Phase Two Environmental Site Assessment
6659 Franktown Road, Ottawa, Ontario

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Air Rock Drilling

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Phase Two Environmental Site Assessment

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Executive Summary

EXP Services Inc. (EXP) was retained by Air Rock Drilling to conduct a Phase Two Environmental Site Assessment (ESA) at 6659 Franktown Road in Ottawa, Ontario (hereinafter referred to as the 'Phase Two Property'). At the time of the investigation the Phase Two property was occupied by one (1) residential structure, one workshop / office building and a Quonset Hut associated with the on-Site well drilling company (Air Rock Drilling Company Ltd.).

The objective of the Phase Two ESA investigation was 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. EXP understands that this report is being conducted in support of a zoning amendment and will not be used to submit a Record of Site Condition (RSC).

The Phase Two property is located on the north side of Franktown Road, at 6659 Franktown Road in Ottawa. The Phase Two property has an area of approximately 1.22 hectares and is currently occupied by one residential structure, one workshop / office building and a Quonset hut all associated with the on site well drilling company (Air Rock Drilling Company Ltd.). The residential structure was constructed some time around 2000, and the outbuildings were constructed sometime around 2005. The Phase Two property is in a rural countryside zoned area. The local groundwater flow direction is unknown, although based on regional topography, groundwater flow is anticipated to be southeast toward the Jock River. The Phase Two property is legally described as CON 4 E PT LOT 19 RP;4R-14477 PART 2. The PIN for the Phase Two property is 044390239.

EXP completed a draft Phase One ESA for the property in July 2023 and the following on-site potentially contaminating activities (PCA) were identified:

- PCA #10 – Commercial autobody shops
    - On-site repair garage – active repair garage
- PCA #28 – Gasoline and associated products storage in fixed tanks
    - 2 AST in east part of Phase One property
    - 4 AST in west part of Phase One property

No off-site PCA were identified.

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 in Table EX-1:

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	Workshop shop sump discharge (sump discharges to ground just outside workshop building, south side)	PCA #10 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	Benzene, toluene, ethylbenzene, xylene (BTEX), and petroleum hydrocarbons (PHC), metals	Soil and groundwater
APEC #2	Above ground storage tanks for furnace oil and fuel	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX and PHC	Soil and groundwater

A Phase I and II ESA was conducted by EXP in 2017 for due diligence purposes. The property owner at the time of the investigation indicated that the site was first developed in the 2000s with a residence and workshop and office building, as well as a Quonset hut. Three potentially contaminating activities (PCA) resulting in areas of potential environmental concern (APEC) were identified and an additional site investigation was recommended. Nine (9) test pits (TP1 to TP9) were excavated in the areas of the sump pit discharge (APEC 1) and the above ground storage tanks (APEC 2 ad 3) performed on the site and soil samples were collected for laboratory analysis of the contaminants of concern. In addition, three (3) monitoring wells were advanced at the APECs and groundwater samples were collected for laboratory analysis of the contaminants of concern. Based on the laboratory analyses, the concentrations of PHC, BTEX and metals measured in the analysed soil and groundwater samples were less than the MOECC 2011 Table 2 SCS, with the exception of the sample collected from TP5, which was found to have soil exceedances of the Table 2 SCS for PHC F1 and PHC F2. The impacts at TP5 were delineated in all four cardinal directions. No elevated PHC and / or BTEX concentrations were detected from any of the three water samples collected and the water results were less than the Table 2 SCS. Therefore, the minor soil impact from TP5 had not impacted the groundwater at MW3 (which was located immediately next to TP5).

The current site investigative activities consisted of collecting groundwater samples from the three on-site monitoring wells. Three groundwater samples, one field duplicate, one field blank, and one trip blank were submitted for chemical analysis of BTEX and PHC were taken July 11, 2023. There were no exceedances of the MECP Table 2 SCS for any of the parameters analyzed in the groundwater samples from the monitoring wells (MW-1 to MW-3), with the exception of PHC F3 and F4 in the sample collected from MW3. The elevated PHC concentrations were due to sediment in the groundwater sample. A second groundwater sample was taken from MW3 on July 14, 2023 and PHC was not detected in the sample and the concentrations therefore did not exceed the Table 2 SCS.

A variety of physical, chemical and biochemical mechanisms affect the fate and transport of the potential COC in soil and groundwater, the contribution of which is dependent on the soil and groundwater conditions at the Phase Two property, as well as the chemical/physical properties of the COC. 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.

No groundwater exceedances were identified on the Phase Two property.

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. No further environmental investigations are deemed to be warranted.

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

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1.0 Introduction

EXP Services Inc. (EXP) was retained by Air Rock Drilling to conduct a Phase Two Environmental Site Assessment (ESA) for the property located at 6659 Franktown Road in Ottawa, Ontario (hereinafter referred to as the 'Phase Two property'). At the time of the investigation, the Site was occupied by one (1) residential structure, one workshop / office building and a Quonset Hut associated with the on-Site well drilling company (Air Rock Drilling Company Ltd.).

The objective of the Phase Two ESA investigation was 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 property was commercial.

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.

1.1 Site Description

The Phase One property is located on the north side of Franktown Road, at 6659 Franktown Road in Ottawa, just west of the village of Richmond in Ottawa, as shown on Figure 1 in Appendix A. The Phase Two property is rectangular in shape with am area of approximately 1.22 hectares and is currently occupied by one (1) residential structure, one workshop / office building and a Quonset Hut associated with the on-Site well drilling company (Air Rock Drilling Company Ltd.). The approximate centroid coordinates are NAD83 18T 432048 m E and 5003159 m N.

Asphalt parking area and access-way is present along the east side of the Phase Two property. The remainder of the Phase Two property is landscaped. The residential structure was constructed in 2002 and the Quonset Building and Workshop/Office were constructed around 2005. The site layout is shown on Figure 2 in Appendix A.

The Phase Two property is legally described as CON 4 E PT LOT 19 RP;4R-14477 PART 2. The PIN for the Phase Two property is 044390239.

Refer to Table 1.1 for the Site identification information.

Table 1.1: Site Identification Details

Civic Address	6659 Franktown Road, Ottawa, Ontario
Current Land Use	Commercial
Proposed Future Land Use	Commercial
Property Identification Number	040460029, 04060037
UTM Coordinates	Zone 18, 432048 m E and 5003159 m N
Site Area	1.22 hectares
Property Owner	Air Rock Drilling

A survey plan of the Phase Two property was completed by H.A. Ken Shipman Surveying Ltd. in March 2022. A copy of the survey plan is provided in Appendix B.

1.2 Property Ownership

The registered owner of the Phase One property is Air Rock Drilling. Authorization to proceed with this investigation was provided by Mr. Jeremy Hanna of Air Rock Drilling. Contact information for Mr. Hanna is 6659 Franktown Road, Ottawa, Ontario, K0A 2Z0.

1.3 Current and Proposed Future Use

Based on a review of historical aerial photographs, historical maps, and other records review, it appears that the Site was initially agricultural land dating back to the 1970's (1976) up to the early 2000's (2002) when the property was developed in its current configuration.

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 non-potable groundwater condition for residential/parkland/institutional property use, coarse grained soil.

The selection of these categories was based on the following factors:

- Bedrock is greater than 2 metres below grade across the subject property;

- The Phase Two property is not located within 30 metres of a waterbody;
- 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;
- Potable water for the Phase Two property is supplied from an on-Site water well;
- The Phase Two property is not located in an area designated in a municipal official plan as a well-head protection area;
- The proposed building is planned for residential and commercial 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 north side of Franktown Road, at 6659 Franktown Road in Ottawa, just west of the village of Richmond. The Phase Two property is rectangular in shape with am area of approximately 1.22 hectares and is currently occupied by one (1) residential structure, one workshop / office building and a Quonset Hut associated with the on-Site well drilling company (Air Rock Drilling Company Ltd.). Asphalt parking area and access-way is present along the east side of the Phase Two property. The remainder of the Phase Two property is landscaped. The residential structure was constructed in 2002 and the Quonset Building and Workshop/Office were constructed around 2005.

A site plan showing the Phase Two property is presented as Figure 2 in Appendix A.

The Phase Two property, and all other properties located, in whole or in part, within 250 metres of the boundaries of the Phase Two property, are supplied by individual water wells. 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.

The Phase Two property is not a shallow soil property as defined in Section 43.1 of the regulation. It does not include all or part of a water body or is adjacent to a water body or includes land that is within 30 metres of a water body.

The bedrock geology underlying the subject Phase One property consists of Ottawa Formation, limestone, dolostone, and shale. The overburden at the Phase Two property, beneath any fill, material consists of clay and silty underlying erosional terraces.

The general topography of the Phase Two property and study area sloped to the southeast, the generic groundwater flow is anticipated to be southeast towards the Jock River.

2.2 Past Investigations

A Phase I and II ESA was conducted by EXP in 2017 for due diligence purposes. The property owner at the time of the investigation indicated that the site was first developed in the 2000s with a residence and workshop and office building, as well as a Quonset hut. Three potentially contaminating activities (PCA) resulting in areas of potential environmental concern (APEC) were identified and an additional site investigation was recommended. Nine (9) test pits (TP1 to TP9) were excavated in the areas of the sump pit discharge (APEC 1) and the above ground storage tanks (APEC 2 ad 3) performed on the site and soil samples were collected for laboratory analysis of the contaminants of concern. In addition, three (3) monitoring wells were advanced at the APECs and groundwater samples were collected for laboratory analysis of the contaminants of concern. Based on the laboratory analyses, the concentrations of PHC, BTEX and metals measured in the analysed soil and groundwater samples were less than the MOECC 2011 Table 2 SCS, with the exception of the sample collected from TP5, which was found to have soil exceedances of the Table 2 SCS for PHC F1 and PHC F2. The impacts at TP5 were delineated in all four cardinal directions. No elevated PHC and / or BTEX concentrations were detected from any of the three water samples collected and the water results were less than the Table 2 SCS. Therefore, the minor soil impact from TP5 had not impacted the groundwater at MW3 (which was located immediately next to TP5).

Most recently, EXP prepared a report entitled *Phase One Environmental Site Assessment, 6659 Franktown Road, Ottawa, Ontario,* dated August 3, 2023. The Phase One study area included properties within 250 m of the Phase Two property. Based on the results of the Phase One ESA, EXP identified three APEC within the Phase One study area. A summary is provided in Table 2.1.

Table 2.1: Findings of Phase One 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	Workshop shop sump discharge (sump discharges to ground just outside workshop building, south side)	PCA #10 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	Benzene, toluene, ethylbenzene, xylene (BTEX), and petroleum hydrocarbons (PHC), metals	Soil and groundwater
APEC #2	Above ground storage tanks for furnace oil and fuel	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX and PHC	Soil and groundwater

The locations of the APEC are shown on Figure 3 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. A copy of the Phase One conceptual site model is provided as Figure 3 in Appendix A.

3.0 Scope of the Investigation

3.1 Overview of Site Investigation

The objective of the Phase Two ESA was to assess the quality of soil and groundwater on the Phase Two property.

The most recent use of the property was commercial and residential and the land use will not be changing. Since the land use will not be changing, a Record of Site Condition (RSC) is not required, per Ontario Regulation 153/04.

3.2 Scope of Work

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

- Collecting groundwater samples from the monitoring wells and submitting them for analysis of BTEX and PHC;
- Comparing the results of the groundwater chemical analyses to applicable criteria, as set out by the Ontario Ministry of the Environment, Conservation and Parks (MECP);
- Monitoring groundwater levels in the wells to determine groundwater elevations; 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 soil quality on the Phase One property was assessed in 2017. The current Phase Two ESA included the investigation of groundwater on the Phase Two property. There are no waterbodies on the Phase Two property, therefore sediment sampling was not 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 Figure 3 in Appendix A.

3.4.1 Buildings and Structures

The Phase Two property is rectangular in shape with am area of approximately 1.22 hectares and is currently occupied by one (1) residential structure, one workshop / office building and a Quonset Hut associated with the on-Site well drilling company (Air Rock Drilling Company Ltd.).

3.4.2 Water Bodies and Groundwater Flow Direction

The local groundwater flow direction is unknown, although based on regional topography, groundwater flow is anticipated to be southeast toward the Jock River, approximately 2.3 km south.

3.4.3 Areas of Natural Significance

There are no ANSI within the Phase Two study area.

3.4.4 Water Wells

Fifteen well records were identified within the Phase One study area, including 6 records for monitoring wells on the Phase One property. Three of the remaining well records were for monitoring wells and/or monitoring well abandonment, and six were for domestic water supply wells. Well records indicate surficial soil consists of sand and sandy clay. Limestone bedrock was present approximately 1.0 to 9.0 metres below ground surface.

3.4.5 Potentially Contaminating Activity

The following on-site PCA were identified:

- PCA #10 – Commercial autobody shops
  - On-site repair garage – active repair garage
- PCA #28 – Gasoline and associated products storage in fixed tanks
  - 2 AST in east part of Phase One property
  - 4 AST in west part of Phase One property

3.4.6 Areas of Potential Environmental Concern

The APEC identified are summarized in Table 3.1.

Table 3.1: 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	Workshop shop sump discharge (sump discharges to ground just outside workshop building, south side)	PCA #10 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	Benzene, toluene, ethylbenzene, xylene (BTEX), and petroleum hydrocarbons (PHC), metals	Soil and groundwater
APEC #2	Above ground storage tanks for furnace oil and fuel	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX and PHC	Soil and groundwater

3.4.7 Underground Utilities

Utilities, including underground hydro, natural gas are present on the Phase Two property. There is a private water well and septic system at the Phase Two property.

3.4.8 Subsurface Stratigraphy

Bedrock in the general area of the Phase One property consists of limestone and shale of the Simcoe Group. Native surficial soil consists of sand and silt glacial till. Based on local mapping, beneath any fill, the surficial geology of The Phase One property is characterised by sand, gravel, silt and clay. The bedrock geology underlying the subject Site consists of Ottawa Formation, limestone, dolostone, and shale. The local MECP water well records and geotechnical boreholes indicate local geology is sand over limestone bedrock. Bedrock is anticipated approximately 1.0 to 9 metres below ground surface. The general topography of the Phase One property and study area slopes down to the southeast towards Jock River..

3.4.9 Uncertainty Analysis

The CSM is a simplification of reality, which aims to provide a description and assessment of any areas where potentially contaminating activity that occurred within the Phase Two study area may have adversely affected the Phase Two property. All information collected during this investigation, including records, interviews, and site reconnaissance, has contributed to the formulation of the CSM.

Information was assessed for consistency, however EXP has confirmed neither the completeness nor the accuracy of any of the records that were obtained or of any of the statements made by others. All reasonable inquiries to obtain accessible information were made, as required by Schedule D, Table 1, Mandatory Requirements for Phase Two Environmental Site Assessment Reports. The CSM reflects our best interpretation of the information that was available during this investigation.

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 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 impediments were encountered during this investigation.

4.0 Investigation Method

4.1 General

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

4.2 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.

4.3 Groundwater: Sampling

All groundwater samples were collected via a low flow sampling technique using a Horiba U-52 multi probe water quality meter. The Horiba 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 to ensure that the samples collected were representative of actual groundwater conditions. 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.

The groundwater sampling during the completion of this Phase Two ESA was undertaken in general accordance with the SAAP presented in Appendix C. The groundwater samples were placed in clean coolers containing ice packs prior to and during transportation to the laboratory. The samples were transported to the laboratory within 24 hours of collection with a chain of custody.

On July 11, 2023, groundwater samples were collected from the three monitoring wells (MW-1, MW-2, and MW-3) using the low flow sampling method described above.

Three groundwater samples, a field blank, a field duplicate, and a trip blank were submitted for chemical analysis of PHC, and BTEX parameters.

On July 14, 2023, a second groundwater sample was collected from MW-3 using the low flow sampling method described above and the sample was submitted for laboratory analysis of BTEX and PHC.

4.4 Sediment: Sampling

There are no waterbodies present on the Phase Two property, therefore sediment sampling was not required.

4.5 Analytical Testing

The contracted laboratory selected to perform chemical analysis on all ground water samples was Bureau Veritas Laboratories (BVL). BVL is an accredited laboratory 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.

4.6 Residue Management

The drill cuttings from drilling activities and purged water from groundwater development and sampling were stored in on site drums until work was completed and were disposed of off site by a licenced contractor. Fluids from cleaning drilling equipment were disposed of by the driller at their facility.

4.7 Elevation Surveying

An elevation survey was conducted by EXP. The top of casing and ground surface elevation of each monitoring well location was surveyed relative to a geodetic reference. The Universal Transverse Mercator (UTM) coordinates of each monitoring well were also recorded so that their locations could be plotted accurately.

4.8 Quality Assurance and Quality Control Measures

All groundwater samples were placed in coolers containing ice packs prior to and during transportation to the contract laboratory, BVL. BVL is accredited to the ISO/IEC 17025:2005 standard - *General Requirements for the Competence of Testing and Calibration Laboratories*.

A 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:

- Collecting and analysing field duplicate samples to ensure analytical precision;
- 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.

BVL'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

A 0.15-0.6 m thick layer of gravel was found at the ground surface at TP1, TP2, TP3, TP4, TP5, TP6 and TP9. A 0.15 m thick surface layer of topsoil was found at TP7 and TP8. Below the topsoil a layer of sand was observed. No indications of petroleum impact were identified in the fill. Below any topsoil or gravel was a brown sand in all test pits. This extended to a depth of 0.3-1.8 m. Below the sand was a layer of grey silty clay. There were no visual or olfactory indications of petroleum impact to the native soil except for TP5 which was observed to have a slight petroleum odour within the grey silty clay layer.

A plan view showing cross-sections is provided as Figure 5 in Appendix A, while the Phase Two property geology is depicted in cross-sections on Figure 6 in Appendix A.

5.2 Groundwater: Elevations and Flow Direction

On July 11, 2023, the three existing monitoring wells (MW-1, MW-2, and MW-3) were inspected for general physical condition, groundwater depth, the presence of light non-aqueous phase liquid (LNAPL).

Overburden groundwater monitoring and elevation data are provided below.

Table 5.1: Monitoring and Elevation Data

Monitoring Well ID	Screen Location	Grade Elevation (masl)	Top of Casing Elevation (masl)	Screen Depth (mbgs)	Depth to LNAPL (mbgs)	Depth to Groundwater (mbTOC)	Groundwater Elevation (masl)
MW-1	Overburden	99.46	99.43	3.0 to 4.5	N/A	1.63	97.80
MW-2	Overburden	99.49	99.45	3.0 to 4.5	N/A	1.67	97.78
MW-3	Overburden	99.48	99.42	3.0 to 4.50	N/A	1.20	98.22

Notes: Elevations were measured to a geodetic datum
mbgs – metres below ground surface
masl – metres above sea level
mbTOC – metres below top of monitor casing
N/A – not applicable

Previous investigations on the Phase Two property and the greater property at 6659 Franktown Road, indicate that the groundwater flow direction was determined to be to the northeast. Based on groundwater levels measured on July 11, 2023, the groundwater flow direction was to the northeast, however MW1 and MW2 are relatively close together so the groundwater flow direction is definitely to the east but could be more towards the south. The groundwater contour plan is provided as Figure 4 in Appendix A.

Groundwater levels can also be influenced by seasonal changes, the presence of subsurface structures, or fill material.

5.3 Groundwater: Hydraulic Gradients

Horizontal hydraulic gradients were estimated for the groundwater flow components identified in the overburden aquifer based on the July 2023 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 0.007 m/m.

On August 2, 2023, a rising head test was conducted in one monitoring well (MW1). The rising head test requires that the static water level be measured in each monitoring well prior to the removal of groundwater. Groundwater is removed from the monitoring well using a pump. After the water level has been sufficiently lowered, an interface probe is lowered into the monitor as quickly as possible to measure the new water level. The time at which the new water level is measured is noted as time equal zero. Water level readings are subsequently taken at frequent intervals. Both the water levels and the time they were taken are recorded.

The frequency of the time measurement is determined by the rate the water level recovers to the static water level. Measurements are taken until at least 70% recovery has been achieved or, in cases where recovery is extremely slow, until it is deemed that a sufficient amount of time has elapsed. Using the Hvorslev model, the hydraulic conductivity for the monitoring well was calculated.

All water level measurements were made with a Heron oil/water interface probe. Both the probe and the measuring tape that come into contact with liquids within a monitor are cleaned with phosphate-free soap and tap water, rinsed with distilled water and then finally rinsed with methanol after each hydraulic conductivity test is concluded.

Table 5.3: Rising Head Tests

Monitoring Well ID/ Installation ID	Horizon	Screen Depth (mbgs)	Initial Static Water Level (mbToC)	Water Level after Purging (mbToC)	Recovery to Static after Elapsed time (s)	Hydraulic Conductivity (cm/s)
MW1	Overburden	3.0 to 4.5	1.27	4.05	780	1.4×10^{-4}

Notes: mbTOC – metres below top of monitor casing

The hydraulic conductivity calculated in MW1 was 1.4×10^{-4} cm/s. The data and the calculations for the hydraulic conductivity testing are provided in Appendix G.

5.4 Soil: Field Screening

The methodology for the collection of soil vapour concentration measurements is described in Section 4.4.

Petroleum vapours ranged from non-detectable to 40 ppm in samples collected from the boreholes. Field screening data is presented in the borehole logs in Appendix D.

5.5 Soil: Quality

In accordance with the scope of work, chemical analyses were performed on selected soil samples recovered from the boreholes and from the north wall of the utility trench excavation. The selection of representative "worst case" soil samples from each borehole was based on field visual or olfactory evidence of impacts and/or presence of potential water bearing zones.

In 2017, the concentrations of PHC and BTEX measured in the analysed soil samples were less than the MECP 2011 Table 2 SCS, except for PHC (F1 and F2) in the sample collected from TP5 (68 and 412 ug/g, respectively) at a depth of 1.8 m which exceeded the MOECC 2011 Table 2 SCS of 65 and 150 ug/g respectively. The concentrations of metals measured in the analysed soil samples were less than the MECP 2011 Table 2 SCS.

Based on the field observations and analytical results obtained, a zone of PHC impacted soil was found in the central western part of the Phase Two property directly to the south of the fuel tanks. The lateral extent of the petroleum impacted soil has

been delineated. Given the nature of the contaminant (PHC F1 and F2) and its location on the Phase Two property, the most likely source of this impact is from minor spills related to refueling practices associated with the gas and diesel ASTs.

The soil results are provided in Tables 1 and 2 in Appendix E. They are shown in plan view on Figures 7 and 8 and on cross-sections on Figures 9 and 10 in Appendix A.

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

5.6 Groundwater: Quality

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.

There were no exceedances of the MECP Table 2 SCS for any of the parameters analyzed in the groundwater samples from the monitoring wells (MW-1 to MW-3), with the exception of PHC F3 and F4 in the sample collected from MW3. The elevated PHC concentrations were due to sediment in the groundwater sample. A second groundwater sample taken from MW3 on July 14, 2023 and PHC was not detected in the sample and the concentrations therefore did not exceed the Table 2 SCS.

The analytical results are included in Table 3 in Appendix E and are shown in plan view on Figure 11 and on the cross-section on Figure 12 in Appendix A.

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

5.6.1 Chemical Transformation and Contaminant Sources

A variety of physical, chemical and biochemical mechanisms affect the fate and transport of the potential COC in soil and groundwater, the contribution of which is dependent on the soil and groundwater conditions at the Phase Two property, as well as the chemical/physical properties of the COC. 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.

No groundwater exceedances were identified on the Phase Two property.

Cross-sections that depict the geological, hydrogeological, and groundwater chemical data for the Phase Two property are provided as Figures 9, 10 and 12 in Appendix A.

5.6.2 Evidence of Non-Aqueous Phase Liquid

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

5.6.3 Maximum Concentrations

Contaminants that exceeded the applicable Table 3 residential standards included:

Soil: Petroleum hydrocarbons

Groundwater: None.

Maximum groundwater concentrations are provided in Tables 5 and 6 in Appendix E.

5.7 Sediment: Quality

There are no water bodies on the Phase Two property, therefore sediment sampling was not required.

5.8 Quality Assurance and Quality Control Results

Quality assurance and quality control measures were taken during the field activities to meet the objectives of the sampling and quality assurance plan to collect unbiased and representative samples to characterize existing conditions in the fill materials and groundwater at the site. QA/QC measures, included:

- Collection and analysis of blind duplicate soil and groundwater samples to ensure sample collection precision;
- Analysis of a groundwater field blank for all parameters that were analysed to assess potential impact during sampling;
- Using dedicated and/or disposable sampling equipment;
- Following proper decontamination protocols to minimize cross-contamination;
- Maintaining field notes and completing field forms to document on-site activities; and
- Using only laboratory supplied sample containers and following prescribed sample protocols, including proper preservation, meeting sample hold times, proper chain of custody documentation, to ensure integrity of the samples.

Bureau Veritas' QA/QC program 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 Caduceon. 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 within acceptable control limits or below applicable alert criteria for the sampled media and analytical test groups.

For QA/QC purposes, the analytical sample results are quantitatively evaluated by calculating the relative percent difference (RPD) between the samples and their duplicates. To accurately calculate a statistically valid RPD, the concentration of the analytes found in both the original and duplicate sample must be greater than five times the reporting detection limit (RDL).

The results of the RPD calculations are provided in Appendix E in Table4. All of the RPD for groundwater were either not calculable or within the applicable alert limits.

Field blanks and trip blanks were prepared and submitted for laboratory analysis of BTEX and PHC. The results of the trip blank and field blank analyses are provided in Table 3 in Appendix E. The trip blank and field blank were below the detection limits for all parameters analysed.

5.9 Phase Two Conceptual Site Model

A Conceptual Site Model (CSM) provides 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.

5.9.1 Introduction

EXP Services Inc. (EXP) was retained by Air-Rock Drilling Ltd. to conduct a Phase Two Environmental Site Assessment (ESA) at 6659 Franktown Road in Ottawa, Ontario (hereinafter referred to as the 'Phase Two property'). At the time of the investigation, the Phase Two property was occupied one (1) residential structure, one workshop / office building and a Quonset Hut associated with the on-Site well drilling company (Air Rock Drilling Company Ltd.).

The objective of the Phase Two ESA investigation was to assess the quality of the groundwater conditions within the areas of potential environmental concern (APEC) identified in a Phase One ESA prepared by EXP. EXP understands that this report is being conducted in support of a zoning amendment.

5.9.2 Physical Site Description

The Phase Two property is located on the north side of Franktown Road, as shown on Figure 1 in Appendix A. The Phase Two property is rectangular in shape and has an area of approximately 1.22 hectares. The approximate centroid coordinates are NAD83 18T 432048 m E and 5003159 m N.

At the time of the investigation, the Phase Two property was occupied by one (1) residential structure, one workshop / office building and a Quonset Hut associated with the on-Site well drilling company (Air Rock Drilling Company Ltd.)

The municipal address of the Phase Two property is 6659 Franktown Road, Ottawa, Ontario. The Phase Two property is legally described as CON 4 E PT LOT 19 RP;4R-14477 PART 2. The property identification number (PIN) is 044390239. Based on topography, the groundwater flow is anticipated to be to the southeast towards the Jock River, approximately 2.3 km south.

Refer to Table 5.4 for the Site identification information.

Table 5.4: Site Identification Details

Civic Address	6659 Franktown Road, Ottawa, Ontario
Current Land Use	Commercial
Proposed Future Land Use	Commercial
Property Identification Number	044390239
UTM Coordinates	Zone 18, 432048 m E and 5003159 m N
Site Area	1.22 hectares
Property Owner	Air-Rock Drilling

The Phase One Conceptual Site Model is provided as Figure 3.

The Phase Two property and all other properties located, in whole or in part, within 250 metres of the boundaries of the Phase Two property, are supplied by domestic water wells. Further, the Phase Two property is not located in an area designated in the municipal official plan as a well-head protection area. 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.

The Phase Two property is not a shallow soil property as defined in Section 43.1 of the regulation. It does not include all or part of a water body or is adjacent to a water body or includes land that is within 30 metres of a water body.

5.9.3 Geological and Hydrogeological

Bedrock in the general area of the Phase Two property consists of limestone of the Ottawa Formation. The bedrock elevation is approximately 96 metres above sea level (masl). The overburden at the Phase Two property, beneath any fill, material consists of clay and silty underlying erosional terraces.

The groundwater flow direction is anticipated to be southeast, towards the Jock River. Based on groundwater levels measured on July 11, 2023, the groundwater flow direction was to the northeast, however MW1 and MW2 are relatively close together so the groundwater flow direction is definitely to the east but could be more towards the south. Groundwater levels can also be influenced by seasonal changes, the presence of subsurface structures, or fill, however based on the based on the depth of the water table, it is unlikely that any of these factors will affect the groundwater flow direction at the Phase Two property.

The hydraulic conductivity in monitoring well MW1 was 1.4 x 10^{-4} cm/s.

A plan view showing cross-sections is provided as Figure 6, while the Phase Two property geology is depicted in cross-sections on Figure 7.

A summary of factors that apply to the Phase Two property is provided in Table 5.5.

Table 5.5: Site Characteristics

Characteristic	Description
Minimum Depth to Bedrock	Not encountered during drilling
Minimum Depth to Groundwater	1.20 masl (July 11, 2023)
Shallow Soil Property	No, bedrock is deeper than 2.0 mbgs
Proximity to water body or ANSI	Approximately 2.3 km south – Jock River
Soil Texture	Fine
Current Property Use	Commercial
Future Property Use	Commercial
Proposed Future Building	Same

5.9.4 Utilities and Impediments

Utilities, including underground hydro, and natural gas are present on the Phase Two property. No other utilities are present in the vicinity of the contaminant plume, and therefore the presence of utilities is not expected to affect possible migration of contaminants.

5.9.5 Potentially Contaminating Activities

The following on-site PCA were identified:

- PCA #10 – Commercial autobody shops
    - On-site repair garage – active repair garage
- PCA #28 – Gasoline and associated products storage in fixed tanks
    - 2 AST in east part of Phase One property
    - 4 AST in west part of Phase One property

No off-site PCA were identified.

5.9.6 Areas of Potential Environmental Concern/Potential Contaminates 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 2 and Table 5.6 below:

Table 5.6: 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	Workshop shop sump discharge (sump discharges to ground just outside workshop building, south side)	PCA #10 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	Benzene, toluene, ethylbenzene, xylene (BTEX), and petroleum hydrocarbons (PHC), metals	Soil and groundwater
APEC #2	Above ground storage tanks for furnace oil and fuel	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX and PHC	Soil and groundwater

5.9.7 Investigation

In 2017, the site investigative activities consisted of excavating test pits and installing monitoring wells to facilitate the collection of groundwater samples. On July 11, 2023, EXP collected groundwater samples from the three monitoring wells.

5.9.8 Groundwater Sampling

Three groundwater samples, one field duplicate, one field blank, and one trip blank were submitted for chemical analysis of PHC and BTEX parameters on July 11, 2023. There were no exceedances of the MECP Table 2 SCS for any of the parameters analyzed in the groundwater samples from the monitoring wells (MW-1 to MW-3), with the exception of PHC F3 and F4 in the sample collected from MW3. The elevated PHC concentrations were due to sediment in the groundwater sample. A second groundwater sample taken from MW3 on July 14, 2023 and PHC was not detected in the sample and the concentrations therefore did not exceed the Table 2 SCS.

Analytical results are included in Table 3 in Appendix E and are shown in plan view on Figure 14 and on cross-sections on Figure 15 in Appendix A.

5.9.9 Contaminants of Concern

Contaminants that exceeded the Table 2 SCS included:

Soil: petroleum hydrocarbons

Groundwater: none

5.9.10 Contaminant Fate and Transport

A variety of physical, chemical and biochemical mechanisms affect the fate and transport of the potential COC in soil and groundwater, the contribution of which is dependent on the soil and groundwater conditions at the Phase Two property, as

well as the chemical/physical properties of the COC. 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.

No groundwater exceedances were identified on the Phase Two property.

Cross-sections that depict the geological, hydrogeological, and groundwater chemical data for the Phase Two property are provided as Figures 6, 9, 10, and 12 in Appendix A.

6.0 Conclusion

The current site investigative activities consisted of collecting groundwater samples from the three on-site monitoring wells. Three groundwater samples, one field duplicate, one field blank, and one trip blank were submitted for chemical analysis of BTEX and PHC were taken July 11, 2023. There were no exceedances of the MECP Table 2 SCS for any of the parameters analyzed in the groundwater samples from the monitoring wells (MW-1 to MW-3), with the exception of PHC F3 and F4 in the sample collected from MW3. The elevated PHC concentrations were due to sediment in the groundwater sample. A second groundwater sample taken from MW3 on July 14, 2023 and PHC was not detected in the sample and the concentrations therefore did not exceed the Table 2 SCS.

A variety of physical, chemical and biochemical mechanisms affect the fate and transport of the potential COC in soil and groundwater, the contribution of which is dependent on the soil and groundwater conditions at the Phase Two property, as well as the chemical/physical properties of the COC. 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.

No groundwater exceedances were identified on the Phase Two property.

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. No further environmental investigations are deemed to be warranted.

Mackenzie Russell, M.Sc.,
Environmental Technician
Earth and Environment

Mark McCalla, B.Sc., P.Geo.
Team Lead/Senior Project Manager
Earth and Environment

PROFESSIONAL GEOSCIENTIST
MARK G. McCALLA
PRACTISING MEMBER
0451
Aug 11/23
ONTARIO

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.

- EXP Services Inc., *Phase One Environmental Site Assessment, 6659 Franktown Road, Ottawa, Ontario,* August 9, 2023.
- Freeze and Cherry, *Groundwater*, Prentice Hall, 1979.
- Ontario Ministry of the Environment, Conservation and Parks, *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*, December 1996.
- Ontario Ministry of the Environment, Conservation and Parks, *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, April 15, 2011.
- Ontario Ministry of the Environment, Conservation and Parks, *Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04,* June 2011.
- Ontario Ministry of the Environment, Conservation and Parks, *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act,* July 1, 2011.
- Ontario Ministry of the Environment, Conservation and Parks, *Management of Excess Soil – A Guide for Best Management Practices,* January 2014.
- Ontario Regulation 153/04, made under the *Environmental Protection Act*, as amended.
- Ontario R.R.O. 1990, Regulation 347, made under the *Environmental Protection Act*, as amended.
- Ontario R.R.O. 1990, Regulation 903, made under the *Water Resources Act*, as amended.

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 780 Baseline Inc. ("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.

Use of Report

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. No other party may use or rely upon the Report in whole or in part without the written consent of EXP. Any use of the Report, or any portion of the Report, by a third party are the sole responsibility of such third party. EXP is not responsible for damages suffered by any third party resulting from unauthorised use of the Report.

Report Format

Where EXP has submitted both electronic file and a hard copy of the Report, or any document forming part of the Report, only the signed and sealed hard copy shall be the original documents for record and working purposes. In the event of a dispute or discrepancy, the hard copy shall govern. Electronic files transmitted by EXP utilize specific software and hardware systems. EXP makes no representation about the compatibility of these files with the Client's current or future software and hardware systems. Regardless of format, the documents described herein are EXP's instruments of professional service and shall not be altered without the written consent of EXP.

Appendix A: Figures

0 150m 300m 600m

HORIZONTAL 1:15,000

EXP Services Inc. www.exp.com
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2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

DATE: AUGUST 2023	PROJECT: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT		project no. OTT-00243705-B0
DESIGN: MM / CHECKED: CK	ADDRESS: 6659 FRANKTOWN ROAD, OTTAWA, ONTARIO		scale 1:15,000
DRAWN BY: AS	TITLE: SITE LOCATION PLAN		FIG 1

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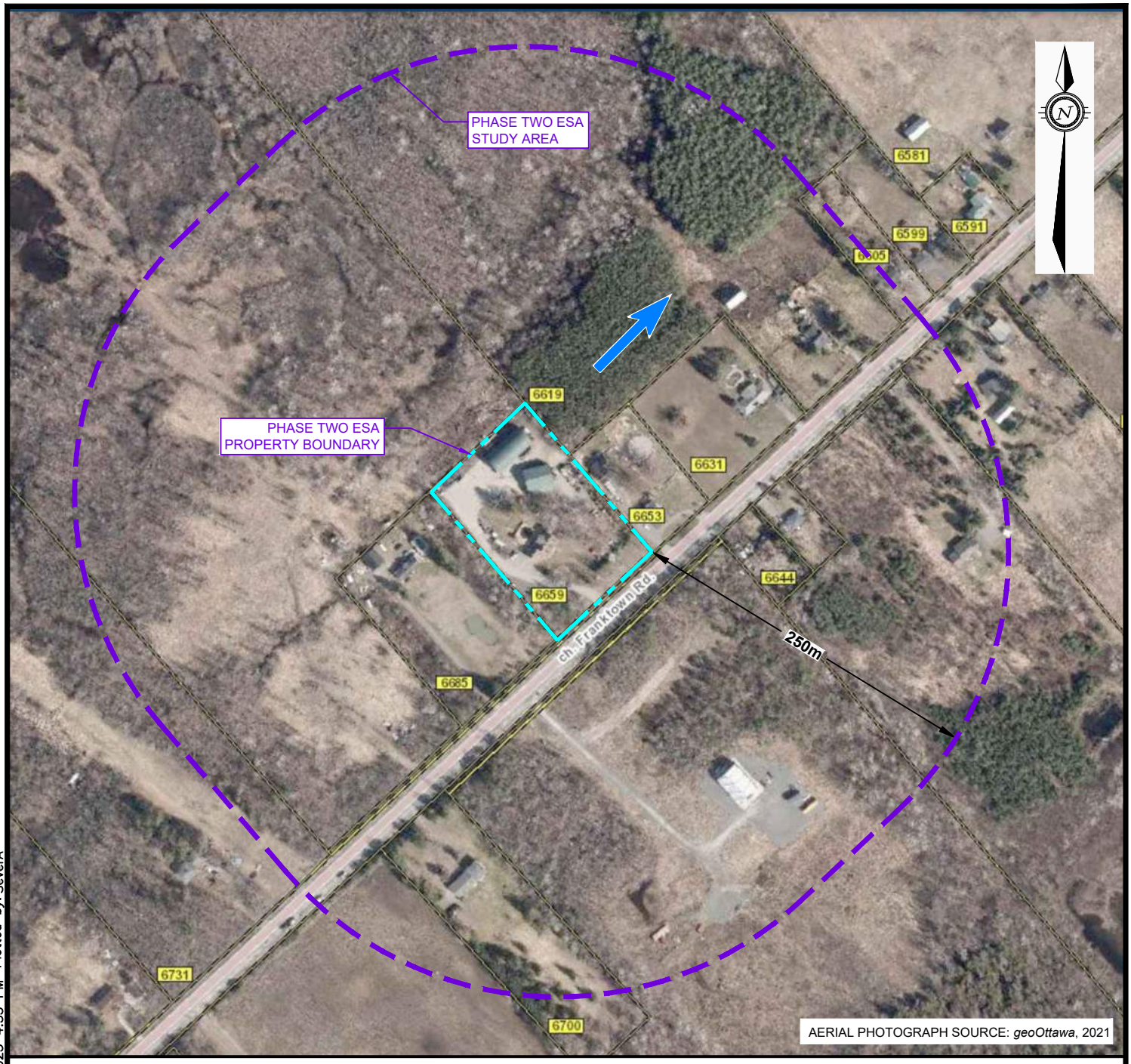

LEGEND

- PROPERTY BOUNDARY
- PHASE TWO ESA STUDY AREA (250 m)
- INFERRED GROUNDWATER FLOW DIRECTION
- 1 POTENTIALLY CONTAMINATING ACTIVITY (PCA) RESULTING IN APECS
- 2 POTENTIALLY CONTAMINATING ACTIVITY (PCA) NOT RESULTING IN APECS

0 40m 80m 160m

HORIZONTAL 1:4,000

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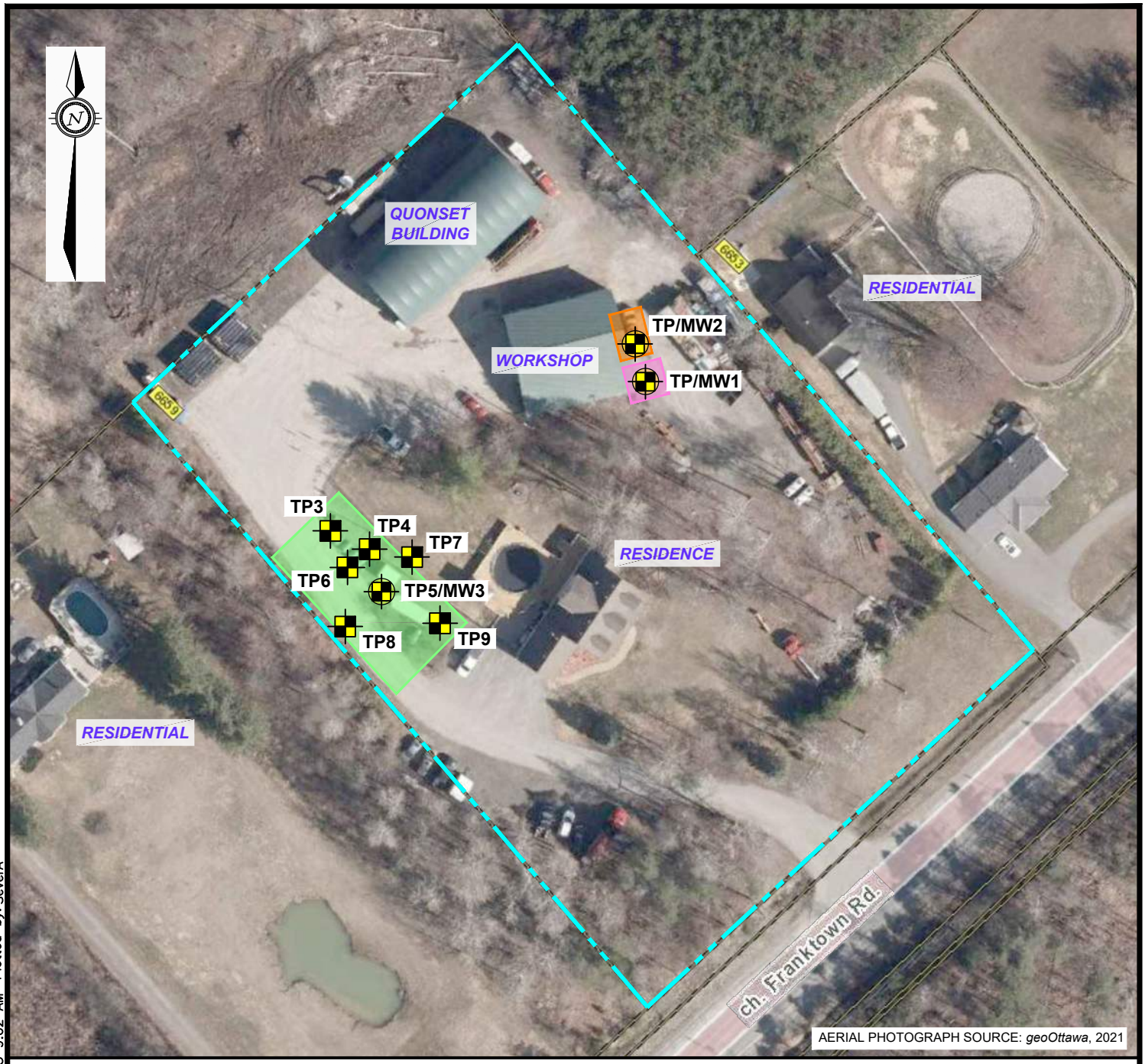

LEGEND

- PROPERTY BOUNDARY
- AREA OF POTENTIAL ENVIRONMENTAL CONCERN 1 (APEC-1) - SUMP PIT DISCHARGE
- AREA OF POTENTIAL ENVIRONMENTAL CONCERN 2 (APEC-2) - TWO (2) ASTs*
- AREA OF POTENTIAL ENVIRONMENTAL CONCERN 3 (APEC-3) - FOUR (4) ASTs

TP3 — TEST PIT NO. AND LOCATION (*EXP*, 2017)

TP/MW1 — TEST PIT & MONITORING WELL NO. AND LOCATION (*EXP*, 2017)

***AST** = ABOVEGROUND STORAGE TANK

0 10m 20m 40m

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DRAWN BY: AS	TITLE: TEST HOLE LOCATION PLAN	FIG 3

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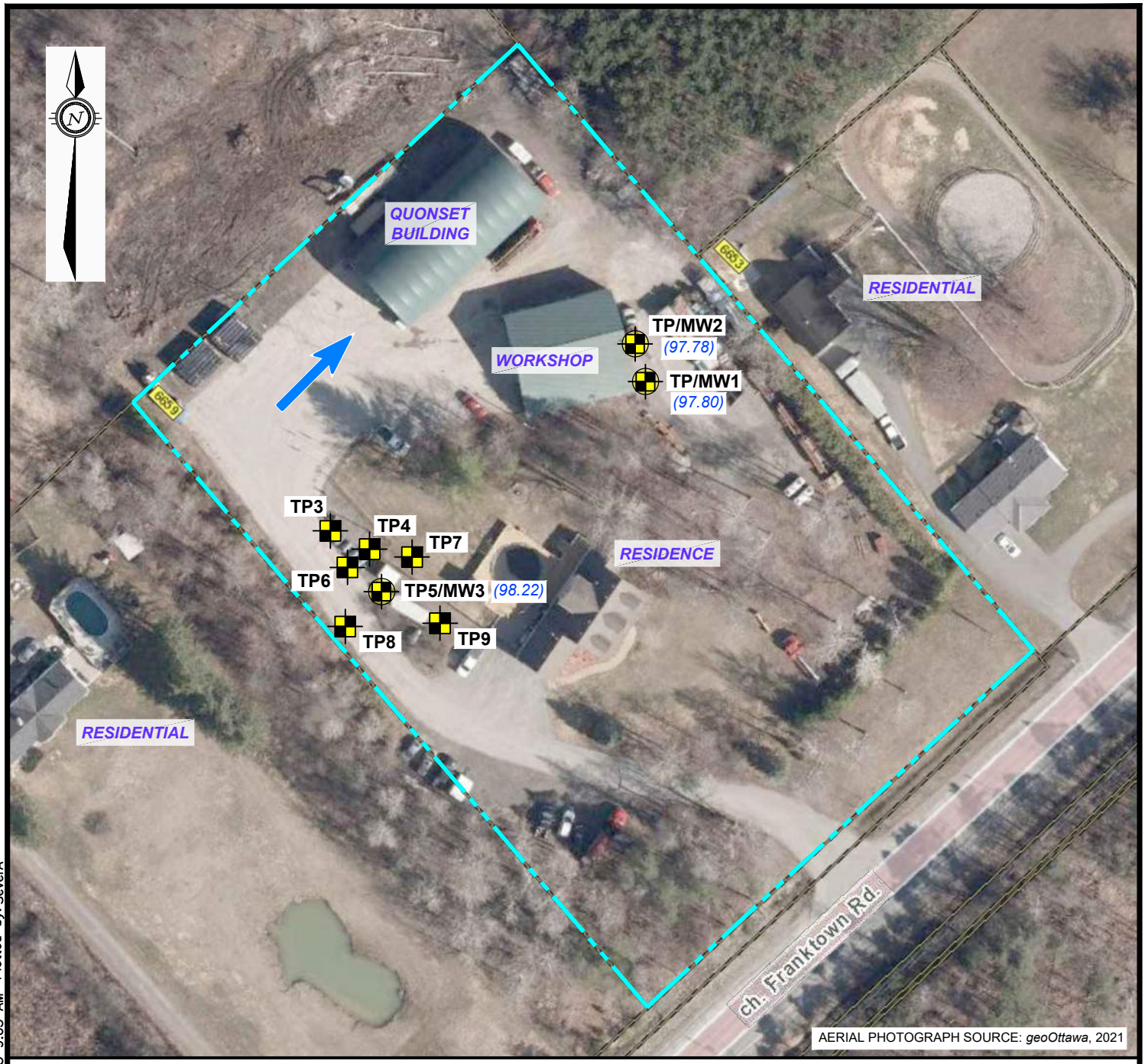

LEGEND

PROPERTY BOUNDARY

INFERRED GROUNDWATER FLOW DIRECTION

(97.80) GROUNDWATER LEVEL ELEVATION (JULY 11, 2023)

TP3 TEST PIT NO. AND LOCATION (*EXP*, 2017)

TP/MW1 TEST PIT & MONITORING WELL NO. AND LOCATION (*EXP*, 2017)

0 10m 20m 40m

HORIZONTAL 1:1000

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DRAWN BY: AS	TITLE: GROUNDWATER CONTOUR PLAN - OVERBURDEN 2023	FIG 4

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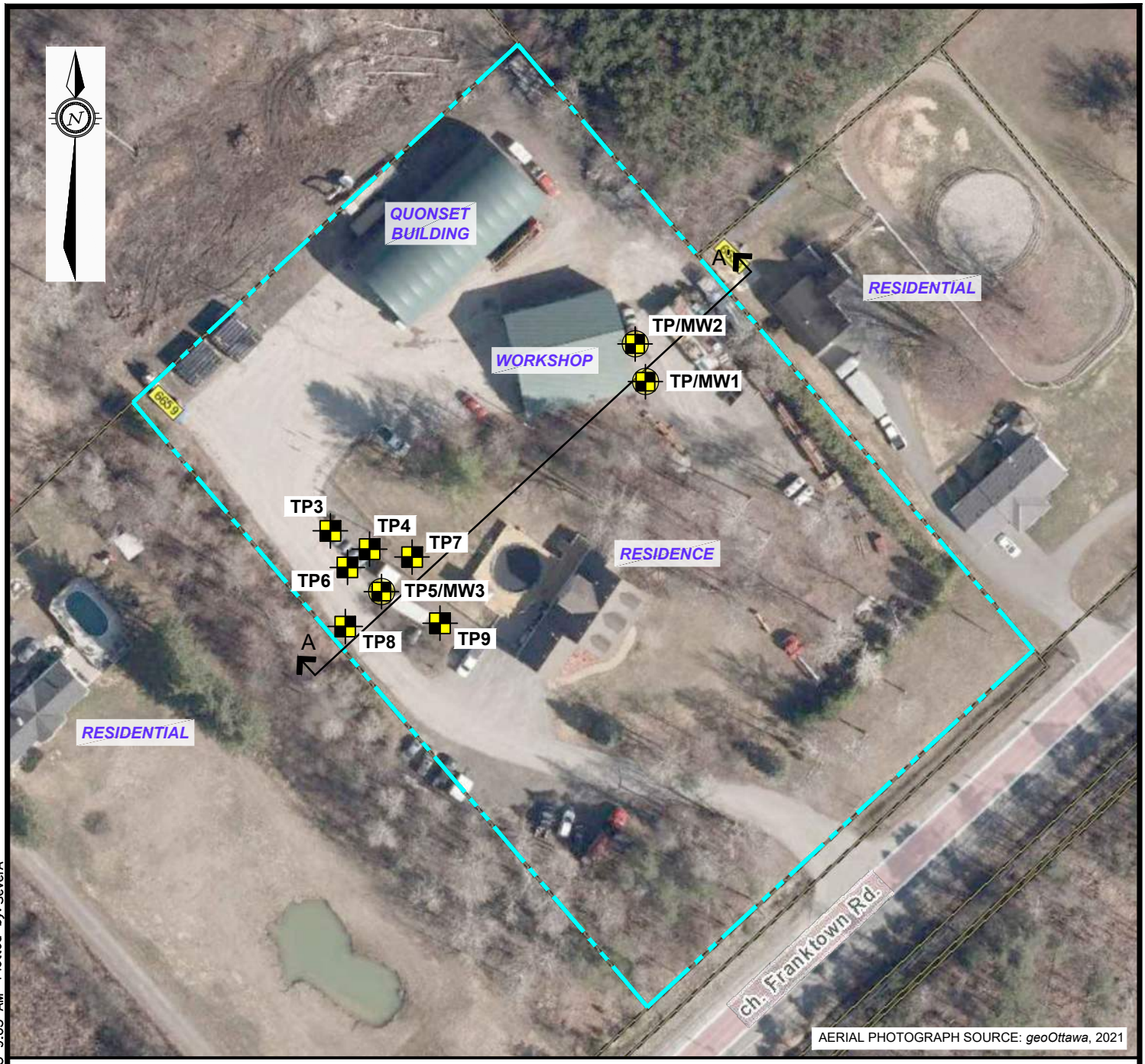

LEGEND

PROPERTY BOUNDARY

A — CROSS SECTION MARK

TP3 — TEST PIT NO. AND LOCATION (*EXP*, 2017)

TP/MW1 — TEST PIT & MONITORING WELL NO. AND LOCATION (*EXP*, 2017)

0 10m 20m 40m

HORIZONTAL 1:1000

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DESIGN: MM / CHECKED: CK	ADDRESS: 6659 FRANKTOWN ROAD, OTTAWA, ONTARIO	scale 1:1,000
DRAWN BY: AS	TITLE: CROSS SECTION PLAN	FIG 5

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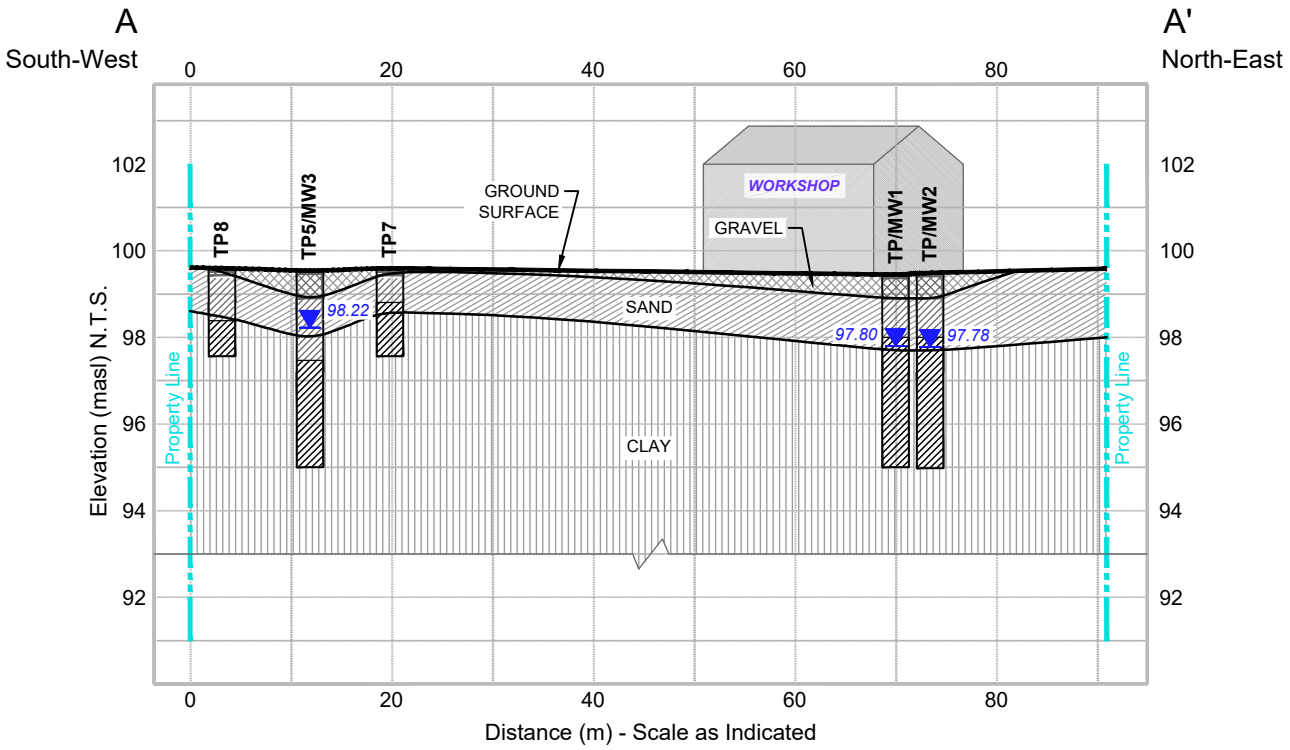

CROSS SECTION A-A'

LEGEND

- FILL - GRAVEL
- SAND (DRY TO MOIST)
- CLAY (BROWN)
- 97.80 WATER LEVEL DATE: JULY 11, 2023

0 5m 10m 30m

HORIZONTAL 1:750

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DESIGN: MM / CHECKED: CK	ADDRESS: 6659 FRANKTOWN ROAD, OTTAWA, ONTARIO	scale 1:750
DRAWN BY: AS	TITLE: CROSS SECTION A-A'	FIG 6

TP1A	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	0.9	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6

TP2B	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	2.1	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6

TP3A	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	0.9	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6

TP3B	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	1.8	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6

TP5B	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	1.8	<0.02	<0.02	<0.02	<0.05	68	412	202	<6

TP6A	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	0.9	<0.02	<0.02	<0.02	<0.04	<7	<4	<8	<6

TP7B	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	2	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6

TP8B	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	2.1	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6

TP9B	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	2.3	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Benzene	B	0.21
Toluene	T	2.3
Ethylbenzene	E	1.1
Total Xylenes	X	3.1
F1	F1 (C6-C10)	55
F2	F2 (C10-C16)	98
F3	F3 (C16-C34)	300
F4	F4 (C34-C50)	2800

LEGEND

PROPERTY BOUNDARY

CONCENTRATION EXCEEDS MECP TABLE 2 SCS

CONCENTRATION IS LESS THAN MECP TABLE 2 SCS

TP3 TEST PIT NO. AND LOCATION (*EXP*, 2017)

TP/MW1 TEST PIT & MONITORING WELL NO. AND LOCATION (*EXP*, 2017)

0 10m 20m 40m

HORIZONTAL 1:1000

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Ottawa, ON K2B 8H6, Canada

DATE	PROJECT:	project no.
AUGUST 2023	PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	OTT-00243705-B0
DESIGN: MM / CHECKED: CK	ADDRESS: 6659 FRANKTOWN ROAD, OTTAWA, ONTARIO	scale: 1:1,000
DRAWN BY: AS	TITLE: SOIL ANALYTICAL RESULTS – PHC & BTEX	FIG 7

Filename: P:\Projects\Environmental\240000s\243000\243705-B0 PhOne&TwoESA 6659 Franktown Rd\Phase Two ESA\Drawings\OTT-00243705-B0_Ph-2.dwg
Last Saved: Aug 11, 2023 9:03 AM Last Plotted: Aug 11, 2023 9:06 AM Plotted by: SeverA

TP1A	Depth (mbgs)	22-Jul-22																	
		Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
	0.9	<1.0	<1.0	23.0	<1.0	1.9	<0.5	6.2	1.9	2.2	3.8	<1.0	3.3	<1.0	<0.5	<1.0	1.6	14.7	9.3

TP2B	Depth (mbgs)	22-Jul-22																	
		Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
	2.1	<1.0	<1.0	30.2	<1.0	2.0	<0.5	10.8	4.0	10.3	3.1	<1.0	6.1	<1.0	<0.5	<1.0	<1.0	24.9	17.1

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Antimony	Sb	7.5
Arsenic	As	18
Barium	Ba	390
Beryllium	Be	4
Boron	B	120
Cadmium	Cd	1.2
Chromium	Cr	160
Cobalt	Co	22
Copper	Cu	140
Lead	Pb	120
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
- CONCENTRATION EXCEEDS MECP TABLE 2 SCS
- CONCENTRATION IS LESS THAN MECP TABLE 2 SCS
- TP3 — TEST PIT NO. AND LOCATION (*EXP*, 2017)
- TP/MW1 — TEST PIT & MONITORING WELL NO. AND LOCATION (*EXP*, 2017)

0 10m 20m 40m
HORIZONTAL 1:1000

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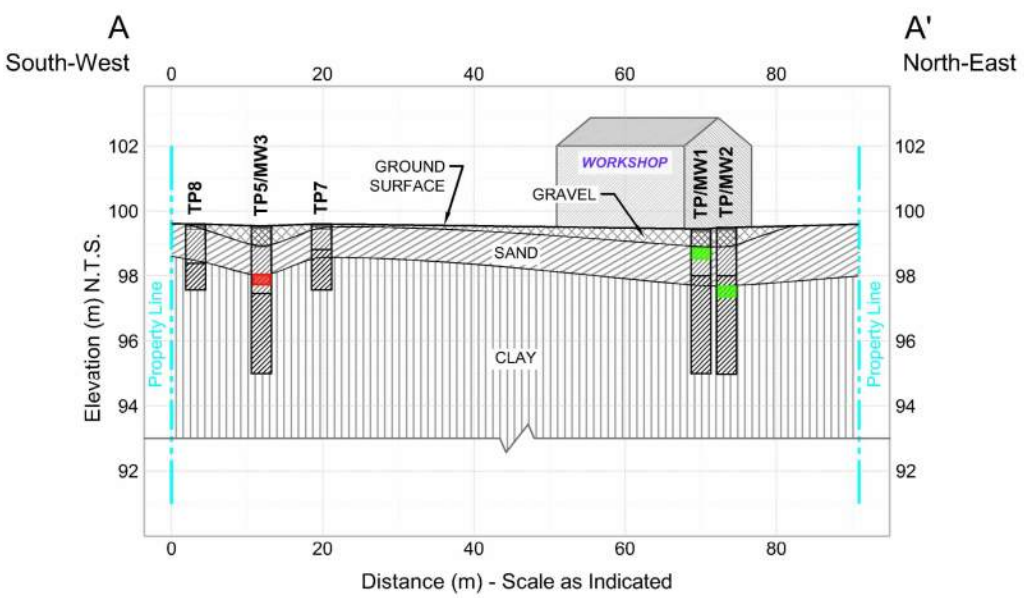
Ottawa, ON K2B 8H6, Canada

DATE	PROJECT:	project no.
AUGUST 2023	PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	OTT-00243705-B0
DESIGN: MM / CHECKED: CK	ADDRESS: 6659 FRANKTOWN ROAD, OTTAWA, ONTARIO	scale: 1:1,000
DRAWN BY: AS	TITLE: SOIL ANALYTICAL RESULTS – INORGANICS	FIG 8

Filename: P:\Projects\Environmental\240000s\243000\243705-B0 PhOne&TwoESA 6659 Franktown Rd\Phase Two ESA\Drawings\OTT-00243705-B0_Ph-2.dwg
Last Saved: Aug 11, 2023 9:03 AM Last Plotted: Aug 11, 2023 9:07 AM Plotted by: SeverA



CROSS SECTION A-A'

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Benzene	B	0.21
Toluene	T	2.3
Ethylbenzene	E	1.1
Total Xylenes	X	3.1
F1	F1 (C6-C10)	55
F2	F2 (C10-C16)	98
F3	F3 (C16-C34)	300
F4	F4 (C34-C50)	2800

LEGEND

- FILL - GRAVEL
- SAND (DRY TO MOIST)
- CLAY (BROWN)
- CONCENTRATION EXCEEDS MECP TABLE 2 SCS
- CONCENTRATION IS LESS THAN MECP TABLE 2 SCS

TP1A	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	0.9	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6
TP2B	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	2.1	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6
TP3A	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	0.9	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6
TP3B	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	1.8	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6
TP5B	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	1.8	<0.02	<0.02	<0.02	<0.05	68	412	202	<6
TP6A	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	0.9	<0.02	<0.02	<0.02	<0.04	<7	<4	<8	<6
TP7B	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	2	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6
TP8B	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	2.1	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6
TP9B	Depth (mbgs)	14-Nov-17							
		B	T	E	X	F1	F2	F3	F4
	2.3	<0.02	<0.02	<0.02	<0.05	<7	<4	<8	<6

0 10m 20m 40m

HORIZONTAL 1:1000

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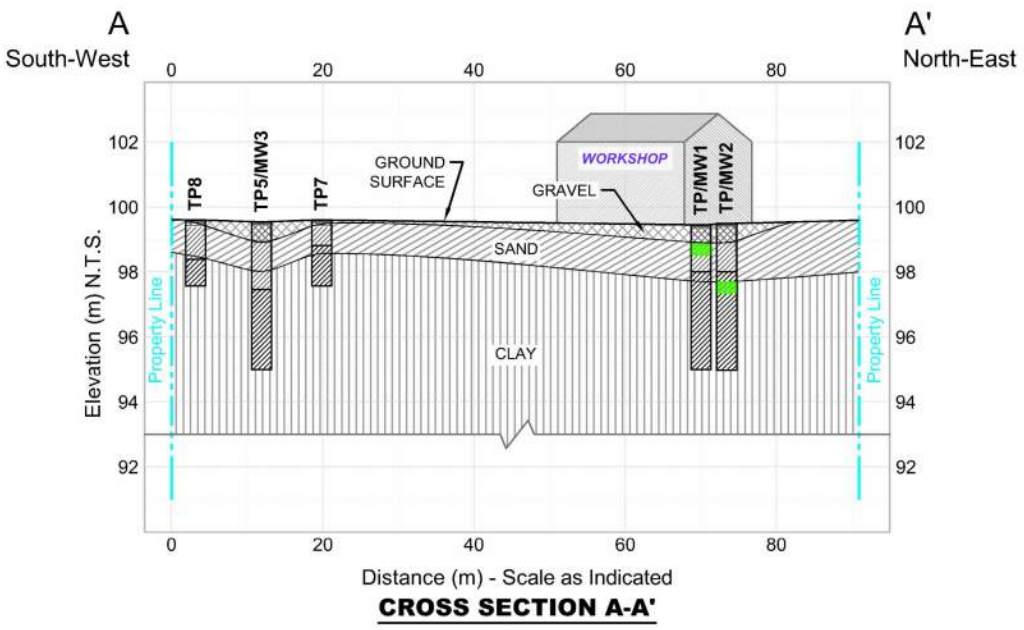
DESIGN: MM / CHECKED: CK	ADDRESS: 6659 FRANKTOWN ROAD, OTTAWA, ONTARIO	scale 1:1000
DRAWN BY: AS	TITLE: SOIL CROSS SECTION A-A' – PHC & BTEX	FIG 9



CROSS SECTION A-A'

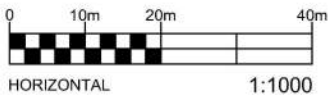
LEGEND

- FILL - GRAVEL
- SAND (DRY TO MOIST)
- CLAY (BROWN)
- CONCENTRATION EXCEEDS MECP TABLE 2 SCS
- CONCENTRATION IS LESS THAN MECP TABLE 2 SCS

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Antimony	Sb	7.5
Arsenic	As	18
Barium	Ba	390
Beryllium	Be	4
Boron	B	120
Cadmium	Cd	1.2
Chromium	Cr	160
Cobalt	Co	22
Copper	Cu	140
Lead	Pb	120
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

TP1A	Depth (mbgs)	22-Jul-22																	
		Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
	0.9	<1.0	<1.0	23.0	<1.0	1.9	<0.5	6.2	1.9	2.2	3.8	<1.0	3.3	<1.0	<0.5	<1.0	1.6	14.7	9.3

TP2B	Depth (mbgs)	22-Jul-22																	
		Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
	2.1	<1.0	<1.0	30.2	<1.0	2.0	<0.5	10.8	4.0	10.3	3.1	<1.0	6.1	<1.0	<0.5	<1.0	<1.0	24.9	17.1



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DATE: AUGUST 2023	PROJECT: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	project no. OTT-00243705-B0
DESIGN: MM / CHECKED: CK	ADDRESS: 6659 FRANKTOWN ROAD, OTTAWA, ONTARIO	scale 1:1000
DRAWN BY: AS	TITLE: SOIL CROSS SECTION A-A' – INORGANICS	FIG 10

MW1	Screen Interval 3.0 to 4.5 mbgs							
DATE	B	T	E	X	F1	F2	F3	F4
15-Nov-17	< 0.5	< 0.5	< 0.5	< 0.5	< 25	< 100	< 200	< 200
11-Jul-23	<0.2	<0.2	<0.2	<0.4	< 25	< 100	< 200	< 200

MW2	Screen Interval 3.0 to 4.5 mbgs							
DATE	B	T	E	X	F1	F2	F3	F4
15-Nov-17	< 0.5	< 0.5	< 0.5	< 0.5	< 25	< 100	< 200	< 200
11-Jul-23	<0.2	<0.2	<0.2	<0.4	< 25	< 100	< 200	< 200

MW3	Screen Interval 3.0 to 4.5 mbgs							
DATE	B	T	E	X	F1	F2	F3	F4
15-Nov-17	< 0.5	< 0.5	< 0.5	< 0.5	< 25	< 100	172	< 200
11-Jul-23	<0.2	<0.2	<0.2	<0.4	< 25	< 100	850	970
Duplicate	<0.2	<0.2	<0.2	<0.4	< 25	< 100	550	620
14-Jul-23	<0.2	<0.2	<0.2	<0.4	< 25	< 100	< 200	< 200

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Benzene	B	0.5
Toluene	T	24
Ethylbenzene	E	2.4
Total Xylenes	X	300
F1	F1 (C6-C10)	750
F2	F2 (C10-C16)	150
F3	F3 (C16-C34)	500
F4	F4 (C34-C50)	500

LEGEND

- PROPERTY BOUNDARY
- INFERRED GROUNDWATER FLOW DIRECTION
- (97.80) GROUNDWATER LEVEL ELEVATION (JULY 11, 2023)
- TP3 TEST PIT NO. AND LOCATION (*EXP*, 2017)
- TP/MW1 TEST PIT & MONITORING WELL NO. AND LOCATION (*EXP*, 2017)
- CONCENTRATION EXCEEDS MECP TABLE 2 SCS
- CONCENTRATION IS LESS THAN MECP TABLE 2 SCS

0 10m 20m 40m

HORIZONTAL 1:1000

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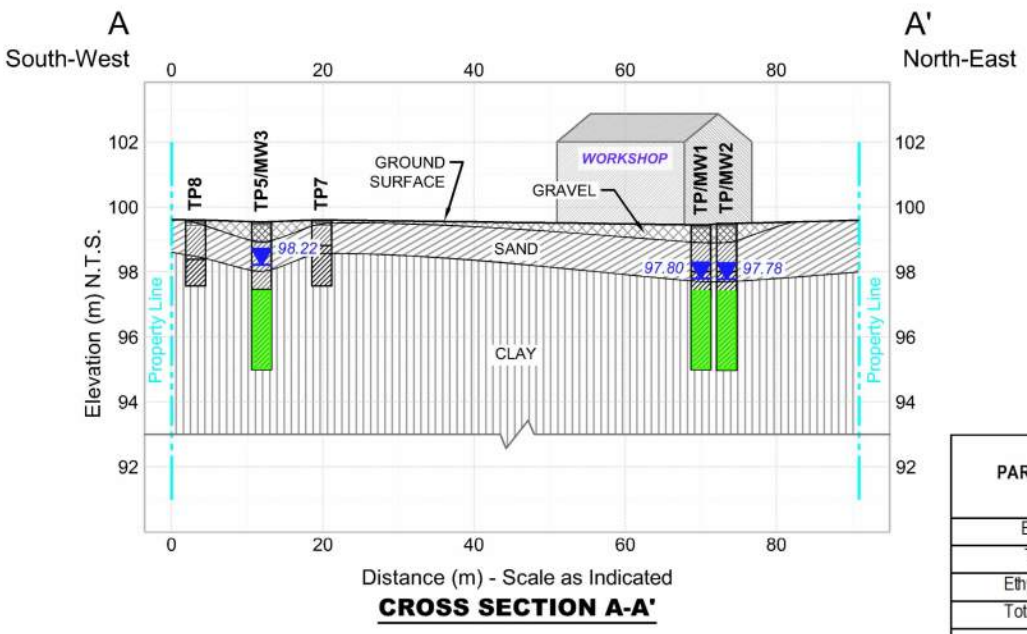
Ottawa, ON K2B 8H6, Canada

DATE: AUGUST 2023
DESIGN: MM | CHECKED: CK
DRAWN BY: AS

PROJECT: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
ADDRESS: 6659 FRANKTOWN ROAD, OTTAWA, ONTARIO
TITLE: GROUNDWATER ANALYTICAL RESULTS – PHC & BTEX

project no. OTT-00243705-B0
scale 1:1,000
FIG 11

Filename: P:\Projects\Environmental\240000s\243000\243705-B0 PhOne&TwoESA 6659 Franktown Rd\Phase Two ESA\Drawings\OTT-00243705-B0_Ph-2.dwg
Last Saved: Aug 11, 2023 9:03 AM Last Plotted: Aug 11, 2023 9:10 AM Plotted by: SeverA



CROSS SECTION A-A'

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 2 STANDARDS
Benzene	B	0.5
Toluene	T	24
Ethylbenzene	E	2.4
Total Xylenes	X	300
F1	F1 (C6-C10)	750
F2	F2 (C10-C16)	150
F3	F3 (C16-C34)	500
F4	F4 (C34-C50)	500

LEGEND

- FILL - GRAVEL
- SAND (DRY TO MOIST)
- CLAY (BROWN)
- CONCENTRATION EXCEEDS MECP TABLE 2 SCS
- CONCENTRATION IS LESS THAN MECP TABLE 2 SCS
- 97.80 WATER LEVEL DATE: JULY 11, 2023

MW1	Screen Interval 3.0 to 4.5 mbgs							
DATE	B	T	E	X	F1	F2	F3	F4
15-Nov-17	< 0.5	< 0.5	< 0.5	< 0.5	< 25	< 100	< 200	< 200
11-Jul-23	<0.2	<0.2	<0.2	<0.4	< 25	< 100	< 200	< 200

MW2	Screen Interval 3.0 to 4.5 mbgs							
DATE	B	T	E	X	F1	F2	F3	F4
15-Nov-17	< 0.5	< 0.5	< 0.5	< 0.5	< 25	< 100	< 200	< 200
11-Jul-23	<0.2	<0.2	<0.2	<0.4	< 25	< 100	< 200	< 200

MW3	Screen Interval 3.0 to 4.5 mbgs							
DATE	B	T	E	X	F1	F2	F3	F4
15-Nov-17	< 0.5	< 0.5	< 0.5	< 0.5	< 25	< 100	172	< 200
11-Jul-23	<0.2	<0.2	<0.2	<0.4	< 25	< 100	850	970
Duplicate	<0.2	<0.2	<0.2	<0.4	< 25	< 100	550	620
14-Jul-23	<0.2	<0.2	<0.2	<0.4	< 25	< 100	< 200	< 200

0 10m 20m 40m

HORIZONTAL 1:1000

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DATE: AUGUST 2023	PROJECT: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT	project no. OTT-00243705-B0
DESIGN: MM / CHECKED: CK	ADDRESS: 6659 FRANKTOWN ROAD, OTTAWA, ONTARIO	scale 1:1000
DRAWN BY: AS	TITLE: GROUNDWATER CROSS SECTION A-A' – PHC & BTEX	FIG 12

Appendix B: Survey Plan

NOTES

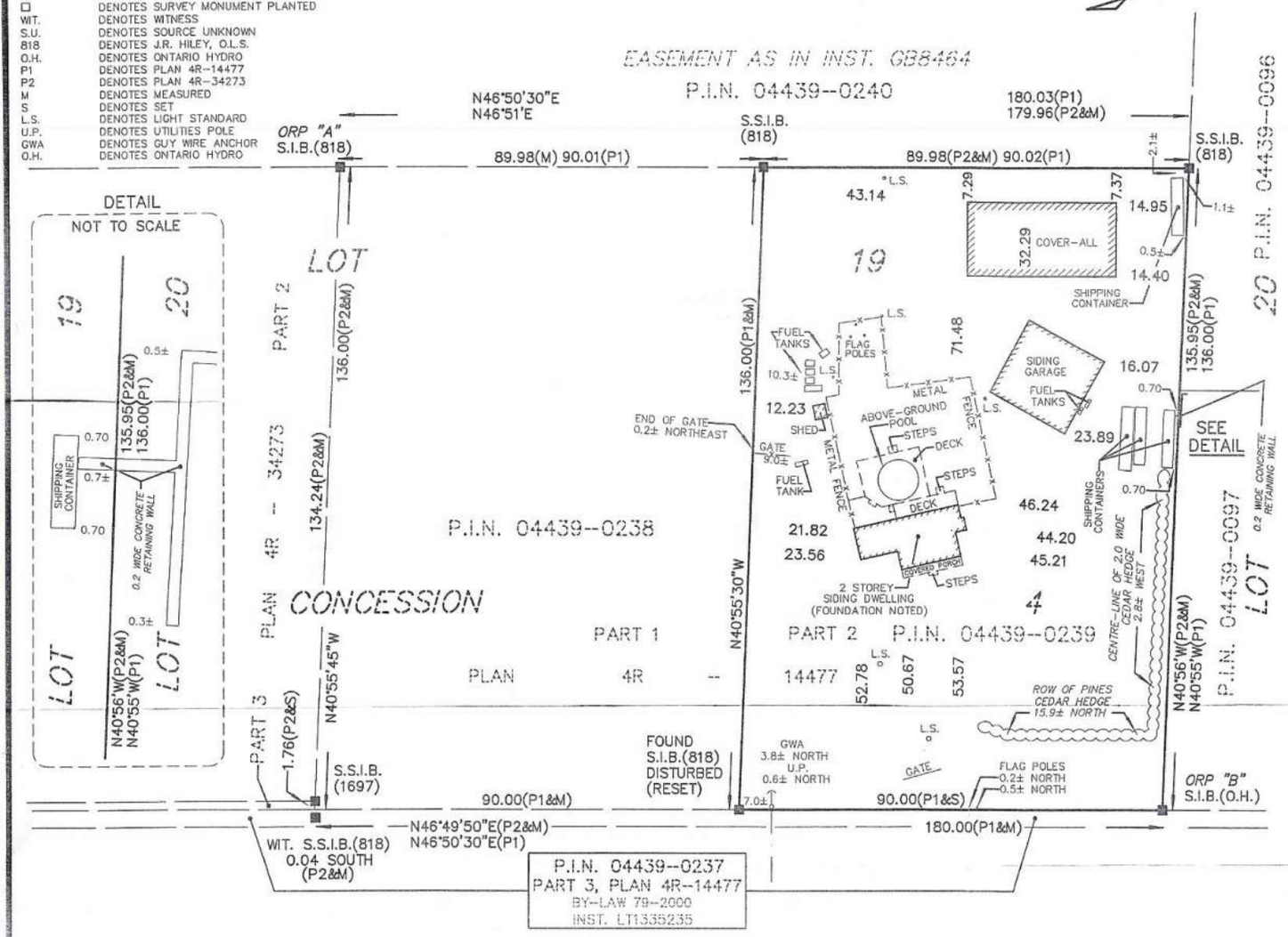
BEARINGS SHOWN ON THIS PLAN ARE GRID BEARINGS, AND ARE DERIVED FROM LEICA SMART-NET REAL TIME NETWORK GPS OBSERVATIONS ON REFERENCE POINTS 'A' AND 'B' SHOWN HEREON, AND ARE REFERENCED TO SPECIFIED CONTROL POINTS 01919791338 AND 01919871649, MTM ZONE 9, (76°30' WEST LONGITUDE), NAD 83 (ORIGINAL).

DISTANCES SHOWN ON THIS PLAN ARE HORIZONTAL GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999915

S.I.B.	DENOTES 0.025 SQ., 1.2 LONG, STANDARD IRON BAR
S.S.I.B.	DENOTES 0.025 SQ., 0.6 LONG, SHORT STANDARD IRON BAR
I.B.	DENOTES 0.016 SQ., 0.6 LONG, IRON BAR
R.I.B.	DENOTES ROUND IRON BAR
■	DENOTES SURVEY MONUMENT FOUND
□	DENOTES SURVEY MONUMENT PLANTED
WIT.	DENOTES WITNESS
S.U.	DENOTES SOURCE UNKNOWN
818	DENOTES J.R. HILEY, O.L.S.
O.H.	DENOTES ONTARIO HYDRO
P1	DENOTES PLAN 4R-14477
P2	DENOTES PLAN 4R-34273
M	DENOTES MEASURED
S	DENOTES SET
L.S.	DENOTES LIGHT STANDARD
U.P.	DENOTES UTILITIES POLE
GWA	DENOTES GUY WIRE ANCHOR
O.H.	DENOTES ONTARIO HYDRO

OBSERVED REFERENCE POINTS (ORP): MTM ZONE 9, NAD 83 (ORIGINAL)		
POINT IDENTIFICATION	NORTHING	EASTING
ORP A	5004456.49	354579.40
ORP B	5004476.85	354799.74

COORDINATES SHOWN TO RURAL ACCURACY IN ACCORDANCE WITH O.REG 216/10, SECTIONS 14 AND 31 TO 35 (BOTH INCLUSIVE).
COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN



SURVEYOR'S REAL PROPERTY REPORT
PART 1) PLAN OF
PART OF LOT 19
CONCESSION 4
GEOGRAPHIC TOWNSHIP OF GOULBOURN
CITY OF OTTAWA

SCALE 1:1000

0 10 20 30 40 50 75 100
METRES

METRIC

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

SURVEYOR'S REAL PROPERTY REPORT
PART 2) REPORT SUMMARY

DESCRIPTION OF LAND

LOT 19, CONCESSION 4, GEOGRAPHIC TOWNSHIP OF GOULBOURN, CITY OF OTTAWA. P.I.N. 04439-0239, PART 2 ON PLAN 4R-14477

REGISTERED EASEMENTS AND/OR RIGHT OF WAYS

NONE

FEATURES

NOTE CEDAR HEDGE, LIGHT STANDARDS, PROPANE TANK, GAS TANKS, OIL TANKS, FLAG POLES, POOL, METAL FENCE & SHIPPING CONTAINERS, UTILITIES POLE, GUY WIRE ANCHOR, GATES & CONCRETE RETAINING WALL ALONG EASTERLY LIMIT.

COMPLIANCE WITH MUNICIPAL ZONING BY-LAWS

NOT CERTIFIED BY THIS REPORT.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 17th DAY OF FEBRUARY, 2022.

MARCH 8 2022
DATE

J.P. SHIPMAN
ONTARIO LAND SURVEYOR

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-22127

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR
In accordance with Regulation 1026, Section 29(3)

NOTE: THIS REPORT WAS PREPARED FOR JEFFERY HANNA AND THE UNDERSIGNED ACCEPTS NO RESPONSIBILITY FOR USE BY OTHER PARTIES.

H.A.KEN SHIPMAN SURVEYING LTD.
P.O. BOX 53, NORTH GOWER, ONT. K0A 2T0 TEL: 489-3910

REF. No.: GLB.-560 | FILE No.: 22-12872

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 6659 Franktown 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 groundwater samples for chemical analysis of petroleum hydrocarbons (PHC) and benzene, toluene, ethylbenzene and xylenes collectively known as BTEX. The monitoring well network is comprised of three 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:

- 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 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.

3.2 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.

3.3 Groundwater Sampling

Groundwater samples will be collected from the monitoring well for chemical analysis. The well 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 BTEX 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:

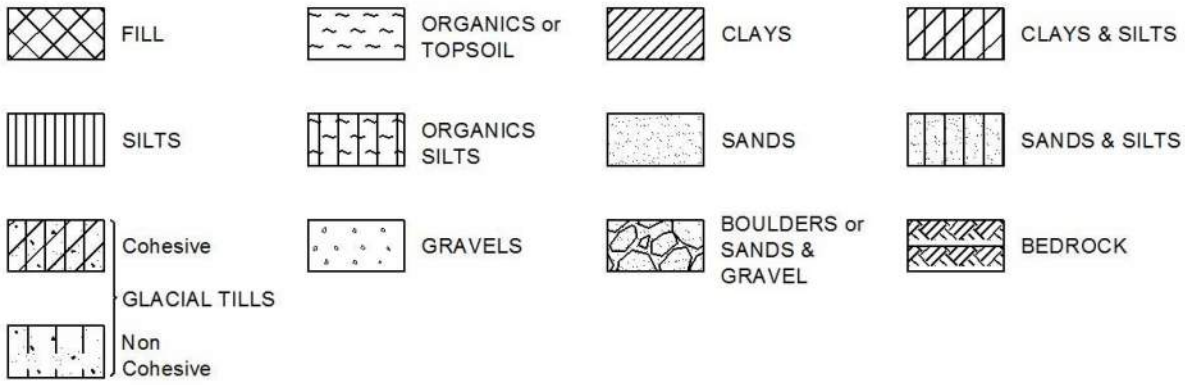
Table c: Consistency of Cohesive Soil

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 MW1

Project No: OTT-00243705-B0

Project: Phase Two ESA

Location: 6659 Franktown Road, Ottawa, Ontario

Date Drilled: 'November 14, 2017

Drill Type: Well rig

Datum: Geodetic

Logged by: M.L. Checked by: C.K.

Figure No. _____

Page. 1 of 1

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	99.46	0
			98.9	
		SAND Brown, dry to moist, no staining or odours		1
▽			97.8	
			97.7	2
		CLAY Brown, damp		
				3
				4
			95.0	
		Borehole Terminated at 4.5 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

10
15

SAMPLES

Natural Unit Wt. kN/m³

NOTES:
1. Borehole data requires interpretation by EXP before use by others
2. A 37 mm diameter monitoring well was installed upon completion.
3. Field work was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report No. OTT-00243705-B0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
July 11, 2023	1.7	

CORE DRILLING RECORD

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

LOG OF BOREHOLE OTT-00243705-A0 FRANKTOWN WELLS.GPJ TROW OTTAWA.GDT 8/4/23

Log of Borehole MW2

Project No: OTT-00243705-B0

Project: Phase Two ESA

Location: 6659 Franktown Road, Ottawa, Ontario

Date Drilled: 'November 14, 2017

Drill Type: Well rig

Datum: Geodetic

Logged by: M.L. Checked by: C.K.

Figure No. _____

Page. 1 of 1

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	99.49	0
			98.9	
		PEAT Brown, damp, no staining or odours	98.7	
		SAND Brown, dry to moist, no staining or odours	97.78	1
			97.7	
		CLAY Brown, damp		2
				3
				4
			95.0	
		Borehole Terminated at 4.5 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

15
10

NOTES:
1. Borehole data requires interpretation by EXP before use by others
2. A 37 mm diameter monitoring well was installed upon completion.
3. Field work was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report No. OTT-00243705-B0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
July 11, 2023	1.7	

CORE DRILLING RECORD

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

LOG OF BOREHOLE OTT-00243705-A0 FRANKTOWN WELLS.GPJ TROW OTTAWA.GDT 8/4/23

Log of Borehole MW3

Project No: OTT-00243705-B0

Project: Phase Two ESA

Location: 6659 Franktown Road, Ottawa, Ontario

Date Drilled: 'November 14, 2017

Drill Type: Well rig

Datum: Geodetic

Logged by: M.L. Checked by: C.K.

Figure No. _____

Page. 1 of 1

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	99.48	0
			98.9	
		SAND Brown, dry to moist, no staining or odours		1
			98.22	
			98.0	
		CLAY Brown, damp		2
				3
				4
			95.0	
		Borehole Terminated at 4.5 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

15

40

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 37 mm diameter monitoring well was installed upon completion.
3. Field work was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report No. OTT-00243705-B0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
July 11, 2023	1.3	

CORE DRILLING RECORD

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

LOG OF BOREHOLE OTT-00243705-A0 FRANKTOWN WELLS.GPJ TROW OTTAWA.GDT 8/4/23

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FIELD TEST PIT LOG

Project Name: Phase II ESA
Date: November 14, 2017
Test Pit ID: TP1

Project Number: OTT-00243705-A0
Project Location: 6659 Franktown Road
Field Supervisor: Matt Laneville

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0	0.6	Gravel, grey. No staining or odours.	N/A	N/A	N/A
0.6	1.8	Sand, brown. Dry to damp, No staining or odours.	TP1A	0.9	15
1.8	2.1	Silty Clay, grey brown. Damp, No staining or odours.	TP1B	2.0	10
		Notes:			
	1	TP investigation via excavator using bucket.			
	2	No odours.			
	3	Test pit terminated at 2.1m and backfilled.			
	4	Samples warmed in office at site and screened at exp office.			
	5	See Test Pit Location Plan.			
	6	Sample TP1A submitted for analysis of PHC(f1-f4) and BTEX and metals			
	7	A monitoring well (MW1) constructed of 37 mm diameter, 1.5 m long Schedule 40 PVC screen and appropriate length riser pipe was installed at this location. Space around the screen was backfilled with silica to approximately 0.3m above the screen. Monitoring well installed to a depth of 4.5 m.			

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FIELD TEST PIT LOG

Project Name: Phase II ESA
Date: November 14, 2017
Test Pit ID: TP2

Project Number: OTT-00243705-A0
Project Location: 6659 Franktown Road
Field Supervisor: Matt Laneville

Depth (ft)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0	0.6	Gravel, grey. No staining or odours.	N/A	N/A	N/A
0.6	0.8	Humus Layer, black., Damp, No staining or odours.	TP2A	0.8	10
0.8	1.8	Sand, brown. Dry to damp, No staining or odours.			
1.8	2.1	Silty Clay, grey brown. Damp, No staining or odours.	TP2B	2.1	15
		Notes:			
	1	TP investigation via excavator using bucket.			
	2	No odours.			
	3	Test pit terminated at 2.1m and backfilled.			
	4	Samples warmed in office at site and screened at exp office.			
	5	See Test Pit Location Plan.			
	6	Sample TP2B submitted for analysis of PHC(f1-f4) and BTEX			
	7	A monitoring well (MW2) constructed of 37 mm diameter, 1.5 m long Schedule 40 PVC screen and appropriate length riser pipe was installed at this location. Space around the screen was backfilled with silica to approximately 0.3m above the screen. Monitoring well installed to a depth of 4.8 m.			

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FIELD TEST PIT LOG

Project Name: Phase II ESA
Date: November 14, 2017
Test Pit ID: TP3

Project Number: OTT-00243705-A0
Project Location: 6659 Franktown Road
Field Supervisor: Matt Laneville

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0	0.6	Gravel, grey. No staining or odours.	N/A	N/A	N/A
0.6	1.5	Sand, brown. Water saturated, No staining or odours.	TP3A	0.9	20
1.5	1.8	Silty Clay, grey brown. Water saturated, No staining or odours.	TP3B	1.8	15
		Notes:			
	1	TP investigation via excavator using bucket.			
	2	No odours.			
	3	Test pit terminated at 1.8m and backfilled.			
	4	Water infiltration occurred as test pitting was being performed, water entering test pit at approximately 0.6 m			
	5	Water in pit was not observed to have sheen			
	6	Samples warmed in office at site and screened at exp office.			
	7	See Test Pit Location Plan.			
	8	Sample TP3A submitted for analysis of PHC(f1-f4) and BTEX			

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FIELD TEST PIT LOG

Project Name: Phase II ESA
Date: November 14, 2017
Test Pit ID: TP4

Project Number: OTT-00243705-A0
Project Location: 6659 Franktown Road
Field Supervisor: Matt Laneville

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0	0.6	Gravel, grey. No staining or odours.	N/A	N/A	N/A
0.6	0.9	Sand, brown. Water saturated, No staining or odours.	TP4A	0.9	15
		Notes:			
	1	TP investigation via hand shovel due to proximity to utilities and ASTs.			
	3	Test pit terminated at 0.9m and backfilled.			
	4	Water infiltration occurred as test pitting was being performed, water entering test pit at approximately 0 .6m			
	5	Water in pit was not observed to have sheen			
	6	Samples warmed in office at site and screened at exp office.			
	7	See Test Pit Location Plan.			
	8	Samples were not submitted from this TP			

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FIELD TEST PIT LOG

Project Name: Phase II ESA
Date: November 14, 2017
Test Pit ID: TP5

Project Number: OTT-00243705-A0
Project Location: 6659 Franktown Road
Field Supervisor: Matt Laneville

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0	0.6	Gravel, grey. No staining or odours.	N/A	N/A	N/A
0.6	1.5	Sand, brown. Water saturated, No staining or odours.	TP5A	0.9	15
1.5	1.8	Silty Clay, grey brown. Slight odour.	TP5B	1.8	40
		Notes:			
	1	TP investigation via excavator using bucket.			
	2	Test pit terminated at 1.8m and backfilled.			
	3	Water infiltration occurred as test pitting was being performed, water entering test pit at approximately 0.6m			
	4	Water in pit was not observed to have sheen			
	5	Samples warmed in office at site and screened at exp office.			
	6	See Test Pit Location Plan.			
	7	Sample TP5B submitted for analysis of PHC(f1-f4) and BTEX			
	8	A monitoring well (MW3) constructed of 37 mm diameter, 1.5 m long Schedule 40 PVC screen and appropriate length riser pipe was installed at this location. Space around the screen was backfilled with silica to approximately 0.3m above the screen. Monitoring well installed to a depth of 4.5 m.			

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FIELD TEST PIT LOG

Project Name: Phase II ESA
Date: November 14, 2017
Test Pit ID: TP6

Project Number: OTT-00243705-A0
Project Location: 6659 Franktown Road
Field Supervisor: Matt Laneville

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0	0.6	Gravel, grey. No staining or odours.	N/A	N/A	N/A
0.6	0.9	Sand, brown. Water saturated, No staining or odours.	TP6A	0.9	10
		Notes:			
	1	TP investigation via hand shovel due to proximity to utilities and ASTs.			
	3	Test pit terminated at 0.9m and backfilled.			
	4	Water infiltration occurred as test pitting was being performed, water entering test pit at approximately 0.6m			
	5	Water in pit was not observed to have sheen			
	6	Samples warmed in office at site and screened at exp office.			
	7	See Test Pit Location Plan.			
	8	Sample TP6A submitted for analysis of PHC(f1-f4) and BTEX			

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FIELD TEST PIT LOG

Project Name: Phase II ESA
Date: November 20, 2017
Test Pit ID: TP7

Project Number: OTT-00243705-A0
Project Location: 6659 Franktown Road
Field Supervisor: Matt Laneville

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0	0.15	Topsoil. Dry to Damp, No staining or odours.			0
0.15	1.2	Sand, brown. Damp, No staining or odours.	TP7A	1.1	10
1.2	1.98	Clay, hard, grey. Damp, No staining of odours	TP7B	1.98	12
		Notes:			
	1	TP investigation via excavator using bucket.			
	3	Test pit terminated at 1.98m and backfilled.			
	4	Samples warmed in office at site and screened at exp office.			
	5	See Test Pit Location Plan.			
	6	Sample TP7B submitted for analysis of PHC(f1-f4) and BTEX to delineate previous findings.			

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FIELD TEST PIT LOG

Project Name: Phase II ESA
Date: November 20, 2017
Test Pit ID: TP8

Project Number: OTT-00243705-A0
Project Location: 6659 Franktown Road
Field Supervisor: Matt Laneville

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0	0.3	Topsoil. Dry to Damp, No staining or odours.			0
0.3	1.5	Sand, brown. Damp, No staining or odours.	TP8A	1.2	10
1.5	2.1	Clay, hard, grey. Damp, No staining of odours	TP8B	2.1	10
		Notes:			
	1	TP investigation via excavator using bucket.			
	3	Test pit terminated at 2.1m and backfilled.			
	4	Samples warmed in office at site and screened at exp office.			
	5	See Test Pit Location Plan.			
	6	Sample TP8B submitted for analysis of PHC(f1-f4) and BTEX to delineate previous findings.			

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FIELD TEST PIT LOG

Project Name: Phase II ESA
Date: November 20, 2017
Test Pit ID: TP9

Project Number: OTT-00243705-A0
Project Location: 6659 Franktown Road
Field Supervisor: Matt Laneville

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0	0.15	Gravel, grey. Dry to damp, No staining or odours.			0
0.15	0.3	Humus, dark brown. Dry to damp, No staining or odours			0
0.3	1.5	Sand, brown. Damp, No staining or odours.	TP9A	1.5	10
1.5	2.3	Clay, mix of hard and soft, grey. Damp, No staining of odours	TP9B	2.3	11
		Notes:			
	1	TP investigation via excavator using bucket.			
	3	Test pit terminated at 2.3m and backfilled.			
	4	Samples warmed in office at site and screened at exp office.			
	5	See Test Pit Location Plan.			
	6	Sample TP9B submitted for analysis of PHC(f1-f4) and BTEX to delineate previous findings.			

Appendix E: Analytical Summary Tables

TABLE 1 SOIL ANALYTICAL RESULTS *(µg/g)*
PETROLEUM HYDROCARBONS
6659 Franktown Road, Ottawa, Ontario

Parameter	**MECP Table 2[1]**	TP1A	TP2B	TP3A	TP3B	TP5B	TP6A	TP7B	TP8B	TP9B
Sample Date (d/m/y)	**Residential**	14/11/17	14/11/17	14/11/17	14/11/17	14/11/17	14/11/17	20/11/2017	20/11/2017	20/11/2017
Sample Depth (mbsg)		0.9	2.1	0.9	1.8	1.8	0.9	1.98	2.1	2.3
Benzene	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	1.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	2.3	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Xylenes, Total	3.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05
PHC F_1 (>C_6-C_{10})	55	<7	<7	<7	<7	**68**	<7	<7	<7	<7
PHC F_2 (>C_{10}-C_{16})	98	<4	<4	<4	<4	**412**	<4	<4	<4	<4
PHC F_3 (>C_{16}-C_{34})	300	<8	<8	<8	<8	202	<8	<8	<8	<8
PHC F_4 (>C_{34}-C_{50})	2800	<6	<6	<6	<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, with coarse textured soil.*

Shaded Concentration exceeds MECP Table 2 site condition standard.

TABLE 2 SOIL ANALYTICAL RESULTS *(µg/g)*
METALS
6659 Franktown Road, Ottawa, Ontario

Parameter	**MECP Table 2[1]**	TP1A	TP2B
Sample Date (d/m/y)	**Residential**	14/11/17	14/11/17
Sample Depth (mbsg)		0.9	2.1
Antimony	7.5	<1.0	<1.0
Arsenic	18	<1.0	<1.0
Barium	390	23.0	30.2
Beryllium	4	<1.0	<1.0
Boron	120	1.9	2.0
Cadmium	1.2	<0.5	<0.5
Chromium	160	6.2	10.8
Cobalt	22	1.9	4.0
Copper	140	2.2	10.3
Lead	120	3.8	3.1
Molybdenum	7	<1.0	<1.0
Nickel	100	3.3	6.1
Selenium	2.4	<1.0	<1.0
Silver	20	<0.5	<0.5
Thallium	1	<1.0	<1.0
Uranium	23	1.6	<1.0
Vanadium	86	14.7	24.9
Zinc	340	9.3	17.1

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, with coarse textured soil.*

Shaded Concentration exceeds MECP Table 2 site condition standard.

TABLE 3 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
PHC and BTEX
6659 Franktown Road, Ottawa, Ontario

Parameter	MECP Table 2[1]	MW1	MW1	MW2	MW2	MW3	MW3	DUP	MW3	Trip Blank	Field Blank
Sample Date (d/m/y)		15/11/17	11/7/23	15/11/17	11/7/23	15/11/17	11/7/23	Duplicate of MW3	11/11/23	11/7/23	11/7/23
Benzene	5	<0.5	<0.2	<0.5	<0.2	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	2.4	<0.5	<0.2	<0.5	<0.2	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	24	<0.5	<0.2	<0.5	<0.2	<0.5	0.24	0.22	<0.2	<0.2	<0.2
Xylenes, total	300	<0.5	<0.4	<0.5	<0.4	<0.5	<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	<25
PHC F_2 (>C_{10}-C_{16})	150	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
PHC F_3 (>C_{16}-C_{34})	500	<200	<200	<200	<200	172	850	550	<200	<200	<200
PHC F_4 (>C_{34}-C_{50})	500	<200	<200	<200	<200	<200	970	620	<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, with coarse textured soil.*

Shaded Concentration exceeds MECP Table 2 groundwater quality standard.

Table 4 - Relative Percent Differences - PHC and BTEX in Groundwater
6659 Franktown Road, Ottawa, Ontario

Parameter	Units	RDL	MW3	DUP	RPD (%)	Alert Limit (%)
			11/7/23	11/7/23		
Petroleum Hydrocarbons						
F1 PHC (C6 - C10) - BTEX	ug/L	25	<25	<25	nc	60
F2 PHC (C10-C16)	ug/L	100	<100	<100	nc	60
F3 PHC (C16-C34)	ug/L	100	850	550	43	60
F4 PHC (C34-C50)	ug/L	100	970	620	44	60
Volatiles						
Benzene	ug/L	0.5	<0.2	<0.2	nc	60
Ethylbenzene	ug/L	0.5	<0.2	<0.2	nc	60
Toluene	ug/L	0.5	*0.24*	0.22	nc	60
Xylenes, total	ug/L	0.5	<0.40	<0.40	nc	60

NOTES:

Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.
- means "not analysed"
nc means "not calculable" - one (or both) of the results are <5x RDL
Exceedances of alert limits are shown in **bold**

Table 5 - Maximum Concentrations in Soil
6659 Franktown Road, Ottawa, Ontario
OTT-00243705-B0

Parameter	Sample Location	Sample Depth (m bgs)	Sampling Date	Maximum Concentration	MECP Table 2 Residential
Petroleum Hydrocarbons					
Benzene	All sample locations	0.9	14-Nov-17	<0.02	0.21
Ethylbenzene	All sample locations	0.9	14-Nov-17	<0.02	1.1
Toluene	All sample locations	0.9	14-Nov-17	<0.02	2.3
Xylenes	All sample locations	0.9	14-Nov-17	<0.05	3.1
F1 PHC (C6-C10)	TP5B	1.5 - 1.8	14-Nov-17	68	55
F2 PHC (C10-C16)	TP5B	1.5 - 1.8	14-Nov-17	412	98
F3 PHC (C16-C34)	TP5B	1.5 - 1.8	14-Nov-17	202	300
F4 PHC (C34-C50)	All sample locations	0.9	14-Nov-17	<6	2800
Metals					
Antimony	All sample locations	0.9	14-Nov-17	<1	7.5
Arsenic	All sample locations	0.9	14-Nov-17	<1	18
Barium	TP2B	1.8 - 2.1	14-Nov-17	30.2	390
Beryllium	All sample locations	0.9	14-Nov-17	<1.0	4
Boron (Total)	TP2B	1.8 - 2.1	14-Nov-17	2.0	120
Cadmium	All sample locations	0.9	14-Nov-17	<0.5	1.2
Chromium (Total)	TP2B	1.8 - 2.1	14-Nov-17	10.8	160
Cobalt	TP2B	1.8 - 2.1	14-Nov-17	4.0	22
Copper	TP2B	1.8 - 2.1	14-Nov-17	10.3	140
Lead	TP1A	0.6 - 0.9	14-Nov-17	3.8	120
Molybdenum	All sample locations	0.9	14-Nov-17	<1.0	6.9
Nickel	TP2B	1.8 - 2.1	14-Nov-17	6.1	100
Selenium	All sample locations	0.9	14-Nov-17	<1.0	2.4
Silver	All sample locations	0.9	14-Nov-17	<0.5	20
Thallium	All sample locations	0.9	14-Nov-17	<1.0	1
Uranium	TP1A	0.6 - 0.9	14-Nov-17	1.6	23
Vanadium	TP2B	1.8 - 2.1	14-Nov-17	24.9	86
Zinc	TP2B	1.8 - 2.1	14-Nov-17	17.1	340

NOTES:

1 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 2 Full Depth Generic Site Condition Standards (SCS) in a Potable Ground Water Condition for Residential/Institutional/Parkland Property Use (fine textured soils)

NV No Value

- Parameter not analyzed

m bgs Metres below ground surface

Table 6 - Maximum Concentrations in Groundwater
6659 Franktown Road, Ottawa, Ontario
OTT-00243705-B0

Parameter	Sample Location	Screen Depth (m bgs)	Sampling Date	Maximum Concentration	MECP Table 2
Petroleum Hydrocarbons					
Benzene	All sample locations	3.0 - 4.5	11-Jul-23	<0.2	5
Ethylbenzene	All sample locations	3.0 - 4.5	11-Jul-23	<0.2	2.4
Toluene	All sample locations	3.0 - 4.5	11-Jul-23	<0.2	24
Xylenes	All sample locations	3.0 - 4.5	11-Jul-23	<0.4	300
F1 PHC (C6-C10)	All sample locations	3.0 - 4.5	11-Jul-23	<25	750
F2 PHC (C10-C16)	All sample locations	3.0 - 4.5	11-Jul-23	<100	150
F3 PHC (C16-C34)	All sample locations	3.0 - 4.5	11-Jul-23	<200	500
F4 PHC (C34-C50)	All sample locations	3.0 - 4.5	11-Jul-23	<200	500

NOTES:

1	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 2 Full Depth Generic Site Condition Standards (SCS) in a Potable Ground Water Condition for Residential/Parkland/Institutional Property Use (fine textured soils)
NV	No Value
-	Parameter not analyzed
m bgs	Metres below ground surface

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: Matt Laneville

Client PO:
Project: OTT00243705AO
Custody: 40796

Report Date: 21-Nov-2017
Order Date: 20-Nov-2017

Order #: 1747092

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

Paracel ID	Client ID
1747092-01	TP3B
1747092-02	TP7B
1747092-03	TP8B
1747092-04	TP9B

Approved By:

Dale Robertson, BSc
Laboratory Director

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

Report Date: 21-Nov-2017
Order Date: 20-Nov-2017
Project Description: OTT00243705AO

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	20-Nov-17	21-Nov-17
PHC F1	CWS Tier 1 - P&T GC-FID	20-Nov-17	21-Nov-17
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	20-Nov-17	21-Nov-17
Solids, %	Gravimetric, calculation	21-Nov-17	21-Nov-17

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

Report Date: 21-Nov-2017
Order Date: 20-Nov-2017
Project Description: OTT00243705AO

	Client ID:	TP3B	TP7B	TP8B	TP9B
	Sample Date:	14-Nov-17	20-Nov-17	20-Nov-17	20-Nov-17
	Sample ID:	1747092-01	1747092-02	1747092-03	1747092-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	82.5	78.4	81.3	86.3
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	84.6%	84.5%	84.3%	83.2%
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

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

Report Date: 21-Nov-2017
Order Date: 20-Nov-2017
Project Description: OTT00243705AO

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	*2.89*		*ug/g*		*90.2*	*50-140*			

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

Report Date: 21-Nov-2017
Order Date: 20-Nov-2017
Project Description: OTT00243705AO

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 wet	ND			0.0	30	
F3 PHCs (C16-C34)	68	8	ug/g wet	85			21.6	30	
F4 PHCs (C34-C50)	90	6	ug/g wet	108			18.3	30	
Physical Characteristics									
% Solids	75.1	0.1	% by Wt.	72.1			4.1	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	*2.64*		*ug/g dry*		*92.9*	*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)	198	7	ug/g		98.8	80-120			
F2 PHCs (C10-C16)	89	4	ug/g	ND	99.3	60-140			
F3 PHCs (C16-C34)	276	8	ug/g	85	102	60-140			
F4 PHCs (C34-C50)	243	6	ug/g	108	108	60-140			
Volatiles									
Benzene	2.91	0.02	ug/g		72.7	60-130			
Ethylbenzene	3.96	0.05	ug/g		98.9	60-130			
Toluene	3.81	0.05	ug/g		95.3	60-130			
m,p-Xylenes	9.10	0.05	ug/g		114	60-130			
o-Xylene	4.58	0.05	ug/g		115	60-130			
Surrogate: Toluene-d8	*2.20*		*ug/g*		*68.8*	*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.

Paracel ID: 1747092

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Page 1 of 1

Client Name: EXP	Project Reference: OTT 00243705AC	**Turnaround Time:**
Contact Name: MATT LANEVILLE	Quote #	☑ 1 Day ☐ 3 Day
Address: 2650 Queensview Dr.	PO #	☐ 2 Day ☐ Regular
Telephone: 613-608-1958	Email Address: matthew.laneville@exp.com	Date Required: Nov 21 /17

Criteria: ☐ O. Reg. 153/04 (As Amended) Table _ ☐ 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: 1747092

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHC F1-F4	BTEX									
1	TP3B	S		3	NOV 14		✓	✓			1,2-DCB, 1,3-DCB, 1,4-DCB						
2	TP7B	S		3	NOV 20		✓	✓									
3	TP8B	S		3	NOV 20		✓	✓									
4	TP9B	S		3	NOV 20		✓	✓									
5																	
6																	
7																	
8																	
9																	
10																	

Comments:

Method of Delivery: walk-in

Relinquished By (Sign):	Received by Driver/Depot: Karen Cull	Received at Lab: SUNDERRAM DOKMAI	Verified By: Rachel Subject
Relinquished By (Print): MATT LANEVILLE	Date/Time: Nov 20/17 11:59	Date/Time: NOV 20, 2017 03:51	Date/Time: NOV 20 2017
Date/Time: NOV 20/17 @ 11:55 AM	Temperature: 6.3 °C	Temperature: 9.5 °C	pH Verified ☒ By: N/A 3:06

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Certificate of Analysis

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

Client PO:
Project: OTT00243705A0
Custody: 40150

Report Date: 17-Nov-2017
Order Date: 15-Nov-2017

Order #: 1746321

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

Paracel ID	Client ID
1746321-01	MW#1
1746321-02	MW#2
1746321-03	MW#3

Approved By:

Dale Robertson, BSc
Laboratory Director

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

Report Date: 17-Nov-2017
Order Date: 15-Nov-2017
Project Description: OTT00243705A0

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	16-Nov-17	16-Nov-17
PHC F1	CWS Tier 1 - P&T GC-FID	16-Nov-17	16-Nov-17
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	16-Nov-17	17-Nov-17

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

Report Date: 17-Nov-2017
Order Date: 15-Nov-2017
Project Description: OTT00243705A0

	Client ID:	MW#1	MW#2	MW#3	-
	Sample Date:	15-Nov-17	15-Nov-17	15-Nov-17	-
	Sample ID:	1746321-01	1746321-02	1746321-03	-
	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	89.6%	88.1%	88.3%	-
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	172	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	-

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

Report Date: 17-Nov-2017
Order Date: 15-Nov-2017
Project Description: OTT00243705A0

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	*72.3*		*ug/L*		*90.4*	*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	*70.4*		*ug/L*		*88.0*	*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)	2020	25	ug/L		101	68-117			
F2 PHCs (C10-C16)	1830	100	ug/L		102	60-140			
F3 PHCs (C16-C34)	4180	100	ug/L		112	60-140			
F4 PHCs (C34-C50)	3050	100	ug/L		123	60-140			
Volatiles									
Benzene	43.6	0.5	ug/L		109	60-130			
Ethylbenzene	31.1	0.5	ug/L		77.7	60-130			
Toluene	29.7	0.5	ug/L		74.2	60-130			
m,p-Xylenes	65.4	0.5	ug/L		81.7	60-130			
o-Xylene	30.3	0.5	ug/L		75.7	60-130			
Surrogate: Toluene-d8	*63.6*		*ug/L*		*79.5*	*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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TR
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RE

Paracel ID: 1746321

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№ 40150

Page 1 of 1

Client Name: EXP	Project Reference: 65297
Contact Name: MATT LANEVILLE	Quote #
Address: 2650 Queensview Dr	PO #
Telephone: 613-608 1958	Email Address: matthew.laneville@exp.com

Turnaround Time:
- ☐ 1 Day
- ~~☑ 3 Day~~
- ~~☑ 2 Day~~
- ☐ Regular

Date Required: ~~Friday Nov 17~~

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: 1746321

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	BTEX	PHCs									
1	MW #1	GW		3	Nov 15		✓	✓									✓
2	MW #2	"		3	"		✓	✓									✓
3	MW #3	"		3	"		✓	✓									✓
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Comments: ~~3 day TAT per client~~ -> Updated TAT to 2-day per Matt. SC

Method of Delivery: Walk-in

Relinquished By (Sign):	Received by Driver/Depot: Karen Cyll	Received at Lab:	Verified By:
Relinquished By (Print): Matt Laneville	Date/Time: Nov 15/17 1:16	Date/Time: 11/16/17 4:20pm	Date/Time: Nov 16/17 7:50a
Date/Time: Nov 15/17	Temperature: 7.9 °C	Temperature: 9.3 °C	pH Verified ☐ By: NIA

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Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr.
Ottawa, ON K2B 8K2
Attn: Matt Laneville

Client PO:
Project: OTT00243705A0
Custody: 110819

Report Date: 17-Nov-2017
Order Date: 14-Nov-2017

Order #: 1746264

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

Paracel ID	Client ID
1746264-01	TP1A
1746264-02	TP2B
1746264-03	TP3A
1746264-04	TP6A
1746264-05	TP5B

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

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

Report Date: 17-Nov-2017
Order Date: 14-Nov-2017
Project Description: OTT00243705A0

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	16-Nov-17	17-Nov-17
PHC F1	CWS Tier 1 - P&T GC-FID	16-Nov-17	17-Nov-17
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	15-Nov-17	16-Nov-17
REG 153: Metals by ICP/OES, soil	based on MOE E3470, ICP-OES	17-Nov-17	17-Nov-17
Solids, %	Gravimetric, calculation	16-Nov-17	17-Nov-17

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

Report Date: 17-Nov-2017
Order Date: 14-Nov-2017
Project Description: OTT00243705A0

	Client ID:	TP1A	TP2B	TP3A	TP6A
	Sample Date:	14-Nov-17	14-Nov-17	14-Nov-17	14-Nov-17
	Sample ID:	1746264-01	1746264-02	1746264-03	1746264-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	84.8	73.9	80.0	76.3
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	-	-
Arsenic	1.0 ug/g dry	<1.0	<1.0	-	-
Barium	1.0 ug/g dry	23.0	30.2	-	-
Beryllium	1.0 ug/g dry	<1.0	<1.0	-	-
Boron	1.0 ug/g dry	1.9	2.0	-	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	-
Chromium	1.0 ug/g dry	6.2	10.8	-	-
Cobalt	1.0 ug/g dry	1.9	4.0	-	-
Copper	1.0 ug/g dry	2.2	10.3	-	-
Lead	1.0 ug/g dry	3.8	3.1	-	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	-	-
Nickel	1.0 ug/g dry	3.3	6.1	-	-
Selenium	1.0 ug/g dry	<1.0	<1.0	-	-
Silver	0.5 ug/g dry	<0.5	<0.5	-	-
Thallium	1.0 ug/g dry	<1.0	<1.0	-	-
Uranium	1.0 ug/g dry	1.6	<1.0	-	-
Vanadium	1.0 ug/g dry	14.7	24.9	-	-
Zinc	1.0 ug/g dry	9.3	17.1	-	-
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	104%	105%	104%	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

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

Report Date: 17-Nov-2017
Order Date: 14-Nov-2017
Project Description: OTT00243705A0

	Client ID:	TP5B	-	-	-
	Sample Date:	14-Nov-17	-	-	-
	Sample ID:	1746264-05	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	78.7	-	-	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
Toluene-d8	Surrogate	100%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	68	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	412	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	202	-	-	-
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						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	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	*7.77*		*ug/g*		*97.1*	*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 wet	ND				30	
F3 PHCs (C16-C34)	47	8	ug/g wet	50			6.4	30	
F4 PHCs (C34-C50)	41	6	ug/g wet	54			27.4	30	
Metals									
Antimony	ND	1.0	ug/g dry	ND				30	
Arsenic	7.13	1.0	ug/g dry	6.61			7.5	30	
Barium	147	1.0	ug/g dry	148			0.7	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron	10.4	1.0	ug/g dry	11.1			6.9	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium	15.4	1.0	ug/g dry	14.9			3.2	30	
Cobalt	5.17	1.0	ug/g dry	5.26			1.6	30	
Copper	42.7	1.0	ug/g dry	39.6			7.7	30	
Lead	110	1.0	ug/g dry	109			0.6	30	
Molybdenum	1.01	1.0	ug/g dry	1.18			15.1	30	
Nickel	13.7	1.0	ug/g dry	13.2			3.9	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	1.89	1.0	ug/g dry	1.97			4.1	30	
Vanadium	24.0	1.0	ug/g dry	24.2			1.0	30	
Zinc	168	1.0	ug/g dry	169			0.4	30	
Physical Characteristics									
% Solids	83.2	0.1	% by Wt.	82.9			0.4	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND			0.0	50	
Ethylbenzene	ND	0.05	ug/g dry	ND			0.0	50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND			0.0	50	
o-Xylene	ND	0.05	ug/g dry	ND			0.0	50	
Surrogate: Toluene-d8	*6.84*		*ug/g dry*		*104*	*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)	172	7	ug/g		86.1	80-120			
F2 PHCs (C10-C16)	85	4	ug/g	ND	94.3	60-140			
F3 PHCs (C16-C34)	248	8	ug/g	50	107	60-140			
F4 PHCs (C34-C50)	174	6	ug/g	54	96.7	60-140			
Metals									
Antimony	310		ug/L	ND	124	70-130			
Arsenic	402		ug/L	132	108	70-130			
Barium	251		ug/L		100	70-130			
Beryllium	252		ug/L	1.87	100	70-130			
Boron	456		ug/L	222	93.3	70-130			
Cadmium	246		ug/L	8.94	94.8	70-130			
Chromium	515		ug/L	298	86.8	70-130			
Cobalt	327		ug/L	105	88.9	70-130			
Copper	1020		ug/L	791	89.9	70-130			
Lead	2360		ug/L	2180	74.1	70-130			
Molybdenum	245		ug/L	23.5	88.5	70-130			
Nickel	479		ug/L	263	86.1	70-130			
Selenium	224		ug/L	7.82	86.3	70-130			
Silver	230		ug/L	ND	91.9	70-130			
Thallium	235		ug/L	ND	94.1	70-130			
Uranium	307		ug/L	39.4	107	70-130			
Vanadium	714		ug/L	484	91.8	70-130			
Zinc	226		ug/L		90.4	70-130			
Volatiles									
Benzene	2.85	0.02	ug/g		71.3	60-130			
Ethylbenzene	3.46	0.05	ug/g		86.6	60-130			
Toluene	3.09	0.05	ug/g		77.2	60-130			
m,p-Xylenes	7.59	0.05	ug/g		94.9	60-130			
o-Xylene	3.81	0.05	ug/g		95.2	60-130			
Surrogate: Toluene-d8	*6.33*		*ug/g*		*79.1*	*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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№ 110819

Page 1 of 1

Client Name: EXP	Project Reference: 6529	**Turnaround Time:**
Contact Name: MATT LANEVILLE	Quote #	☐ 1 Day ☑ 3 Day
Address: 2650 Queensview Dr	PO #	☐ 2 Day ☐ Regular
Telephone: 613-608-1956	Email Address: matthew.laneville@exp.com	Date Required: Nov 17/17

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: 1746264 / 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	TP1A	S		3	Nov 14/17		✓			✓			
2	TP2B	S		3			✓			✓			
3	TP3A	S		3			✓			✓			
4	TP6A	S		3			✓			✓			
5	TP5B	S		3			✓			✓			
6													
7													
8													
9													
10													

Comments: Cancel metals analysis on samples TP3A, TP6A and TP5B per client.

Method of Delivery: Courier

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Matt Laneville	Date/Time: 4:48 pm Nov 14/17	Date/Time: Nov 15/17 11:30	Date/Time: Nov 15/17 11:40 am
Date/Time: Nov 14/17 @ 4:30pm	Temperature: 3.8 °C	Temperature: 5.4 °C	pH Verified [ ] By:

Your Project #: (EXP) OTT-00243705-B0
Your C.O.C. #: 943454-01-01

Attention: Mark McCalla

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

Report Date: 2023/07/14
Report #: R7717059
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3K4929
Received: 2023/07/11, 13:53

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	2023/07/13	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	6	2023/07/13	2023/07/13	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, MELCCFP, 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 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 #: (EXP) OTT-00243705-B0
Your C.O.C. #: 943454-01-01

Attention: Mark McCalla

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

Report Date: 2023/07/14
Report #: R7717059
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3K4929
Received: 2023/07/11, 13:53

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
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.
Bureau Veritas 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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

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

Bureau Veritas ID		WIX824	WIX825			WIX825			WIX826		
Sampling Date		2023/07/11 10:30	2023/07/11 11:25			2023/07/11 11:25			2023/07/11 12:10		
COC Number		943454-01-01	943454-01-01			943454-01-01			943454-01-01		
	UNITS	**MW-1**	**MW-2**	**RDL**	**QC Batch**	**MW-2 Lab-Dup**	**RDL**	**QC Batch**	**MW-3**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons											
Benzene	ug/L	<0.20	<0.20	0.20	8787759				<0.20	0.20	8787759
Toluene	ug/L	<0.20	<0.20	0.20	8787759				0.24	0.20	8787759
Ethylbenzene	ug/L	<0.20	<0.20	0.20	8787759				<0.20	0.20	8787759
o-Xylene	ug/L	<0.20	<0.20	0.20	8787759				<0.20	0.20	8787759
p+m-Xylene	ug/L	<0.40	<0.40	0.40	8787759				<0.40	0.40	8787759
Total Xylenes	ug/L	<0.40	<0.40	0.40	8787759				<0.40	0.40	8787759
F1 (C6-C10)	ug/L	<25	<25	25	8787759				<25	25	8787759
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	8787759				<25	25	8787759
F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	100	8786310	<100	100	8786310	<100	100	8786310
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	200	8786310	<200	200	8786310	850	200	8786310
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	8786310	<200	200	8786310	970	200	8786310
Reached Baseline at C50	ug/L	Yes	Yes		8786310	Yes		8786310	Yes		8786310
Surrogate Recovery (%)											
1,4-Difluorobenzene	%	122	121		8787759				121		8787759
4-Bromofluorobenzene	%	87	88		8787759				87		8787759
D10-o-Xylene	%	113	112		8787759				113		8787759
D4-1,2-Dichloroethane	%	109	109		8787759				112		8787759
o-Terphenyl	%	90	98		8786310	96		8786310	97		8786310

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

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

Bureau Veritas ID		WIX827	WIX828	WIX829		
Sampling Date		2023/07/11 12:30	2023/07/11	2023/07/11 12:10		
COC Number		943454-01-01	943454-01-01	943454-01-01		
	UNITS	**FIELD BLANK**	**TRIP BLANK**	**DUP**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons						
Benzene	ug/L	<0.20	<0.20	<0.20	0.20	8787759
Toluene	ug/L	<0.20	<0.20	0.22	0.20	8787759
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	0.20	8787759
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	8787759
p+m-Xylene	ug/L	<0.40	<0.40	<0.40	0.40	8787759
Total Xylenes	ug/L	<0.40	<0.40	<0.40	0.40	8787759
F1 (C6-C10)	ug/L	<25	<25	<25	25	8787759
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	25	8787759
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	100	8786310
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	550	200	8786310
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	620	200	8786310
Reached Baseline at C50	ug/L	Yes	Yes	Yes		8786310
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	119	117	120		8787759
4-Bromofluorobenzene	%	88	89	87		8787759
D10-o-Xylene	%	110	108	113		8787759
D4-1,2-Dichloroethane	%	107	111	111		8787759
o-Terphenyl	%	95	97	97		8786310

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

TEST SUMMARY

Bureau Veritas ID: WIX824 **Collected:** 2023/07/11
Sample ID: MW-1 **Shipped:**
Matrix: Water **Received:** 2023/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8787759	N/A	2023/07/13	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8786310	2023/07/13	2023/07/13	Emir Danisman

Bureau Veritas ID: WIX825 **Collected:** 2023/07/11
Sample ID: MW-2 **Shipped:**
Matrix: Water **Received:** 2023/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8787759	N/A	2023/07/13	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8786310	2023/07/13	2023/07/13	Emir Danisman

Bureau Veritas ID: WIX825 Dup **Collected:** 2023/07/11
Sample ID: MW-2 **Shipped:**
Matrix: Water **Received:** 2023/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8786310	2023/07/13	2023/07/13	Emir Danisman

Bureau Veritas ID: WIX826 **Collected:** 2023/07/11
Sample ID: MW-3 **Shipped:**
Matrix: Water **Received:** 2023/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8787759	N/A	2023/07/13	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8786310	2023/07/13	2023/07/13	Emir Danisman

Bureau Veritas ID: WIX827 **Collected:** 2023/07/11
Sample ID: FIELD BLANK **Shipped:**
Matrix: Water **Received:** 2023/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8787759	N/A	2023/07/13	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8786310	2023/07/13	2023/07/13	Emir Danisman

Bureau Veritas ID: WIX828 **Collected:** 2023/07/11
Sample ID: TRIP BLANK **Shipped:**
Matrix: Water **Received:** 2023/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8787759	N/A	2023/07/13	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8786310	2023/07/13	2023/07/13	Emir Danisman

Bureau Veritas Job #: C3K4929
Report Date: 2023/07/14

exp Services Inc
Client Project #: (EXP) OTT-00243705-B0
Sampler Initials: MR

TEST SUMMARY

Bureau Veritas ID: WIX829
Sample ID: DUP
Matrix: Water

Collected: 2023/07/11
Shipped:
Received: 2023/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8787759	N/A	2023/07/13	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8786310	2023/07/13	2023/07/13	Emir Danisman

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

GENERAL COMMENTS

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

Package 1	20.7°C

Results relate only to the items tested.

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

QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8786310	o-Terphenyl	2023/07/13	101	60 - 130	100	60 - 130	100	%		
8787759	1,4-Difluorobenzene	2023/07/13	98	70 - 130	114	70 - 130	118	%		
8787759	4-Bromofluorobenzene	2023/07/13	107	70 - 130	91	70 - 130	89	%		
8787759	D10-o-Xylene	2023/07/13	94	70 - 130	112	70 - 130	107	%		
8787759	D4-1,2-Dichloroethane	2023/07/13	94	70 - 130	101	70 - 130	108	%		
8786310	F2 (C10-C16 Hydrocarbons)	2023/07/13	113	60 - 130	101	60 - 130	<100	ug/L	NC	30
8786310	F3 (C16-C34 Hydrocarbons)	2023/07/13	117	60 - 130	108	60 - 130	<200	ug/L	NC	30
8786310	F4 (C34-C50 Hydrocarbons)	2023/07/13	117	60 - 130	106	60 - 130	<200	ug/L	NC	30
8787759	Benzene	2023/07/14	97	50 - 140	114	50 - 140	<0.20	ug/L	NC	30
8787759	Ethylbenzene	2023/07/14	108	50 - 140	130	50 - 140	<0.20	ug/L	NC	30
8787759	F1 (C6-C10) - BTEX	2023/07/14					<25	ug/L	NC	30
8787759	F1 (C6-C10)	2023/07/14	97	60 - 140	101	60 - 140	<25	ug/L	NC	30
8787759	o-Xylene	2023/07/14	100	50 - 140	120	50 - 140	<0.20	ug/L	NC	30
8787759	p+m-Xylene	2023/07/14	97	50 - 140	119	50 - 140	<0.40	ug/L	NC	30
8787759	Toluene	2023/07/14	89	50 - 140	106	50 - 140	<0.20	ug/L	NC	30
8787759	Total Xylenes	2023/07/14					<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.

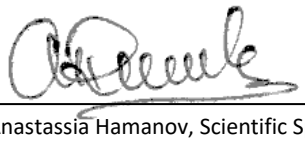
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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:



Anastassia Hamanov, Scientific Specialist

Bureau Veritas 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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

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

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvna.com

Received in Ottawa 11-Jul-23 13:53 Katherine Szozda C3K4929 AN4 ENV-910

Page 1 of 1

Order #: 3454

C#943454-01-01

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#17497 exp Services Inc	Company Name:		Quotation #:	C31678
Attention:	Accounts Payable	Attention:	Mark McCalla	P.O. #:	
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	(EXP) OTT-00243705-B0
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	(613) 225-9940 Ext: 243 Fax:	Project Name:	
Email:	AP@exp.com	Email:	mark.mccalla@exp.com	Site #:	
				Sampled By:	Mackenzie Russell

Project Manager: Katherine Szozda

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

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☑ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ☐ PWQO ☐ Reg 406 Table ☐ Other

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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	O Reg 153 PHCs, BTEX/F1-F4	# of Bottles	Comments
1	MW-1		07/11/23	10:30	GW	✓	4	
2	MW-2			11:25		✓	4	
3	MW-3			12:10		✓	4	turbid
4	Field Blank			12:30		✓	4	
5	Trip Blank			—		✓	3	
6	DUP			12:10		✓	4	turbid
7								
8								
9								
10								

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Mackenzie Russell	23/07/11	13:20	Samuel Durand Samuel Durand	2023/07/11	13:53	
				023/07/12	08:30	

Laboratory Use Only ICEPACKS

Time Sensitive

Temperature (°C) on Rece: 20, 20, 22

Custody Seal	Yes	No
Present	✓	
Intact	✓	

7/8/18

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S 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.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-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.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

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

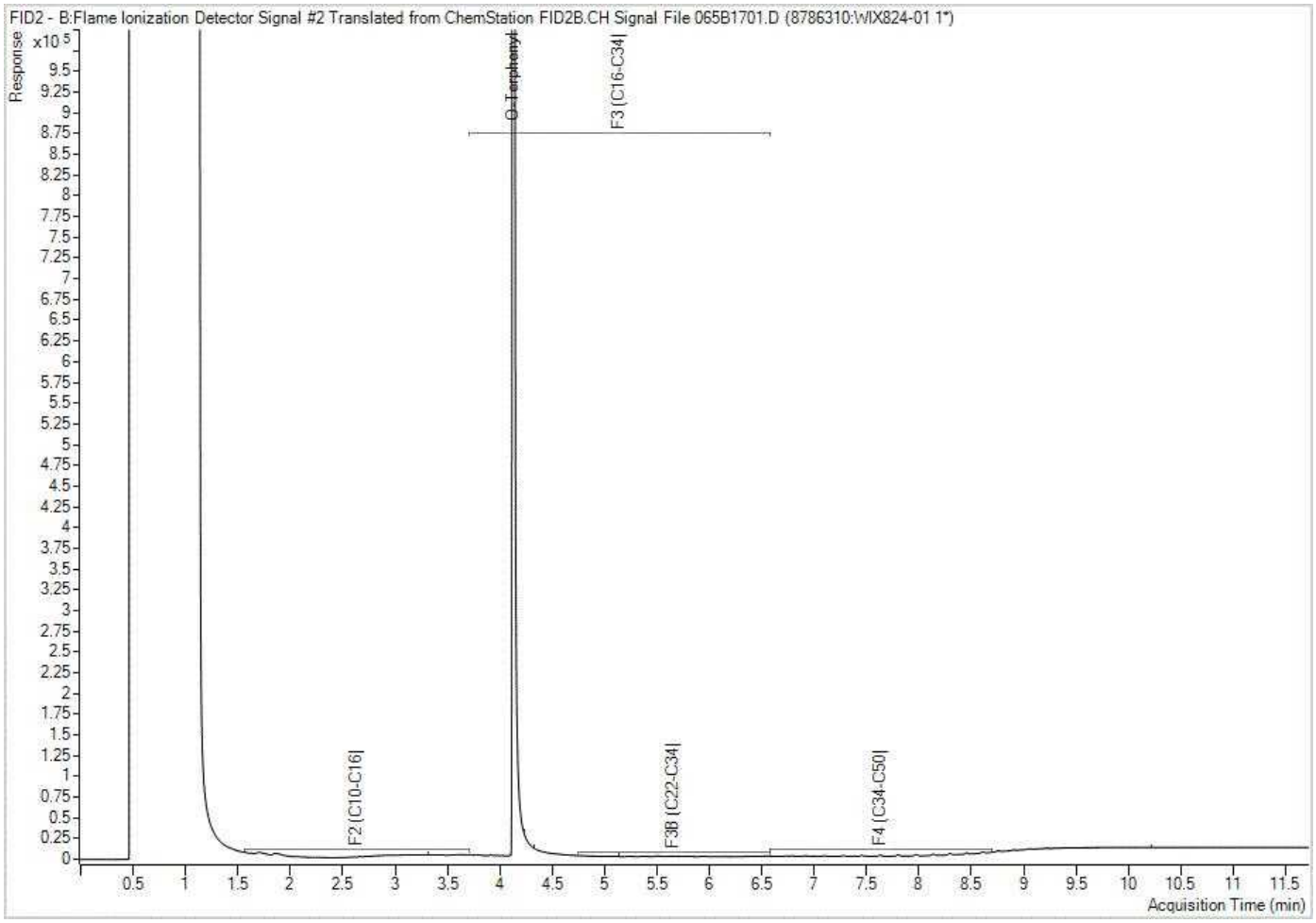
White: Bureau Veritas Yellow: Client

Bureau Veritas Canada (2019) Inc.

Bureau Veritas Job #: C3K4929
Report Date: 2023/07/14
Bureau Veritas Sample: WIX824

exp Services Inc
Client Project #: (EXP) OTT-00243705-B0
Client ID: MW-1

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

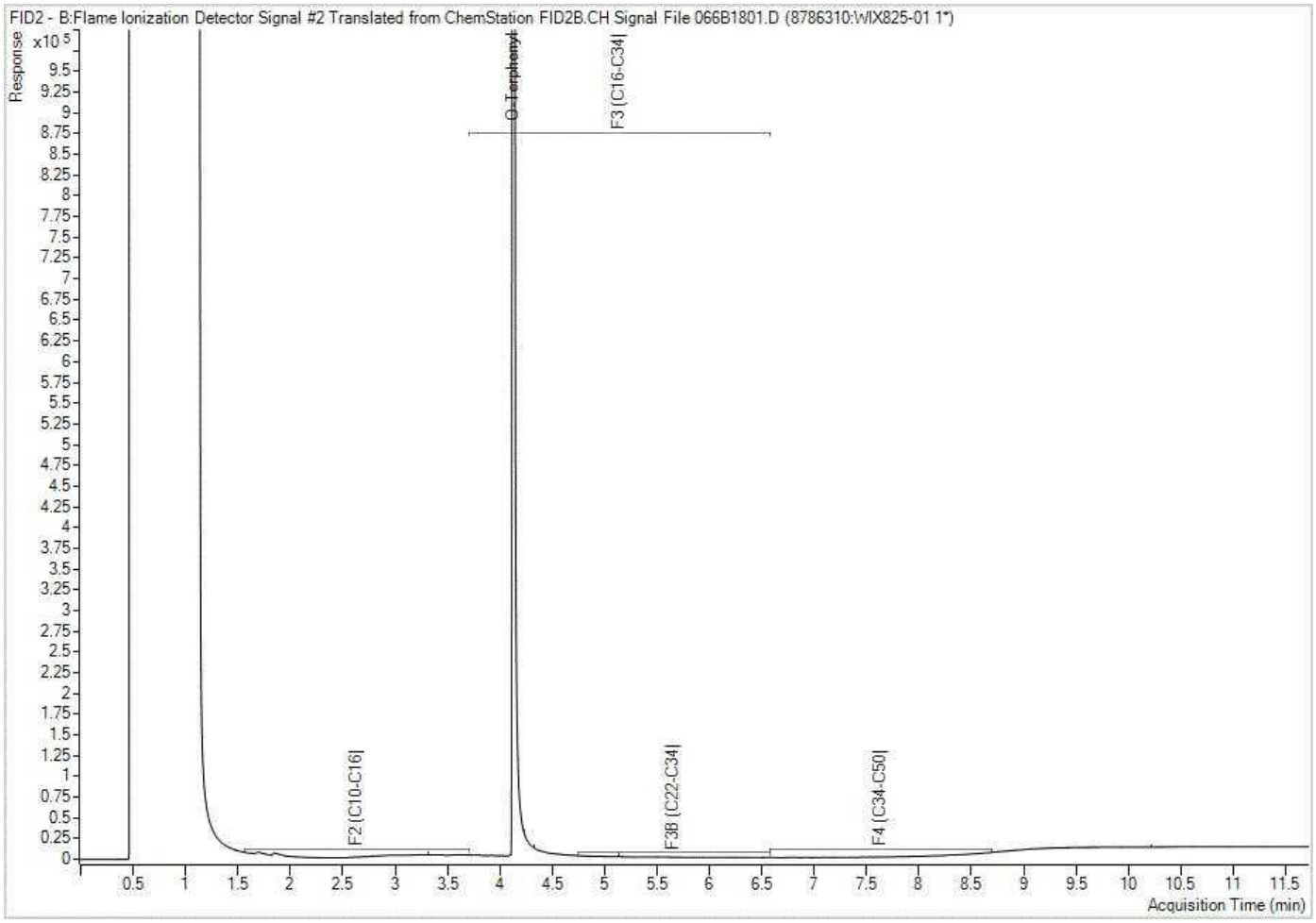


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C3K4929
Report Date: 2023/07/14
Bureau Veritas Sample: WIX825

exp Services Inc
Client Project #: (EXP) OTT-00243705-B0
Client ID: MW-2

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

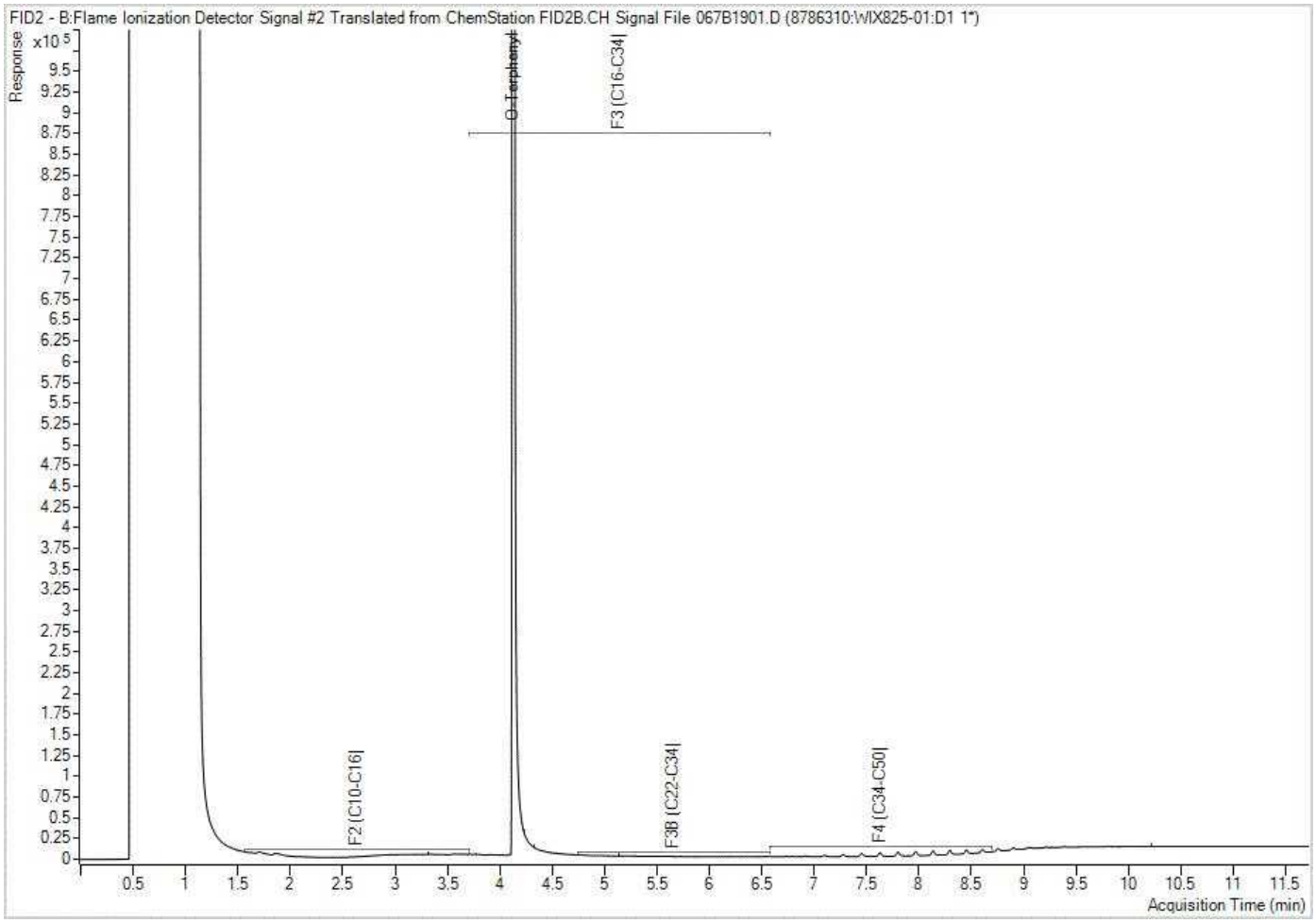


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C3K4929
Report Date: 2023/07/14
Bureau Veritas Sample: WIX825 Lab-Dup

exp Services Inc
Client Project #: (EXP) OTT-00243705-B0
Client ID: MW-2

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

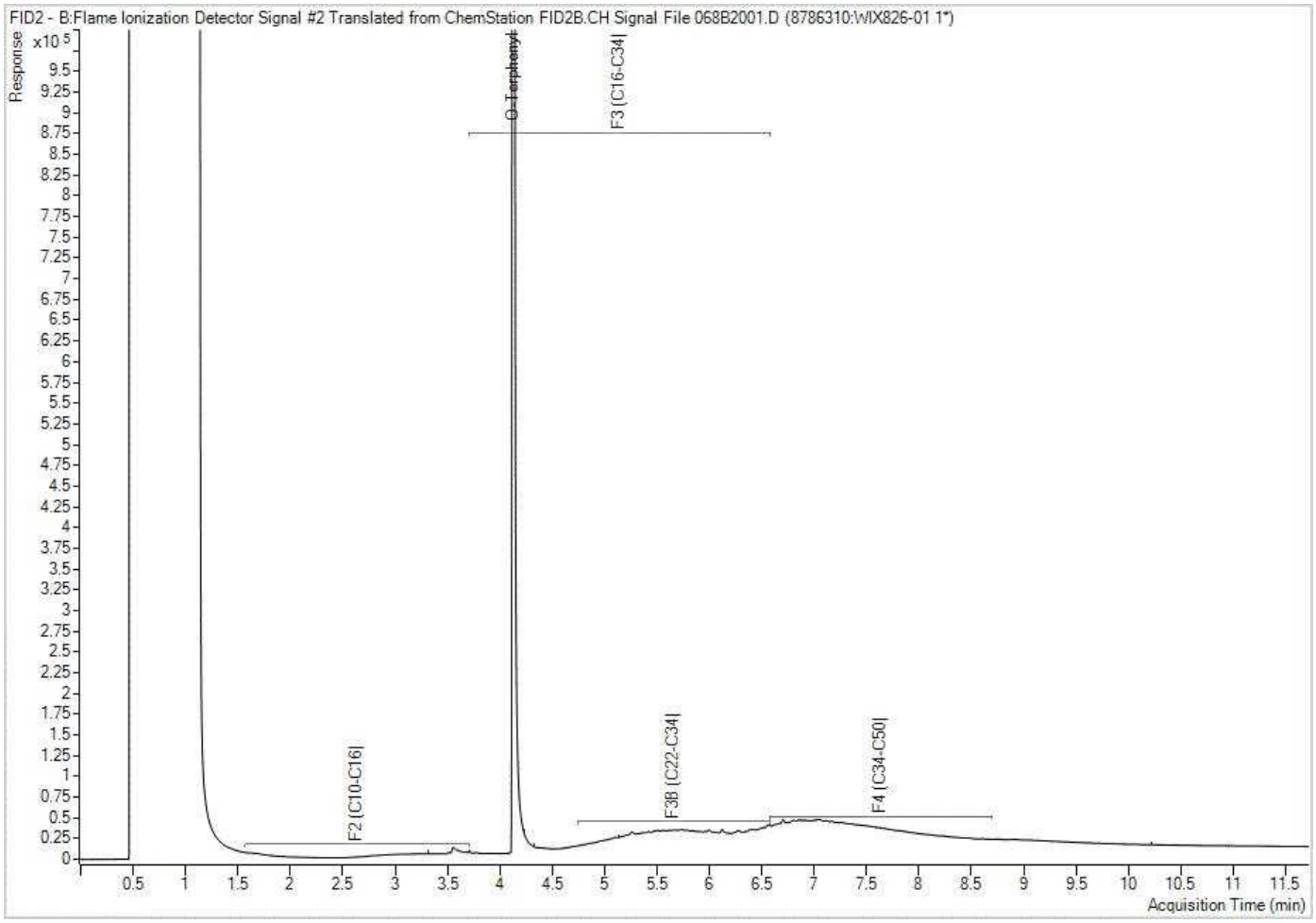


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C3K4929
Report Date: 2023/07/14
Bureau Veritas Sample: WIX826

exp Services Inc
Client Project #: (EXP) OTT-00243705-B0
Client ID: MW-3

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

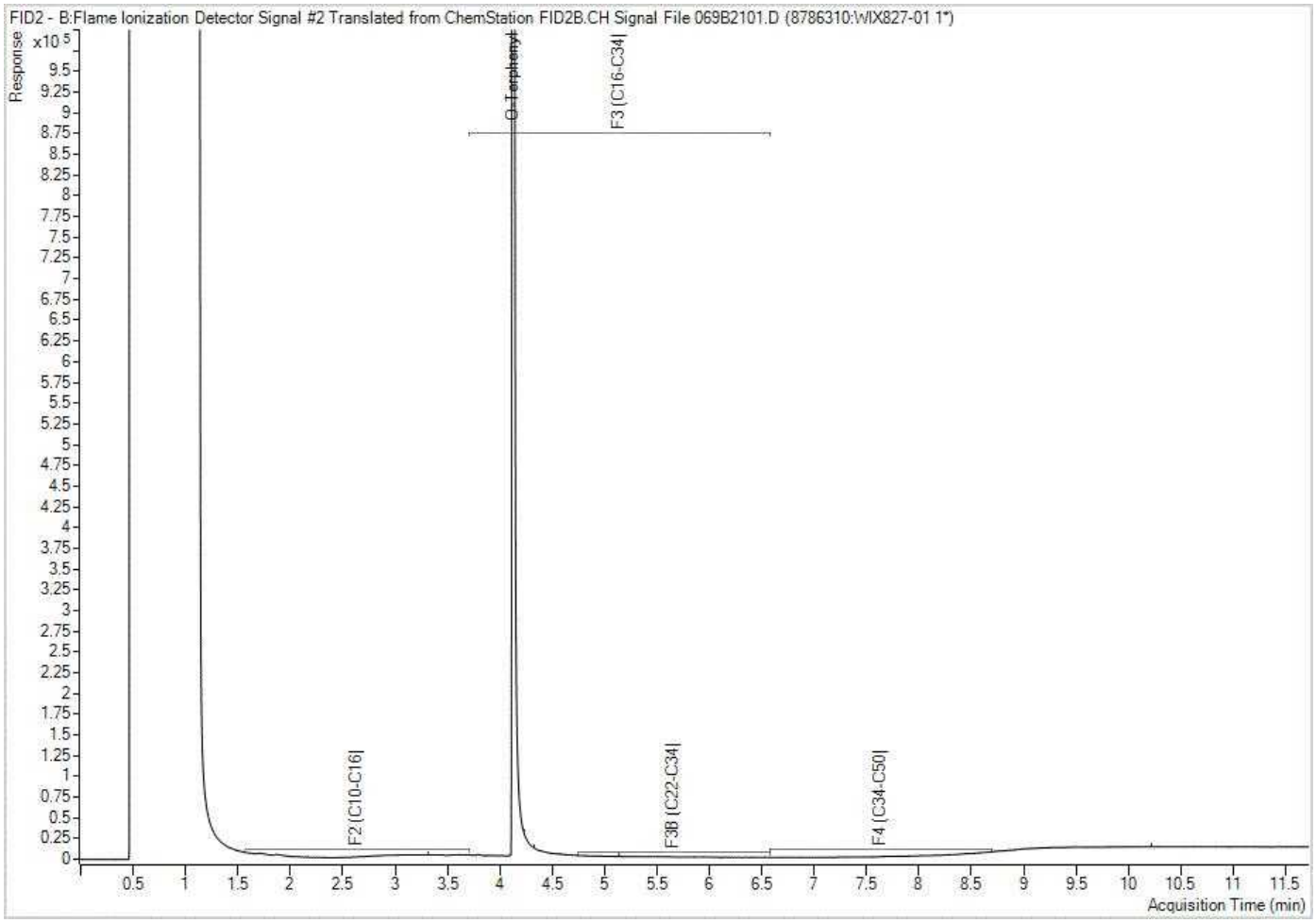


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C3K4929
Report Date: 2023/07/14
Bureau Veritas Sample: WIX827

exp Services Inc
Client Project #: (EXP) OTT-00243705-B0
Client ID: FIELD BLANK

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-00243750-B
Site Location: 6659 FRANKTOWN RD
Your C.O.C. #: n/a

Attention: Mark McCalla

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

Report Date: 2023/07/19
Report #: R7724936
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3L0437
Received: 2023/07/14, 16:29

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	2023/07/17	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	1	2023/07/18	2023/07/19	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, MELCCFP, 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 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-00243750-B
Site Location: 6659 FRANKTOWN RD
Your C.O.C. #: n/a

Attention: Mark McCalla

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

Report Date: 2023/07/19
Report #: R7724936
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3L0437
Received: 2023/07/14, 16:29

Encryption Key

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

==========

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Bureau Veritas 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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

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

Bureau Veritas ID		WKB310			WKB310		
Sampling Date		2023/07/14 15:00			2023/07/14 15:00		
COC Number		n/a			n/a		
	UNITS	**MW-3**	**RDL**	**QC Batch**	**MW-3 Lab-Dup**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons							
Benzene	ug/L	<0.20	0.20	8794260			
Toluene	ug/L	0.23	0.20	8794260			
Ethylbenzene	ug/L	<0.20	0.20	8794260			
o-Xylene	ug/L	<0.20	0.20	8794260			
p+m-Xylene	ug/L	<0.40	0.40	8794260			
Total Xylenes	ug/L	<0.40	0.40	8794260			
F1 (C6-C10)	ug/L	<25	25	8794260			
F1 (C6-C10) - BTEX	ug/L	<25	25	8794260			
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	8795823	<100	100	8795823
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	8795823	<200	200	8795823
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	8795823	<200	200	8795823
Reached Baseline at C50	ug/L	Yes		8795823	Yes		8795823
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	107		8794260			
4-Bromofluorobenzene	%	94		8794260			
D10-o-Xylene	%	99		8794260			
D4-1,2-Dichloroethane	%	91		8794260			
o-Terphenyl	%	95		8795823	95		8795823

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

Bureau Veritas Job #: C3L0437
Report Date: 2023/07/19

exp Services Inc
Client Project #: OTT-00243750-B
Site Location: 6659 FRANKTOWN RD
Sampler Initials: MR

TEST SUMMARY

Bureau Veritas ID: WKB310
Sample ID: MW-3
Matrix: Water

Collected: 2023/07/14
Shipped:
Received: 2023/07/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8794260	N/A	2023/07/17	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8795823	2023/07/18	2023/07/19	Agnieszka Brzuzy-Snopko

Bureau Veritas ID: WKB310 Dup
Sample ID: MW-3
Matrix: Water

Collected: 2023/07/14
Shipped:
Received: 2023/07/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8795823	2023/07/18	2023/07/19	Agnieszka Brzuzy-Snopko

GENERAL COMMENTS

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

Package 1	21.7°C

Results relate only to the items tested.

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

Bureau Veritas Job #: C3L0437
Report Date: 2023/07/19

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00243750-B
Site Location: 6659 FRANKTOWN RD
Sampler Initials: MR

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8794260	1,4-Difluorobenzene	2023/07/17	105	70 - 130	108	70 - 130	110	%		
8794260	4-Bromofluorobenzene	2023/07/17	99	70 - 130	96	70 - 130	94	%		
8794260	D10-o-Xylene	2023/07/17	100	70 - 130	102	70 - 130	106	%		
8794260	D4-1,2-Dichloroethane	2023/07/17	91	70 - 130	89	70 - 130	92	%		
8795823	o-Terphenyl	2023/07/18	96	60 - 130	93	60 - 130	96	%		
8794260	Benzene	2023/07/17	98	50 - 140	99	50 - 140	<0.20	ug/L	NC	30
8794260	Ethylbenzene	2023/07/17	108	50 - 140	112	50 - 140	<0.20	ug/L	NC	30
8794260	F1 (C6-C10) - BTEX	2023/07/17					<25	ug/L		
8794260	F1 (C6-C10)	2023/07/17	108	60 - 140	114	60 - 140	<25	ug/L		
8794260	o-Xylene	2023/07/17	101	50 - 140	103	50 - 140	<0.20	ug/L	NC	30
8794260	p+m-Xylene	2023/07/17	105	50 - 140	111	50 - 140	<0.40	ug/L	NC	30
8794260	Toluene	2023/07/17	95	50 - 140	98	50 - 140	<0.20	ug/L	NC	30
8794260	Total Xylenes	2023/07/17					<0.40	ug/L	NC	30
8795823	F2 (C10-C16 Hydrocarbons)	2023/07/19	100	60 - 130	96	60 - 130	<100	ug/L	NC	30
8795823	F3 (C16-C34 Hydrocarbons)	2023/07/19	105	60 - 130	101	60 - 130	<200	ug/L	NC	30
8795823	F4 (C34-C50 Hydrocarbons)	2023/07/19	104	60 - 130	100	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.

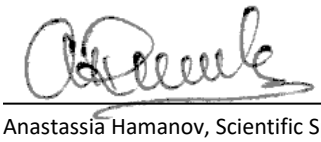
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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:



Anastassia Hamanov, Scientific Specialist

Bureau Veritas 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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

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

Received in Ottawa

CHAIN OF CUSTODY RECORD 159929

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 #:	☑ Regular TAT (5-7 days) Most analyses
Contact Name: Mark McCalla	Contact Name:	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 2650 Queensview Dr. Ottawa	Address:	Project #: OTT-00243750-B	Rush TAT (Surcharges will be applied)
Phone: 613 688 1899 Fax:	Phone: Fax:	Site Location: 6659 Franktown rd.	☐ 1 Day ☐ 2 Days ☐ 3-4 Days
Email: mark.mccalla@exp.com	Email:	Site #:	Date Required:
		Site Location Province: Ontario	Rush Confirmation #:
		Sampled By: Mackenzie Rundell	

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

LABORATORY USE ONLY

CUSTODY SEAL Y / N: Present / Intact

COOLER TEMPERATURES

Present	Intact	Cooler Temperatures
N	N	23.22.20
Y	Y	2/3/3

COOLING MEDIA PRESENT: (Y) / N ICE

	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-3	2023/07/14	15:00	GW	4		✓	✓						
2														
3														
4														
5														
6														
7														
8														
9														
10														

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
[signature]	2023/07/14	16:25	[signature] LAWRENCE	2023/07/14	1629
Mackenzie Rundell			[signature] PEARMOT	2023/07/15	0813

14-Jul-23 16:29
Katherine Szozda
C3L0437
RUK ENV-902

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 accept... terms available at http://www.bvlabs.com/terms-and-conditions

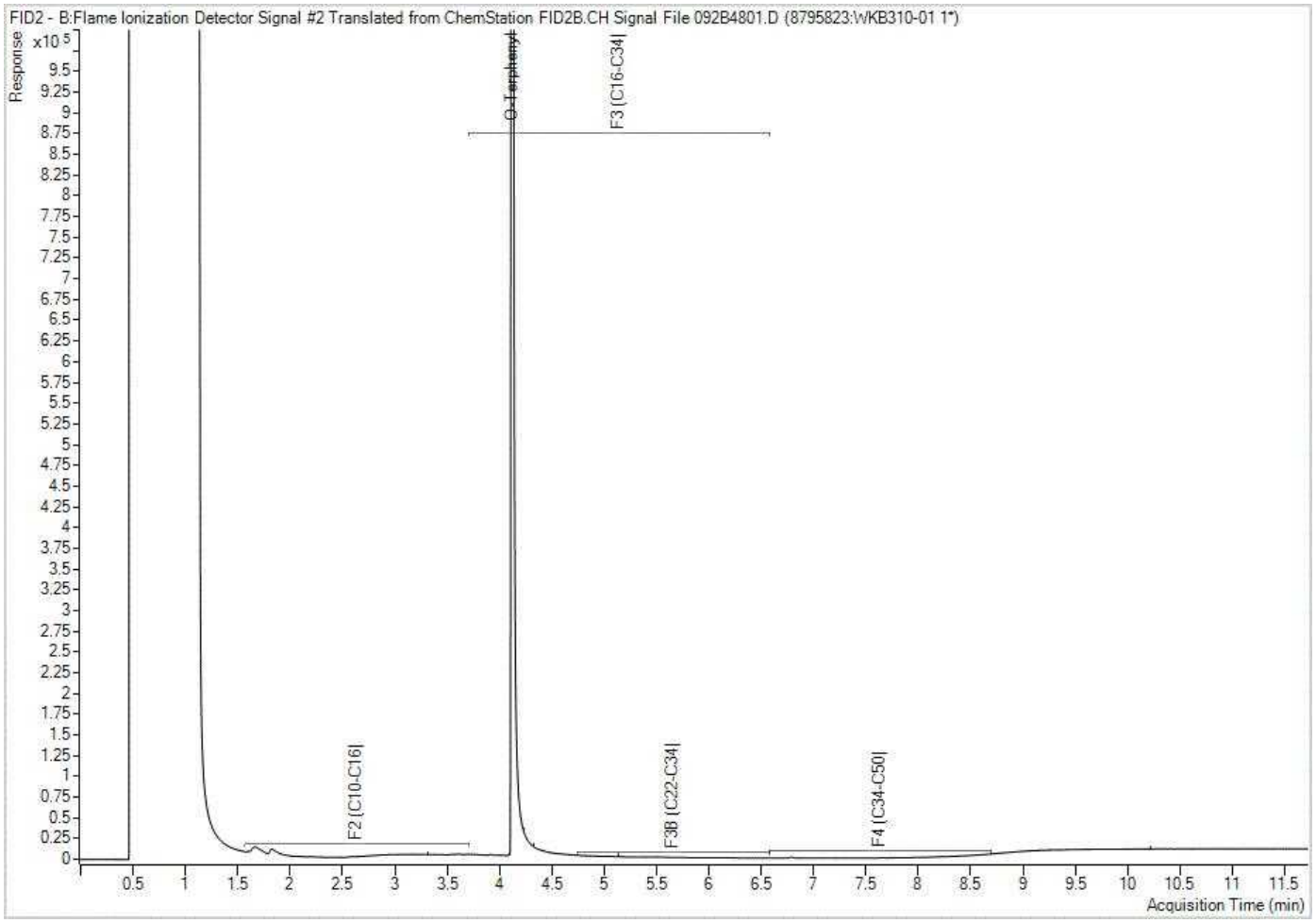
COC-1004 (06/19)

White: BV Labs - Yellow: Client

Bureau Veritas Job #: C3L0437
Report Date: 2023/07/19
Bureau Veritas Sample: WKB310

exp Services Inc
Client Project #: OTT-00243750-B
Project name: 6659 FRANKTOWN RD
Client ID: MW-3

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

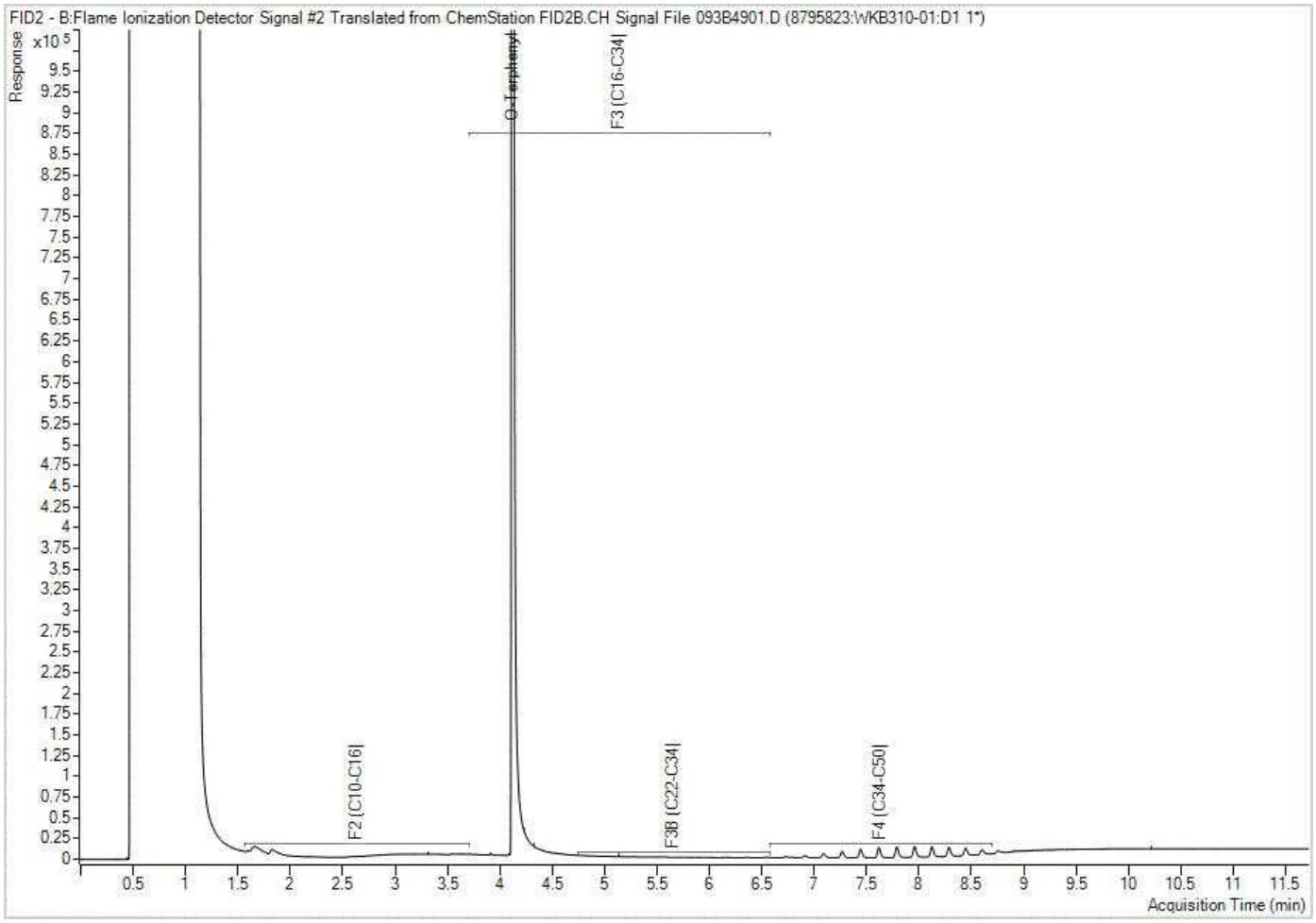


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Bureau Veritas Job #: C3L0437
Report Date: 2023/07/19
Bureau Veritas Sample: WKB310 Lab-Dup

exp Services Inc
Client Project #: OTT-00243750-B
Project name: 6659 FRANKTOWN RD
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.

Appendix G: Hydraulic Conductivity

6659 Franktown Road, Ottawa **MW1** **2-Aug-23**
Rising Head Test Analysis Test 1
Hvorslev Method (1951)

H_0 1.27 m
(static water level in metres)

Time (sec)	Water Level (m)	Drawdown (m)	H-h/H-h0
0	4.05	2.78	1.00
30	3.26	1.99	0.72
60	3.27	2.00	0.72
90	3.07	1.80	0.65
120	2.86	1.59	0.57
150	2.67	1.40	0.50
180	2.49	1.22	0.44
210	2.38	1.11	0.40
240	2.35	1.08	0.39
360	1.86	0.59	0.21
480	1.62	0.35	0.13
600	1.48	0.21	0.08
720	1.4	0.13	0.05
780	1.36	0.09	0.03

To constant= 0.37

L/R	ln(L/R)
30.0	3.401197

input

r= 0.018 (pipe radius)
L= 1.50 (effective screen length, if strattles water)
R= 0.05 (hole radius)
To= 260

$$K = \frac{r^2 \ln(L/R)}{2(To)(L)}$$

K= 1.41E-06 m/sec or **1.41E-04 cm/sec**