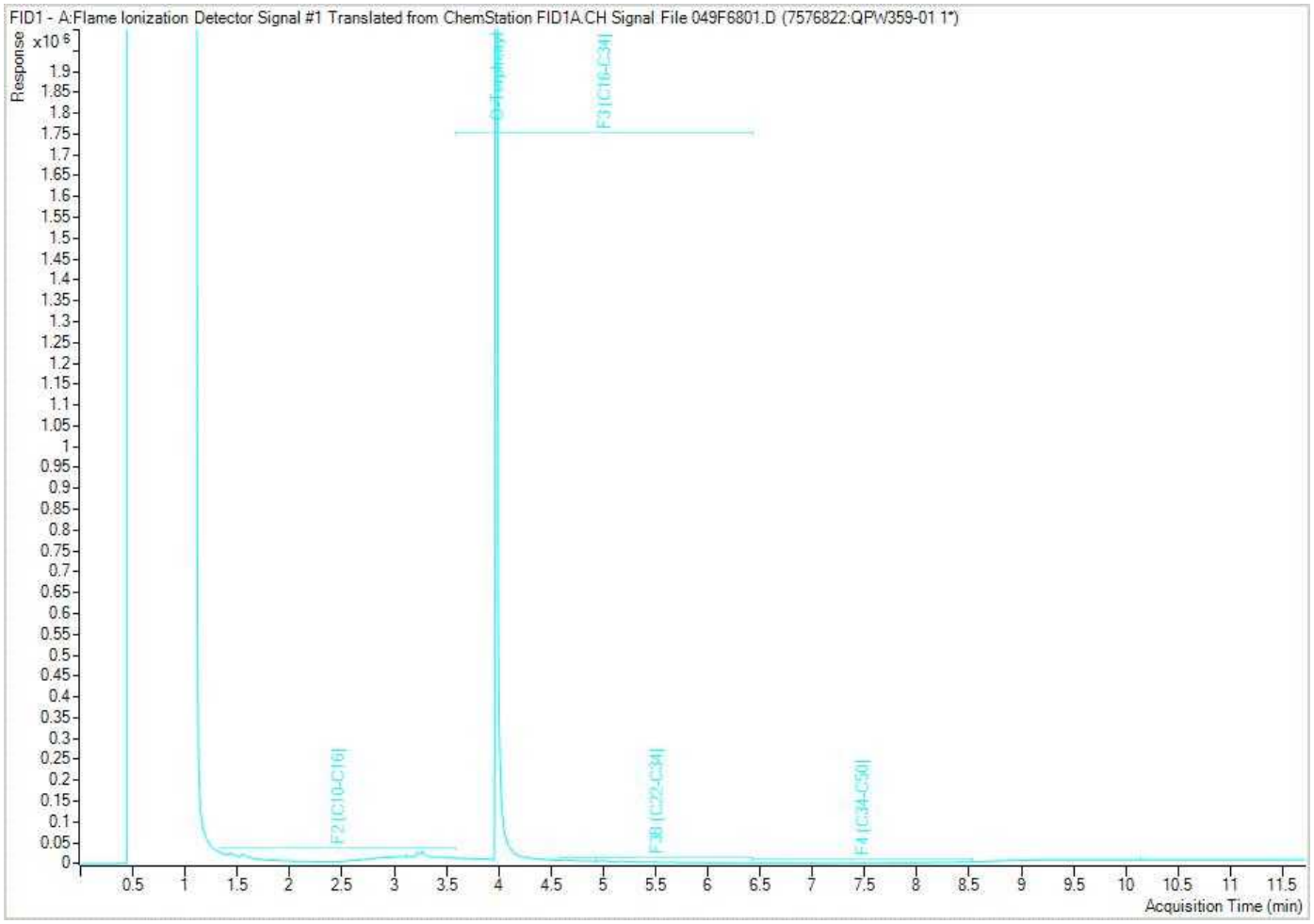


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1Q1472
Report Date: 2021/09/15
BV Labs Sample: QPW359

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: MW-4

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

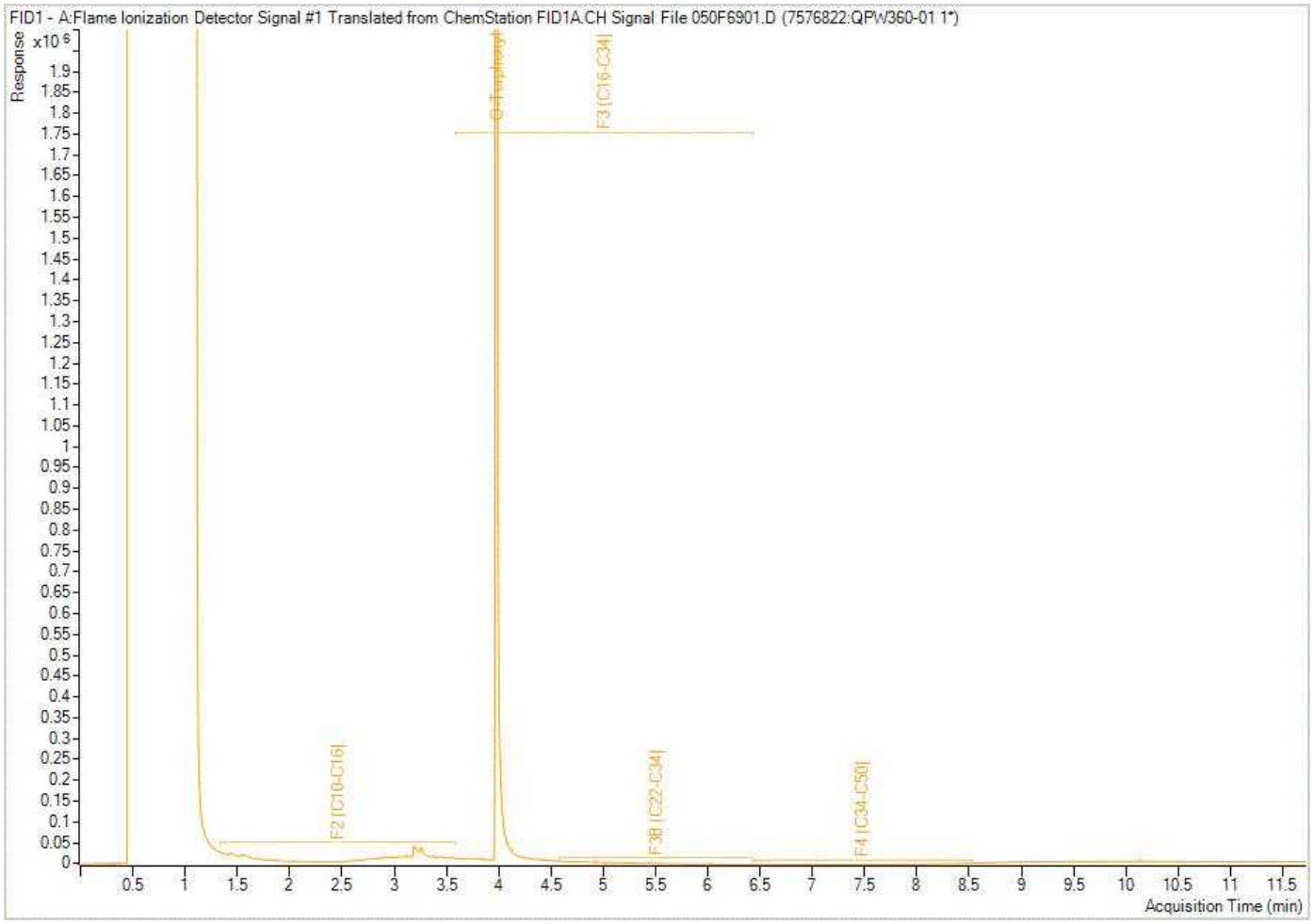


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1Q1472
Report Date: 2021/09/15
BV Labs Sample: QPW360

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: MW-2

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

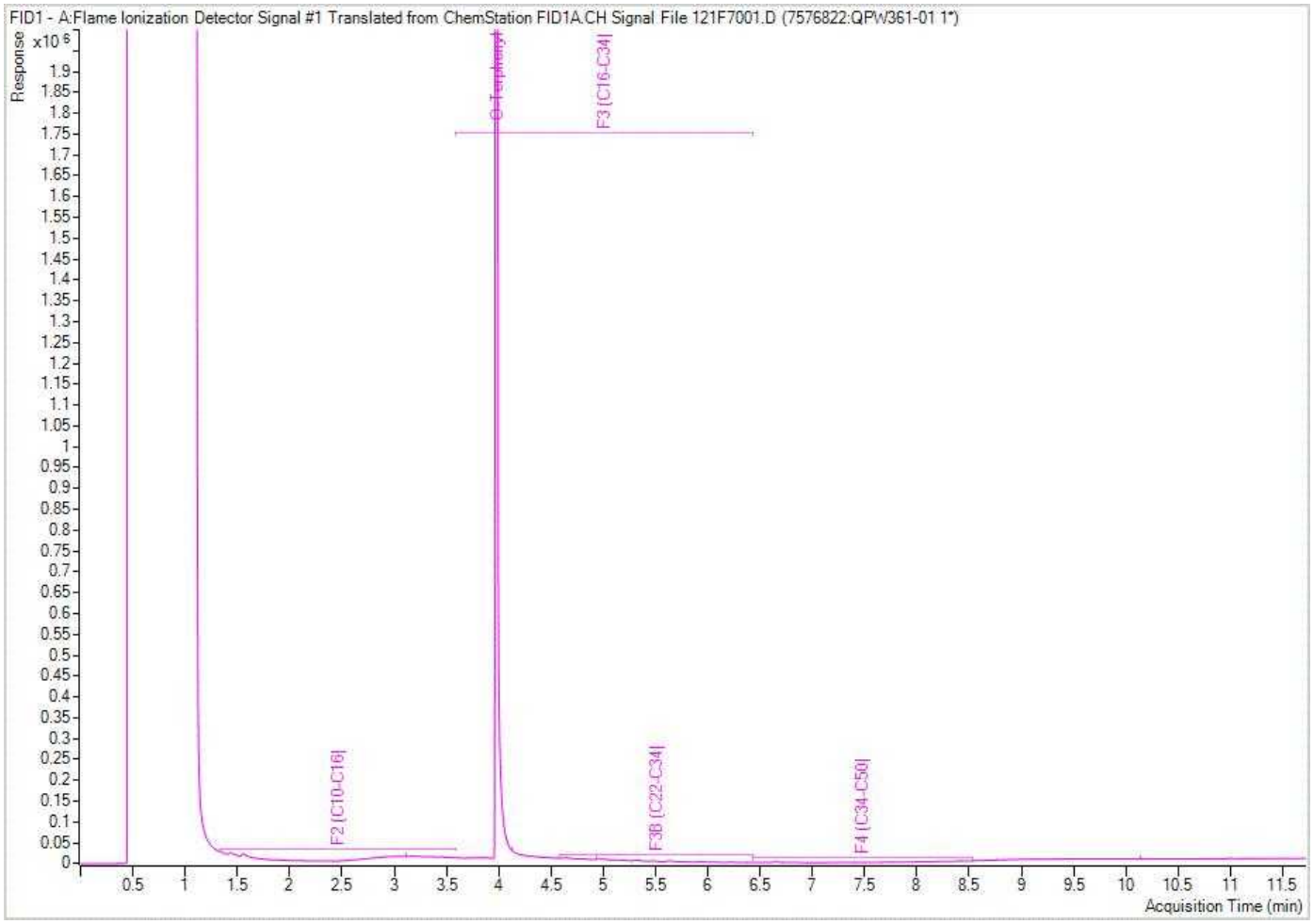


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1Q1472
Report Date: 2021/09/15
BV Labs Sample: QPW361

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: MW-1

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

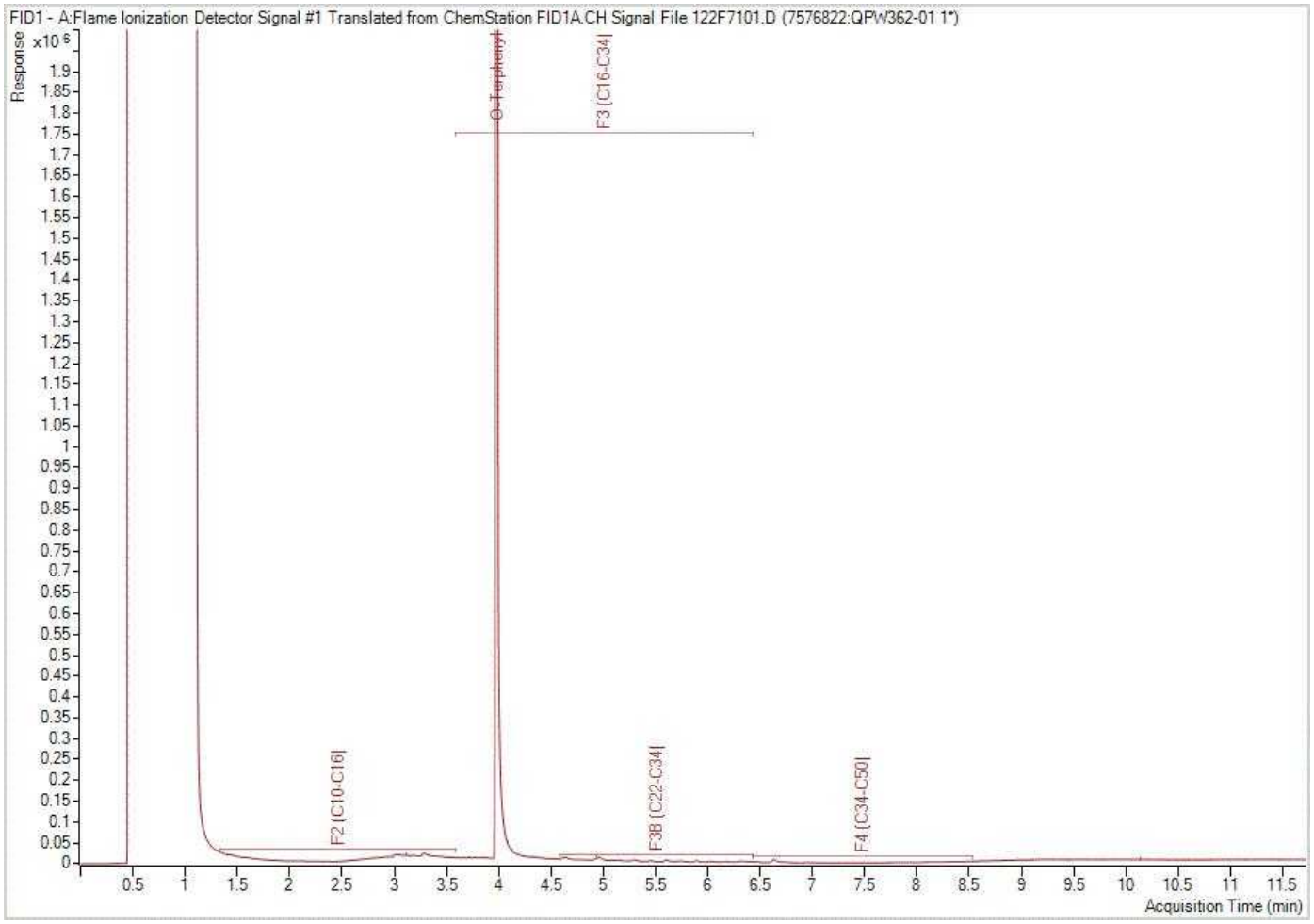


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1Q1472
Report Date: 2021/09/15
BV Labs Sample: QPW362

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: BH8

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

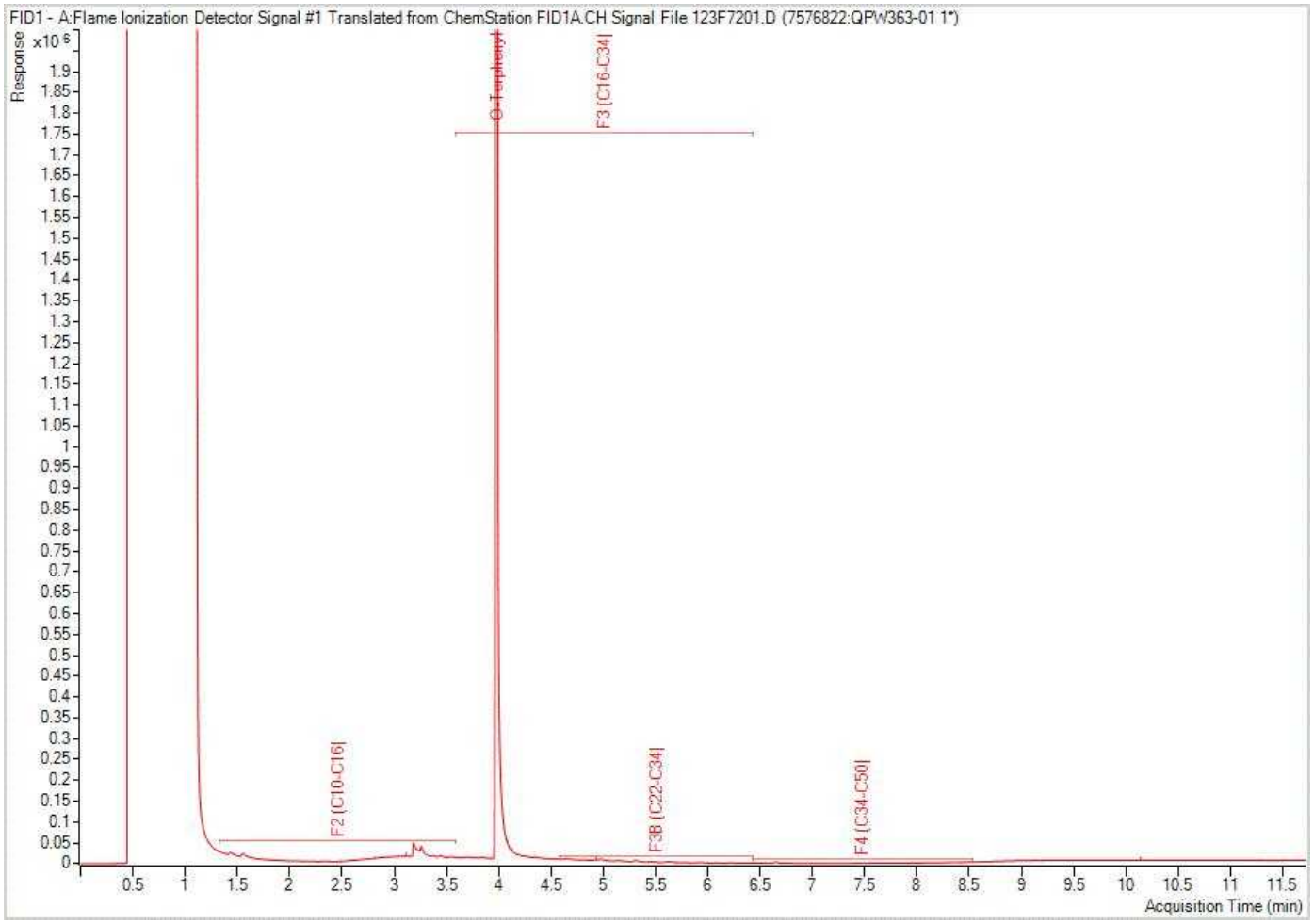


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1Q1472
Report Date: 2021/09/15
BV Labs Sample: QPW363

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: DUPLICATE 1

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: OTT-00234493-A0
Your C.O.C. #: 159776

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/09/17
Report #: R6814914
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Q0105
Received: 2021/09/10, 13:50

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Petroleum Hydro. CCME F1 & BTEX in Water (1)	2	N/A	2021/09/14	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	2	2021/09/15	2021/09/16	CAM SOP-00316	CCME PHC-CWS m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00234493-A0
Your C.O.C. #: 159776

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/09/17
Report #: R6814914
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Q0105
Received: 2021/09/10, 13:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633

==========

This report has been generated and distributed using a secure automated process.
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BV Labs Job #: C1Q0105
Report Date: 2021/09/17

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: JE

O.REG 153 PHCS, BTEX/F1-F4 (WATER)

BV Labs ID		QPP891			QPP891			QPP892		
Sampling Date		2021/09/10 11:40			2021/09/10 11:40			2021/09/10 12:40		
COC Number		159776			159776			159776		
	UNITS	**BH-7B**	**RDL**	**QC Batch**	**BH-7B Lab-Dup**	**RDL**	**QC Batch**	**BH-9**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons										
Benzene	ug/L	<0.20	0.20	7576253				<0.20	0.20	7576253
Toluene	ug/L	<0.20	0.20	7576253				<0.20	0.20	7576253
Ethylbenzene	ug/L	<0.20	0.20	7576253				<0.20	0.20	7576253
o-Xylene	ug/L	<0.20	0.20	7576253				<0.20	0.20	7576253
p+m-Xylene	ug/L	<0.40	0.40	7576253				<0.40	0.40	7576253
Total Xylenes	ug/L	<0.40	0.40	7576253				<0.40	0.40	7576253
F1 (C6-C10)	ug/L	<25	25	7576253				<25	25	7576253
F1 (C6-C10) - BTEX	ug/L	<25	25	7576253				<25	25	7576253
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	7578054	<100	100	7578054	<100	100	7578054
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	7578054	<200	200	7578054	<200	200	7578054
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	7578054	<200	200	7578054	<200	200	7578054
Reached Baseline at C50	ug/L	Yes		7578054	Yes		7578054	Yes		7578054
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	101		7576253				101		7576253
4-Bromofluorobenzene	%	93		7576253				84		7576253
D10-o-Xylene	%	99		7576253				101		7576253
D4-1,2-Dichloroethane	%	109		7576253				107		7576253
o-Terphenyl	%	95		7578054	102		7578054	99		7578054

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs Job #: C1Q0105
Report Date: 2021/09/17

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: JE

TEST SUMMARY

BV Labs ID: QPP891
Sample ID: BH-7B
Matrix: Water

Collected: 2021/09/10
Shipped:
Received: 2021/09/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	7576253	N/A	2021/09/14	Abdikarim Ali
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7578054	2021/09/15	2021/09/16	Agnieszka Brzuzy-Snopko

BV Labs ID: QPP891 Dup
Sample ID: BH-7B
Matrix: Water

Collected: 2021/09/10
Shipped:
Received: 2021/09/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7578054	2021/09/15	2021/09/16	Agnieszka Brzuzy-Snopko

BV Labs ID: QPP892
Sample ID: BH-9
Matrix: Water

Collected: 2021/09/10
Shipped:
Received: 2021/09/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	7576253	N/A	2021/09/14	Abdikarim Ali
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7578054	2021/09/15	2021/09/16	Agnieszka Brzuzy-Snopko

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	8.7°C

Results relate only to the items tested.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

BV Labs Job #: C1Q0105
Report Date: 2021/09/17

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00234493-A0
Sampler Initials: JE

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7576253	1,4-Difluorobenzene	2021/09/14	96	70 - 130	95	70 - 130	101	%		
7576253	4-Bromofluorobenzene	2021/09/14	104	70 - 130	106	70 - 130	94	%		
7576253	D10-o-Xylene	2021/09/14	94	70 - 130	94	70 - 130	102	%		
7576253	D4-1,2-Dichloroethane	2021/09/14	103	70 - 130	98	70 - 130	103	%		
7578054	o-Terphenyl	2021/09/16	112	60 - 130	96	60 - 130	90	%		
7576253	Benzene	2021/09/14	104	50 - 140	103	50 - 140	<0.20	ug/L	NC	30
7576253	Ethylbenzene	2021/09/14	111	50 - 140	111	50 - 140	<0.20	ug/L	1.8	30
7576253	F1 (C6-C10) - BTEX	2021/09/14					<25	ug/L	NC	30
7576253	F1 (C6-C10)	2021/09/14	93	60 - 140	93	60 - 140	<25	ug/L	NC	30
7576253	o-Xylene	2021/09/14	109	50 - 140	108	50 - 140	<0.20	ug/L	0.67	30
7576253	p+m-Xylene	2021/09/14	106	50 - 140	107	50 - 140	<0.40	ug/L	2.5	30
7576253	Toluene	2021/09/14	102	50 - 140	102	50 - 140	<0.20	ug/L	NC	30
7576253	Total Xylenes	2021/09/14					<0.40	ug/L	2.1	30
7578054	F2 (C10-C16 Hydrocarbons)	2021/09/16	118	60 - 130	112	60 - 130	<100	ug/L	NC	30
7578054	F3 (C16-C34 Hydrocarbons)	2021/09/16	120	60 - 130	116	60 - 130	<200	ug/L	NC	30
7578054	F4 (C34-C50 Hydrocarbons)	2021/09/16	124	60 - 130	116	60 - 130	<200	ug/L	NC	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Brad Newman, B.Sc., C.Chem., Scientific Service Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

BUREAU VERITAS

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD 159776

Page 1 of 1

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: EXP Services Inc.	Company Name: EXP Services Inc.	Quotation #:	☒ Regular TAT (5-7 days) Most analyses
Contact Name: Accounts Payable	Contact Name: Mark McCalla	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 100-2650 Queensview Dr. Ottawa, ON	Address: 100-2650 Queensview Dr. Ottawa, ON	Project #: OTT-00234493-A0	Rush TAT (Surcharges will be applied)
Phone: 613-688-1899 Fax:	Phone: 613-688-1899 Fax:	Site Location:	☐ 1 Day ☐ 2 Days ☐ 3-4 Days
Email: accounting-ottawa@exp.com	Email: Mark.mccalla@exp.com	Site #:	Date Required:
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY		Site Location Province: / Sampled By: Jeremy Eckert	Rush Confirmation #:

Regulation 153	Other Regulations
☐ Table 1 ☒ Res/Park ☒ Med/ Fine	☐ CCME ☐ Sanitary Sewer Bylaw
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ MISA ☐ Storm Sewer Bylaw
☒ Table 3 ☐ Agri/ Other	☐ PWQO Region
☐ Table ____	☐ Other (Specify)
FOR RSC (PLEASE CIRCLE) Y / N	☐ REG 558 (MIN. 3 DAY TAT REQUIRED)
	☐ REG 406 Table

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Analysis Requested

LABORATORY USE ONLY

CUSTODY SEAL Y / N: Present / Intact

COOLER TEMPERATURES: 9.9, 1.8

COOLING MEDIA PRESENT: Y / N

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	HOLD- DO NOT ANALYZE	COMMENTS
1	BH-7B	2021/09/10	11:40	GW	4		X	X						
2	BH-9	2021/09/10	12:40	GW	4		X	X						
3														
4														ON Ice
5														
6														
7														
8														
9														
10														

10-Sep-21 13:50
Katherine Szozda
C1Q0105
KJY OTT-001

RECEIVED IN OTTAWA

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	BV JOB #
Jeremy Eckert	2021/09/10	1300	Kim Jury	2021/09/10	13:50	
			[illegible]	2021/09/11	09:10	

3/4/3

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Bureau Veritas Laboratories' standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms available at http://www.bvlabs.com/terms-and-conditions

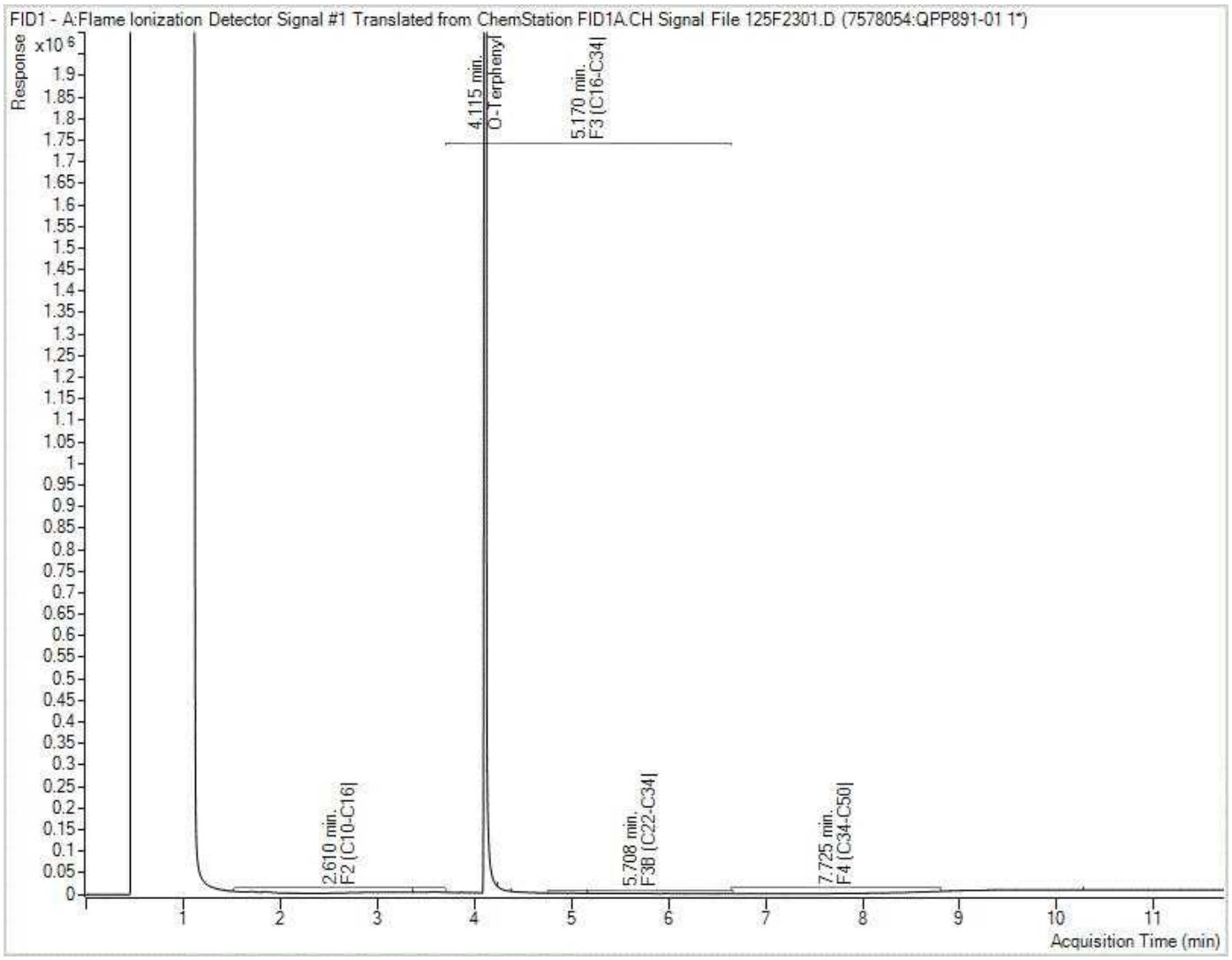
COC-1004 (06/19)

White: BV Labs - Yellow: Client

BV Labs Job #: C1Q0105
Report Date: 2021/09/17
BV Labs Sample: QPP891

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: BH-7B

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

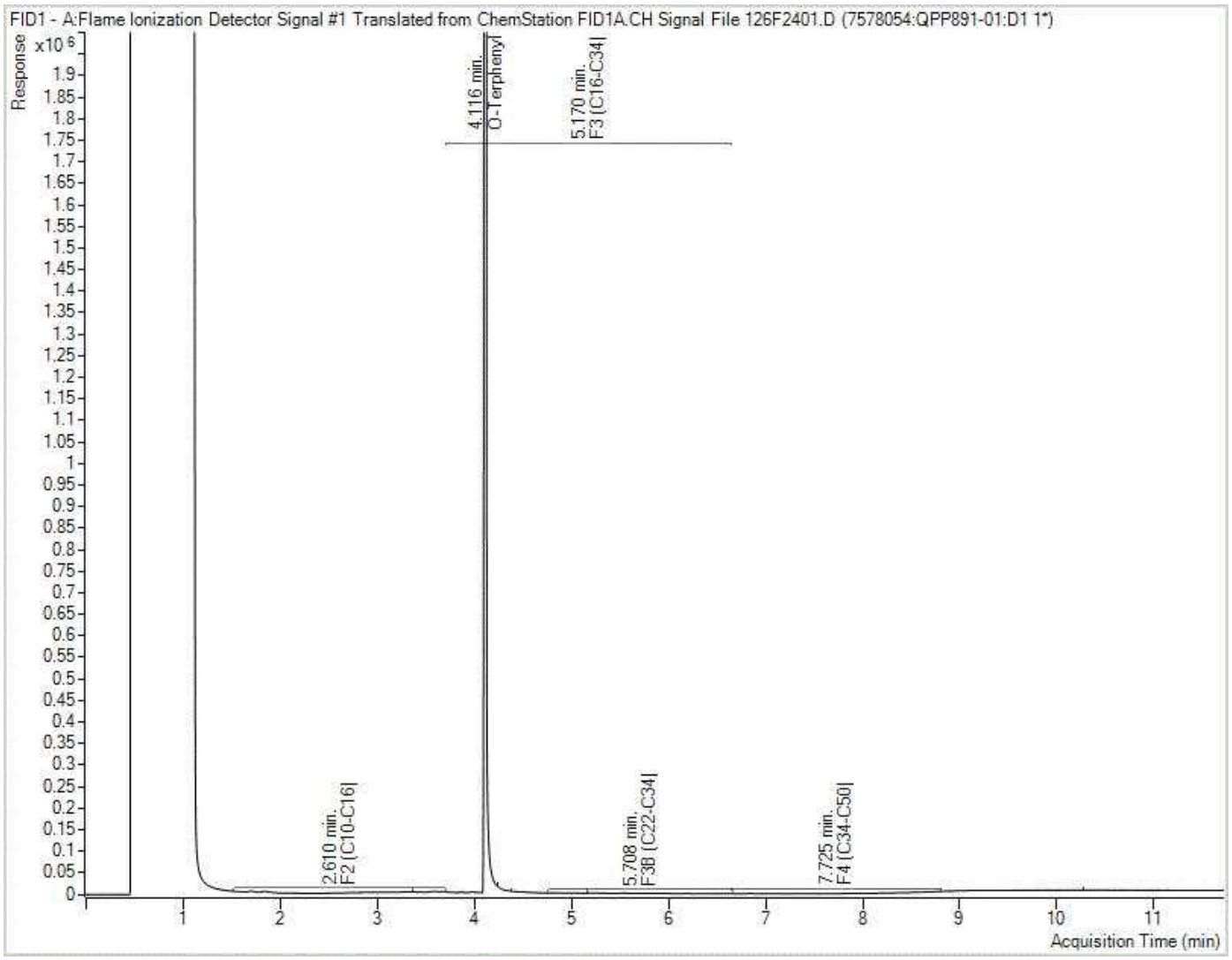


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1Q0105
Report Date: 2021/09/17
BV Labs Sample: QPP891 Lab-Dup

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: BH-7B

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

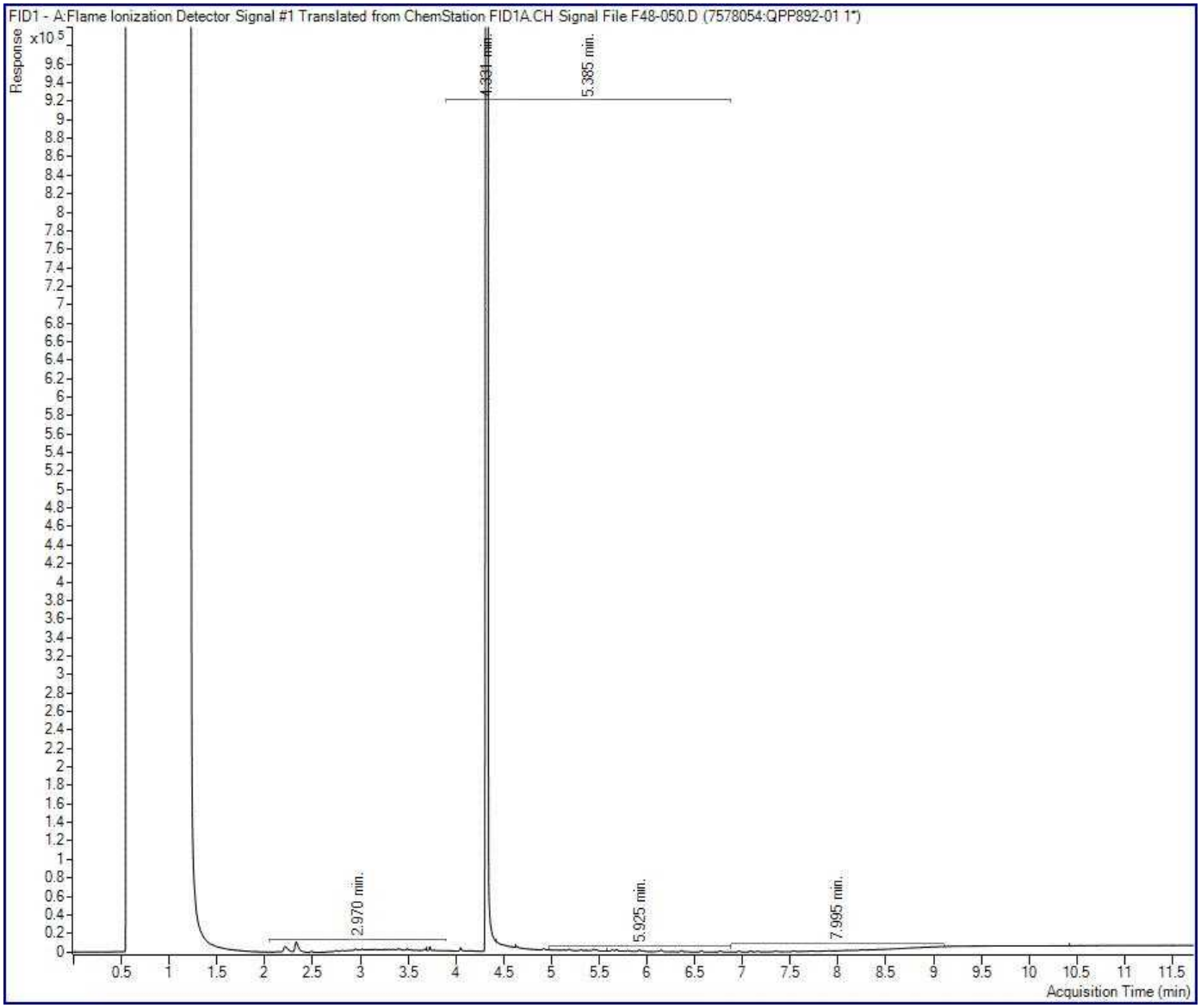


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C1Q0105
Report Date: 2021/09/17
BV Labs Sample: QPP892

exp Services Inc
Client Project #: OTT-00234493-A0
Client ID: BH-9

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BUREAU VERITAS

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD 159776

Page 1 of 1

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: ExP Services Inc.	Company Name: ExP Services Inc.	Quotation #:	☒ Regular TAT (5-7 days) Most analyses
Contact Name: Accounts Payable	Contact Name: Mark McCalla	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 100-2650 Queensview Dr. Ottawa, ON	Address: 100-2650 Queensview Dr. Ottawa, ON	Project #: OTT-00234493-A0	Rush TAT (Surcharges will be applied)
Phone: 613-688-1899 Fax:	Phone: 613-688-1899 Fax:	Site Location:	☐ 1 Day ☐ 2 Days ☐ 3-4 Days
Email: accounting.ottawa@exp.com	Email: Mark.mccalla@exp.com	Site #:	Date Required:
		Site Location Province:	Rush Confirmation #:
		Sampled By: Jeremy Eckert	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY

Regulation 153

☐ Table 1 ☒ Res/Park ☒ Med/ Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☒ Table 3 ☐ Agri/ Other
☐ Table ____
FOR RSC (PLEASE CIRCLE) Y / N

Other Regulations

☐ CCME ☐ Sanitary Sewer Bylaw
☐ MISA ☐ Storm Sewer Bylaw
☐ PWQO Region ____
☐ Other (Specify) ____
☐ REG 558 (MIN. 3 DAY TAT REQUIRED)
☐ REG 406 Table ____

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	HOLD- DO NOT ANALYZE
1	BH-7B	2021/09/10	1140	GW	4		X	X					
2	BH-9	2021/09/10	1240	GW	4		X	X					
3													
4													
5													
6													
7													
8													
9													
10													

10-Sep-21 13:50
Katherine Szozda
C1Q0105
KJY OTT-001

RECEIVED IN OTTAWA

LABORATORY USE ONLY

CUSTODY SEAL Y / N		COOLER TEMPERATURES
Present	Intact	
✓	✓	9.9.6

COOLING MEDIA PRESENT: Y / N

COMMENTS: ON Ice

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Jeremy Eckert	2021/09/10	1300	Kim Jay	2021/09/10	13:50

BV JOB #

Your Project #: OTT-00234493-AO
Your C.O.C. #: 159822

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/09/23
Report #: R6823323
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1R1813
Received: 2021/09/21, 13:00

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Petroleum Hydro. CCME F1 & BTEX in Water (1)	1	N/A	2021/09/22	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	1	2021/09/22	2021/09/23	CAM SOP-00316	CCME PHC-CWS m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: OTT-00234493-AO
Your C.O.C. #: 159822

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/09/23
Report #: R6823323
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1R1813
Received: 2021/09/21, 13:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633

==========

This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

O.REG 153 PHCS, BTEX/F1-F4 (WATER)

BV Labs ID		QSA941		
Sampling Date		2021/09/21 11:00		
COC Number		159822		
	UNITS	**MW-3**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons				
Benzene	ug/L	<0.20	0.20	7593986
Toluene	ug/L	<0.20	0.20	7593986
Ethylbenzene	ug/L	<0.20	0.20	7593986
o-Xylene	ug/L	<0.20	0.20	7593986
p+m-Xylene	ug/L	<0.40	0.40	7593986
Total Xylenes	ug/L	<0.40	0.40	7593986
F1 (C6-C10)	ug/L	<25	25	7593986
F1 (C6-C10) - BTEX	ug/L	<25	25	7593986
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	7593829
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	7593829
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	7593829
Reached Baseline at C50	ug/L	Yes		7593829
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	95		7593986
4-Bromofluorobenzene	%	94		7593986
D10-o-Xylene	%	101		7593986
D4-1,2-Dichloroethane	%	104		7593986
o-Terphenyl	%	95		7593829

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C1R1813
Report Date: 2021/09/23

exp Services Inc
Client Project #: OTT-00234493-AO
Sampler Initials: JE

TEST SUMMARY

BV Labs ID: QSA941
Sample ID: MW-3
Matrix: Water

Collected: 2021/09/21
Shipped:
Received: 2021/09/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	7593986	N/A	2021/09/22	Abdikarim Ali
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7593829	2021/09/22	2021/09/23	Ravinder Gaidhu

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C

Results relate only to the items tested.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

BV Labs Job #: C1R1813
Report Date: 2021/09/23

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00234493-AO
Sampler Initials: JE

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7593829	o-Terphenyl	2021/09/22	91	60 - 130	94	60 - 130	92	%		
7593986	1,4-Difluorobenzene	2021/09/22	96	70 - 130	97	70 - 130	97	%		
7593986	4-Bromofluorobenzene	2021/09/22	102	70 - 130	102	70 - 130	97	%		
7593986	D10-o-Xylene	2021/09/22	92	70 - 130	91	70 - 130	102	%		
7593986	D4-1,2-Dichloroethane	2021/09/22	104	70 - 130	103	70 - 130	111	%		
7593829	F2 (C10-C16 Hydrocarbons)	2021/09/23	97	60 - 130	95	60 - 130	<100	ug/L	15	30
7593829	F3 (C16-C34 Hydrocarbons)	2021/09/23	101	60 - 130	103	60 - 130	<200	ug/L	NC	30
7593829	F4 (C34-C50 Hydrocarbons)	2021/09/23	107	60 - 130	105	60 - 130	<200	ug/L	NC	30
7593986	Benzene	2021/09/22	103	50 - 140	103	50 - 140	<0.20	ug/L	NC	30
7593986	Ethylbenzene	2021/09/22	107	50 - 140	106	50 - 140	<0.20	ug/L	NC	30
7593986	F1 (C6-C10) - BTEX	2021/09/22					<25	ug/L	NC	30
7593986	F1 (C6-C10)	2021/09/22	94	60 - 140	96	60 - 140	<25	ug/L	NC	30
7593986	o-Xylene	2021/09/22	104	50 - 140	104	50 - 140	<0.20	ug/L	NC	30
7593986	p+m-Xylene	2021/09/22	104	50 - 140	104	50 - 140	<0.40	ug/L	NC	30
7593986	Toluene	2021/09/22	98	50 - 140	97	50 - 140	<0.20	ug/L	NC	30
7593986	Total Xylenes	2021/09/22					<0.40	ug/L	NC	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Brad Newman, B.Sc., C.Chem., Scientific Service Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

RUSH!

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD 159822

Page 1 of 1

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: Exp Services Inc.	Company Name:	Quotation #: B91718	Regular TAT (5-7 days) Most analyses
Contact Name: Accounts Payable	Contact Name: Mark McCalla	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 100-2650 Queensview Dr.	Address:	Project #: OTT-00234493-A0	Rush TAT (Surcharges will be applied) ☐ 1 Day ☒ 2 Days ☐ 3-4 Days
		Site Location:	
Phone: 613-688-1899 Fax:	Phone: Fax:	Site #:	Date Required:
Email: accounting.ottawa@exp.com	Email: mark.mccalla@exp.com	Site Location Province:	Rush Confirmation #:
		Sampled By: Jeremy Eckert	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY

Regulation 153: ☐ Table 1 ☒ Res/Park ☒ Med/ Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☒ Table 3 ☐ Agri/ Other ☐ Table ___ FOR RSC (PLEASE CIRCLE) Y / N

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ MISA ☐ Storm Sewer Bylaw ☐ PWQO Region ___ ☐ Other (Specify) ☐ REG 558 (MIN. 3 DAY TAT REQUIRED) ☐ REG 406 Table ___

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / Cr VI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)							HOLD- DO NOT ANALYZE	COMMENTS
1	MW-3	2021/09/21	1100	GW	4		X	X												
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

21-Sep-21 13:00
Katherine Szozda
C1R1813
KJY OTT-001

LABORATORY USE ONLY

CUSTODY SEAL Y / N Present	Intact	COOLER TEMPERATURES
Y	Y	6 / 6 / 6
Y	Y	5 / 5 / 5

COOLING MEDIA PRESENT: (Y) N

RECEIVED IN OTTAWA

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	BV JOB #
Jeremy Eckert	2021/09/21	1200	AISLING MULCAHY	2021/09/21	13:00	
			AAISHA VAHORA	2021/09/22	08:00	

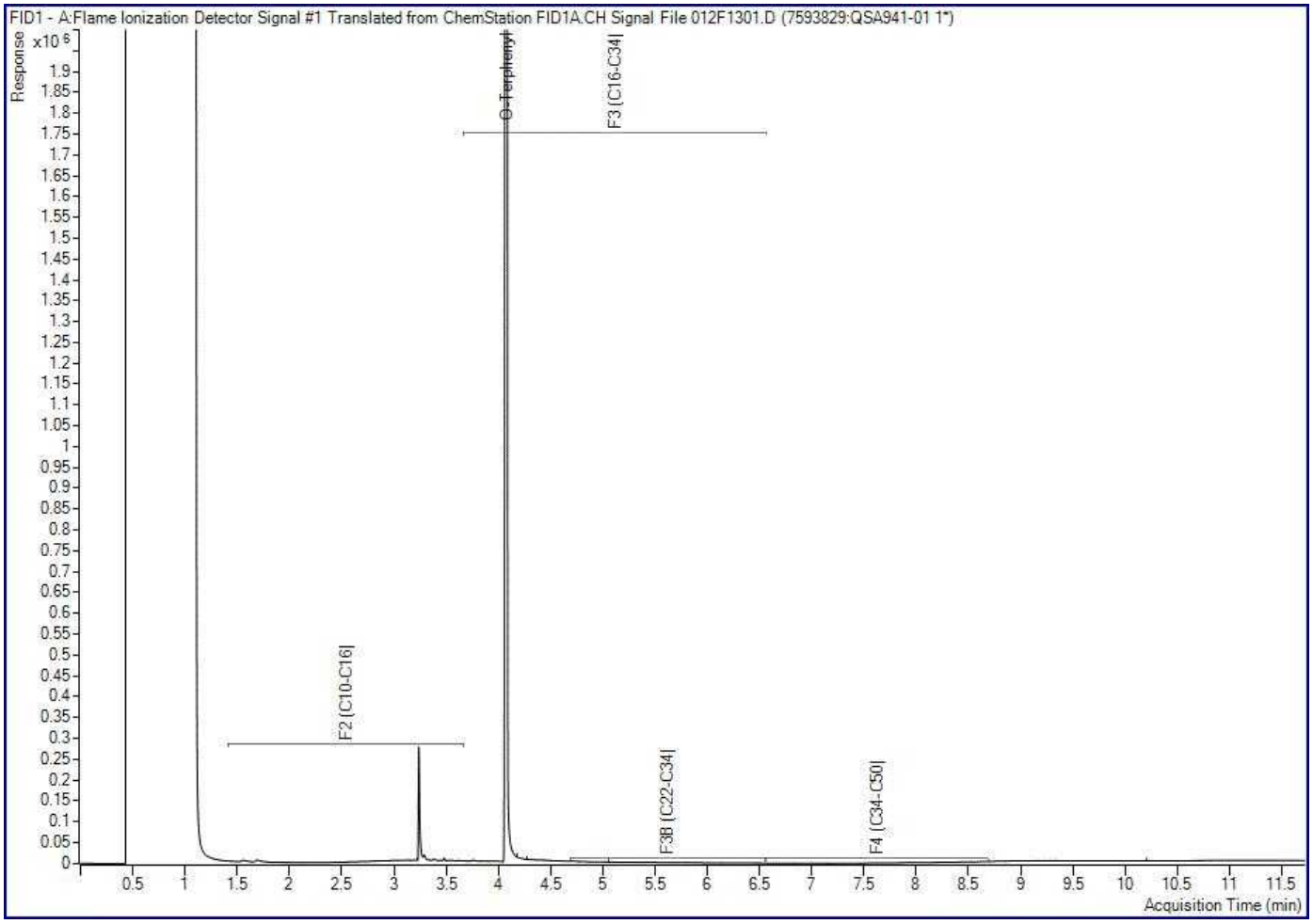
COC-1004 (06/19)

White: BV Labs - Yellow: Client

BV Labs Job #: C1R1813
Report Date: 2021/09/23
BV Labs Sample: QSA941

exp Services Inc
Client Project #: OTT-00234493-AO
Client ID: MW-3

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BUREAU VERITAS

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD 159822

Page 1 of 1

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: Exp Services Inc.	Company Name:	Quotation #: B91718	☐ Regular TAT (5-7 days) Most analyses
Contact Name: Accounts Payable	Contact Name: Mark McCalla	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 100-2650 Queensview Dr.	Address:	Project #: OTT-00234493-A0	Rush TAT (Surcharges will be applied)
Phone: 613-688-1899 Fax:	Phone: Fax:	Site Location:	☐ 1 Day ☒ 2 Days ☐ 3-4 Days
Email: accounting.ottawa@exp.com	Email: mark.mccalla@exp.com	Site #:	Date Required:
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY		Site Location Province: Sampled By: Jeremy Eckert	Rush Confirmation #:

Regulation 153	Other Regulations
☐ Table 1 ☒ Res/Park ☒ Med/ Fine	☐ CCME ☐ Sanitary Sewer Bylaw
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ MISA ☐ Storm Sewer Bylaw
☒ Table 3 ☐ Agri/ Other	☐ PWQO Region
☐ Table ____	☐ Other (Specify)
FOR RSC (PLEASE CIRCLE) Y / N	☐ REG 558 (MIN. 3 DAY TAT REQUIRED)
	☐ REG 406 Table

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	HOLD- DO NOT ANALYZE
1	MW-3	2021/09/21	1100	GW	4		X	X					
2													
3													
4													
5													
6													
7													
8													
9													
10													

21-Sep-21 13:00
Katherine Szozda
C1R1813
KJY OTT-001

LABORATORY USE ONLY

CUSTODY SEAL Y / N		COOLER TEMPERATURES
Present	Intact	
Y	Y	6.6.6

COOLING MEDIA PRESENT: Y / N

COMMENTS

RECEIVED IN OTTAWA

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Jeremy Eckert	2021/09/21	1200	AISLING MULCAHY	2021/09/21	13:00

BV JOB #